Form C-141
Page 6

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2124247509
District RP	
Facility ID	
Application ID	

Closure

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

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

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

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

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

☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Natalie Gladden Title: Env. + Reg. Director

Signature: Natalie Gladden Date: 7/17/22

email: natalie@energystaffingllc.com Telephone: 575-390-6397

OCD Only

Received by: Robert Hamlet Date: 11/17/2022

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

Closure Approved by: Robert Hamlet Date: 11/17/2022

Printed Name: Robert Hamlet Title: Environmental Specialist - Advanced

REDWOOD OPERATING LLC

LOGAN 35 SWD
CLOSURE REQUEST

API NO. 30-015-30409
LEGALS: U/L N, SECTION 35 SOUTH, TOWNSHIP 17 SOUTH, RANGE 27 EAST
EDDY COUNTY, NEW MEXICO

DATE OF RELEASE: 08/20/21
INCIDENT NO. NAPP2124247509

July 14, 2022

PREPARED BY:

ESS
2724 NW COUNTY ROAD
HOBBS, NM 88240
575-393-9048

July 14, 2022

New Mexico Energy, Minerals & Natural Resources
NMOCD District I
C/O Mike Bratcher, Robert Hamlet & Jennifer Nobui
811 S. First Street
Artesia, NM 88210

Bureau of Land Management
C/O Jim Amos
620 E. Green Street
Carlsbad, NM 88220

Redwood Operating, LLC
C/O Matt Buckles
PO BOX 1370
Artesia, NM 88211

Subject: Closure Request for Redwood Operating – Logan 35 SWD

API No. 30-015-30409 (Logan 35 B Fed #009 – closest well)
Incident No. NAPP2124247509
Unit Letter N, Section 35, Township 17 South, Range 27 East
Eddy County, New Mexico

To Whom it May Concern:

Redwood Operating has retained Energy Staffing (ESS), to conduct a spill assessment, delineation, and remediation for the Logan 35 SWD (hereafter referred to as the "Logan") for the produced water release that occurred on August 20, 2021. Matt Buckles with Redwood, provided the immediate notification of the release to the *New Mexico Oil Conservation Division (NMOCD),* District II Office and to the *Bureau of Land Management (BLM)* on Friday August 20th of 2021 at 7:17 p.m. On behalf of Redwood Operating, ESS submitted the initial C141 Release Notification, along with the spill calculator form used to determine the volume of the release (attached) on August 21st of 2021 and assigned the NMOCD Incident ID Number of NAPP2124247509 to this release (Attached).

This report provides a detailed description of the spill assessment, delineation and remedial activities conducted at the Logan and demonstrates that the closure criteria has been established in the *19.15.29.12 New Mexico Administrative Code (NMAC: New Mexico Oil Conservation Division, 2018)* have been met and all applicable regulations have been followed.

This document is intended to serve as the final report to obtain approval from the NMOCD/BLM for the closure of the above-mentioned release.

Incident Description

On August 20th of 2021, the leak on the flowline was located by Redwood Staff. Upon arrival it was observed that the transition on the poly flowline had failed causing the release. The release occurred in the pasture. Approximately 50bbls of produced water was released, with no recovery of standing fluids as it had soaked in once the leak was repaired.

ESS conducted a full site assessment the following day of the release. The area of impact was measured at measured 11,167 sq. ft., not the original reported size of 35,000 sq. ft. Please see the site map attached herein.

Site Characterization

The release at the Logan occurred on federal land and is located at latitude 32.7857 and longitude -103.575140, located 3.48 miles southeast of Riverside, New Mexico. The legal description for the site is Unit Letter N, Section 35, Township 17 South and Range 37 East in Eddy County, New Mexico. Please see the site map attached herein.

The Logan consists of open range land, surrounded by production pads, facilities, and production flowlines. This area is historically side oats grama, little bluestem and other perennial grasses. Please see the Rangeland and Vegetation Classification information attached.

The *United States Department of Agriculture Natural Resource Conservation Services,* indicates that the soil type found in the area of the Logan, consists of 18.7% Gypsum Land-Cottonwood Complex with 0-3% slopes and 81.3% Reeves-Gypsum Land Complex with 0-3% slopes. (Soil Map Attached). In the area of the Logan the *FEMA National Flood Hazard Layer,* indicates that there is 0.2% annual chance of a flood hazard in this area (see map attached).

There is "high potential" for Karst Geology to be present near the Logan site, according to the *United States Department of the Interior, Bureau of Land Management.* Please find the Karst Map attached herein.

There is no surface water located near or around the Logan. This site is not near a continuously flowing watercourse and or lakebed with ½ a mile from the release. No other critical or community features at the Logan were found. (Attached Watercourse Map).

The nearest and most recent water well to the site according to the *New Mexico Office of the State Engineer* is RA 12612 POD1, which is located 3363' from the site and drilled in 2018 with no water well depth available. RA 03917 is located 2454' from the site, drilled in 1958 with 50'dgw. RA 12456 POD1, 3813' from the site, drilled in 2016 with 92'dgw. The other three listed were drilled in the period of 1947-1962. An extended groundwater search was conducted using the *OSE POD Location Mapping System* and it has been determined that two other wells are within the ½ a mile radius of the site. The first one sits on the boundary of the ½ mile radius, labelled RA02996, permitted in 1953 with no groundwater data available. The second one listed is outside the ½ mile radius, labelled RA-12568-POD1, permitted in 2017 with no groundwater information available. Please find the NMOSE, OSE POD and the groundwater map attached to this report.

Closure Criteria Determination

The Closure Criteria for Soils impacted by a Release is shown in the below chart. No groundwater data was found within a ½ mile radius from the release point, being on Federal Land and with having a "high karst potential," this site fell under the <50' to groundwater.

DGW	Constituent	Method	Limit
≤ 50'	Chloride	EPA 300.0 OR SM4500 CLB	600 mg/kg
	TPH (GRO + DRO + MRO)	EPA SW-846 METHOD 8015M	100 mg/kg
	GRO + DRO	EPA SW-846 METHOD 8015M	50 mg/kg
	BTEX	EPA SW-846 METHOD 8021B OR 8260B	10 mg/kg
	Benzene	EPA SW-846 METHOD 8021B OR 8260B	10 mg/kg

Soil Remediation Action Levels

ESS has provided sufficient data that this release has impacted the soil at the Logan and that the protocol is consistent with the remediation/abatement goals and objectives set forth in the *NMOCD Closure Criteria for Soils Impacted by a Release, dated August 14, 2018.*

The guidance document provides direction for Redwood initial response actions, site assessment and sample procedures conducted by ESS Staff. We would like to present to you the following information concerning the delineation process for the release detailed herein.

Soil Sampling Procedures

Soil sampling for laboratory analysis was conducted according to the NMOCD – approved industry standards. Accepted NMOCD soil sampling procedures and laboratory analytical methods are as follows:

- Collect clean samples in airtight glass jars supplied by the laboratory to conduct the analysis

- Each sample jar was labelled with site and sample information
- Samples were kept in and stored in a cool place and packed on ice
- Promptly ship sample to the lab for analysis following the chain of custody procedures

The following lab analysis method was used for each bottom hole (vertical) and sidewall sample (horizontal) was submitted to Envirotech Analytical Laboratory:

Volatile Organics by EPA 8021B

- Benzene, Toluene, Ethylbenzene, p.m. Xylene, o-Xylene and Total Xylenes

Nonhalogenated Organics by EPA 8015D – GRO

- Gasoline Range Organics (C6-C10)

Nonhalogenated Organics by EPA 8015D – DRO/ORO

- Diesel Range Organics (C10-C28)
- Oil Range Organics (C28-C40)

Anions by EPA 300.0/9056A

- Chloride

Release Investigation Data Evaluation

On August 21st of 2021, ESS staff arrived on site to conduct a full site assessment of the release area. It was observed that the line had been repaired and the fluid had soaked in and no standing fluid was visible. Crews mapped out the impacted area, set the sample points, photographed the release area, flagged the area, and called in the one-call. Find initial site photos attached herein.

On August 24th, ESS crews began the delineation process. A total of 10 vertical sample points and 8 horizontal sample points were placed and GPS'd. Numerous buried and surface lines were found in the impact zone. Surface samples indicated that BTEX, TPH and Chlorides were elevated. SP9 and SP10 were in areas of thick Gypsum rock. Crews were unable to gather enough soil for lab analysis on these two samples points but were able to gather 10 grams of soil to conduct field tests. Crews spent several days exposing all of the buried lines. Please find the surface sample data along with lab analysis below:

SURFACE SAMPLE DATA

SP ID	Depth	Titr	PID	L-BTEX	L-GRO	L-DRO	L-ORO	L-TPH	L-CHL
SP1	SURF	560	LOW	ND	ND	40.4	ND	40.4	284
SP2	SURF	>4000	ND	ND	ND	ND	ND	ND	17800

SP3	SURF	>4000	LOW	ND	ND	55.4	ND	55.4	23700
SP4	SURF	>4000	HIGH	0.604	ND	59	51	110	31800
SP5	SURF	>4000	ND	ND	ND	ND	ND	ND	23700
SP6	SURF	>4000	HIGH	0.0315	ND	209	335	544	23600
SP7	SURF	>4000	HIGH	ND	ND	30.3	59.9	90.2	23600
SP8	SURF	>4000	ND	ND	ND	ND	ND	ND	9450
SP9	SURF								
SP10	SURF								

Crews continued the vertical delineation of the impacted area by use of backhoe. All sample points were delineated to clean analysis except for SP6, where refusal occurred at 10bgs due to a large cap, which would need to be excavated and busted out during the remediation phase of the project. SP6 was further delineated when composite sampling was conducted. Once bottom hole samples were clear of contaminates, samples were jarred and submitted to the lab for analysis. Again, SP6 was submitted to the lab when refusal occurred to document concentrations of contaminates. Attached to this report you will locate the complete sample data along with confirmed lab analysis. Below, please find the vertical delineation field data along with the confirmation lab results:

VERTICAL BOTTOM HOLE SAMPLE DATA

SP ID	Depth	Titr	PID	L-BTEX	L-GRO	L-DRO	L-ORO	L-TPH	L-CHL
SP1	8'	480	ND	ND	ND	ND	ND	ND	527
SP2	6'	40	ND	ND	ND	ND	ND	ND	ND
SP3	10'	40	ND	ND	ND	ND	ND	ND	ND
SP4	9'	120	ND	ND	ND	ND	ND	ND	ND
SP5	6'	60	ND	ND	ND	ND	ND	ND	ND
SP6	10'	>4000	ND	ND	ND	34.4	ND	34.4	20200
SP7	10’	400	ND	ND	ND	ND	ND	ND	382
SP8	9'	200	ND	ND	ND	ND	ND	ND	221
SP9	8'	500	ND	ND	ND	ND	ND	ND	445
SP10	8'	500	ND	ND	ND	ND	ND	ND	503

Horizontal samples were placed, GPS’d, field evaluated and submitted to the lab for confirmation. SW9 thru SW11 and SW13 resulted in elevated concentrations of TPH and were further delineated during the excavation phase of the project. Below you will find the horizontal data lab analysis, along with the sample data and lab analysis attached to this report:

HORIZONTAL SAMPLE DATA

SP ID	Depth	Titr	PID	L-BTEX	L-GRO	L-DRO	L-ORO	L-TPH	L-CHL
SW1	3'	80	ND	ND	ND	ND	ND	ND	74.3
SW2	3'	60	ND	ND	ND	ND	ND	ND	ND
SW3	3'	100	ND	ND	ND	ND	ND	ND	57
SW4	3'	40	ND	ND	ND	ND	ND	ND	ND
SW5	3'	20	ND	ND	ND	ND	ND	ND	ND
SW6	2'	160	ND	ND	ND	ND	ND	ND	143
SW7	2'	120	ND	ND	ND	ND	ND	ND	137
SW8	2'	200	ND	ND	ND	ND	ND	ND	181
SW9	2'	300	LOW	ND	ND	58.2	ND	58.2	279
SW10	2'	340	LOW	ND	ND	74.8	ND	74.8	295
SW11	3'	60	HIGH	ND	ND	92.1	157	249.1	45.7
SW12	2'	40	ND	ND	ND	ND	ND	ND	32.5
SW13	2'	200	LOW	ND	ND	52.3	ND	52.3	242
SW14	2'	240	ND	ND	ND	48.1	ND	48.1	227

Excavating of contaminated soil began on April 4th of 2022. SP1, SP9, SP10 was excavated to 8'bgs. SP8 and SP4 were excavated to 8'. SP2 and SP5 were excavated to 6' and SP3, SP6 and SP7 were excavated to 10'bgs. A total of 2,989.56 cy of contaminated soil was hauled to Lealand. A total of 1,104 cy of caliche was backhauled from Lealand and 2,020 cy of topsoil was purchased from a local landowner, with a combined total of 3,124 cy of backfill which was backhauled to location.

On April 11th, an email was sent to the OCD and BLM for the composite notification protocol. After the excavation was completed, a total of 56 bottom hole composites and 13 sidewall composites were obtained, field evaluated, jarred, and send to Envirotech Lab for confirmation. Below you will find the final lab analysis for the composites obtained by ESS. See sample log and lab analysis attached herein.

SP ID	Depth	Titr	PID	L-BTEX	L-GRO	L-DRO	L-ORO	L-TPH	L-CHL
COMP 1	10'	60	ND	ND	ND	ND	ND	ND	46.7
COMP 2	10'	40	ND	ND	ND	ND	ND	ND	30.2
COMP 3	8'	60	ND	ND	ND	ND	ND	ND	56.9
COMP 4	8'	80	ND	ND	ND	ND	ND	ND	76
COMP 5	8'	60	ND	ND	ND	ND	ND	ND	50.3
COMP 6	10'	100	ND	ND	ND	ND	ND	ND	80.2
COMP 7	10'	240	ND	ND	ND	ND	ND	ND	223
COMP 8	8'	160	ND	ND	ND	ND	ND	ND	146

COMP 9	8'	240	ND	ND	ND	ND	ND	ND	116
COMP 10	10'	20	ND	ND	ND	ND	ND	ND	23.7
COMP 11	10	80	ND	ND	ND	ND	ND	ND	69.6
COMP 12	6'	140	ND	ND	ND	ND	ND	ND	113
COMP 13	6'	40	ND	ND	ND	ND	ND	ND	32.7
COMP 14	10'	80	ND	ND	ND	ND	ND	ND	76.2
COMP 15	10'	100	ND	ND	ND	ND	ND	ND	93.9
COMP 16	6'	140	ND	ND	ND	ND	ND	ND	110
COMP 17	6'	80	ND	ND	ND	ND	ND	ND	66.8
COMP 18	9'	220	ND	ND	ND	ND	ND	ND	204
COMP 19	9'	100	ND	ND	ND	ND	ND	ND	106
COMP 20	9'	100	ND	ND	ND	ND	ND	ND	72
COMP 21	9'	60	ND	ND	ND	ND	ND	ND	52.1
COMP 22	9'	100	ND	ND	ND	ND	ND	ND	109
COMP 23	9'	140	ND	ND	ND	ND	ND	ND	120
COMP 24	9'	20	ND	ND	ND	ND	ND	ND	ND
COMP 25	9'	20	ND	ND	ND	ND	ND	ND	ND
COMP 26	9'	20	ND	ND	ND	ND	ND	ND	ND
COMP 27	6'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 28	6'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 29	6'	20	ND	ND	ND	ND	ND	ND	ND
COMP 30	6'	40	ND	ND	ND	ND	ND	ND	ND
COMP 31	6'	20	ND	ND	ND	ND	ND	ND	ND
COMP 32	6'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 33	6'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 34	6'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 35	10'	20	ND	ND	ND	ND	ND	ND	ND
COMP 36	10'	40	ND	ND	ND	ND	ND	ND	ND
COMP 37	10'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 38	10'	20	ND	ND	ND	ND	ND	ND	ND
COMP 39	10'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 40	10'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 41	10'	20	ND	ND	ND	ND	ND	ND	ND
COMP 42	10'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 43	10'	40	ND	ND	ND	ND	ND	ND	ND
COMP 45	9'	60	ND	ND	ND	ND	ND	ND	ND
COMP 46	9'	40	ND	ND	ND	ND	ND	ND	ND
COMP 47	9'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 48	9'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 49	9'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 50	9'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 51	9'	20	ND	ND	ND	ND	ND	ND	ND

COMP 52	8'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 53	8'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 54	8'	40	ND	ND	ND	ND	ND	ND	ND
COMP 55	8'	ND	ND	ND	ND	ND	ND	ND	ND
COMP 56	8'	ND	ND	ND	ND	ND	ND	ND	ND
SWC 1		ND	ND	ND	ND	ND	ND	ND	ND
SWC 2		20	ND	ND	ND	ND	ND	ND	ND
SWC 3		ND	ND	ND	ND	ND	ND	ND	ND
SWC 4		ND	ND	ND	ND	ND	ND	ND	ND
SWC 5		ND	ND	ND	ND	ND	ND	ND	ND
SWC 6		20	ND	ND	ND	ND	ND	ND	ND
SWC 7		ND	ND	ND	ND	ND	ND	ND	ND
SWC 8		40	ND	ND	ND	ND	ND	ND	ND
SWC 9		ND	ND	ND	ND	ND	ND	ND	ND
SWC 10		ND	ND	ND	ND	ND	ND	ND	ND
SWC 11		ND	ND	ND	ND	ND	ND	ND	ND
SWC 12		ND	ND	ND	ND	ND	ND	ND	ND
SWC 13		20	ND	ND	ND	ND	ND	ND	ND

The impacted area was excavated from 6' to 10'bgs. Once ESS had received the confirmed lab analysis that the full extent of the contamination had been removed, backfilling of the site began. The site was backfilled with caliche from bottom of excavation up to 4'bgs, then topsoil was used to backfill the remainder of the excavation. Site was then contoured to its natural state. The site will be seeded in late July of 2022. Please see site photos attached.

Closure Request

On behalf of Redwood Operating, ESS requests that the Incident No. (NAPP2124247509) be closed for the release that occurred in the pasture area from the Logan 35 SWD. ESS and Redwood verifies that all of the information provided and that is detailed in this report, is true and correct and we have complied with all applicable closure requirements for this release that occurred on the Logan 35 SWD.

After review of this report if you have any questions or concerns, please do not hesitate to contact the undersigned at (575) 390-6397 or (575) 393-9048. You may also email any issues to natalie@energystaffingllc.com.

Sincerely,

Director of Environmental and Regulatory Services
Energy Staffing Services, LLC.
2724 NW County Road
Hobbs, NM 88240
Office: 575-393-9048
Cell: 575-390-6397
Email: natalie@energystaffingllc.com

Attachments:

- Redwood Email Notification
- Initial C141
- Spill Calculator Sheet
- Impact Map
- Site Map
- Rangeland and Vegetation Classification
- Soil Map
- FEMA Map
- Karst Map
- Surface Water/Watercourse Map
- Groundwater data and GW Map
- OSE Map
- Initial Site Photos
- Delineation Site Photos
- Delineation Sample Data and Sample GPS
- Delineation Sample Map
- Composite Email Request
- Composite Sample Data and Sample GPs
- Composite Sample Map
- Lab Analysis
- Remediation and Final Photos
- Final C141

Natalie Gladden

From: Matt Buckles <mattbuckles@mec.com>
Sent: Friday, August 20, 2021 7:17 PM
To: mike.bratcher@state.nm.us; jim.griswold@state.nm.us; Robert Hamlet; Victoria Venegas; Melissa Horn
Cc: Jerry Sherrell
Subject: 24 hr notice Release Redwood Operating
Attachments: Logan35WaterLine.png

All,

Redwood Operating had a major release on the Logan 35 SWD System at approximately 6am on 8/20/2021. The poly line transition failed, releasing 50 bbls of produced water covering approximately 35,000 sq ft of surface disturbance on BLM Land. Source of Release was located at 32.7857, -104.2499. Will begin sampling and fully delineate along with submitting an initial C-141 shortly.
[cid:E2DFF63E-CEB7-47D5-B1B2-619A8FF6E3D0]

Thanks,

Matt Buckles
Redwood Operating
575-703-1958

Natalie Gladden

From: natalie@energystaffingllc.com
Sent: Saturday, August 21, 2021 12:07 PM
To: OCDOnline@state.nm.us; CFO_Spill, BLM_NM
Cc: Matt Buckles
Subject: FW: 24 hr notice Release Redwood Operating - Logan 35 SWD
Attachments: Logan35WaterLine.png

Importance: High

Please see email below concerning the release at the Logan 35 SWD for Redwood/Mack Energy.

Natalie Gladden

Director of Environmental and Regulatory Services Energy Staffing Services, LLC.
#7 Compress Rd
Artesia, NM 88210
Cell: 575-390-6397
Email: natalie@energystaffingllc.com

-----Original Message-----
From: Matt Buckles <mattbuckles@mec.com>
Sent: Friday, August 20, 2021 7:17 PM
To: mike.bratcher@state.nm.us; jim.griswold@state.nm.us; Robert Hamlet <Robert.Hamlet@state.nm.us>; Victoria Venegas <Victoria.Venegas@state.nm.us>; Melissa Horn <mhorn@blm.gov>
Cc: Jerry Sherrell <jerrys@mec.com>
Subject: 24 hr notice Release Redwood Operating

All,

Redwood Operating had a major release on the Logan 35 SWD System at approximately 6am on 8/20/2021. The poly line transition failed, releasing 50 bbls of produced water covering approximately 35,000 sq ft of surface disturbance on BLM Land. Source of Release was located at 32.7857, -104.2499. Will begin sampling and fully delineate along with submitting an initial C-141 shortly.
[cid:E2DFF63E-CEB7-47D5-B1B2-619A8FF6E3D0]

Thanks,

Matt Buckles
Redwood Operating
575-703-1958

Soil Type	Porosity	Length	Width	Depth (.083 per inch)	Cubic Feet	Estimated Barrels	Soil Type
Clay	0.15	10	10	0.083	8.3	0.22	Clay
Peat	0.40	10	10	0.083	8.3	0.59	Peat
Glacial Sediments	0.13	10	10	0.083	8.3	0.19	Glacial Sediments
Sandy Clay	0.12	10	10	0.083	8.3	0.18	Sandy Clay
Silt	0.16	10	10	0.083	8.3	0.24	Silt
Loess	0.25	10	10	0.083	8.3	0.37	Loess
Fine Sand	0.16	10	10	0.083	8.3	0.24	Fine Sand
Medium Sand	0.25	10	10	0.083	8.3	0.37	Medium Sand
Coarse Sand	0.26	10	10	0.083	8.3	0.38	Coarse Sand
Gravely Sand	0.26	10	10	0.083	8.3	0.38	Gravely Sand
Fine Gravel	0.26	10	10	0.083	8.3	0.38	Fine Gravel
Medium Gravel	0.20	10	10	0.0553	5.53	0.20	Medium Gravel
Coarse Gravel	0.18	10	10	0.0553	5.53	0.18	Coarse Gravel
Sandstone	0.25	317.66	63.87	0.0553	1121.9786	50.00	Sandstone
Siltstone	0.18	10	10	0.083	8.3	0.27	Siltstone
Shale	0.05	10	10	0.083	8.3	0.07	Shale
Limestone	0.13	10	10	0.083	8.3	0.19	Limestone
Basalt	0.19	10	10	0.083	8.3	0.28	Basalt
Volcanic Tuff	0.20	10	10	0.083	8.3	0.30	Volcanic Tuff
Standing Liquids	X	10	10	0.083	8.3	1.48	Standing Liquids

1	*2*	*3*	*4*	*5*	*6*
0.083	**0.166**	**0.250**	**0.332**	**0.415**	**0.500**
7	*8*	*9*	*10*	*11*	*12*
0.581	**0.664**	**0.750**	**0.830**	**0.913**	**1.000**

NOTE: This is an **estimate** tool designed for quick field estimates of whether a C-141 should be requred *(I.e. a release is estimated to be greater than or less than 5 barrel volumes)*

Choose the one prevailing ground type for estimating spill volumes at a single location.

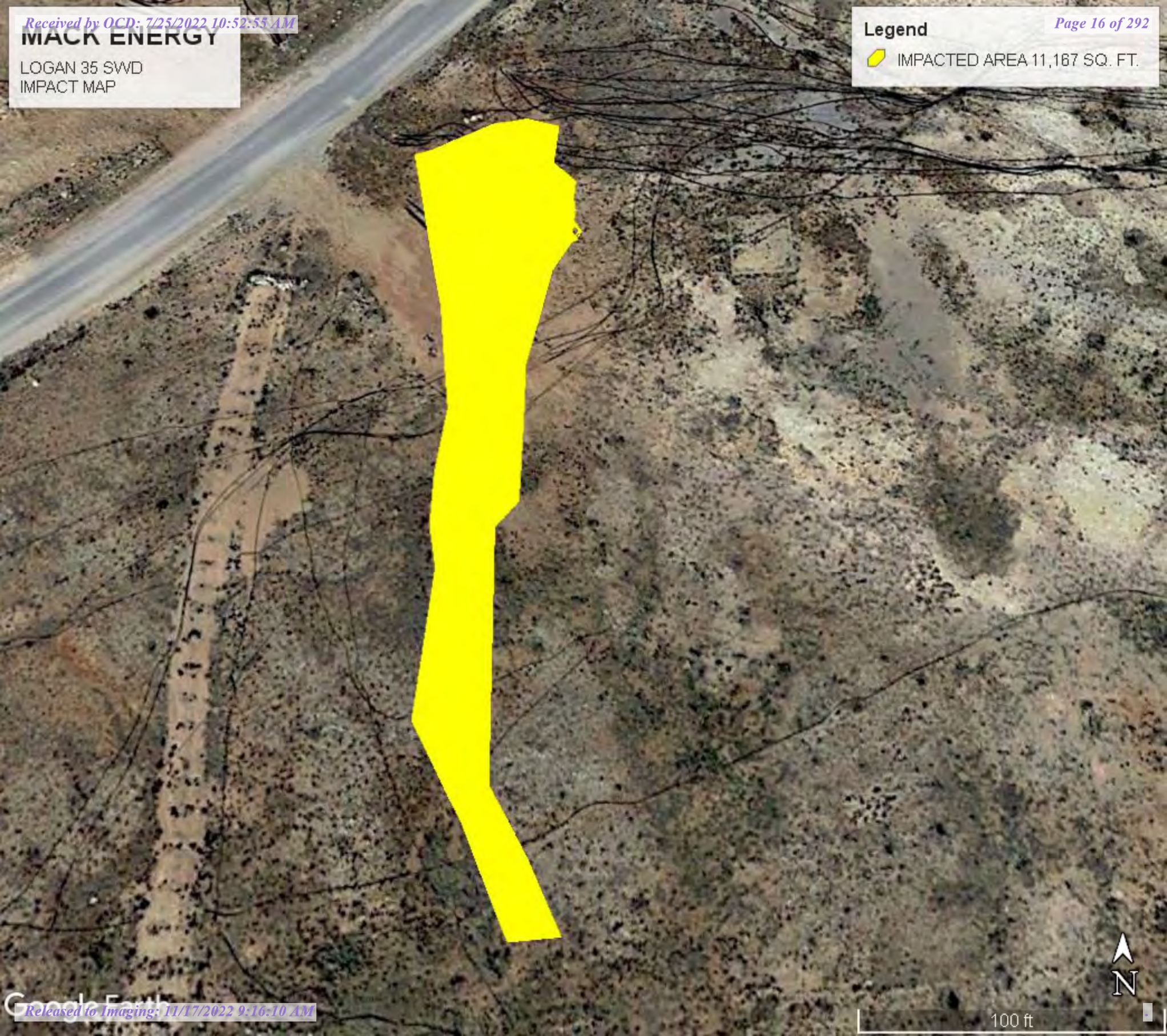
Note that the depth should be measured in feet and tenths of feet (1 inch = .083)

Cubic Feet = L x W x D

Estimated Barrels = ((Cubic Feet x Porosity) / 5.61)

MACK ENERGY

LOGAN 35 SWD
IMPACT MAP



MACK ENERGY

LOGAN 35 SWD
SITE MAP

Rangeland and Forest Vegetation Classification, Productivity, and Plant Composition

In areas that have similar climate and topography, differences in the kind and amount of rangeland or forest understory vegetation are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

This table shows, for each soil that supports vegetation, the ecological site, plant association, or habitat type; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each species. An explanation of the column headings in the table follows.

An *ecological site, plant association, or habitat type* is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly infiltration and runoff that has developed over time; and a characteristic plant community (kind and amount of vegetation). The hydrology of the site is influenced by development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. The plant community on an ecological site, plant association, or habitat type is typified by an association of species that differs from that of other ecological sites, plant associations, or habitat types in the kind and/or proportion of species or in total production. Descriptions of ecological sites are provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service (NRCS). Descriptions of plant associations or habitat types are available from local U.S. Forest Service offices.

Total dry-weight production is the amount of vegetation that can be expected to grow annually in a well managed area that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture. Yields are adjusted to a common percent of air-dry moisture content.

Characteristic vegetation (the grasses, forbs, shrubs, and understory trees that make up most of the potential natural plant community on each soil) is listed by common name. Under *rangeland composition and forest understory*, the expected percentage of the total annual production is given for each species making up the characteristic vegetation. The percentages are by dry weight for rangeland. Percentages for forest understory are by either dry weight or canopy cover. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Range management requires knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range similarity index and rangeland trend. Range similarity index is determined by comparing the present plant community with the potential natural plant community on a particular rangeland ecological site. The more closely the existing community resembles the potential community, the higher the range similarity index. Rangeland trend is defined as the direction of change in an existing plant community relative to the potential natural plant community. Further information about the range similarity index and rangeland trend is available in the "National Range and Pasture Handbook," which is available in local offices of NRCS or on the Internet.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a range similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Reference:

United States Department of Agriculture, Natural Resources Conservation Service, National range and pasture handbook.

Report—Rangeland and Forest Vegetation Classification, Productivity, and Plant Composition

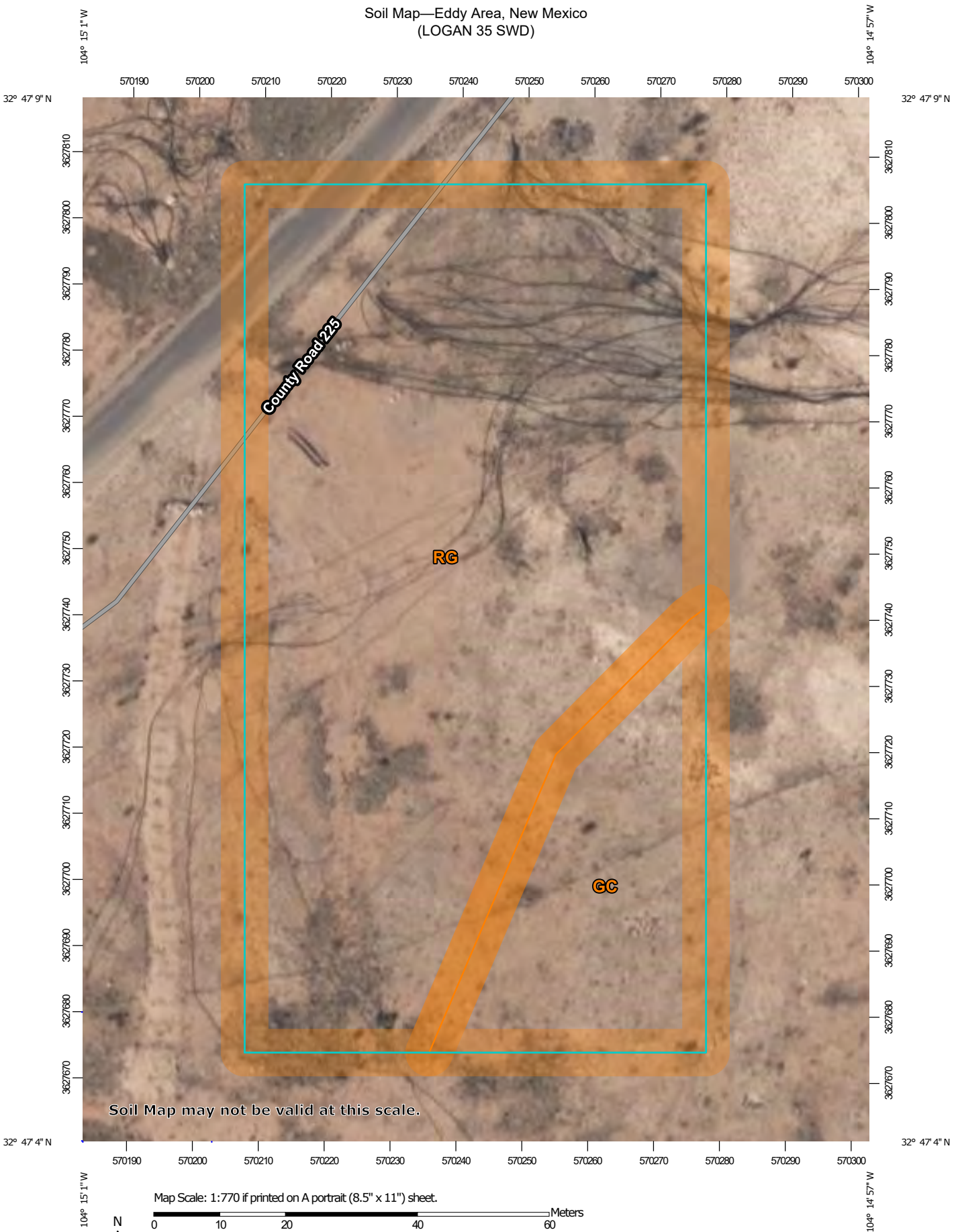
Rangeland and Forest Vegetation Classification, Productivity, and Plant Composition–Eddy Area, New Mexico								
Map unit symbol and soil name	Ecological Site, Plant Association, or Habitat Type	Total dry-weight production			Characteristic rangeland or forest understory vegetation	Composition		
		Favorable year	Normal year	Unfavorable year			Rangeland	Forest understory
		Lb/ac	*Lb/ac*	*Lb/ac*		*Pct dry wt*	*Pct dry wt*	
GC—Gypsum land-Cottonwood complex, 0 to 3 percent slopes								
Gypsum land	—	—	—	—	—			
Cottonwood	Gyp Upland (R042XC006NM)	900	650	300	sideoats grama	20		
					little bluestem	10		
					other perennial grasses	10		
					Adonis blazingstar	5		
					Arizona cottontop	5		
					black grama	5		
					blue grama	5		
					buffalograss	5		
					hairy grama	5		
					obtuse panicgrass	5		
					other shrubs	5		
					other perennial forbs	5		
					rabo de ardilla	5		
					sand bluestem	5		
					yellow Indiangrass	5		

Rangeland and Forest Vegetation Classification, Productivity, and Plant Composition–Eddy Area, New Mexico								
Map unit symbol and soil name	Ecological Site, Plant Association, or Habitat Type	Total dry-weight production			Characteristic rangeland or forest understory vegetation	Composition		
		Favorable year	Normal year	Unfavorable year			Rangeland	Forest understory
		Lb/ac	*Lb/ac*	*Lb/ac*		*Pct dry wt*	*Pct dry wt*	
RG—Reeves-Gypsum land complex, 0 to 3 percent slopes								
Reeves	Loamy (R042XC007NM)	1,200	—	650	Adonis blazingstar	30		
					black grama	15		
					other perennial forbs	15		
					blue grama	10		
					bush muhly	5		
					javelina brush	5		
					other shrubs	5		
					rabo de ardilla	5		
					threeawn	5		
					seepweed	2		
Gypsum land	—	—	—	—	—			

Data Source Information

Soil Survey Area: Eddy Area, New Mexico
Survey Area Data: Version 17, Sep 12, 2021

Soil Map—Eddy Area, New Mexico
(LOGAN 35 SWD)



Map Scale: 1:770 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eddy Area, New Mexico
Survey Area Data: Version 17, Sep 12, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 27, 2020—Feb 28, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

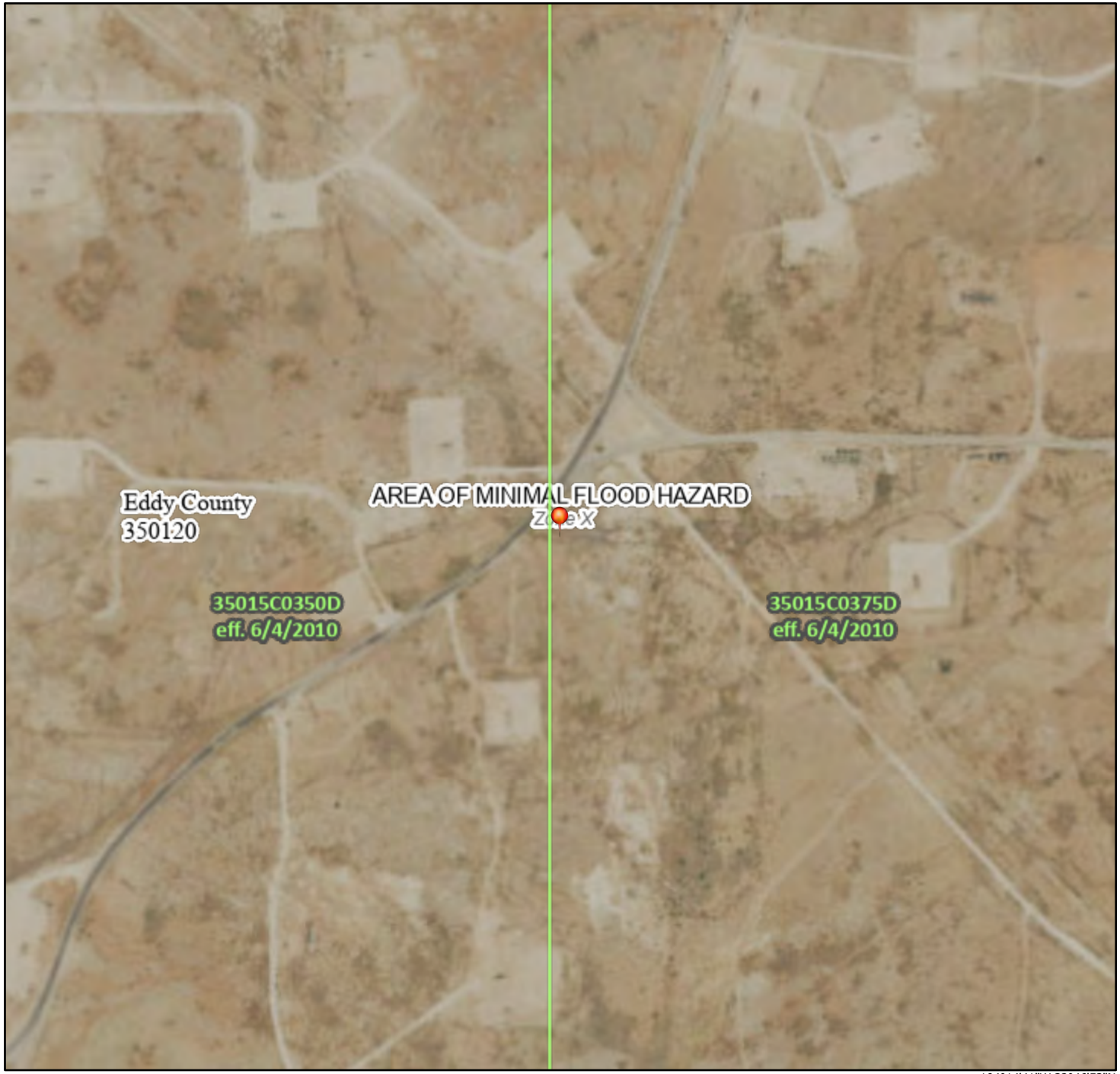
Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GC	Gypsum land-Cottonwood complex, 0 to 3 percent slopes	0.4	18.7%
RG	Reeves-Gypsum land complex, 0 to 3 percent slopes	1.9	81.3%
Totals for Area of Interest		**2.3**	**100.0%**

National Flood Hazard Layer FIRMette

FEMA

104°15'18"W 32°47'24"N



104°14'41"W 32°46'53"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

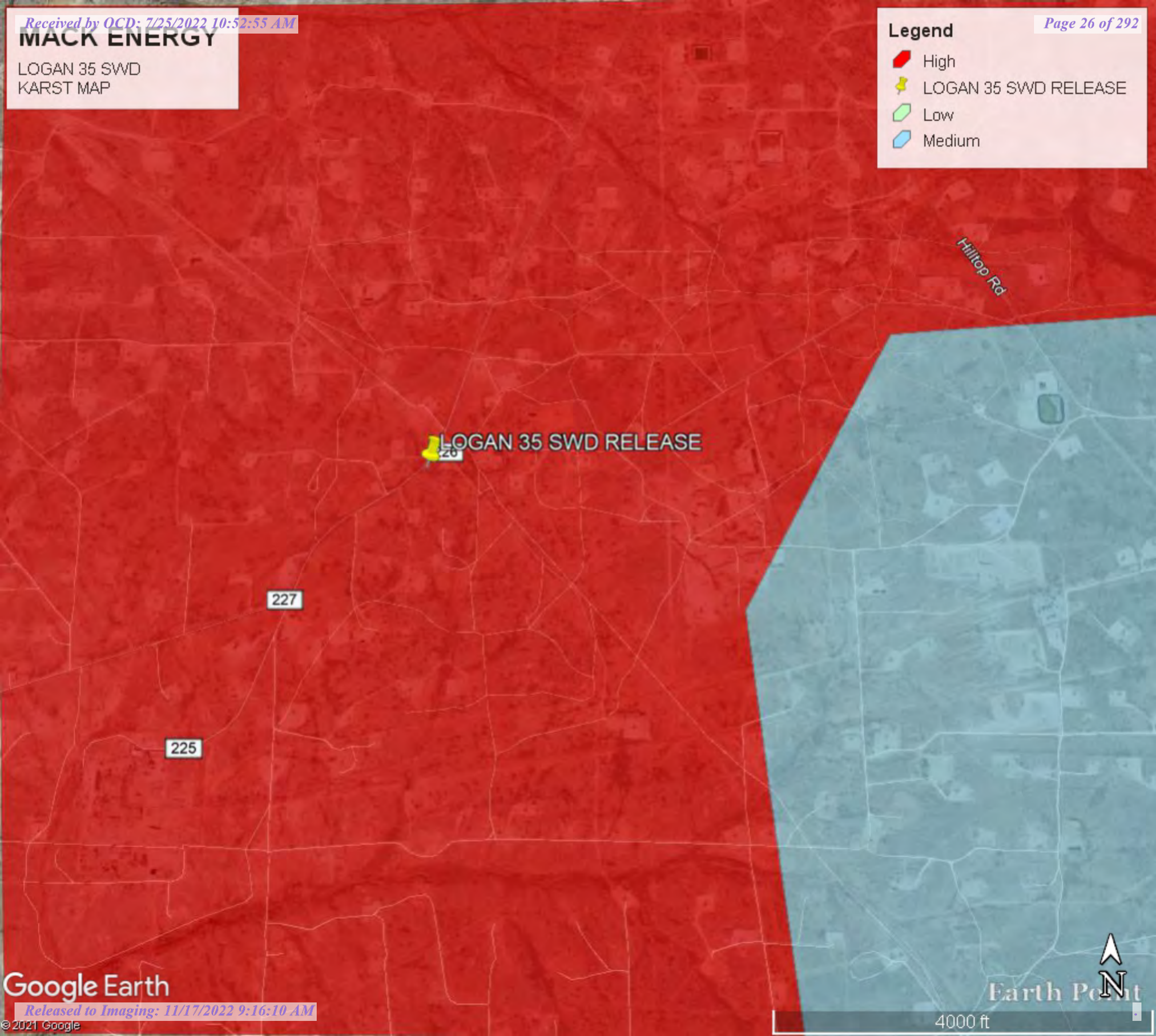
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/14/2022 at 3:32 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

MACK ENERGY

LOGAN 35 SWD
KARST MAP

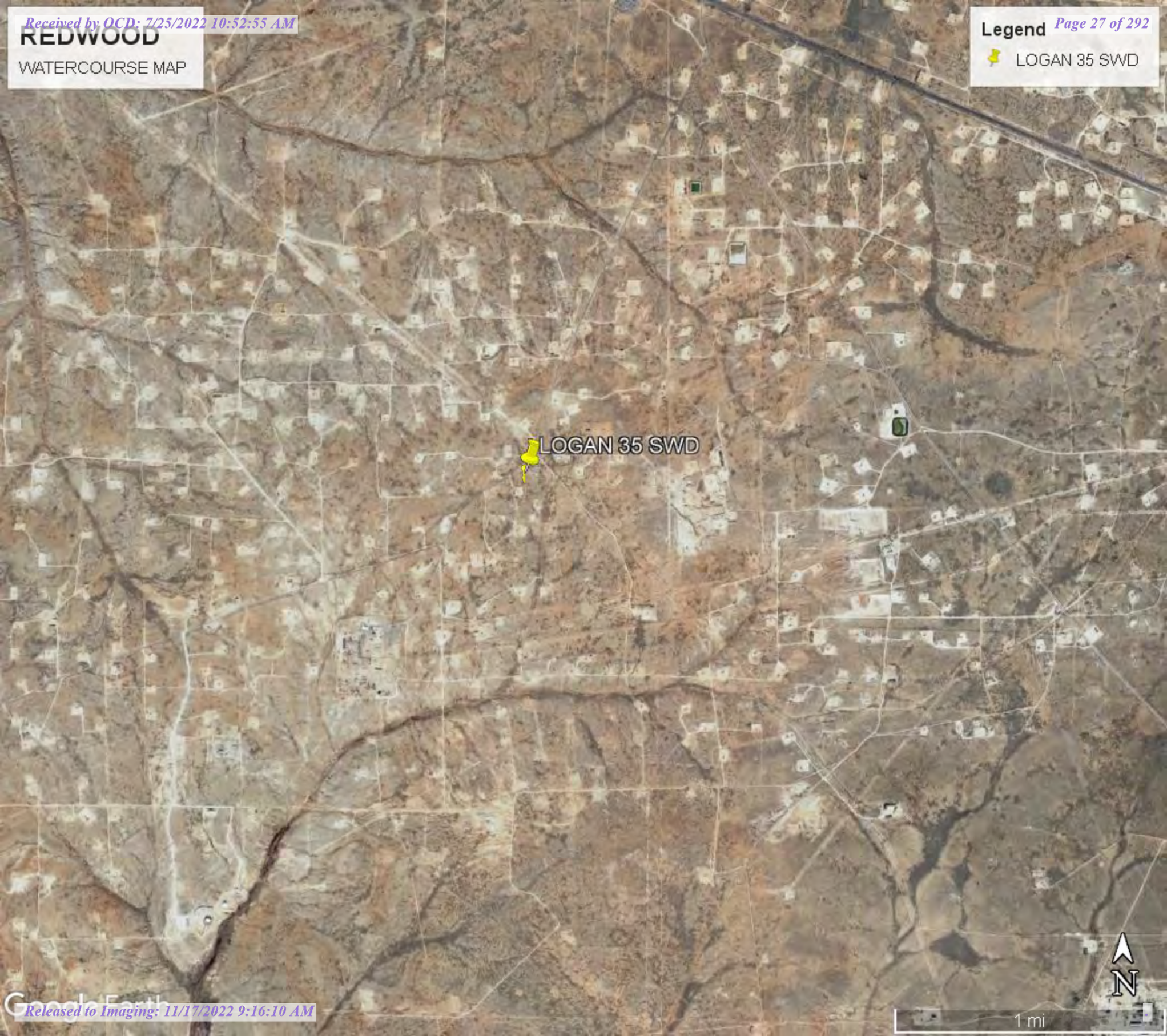


REDWOOD

WATERCOURSE MAP

Legend

LOGAN 35 SWD



New Mexico Office of the State Engineer

Wells with Well Log Information

No wells found.

UTMNAD83 Radius Search (in meters):

Easting (X): 570257.61 **Northing (Y):** 3627779.13 **Radius:** 1000

New Mexico Office of the State Engineer

Wells with Well Log Information

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

(in feet)

POD Number	Code	POD Subbasin	County	Source	q 64	q 16	q 4	Sec	Twn	Rng	X	Y		Distance	Start Date	Finish Date	Log File Date	Depth Well	Depth Water	Driller	License Number
RA 03917		RA	LE	Artesian	4	1	2	10	18S	27E	569019	3625660*		2454	07/31/1958	07/31/1958	08/06/1958	130	50		111
RA 12612 POD1		RA	ED		2	4	3	23	17S	27E	570161	3631140		3363	05/05/2018	05/07/2018	06/01/2018	300		TAYLOR, CLINTON E.	1348
RA 12456 POD1		RA	ED	Shallow	1	4	4	24	17S	27E	572348	3630969		3813	09/07/2016	09/09/2016	09/15/2016	220	92	DON KUEHN III	1058
RA 04554		RA	ED	Artesian			1	23	17S	27E	569859	3631947*		4186	01/26/1962	02/20/1962	12/12/1962	220	40		318
RA 03714		RA	CH	Shallow	4	4	2	08	18S	27E	566212	3625253*		4769	03/28/1957	04/01/1957	04/10/1957	381		ABBOTT, FLOYD	46
RA 04048		RA	LE	Artesian	1	4	4	14	18S	27E	570841	3623030*		4784	11/05/1947	01/03/1948	06/02/1959	2096		STANLEY JONES	

Record Count: 6

UTMNAD83 Radius Search (in meters):

Easting (X): 570257.61 **Northing (Y):** 3627779.13 **Radius:** 5000

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Point of Diversion Summary

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

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	RA 03917	4	1	2	10	18S	27E	569019	3625660*

Driller License: 111 **Driller Company:** BURKE, EDWARD B.
Driller Name:

Drill Start Date: 07/31/1958 **Drill Finish Date:** 07/31/1958 **Plug Date:**
Log File Date: 08/06/1958 **PCW Rcv Date:** **Source:** Artesian
Pump Type: **Pipe Discharge Size:** **Estimated Yield:**
Casing Size: **Depth Well:** 130 feet **Depth Water:** 50 feet

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Point of Diversion Summary

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

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
NA	RA 12612 POD1	2	4	3	23	17S	27E	570161	3631140

Driller License: 1348 **Driller Company:** TAYLOR WATER WELL SERVICE

Driller Name: TAYLOR, CLINTON E.

Drill Start Date: 05/05/2018 **Drill Finish Date:** 05/07/2018 **Plug Date:** 05/17/2018

Log File Date: 06/01/2018 **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** 300 feet **Depth Water:**

New Mexico Office of the State Engineer
Point of Diversion Summary

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

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	RA 12456 POD1	1	4	4	24	17S	27E	572348	3630969

Driller License:	1058	**Driller Company:**	KEY'S DRILLING & PUMP SERVICE		
Driller Name:	DON KUEHN III				
Drill Start Date:	09/07/2016	**Drill Finish Date:**	09/09/2016	**Plug Date:**	
Log File Date:	09/15/2016	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	10 GPM
Casing Size:	4.50	**Depth Well:**	220 feet	**Depth Water:**	92 feet

Water Bearing Stratifications:	Top	Bottom	Description
	90	110	Sandstone/Gravel/Conglomerate
	160	180	Shale/Mudstone/Siltstone
	180	200	Sandstone/Gravel/Conglomerate
	200	210	Sandstone/Gravel/Conglomerate
	210	220	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	200	220

New Mexico Office of the State Engineer
Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	RA 04554			1	23	17S	27E	569859	3631947*

Driller License: 318 **Driller Company:** WESTERN PUMP & SUPPLY

Driller Name:

Drill Start Date: 01/26/1962 **Drill Finish Date:** 02/20/1962 **Plug Date:**

Log File Date: 12/12/1962 **PCW Rcv Date:** **Source:** Artesian

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** 220 feet **Depth Water:** 40 feet

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	RA 02996	2	3	1	02	18S	27E	569808	3627025*

Driller License: **Driller Company:**

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** **Depth Water:**

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Water Right Summary

WR File Number: RA 02996 **Subbasin:** RA **Cross Reference:** -

Primary Purpose: DOM 72-12-1 DOMESTIC ONE HOUSEHOLD

Primary Status: PMT PERMIT

Total Acres: **Subfile:** - **Header:** -

Total Diversion: 3 **Cause/Case:** -

Owner: PATON BROTHERS

Documents on File

Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
283630	72121	1953-01-06	PMT	APR	RA 02996	T		3	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q16	Q4	Sec	Tws	Rng	X	Y	Other Location Desc
RA 02996			2	3	1	02	18S	27E	569808	3627025*	

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

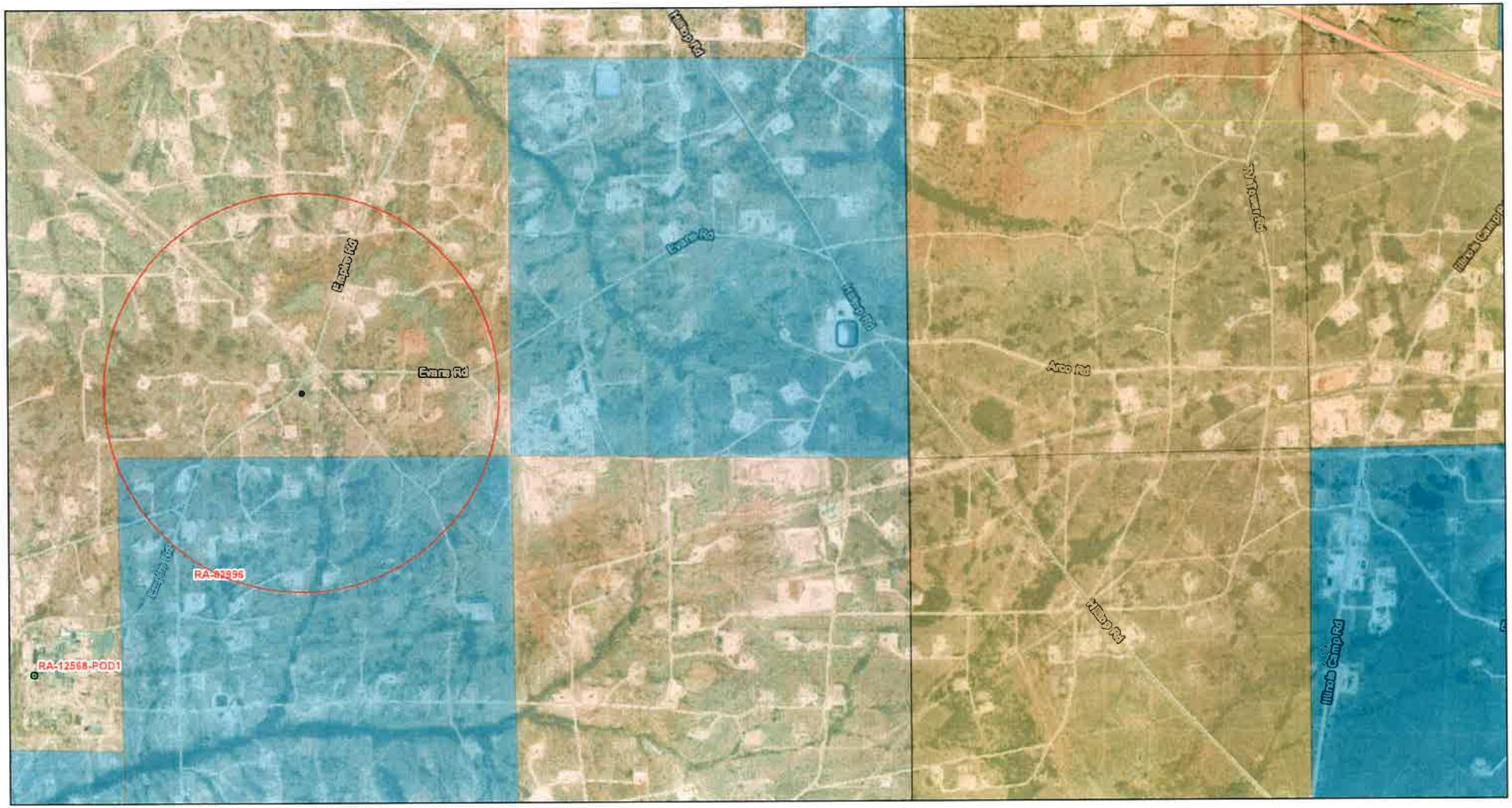
MACK ENERGY

LOGAN 35 SWD
GW MAP

Legend

- LOGAN 35 SWD RELEASE
- RA 03917 - 2454' FROM SITE - 50'DGW
- RA 04554 - 4186' FROM SITE - 40'DGW
- RA 12456 POD1 - 3813' FROM SITE - 92'DGW
- RA 12612 POD1-3363' FROM SITE NO GW

OSE POD Locations Map



7/17/2022, 10:33:17 AM

GIS WATERS PODs
- Pending
- OSE District Boundary

Water Right Regulations
- Closure Area
- New Mexico State Trust Lands
- Subsurface Estate

- Both Estates
- SiteBoundaries

1:18,056

0 0.17 0.35 0.7 mi

0 0.3 0.6 1.2 km

Esri, HERE, GeoTechnologies, Inc., Esri, HERE, Garmin, GeoTechnologies, Inc., U.S. Department of Energy Office of Legacy Management, Maxar

Unofficial Online Map
These maps are distributed "as is" without warranty of any kind.

REDWOOD OPERATING LLC

LOGAN 35 SWD

INTIAL SITE PHOTOS


WGS84 32.78540,
±12ft -104.25004
ft
±10ft 3619
°T
±13 E84
21Aug21 11:08 Logan 35
21-Aug-21 11:08:39


WGS84 32.78535,
±16ft -104.25014
ft
±11ft 3616
°,T
±13 NE24
21Aug21 11:08 Logan 35
21-Aug-21 11:08:25


WGS84 32.78487,
±12ft -104.25011
ft
±10ft 3611
°T
±13 N6
21Aug21 11:07 Logan 35
21-Aug-21 11:07:34

LOGAN 35 SWD

DELINEATION PHOTOS


WGS84 32.78520°
±12ft -104.25013
ft
±10ft 3612
°T
±13 NE46
28Sep21 11:17 Logan 35
28-Sep-21 11:17:47


WGS84 32.78492,
±15ft -104.25011
ft
±12ft 3612
°,T
±12 NE55
28Sep21 14:21 Logan 35
28-Sep-21 14:21:52


WGS84 32.78534,
±16ft -104.25003
ft
±11ft 3617
°T
±13 S179
28Sep21 09:00 Logan 35
28-Sep-21 09:00:15


WGS84 32.78537,
±16ft -104.25005
ft
±11ft 3617
°,T
±13 S167
DEERE
Created with
free version of
GPS Camera 5S
28Sep21 08:59 Logan 35
28-Sep-21 08:59:59


WGS84 32.78480,
±12ft -104.25009
ft
±10ft 3610
°,T
±12 NE31
28Sep21 15:44 Logan 35
28-Sep-21 15:44:26

Company Name: MACK **Location Name:** LOGAN 35 SWD **Release Date:** 8/20/2021

SP ID	Depth	Titr	PID	L-BTEX	L-GRO	L-DRO	L-ORO	L-TPH	L-CHL	Soil	Notes
SP1	SURF	560	LOW	ND	ND	40.4	ND	40.4	284		
	2'	320									
	4'	4000									
	6'	480									
	8'	480	ND	ND	ND	ND	ND	ND	527		
SP2	SURF	>4000	ND	ND	ND	ND	ND	ND	17800		
	2'	2960									
	4'	400									
	6'	40	ND	ND	ND	ND	ND	ND	ND		
SP3	SURF	>4000	LOW	ND	ND	55.4	ND	55.4	23700		
	2'	>4000									
	4'	2640									
	6'	2040									
	8'	320									
	10'	40	ND	ND	ND	ND	ND	ND	ND		
SP4	SURF	>4000	LOW	0.604	ND	59	51	110	31800		
	2'	2960									
	4'	2640									
	6'	1520									
	8'	400									
	9'	120	ND	ND	ND	ND	ND	ND	ND		
SP5	SURF	>4000	ND	ND	ND	ND	ND	ND	23700		
	2'	2000									
	4'	160									
	6'	60	ND	ND	ND	ND	ND	ND	ND		
SP6	SURF	>4000	HIGH	0.0315	ND	209	335	544	23600		

	2'	2560									
	4'	>4000									
	6'	>4000									
	8'	>4000									
	10'	>4000	LOW	ND	ND	34.4	ND	34.4	20200		HIT REFUSAL
SP7	SURF	>4000	LOW	ND	ND	30.3	59.9	90.2	23600		
	2'	>4000									
	4'	>4000									
	6'	1240									
	8'	580									
	10'	400	ND	ND	ND	ND	ND	ND	382		
SP8	SURF	>4000	ND	ND	ND	ND	ND	ND	9450		
	2'	>4000									
	4'	>4000									
	6'	2200									
	8'	400									
	9'	200	ND	ND	ND	ND	ND	ND	221		
SP9	SURF	>4000									
	2'	>4000									
	4'	1920									
	6'	540									
	8'	500	ND	ND	ND	ND	ND	ND	445		
SP10	SURF	>4000									
	2'	>4000									
	4'	>4000									
	6'	580									
	8'	500	ND	ND	ND	ND	ND	ND	503		
SW1	SURF	1200									
	1'	840									

	2'	480									
	3'	80	ND	ND	ND	ND	ND	ND	74.3		
SW2	SURF	800									
	1'	720									
	2'	580									
	3'	60	ND	ND	ND	ND	ND	ND	ND		
SW3	SURF	1000									
	1'	840									
	2'	300									
	3'	100	ND	ND	ND	ND	ND	ND	57		
SW4	SURF	820									
	1'	740									
	2'	420									
	3'	40	ND	ND	ND	ND	ND	ND	ND		
SW5	SURF	640									
	1'	600									
	2'	200									
	3'	20	ND	ND	ND	ND	ND	ND	ND		
SW6	SURF	240									
	2'	160	ND	ND	ND	ND	ND	ND	143		
SW7	SURF	310									
	2'	120	ND	ND	ND	ND	ND	ND	137		
SW8	SURF	200									
	2'	200	ND	ND	ND	ND	ND	ND	181		
SW9	SURF	420									
	2'	300	LOW	ND	ND	**58.2**	ND	**58.2**	279		

SW10	SURF	580									
	2'	340	LOW	ND	ND	**74.8**	ND	**74.8**	295		
SW11	SURF	840									
	1'	660									
	2'	300									
	3'	60	HIGH	ND	ND	**92.1**	**157**	**249.1**	45.7		
SW12	SURF	680									
	1'	200									
	2'	40	ND	ND	ND	ND	ND	ND	32.5		
SW13	SURF	280									
	2'	200	LOW	ND	ND	**52.3**	ND	**52.3**	242		
SW14	SURF	300									
	2'	240	ND	ND	ND	48.1	ND	48.1	227		

REDWOOD OPERATING
LOGAN 35 SWD
DELINEATION SAMPLE MAP GPS

SAM ID	LAT	LONG
SP1	32.785693	-104.250034
SP2	32.785602	-104.249996
SP3	32.785623	-104.250123
SP4	32.785504	-104.250057
SP5	32.785386	-104.250052
SP6	32.785261	-104.250074
SP7	32.785145	-104.250078
SP8	32.785019	-104.250083
SP9	32.784929	-104.250059
SP10	32.784831	-104.250001
SW1	32.785706	-104.250088
SW2	32.785713	-104.249966
SW3	32.785557	-104.249937
SW4	32.785427	-104.249982
SW5	32.785256	-104.249999
SW6	32.785115	-104.250027
SW7	32.784968	-104.250029
SW8	32.784801	-104.249985
SW9	32.78498	-104.250121
SW10	32.785123	-104.250124
SW11	32.785241	-104.250128
SW12	32.785378	-104.25012
SW13	32.785504	-104.250141
SW14	32.785586	-104.250163

MACK ENERGY

LOGAN 35 SWD
DELINEATION SAMPLE MAP

Legend

- HORIZONTAL SAMPLE POINTS
- IMPACTED AREA 11,167 SQ. FT.
- VERTICAL SAMPLE POINTS

Natalie Gladden

From: Natalie Gladden
Sent: Monday, April 11, 2022 8:36 PM
To: ocdonline, emnrd, EMNRD; Bratcher, Mike, EMNRD; Hensley, Chad, EMNRD; Hamlet, Robert, EMNRD; Amos, James A; CFO_Spill, BLM_NM
Cc: mattbuckles@mec.com; Dakoatah Montanez; Jon Kimble
Subject: Redwood - Logan SWD - Composite Sampling Notification

Importance: High

All,

Please find this email as the composite notification for the Logan SWD, the release information is as follows:

Logan SWD
DOR: 8/20/21
API No. 30-015-30409
Incident ID: NAPP2124247509

Composite sampling will begin Thursday morning. If you have any questions, please let me know.

Natalie Gladden
Director of Environmental and Regulatory Services
Energy Staffing Services, LLC.
2724 NW County Road
Hobbs, NM 88240
Cell: 575-390-6397
Office: 575-393-9048
Email: natalie@energystaffingllc.com

Company Name: MACK **Location Name:** LOGAN 35 SWD **Release Date:** 8/20/2021

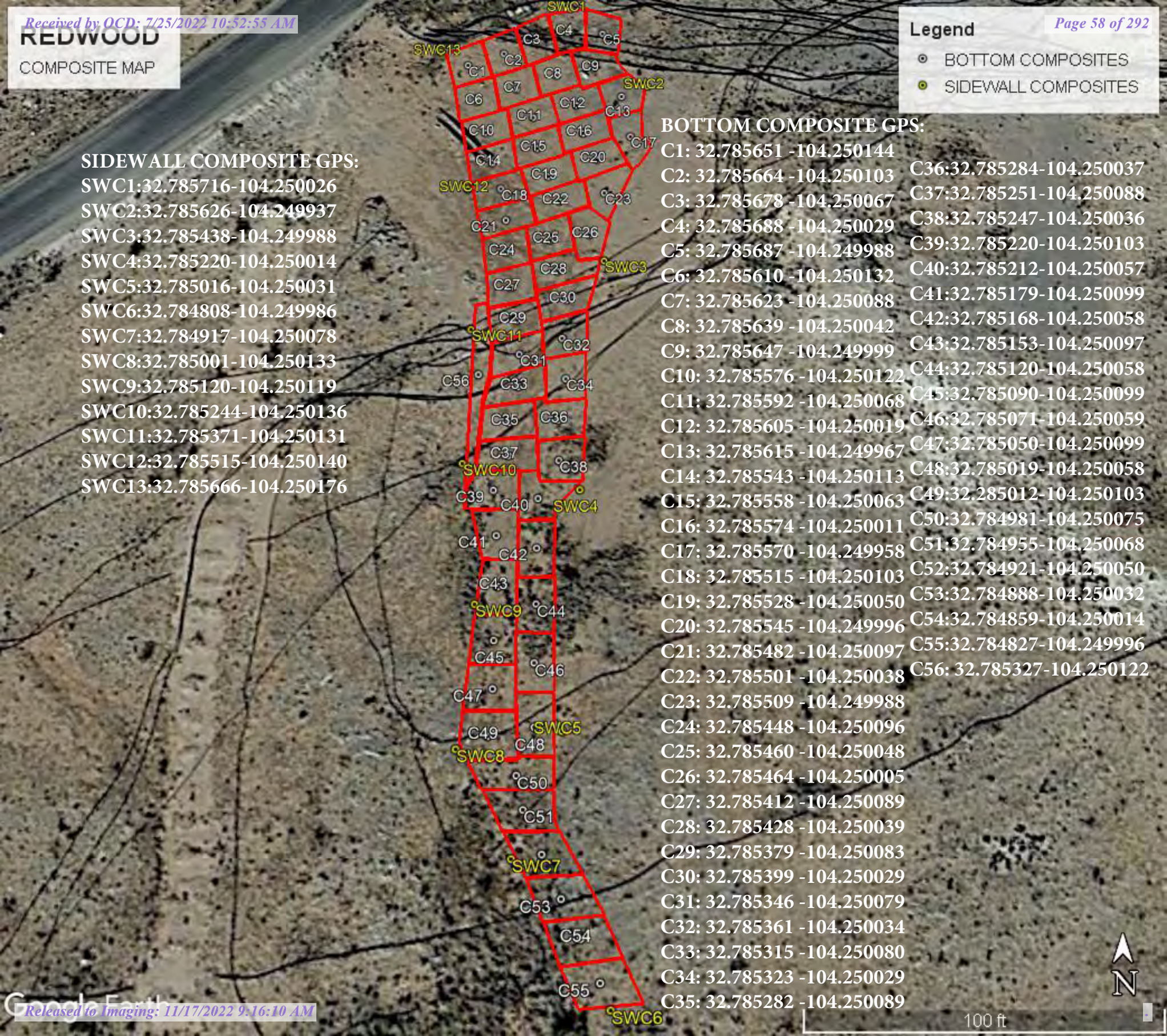
SP ID	Depth	Titr	PID	L-BTEX	L-GRO	L-DRO	L-ORO	L-TPH	L-CHL	Soil	Notes
COMP 1	10'	60	ND	ND	ND	ND	ND	ND	46.7		
COMP 2	10'	40	ND	ND	ND	ND	ND	ND	30.2		
COMP 3	8'	60	ND	ND	ND	ND	ND	ND	56.9		
COMP 4	8'	80	ND	ND	ND	ND	ND	ND	76		
COMP 5	8'	60	ND	ND	ND	ND	ND	ND	50.3		
COMP 6	10'	100	ND	ND	ND	ND	ND	ND	80.2		
COMP 7	10'	240	ND	ND	ND	ND	ND	ND	223		
COMP 8	8'	160	ND	ND	ND	ND	ND	ND	146		
COMP 9	8'	240	ND	ND	ND	ND	ND	ND	116		
COMP 10	10'	20	ND	ND	ND	ND	ND	ND	23.7		
COMP 11	10	80	ND	ND	ND	ND	ND	ND	69.6		
COMP 12	6'	140	ND	ND	ND	ND	ND	ND	113		
COMP 13	6'	40	ND	ND	ND	ND	ND	ND	32.7		
COMP 14	10'	80	ND	ND	ND	ND	ND	ND	76.2		
COMP 15	10'	100	ND	ND	ND	ND	ND	ND	93.9		
COMP 16	6'	140	ND	ND	ND	ND	ND	ND	110		
COMP 17	6'	80	ND	ND	ND	ND	ND	ND	66.8		
COMP 18	9'	220	ND	ND	ND	ND	ND	ND	204		
COMP 19	9'	100	ND	ND	ND	ND	ND	ND	106		
COMP 20	9'	100	ND	ND	ND	ND	ND	ND	72		
COMP 21	9'	60	ND	ND	ND	ND	ND	ND	52.1		
COMP 22	9'	100	ND	ND	ND	ND	ND	ND	109		
COMP 23	9'	140	ND	ND	ND	ND	ND	ND	120		
COMP 24	9'	20	ND	ND	ND	ND	ND	ND	ND		
COMP 25	9'	20	ND	ND	ND	ND	ND	ND	ND		
COMP 26	9'	20	ND	ND	ND	ND	ND	ND	ND		
COMP 27	6'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 28	6'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 29	6'	20	ND	ND	ND	ND	ND	ND	ND		
COMP 30	6'	40	ND	ND	ND	ND	ND	ND	ND		
COMP 31	6'	20	ND	ND	ND	ND	ND	ND	ND		

COMP 32	6'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 33	6'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 34	6'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 35	10'	20	ND	ND	ND	ND	ND	ND	ND		
COMP 36	10'	40	ND	ND	ND	ND	ND	ND	ND		
COMP 37	10'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 38	10'	20	ND	ND	ND	ND	ND	ND	ND		
COMP 39	10'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 40	10'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 41	10'	20	ND	ND	ND	ND	ND	ND	ND		
COMP 42	10'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 43	10'	40	ND	ND	ND	ND	ND	ND	ND		
COMP 45	9'	60	ND	ND	ND	ND	ND	ND	ND		
COMP 46	9'	40	ND	ND	ND	ND	ND	ND	ND		
COMP 47	9'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 48	9'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 49	9'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 50	9'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 51	9'	20	ND	ND	ND	ND	ND	ND	ND		
COMP 52	8'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 53	8'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 54	8'	40	ND	ND	ND	ND	ND	ND	ND		
COMP 55	8'	ND	ND	ND	ND	ND	ND	ND	ND		
COMP 56	8'	ND	ND	ND	ND	ND	ND	ND	ND		
SWC 1		ND	ND	ND	ND	ND	ND	ND	ND		
SWC 2		20	ND	ND	ND	ND	ND	ND	ND		
SWC 3		ND	ND	ND	ND	ND	ND	ND	ND		
SWC 4		ND	ND	ND	ND	ND	ND	ND	ND		
SWC 5		ND	ND	ND	ND	ND	ND	ND	ND		
SWC 6		20	ND	ND	ND	ND	ND	ND	ND		
SWC 7		ND	ND	ND	ND	ND	ND	ND	ND		
SWC 8		40	ND	ND	ND	ND	ND	ND	ND		
SWC 9		ND	ND	ND	ND	ND	ND	ND	ND		
SWC 10		ND	ND	ND	ND	ND	ND	ND	ND		

SWC 11		ND	ND	ND	ND	ND	ND	ND	ND		
SWC 12		ND	ND	ND	ND	ND	ND	ND	ND		
SWC 13		20	ND	ND	ND	ND	ND	ND	ND		

REDWOOD

COMPOSITE MAP



SIDEWALL COMPOSITE GPS:

SWC1:32.785716-104.250026
SWC2:32.785626-104.249937
SWC3:32.785438-104.249988
SWC4:32.785220-104.250014
SWC5:32.785016-104.250031
SWC6:32.784808-104.249986
SWC7:32.784917-104.250078
SWC8:32.785001-104.250133
SWC9:32.785120-104.250119
SWC10:32.785244-104.250136
SWC11:32.785371-104.250131
SWC12:32.785515-104.250140
SWC13:32.785666-104.250176

BOTTOM COMPOSITE GPS:

C1: 32.785651 -104.250144
C2: 32.785664 -104.250103
C3: 32.785678 -104.250067
C4: 32.785688 -104.250029
C5: 32.785687 -104.249988
C6: 32.785610 -104.250132
C7: 32.785623 -104.250088
C8: 32.785639 -104.250042
C9: 32.785647 -104.249999
C10: 32.785576 -104.250122
C11: 32.785592 -104.250068
C12: 32.785605 -104.250019
C13: 32.785615 -104.249967
C14: 32.785543 -104.250113
C15: 32.785558 -104.250063
C16: 32.785574 -104.250011
C17: 32.785570 -104.249958
C18: 32.785515 -104.250103
C19: 32.785528 -104.250050
C20: 32.785545 -104.249996
C21: 32.785482 -104.250097
C22: 32.785501 -104.250038
C23: 32.785509 -104.249988
C24: 32.785448 -104.250096
C25: 32.785460 -104.250048
C26: 32.785464 -104.250005
C27: 32.785412 -104.250089
C28: 32.785428 -104.250039
C29: 32.785379 -104.250083
C30: 32.785399 -104.250029
C31: 32.785346 -104.250079
C32: 32.785361 -104.250034
C33: 32.785315 -104.250080
C34: 32.785323 -104.250029
C35: 32.785282 -104.250089
C36:32.785284-104.250037
C37:32.785251-104.250088
C38:32.785247-104.250036
C39:32.785220-104.250103
C40:32.785212-104.250057
C41:32.785179-104.250099
C42:32.785168-104.250058
C43:32.785153-104.250097
C44:32.785120-104.250058
C45:32.785090-104.250099
C46:32.785071-104.250059
C47:32.785050-104.250099
C48:32.785019-104.250058
C49:32.285012-104.250103
C50:32.784981-104.250075
C51:32.784955-104.250068
C52:32.784921-104.250050
C53:32.784888-104.250032
C54:32.784859-104.250014
C55:32.784827-104.249996
C56: 32.785327-104.250122

Report to:

Matt Buckles

5796 U.S. Hwy 64
Farmington, NM 87401

Phone: (505) 632-1881
Envirotech-inc.com

envirotech

Practical Solutions for a Better Tomorrow

Analytical Report

Mack Energy

Project Name:	Logan 35 Fed Battery
Work Order:	E108092
Job Number:	20046-0001
Received:	8/24/2021

Revision: 1

Report Reviewed By:

Walter Hinchman
Laboratory Director
8/26/21

Date Reported: 8/26/21

Matt Buckles
7 W. Compress Road
Artesia, NM 88210

Project Name: Logan 35 Fed Battery
Workorder: E108092
Date Received: 8/24/2021 6:00:00PM

Matt Buckles,

Thank you for choosing Envirotech, Inc. as your analytical testing laboratory for the sample(s) received on, 8/24/2021 6:00:00PM, under the Project Name: Logan 35 Fed Battery.

The analytical test results summarized in this report with the Project Name: Logan 35 Fed Battery apply to the individual samples collected, identified and submitted bearing the project name on the enclosed chain-of-custody. Subcontracted sample analyses not conducted by Envirotech, Inc., are attached in full as issued by the subcontract laboratory.

Please review the Chain-of-Custody (COC) and Sample Receipt Checklist (SRC) for any issues reguarding sample receipt temperature, containers, preservation etc. To best understand your test results, review the entire report summarizing your sample data and the associated quality control batch data.

All reported data in this analytical report were analyzed according to the referenced method(s) and are in compliance with the latest NELAC/TNI standards, unless otherwise noted. Samples or analytical quality control parameters not meeting specific QC criteria are qualified with a data flag. Data flag definitions are located in the Notes and Definitions section of this analytical report.

If you have any questions concerning this report, please feel free to contact Envirotech, Inc.

Respectfully,

Walter Hinchman
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Sample Summary

Mack Energy	Project Name:	Logan 35 Fed Battery	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Matt Buckles	08/26/21 14:53

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
SP1 Surf	E108092-01A	Soil	08/21/21	08/24/21	Glass Jar, 4 oz.
SP2 Surf	E108092-02A	Soil	08/21/21	08/24/21	Glass Jar, 4 oz.
SP3 Surf	E108092-03A	Soil	08/21/21	08/24/21	Glass Jar, 4 oz.
SP4 Surf	E108092-04A	Soil	08/21/21	08/24/21	Glass Jar, 4 oz.
SP5 Surf	E108092-05A	Soil	08/21/21	08/24/21	Glass Jar, 4 oz.
SP6 Surf	E108092-06A	Soil	08/21/21	08/24/21	Glass Jar, 4 oz.
SP7 Surf	E108092-07A	Soil	08/21/21	08/24/21	Glass Jar, 4 oz.
SP8 Surf	E108092-08A	Soil	08/21/21	08/24/21	Glass Jar, 4 oz.

Sample Data

Mack Energy	Project Name:	Logan 35 Fed Battery	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	8/26/2021 2:53:10PM

SP1 Surf

E108092-01

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Benzene	ND	0.0250	1	08/25/21	08/25/21	
Ethylbenzene	ND	0.0250	1	08/25/21	08/25/21	
Toluene	ND	0.0250	1	08/25/21	08/25/21	
o-Xylene	ND	0.0250	1	08/25/21	08/25/21	
p,m-Xylene	ND	0.0500	1	08/25/21	08/25/21	
Total Xylenes	ND	0.0250	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*96.1 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*101 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*93.9 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*96.1 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*101 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*93.9 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2135024
Diesel Range Organics (C10-C28)	**40.4**	25.0	1	08/25/21	08/25/21	
Oil Range Organics (C28-C36)	ND	50.0	1	08/25/21	08/25/21	
Surrogate: n-Nonane		*114 %*	*50-200*	*08/25/21*	*08/25/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: IY			Batch: 2135023
Chloride	**284**	20.0	1	08/25/21	08/25/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed Battery	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	8/26/2021 2:53:10PM

SP2 Surf

E108092-02

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Benzene	ND	0.0250	1	08/25/21	08/25/21	
Ethylbenzene	ND	0.0250	1	08/25/21	08/25/21	
Toluene	ND	0.0250	1	08/25/21	08/25/21	
o-Xylene	ND	0.0250	1	08/25/21	08/25/21	
p,m-Xylene	ND	0.0500	1	08/25/21	08/25/21	
Total Xylenes	ND	0.0250	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*97.4 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*92.9 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*97.4 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*92.9 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2135024
Diesel Range Organics (C10-C28)	ND	25.0	1	08/25/21	08/25/21	
Oil Range Organics (C28-C36)	ND	50.0	1	08/25/21	08/25/21	
Surrogate: n-Nonane		*80.2 %*	*50-200*	*08/25/21*	*08/25/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: IY			Batch: 2135023
Chloride	**17800**	1000	50	08/25/21	08/25/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed Battery	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	8/26/2021 2:53:10PM

SP3 Surf

E108092-03

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Benzene	ND	0.0250	1	08/25/21	08/25/21	
Ethylbenzene	ND	0.0250	1	08/25/21	08/25/21	
Toluene	ND	0.0250	1	08/25/21	08/25/21	
o-Xylene	ND	0.0250	1	08/25/21	08/25/21	
p,m-Xylene	ND	0.0500	1	08/25/21	08/25/21	
Total Xylenes	ND	0.0250	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*98.3 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*101 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*96.1 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*98.3 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*101 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*96.1 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2135024
Diesel Range Organics (C10-C28)	**55.4**	25.0	1	08/25/21	08/25/21	
Oil Range Organics (C28-C36)	ND	50.0	1	08/25/21	08/25/21	
Surrogate: n-Nonane		*99.0 %*	*50-200*	*08/25/21*	*08/25/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: IY			Batch: 2135023
Chloride	**23700**	1000	50	08/25/21	08/25/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed Battery	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	8/26/2021 2:53:10PM

SP4 Surf

E108092-04

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Benzene	**0.0895**	0.0250	1	08/25/21	08/25/21	
Ethylbenzene	**0.357**	0.0250	1	08/25/21	08/25/21	
Toluene	**0.633**	0.0250	1	08/25/21	08/25/21	
o-Xylene	**0.176**	0.0250	1	08/25/21	08/25/21	
p,m-Xylene	**0.428**	0.0500	1	08/25/21	08/25/21	
Total Xylenes	**0.604**	0.0250	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*98.0 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*97.0 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*98.0 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*97.0 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2135024
Diesel Range Organics (C10-C28)	**59.0**	25.0	1	08/25/21	08/25/21	
Oil Range Organics (C28-C36)	**51.0**	50.0	1	08/25/21	08/25/21	
Surrogate: n-Nonane		*102 %*	*50-200*	*08/25/21*	*08/25/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: IY			Batch: 2135023
Chloride	**31800**	1000	50	08/25/21	08/25/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed Battery	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	8/26/2021 2:53:10PM

SP5 Surf

E108092-05

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Benzene	ND	0.0250	1	08/25/21	08/25/21	
Ethylbenzene	ND	0.0250	1	08/25/21	08/25/21	
Toluene	ND	0.0250	1	08/25/21	08/25/21	
o-Xylene	ND	0.0250	1	08/25/21	08/25/21	
p,m-Xylene	ND	0.0500	1	08/25/21	08/25/21	
Total Xylenes	ND	0.0250	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*98.1 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*94.4 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*98.1 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*94.4 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2135024
Diesel Range Organics (C10-C28)	ND	25.0	1	08/25/21	08/25/21	
Oil Range Organics (C28-C36)	ND	50.0	1	08/25/21	08/25/21	
Surrogate: n-Nonane		*112 %*	*50-200*	*08/25/21*	*08/25/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: IY			Batch: 2135023
Chloride	**23700**	1000	50	08/25/21	08/25/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed Battery	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	8/26/2021 2:53:10PM

SP6 Surf

E108092-06

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Benzene	ND	0.0250	1	08/25/21	08/25/21	
Ethylbenzene	ND	0.0250	1	08/25/21	08/25/21	
Toluene	**0.0315**	0.0250	1	08/25/21	08/25/21	
o-Xylene	ND	0.0250	1	08/25/21	08/25/21	
p,m-Xylene	ND	0.0500	1	08/25/21	08/25/21	
Total Xylenes	ND	0.0250	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*96.9 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*101 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*95.5 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*96.9 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*101 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*95.5 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2135024
Diesel Range Organics (C10-C28)	**209**	25.0	1	08/25/21	08/25/21	
Oil Range Organics (C28-C36)	**335**	50.0	1	08/25/21	08/25/21	
Surrogate: n-Nonane		*112 %*	*50-200*	*08/25/21*	*08/25/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: IY			Batch: 2135023
Chloride	**23600**	1000	50	08/25/21	08/25/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed Battery	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	8/26/2021 2:53:10PM

SP7 Surf

E108092-07

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Benzene	ND	0.0250	1	08/25/21	08/25/21	
Ethylbenzene	ND	0.0250	1	08/25/21	08/25/21	
Toluene	ND	0.0250	1	08/25/21	08/25/21	
o-Xylene	ND	0.0250	1	08/25/21	08/25/21	
p,m-Xylene	ND	0.0500	1	08/25/21	08/25/21	
Total Xylenes	ND	0.0250	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*98.0 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*101 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*94.9 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*98.0 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*101 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*94.9 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2135024
Diesel Range Organics (C10-C28)	**30.3**	25.0	1	08/25/21	08/25/21	
Oil Range Organics (C28-C36)	**59.9**	50.0	1	08/25/21	08/25/21	
Surrogate: n-Nonane		*99.2 %*	*50-200*	*08/25/21*	*08/25/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: IY			Batch: 2135023
Chloride	**23600**	1000	50	08/25/21	08/25/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed Battery	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	8/26/2021 2:53:10PM

SP8 Surf

E108092-08

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Benzene	ND	0.0250	1	08/25/21	08/25/21	
Ethylbenzene	ND	0.0250	1	08/25/21	08/25/21	
Toluene	ND	0.0250	1	08/25/21	08/25/21	
o-Xylene	ND	0.0250	1	08/25/21	08/25/21	
p,m-Xylene	ND	0.0500	1	08/25/21	08/25/21	
Total Xylenes	ND	0.0250	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*97.3 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*95.6 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2135022
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/25/21	08/25/21	
Surrogate: Bromofluorobenzene		*97.3 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*70-130*	*08/25/21*	*08/25/21*	
Surrogate: Toluene-d8		*95.6 %*	*70-130*	*08/25/21*	*08/25/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2135024
Diesel Range Organics (C10-C28)	ND	25.0	1	08/25/21	08/25/21	
Oil Range Organics (C28-C36)	ND	50.0	1	08/25/21	08/25/21	
Surrogate: n-Nonane		*125 %*	*50-200*	*08/25/21*	*08/25/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: IY			Batch: 2135023
Chloride	**9450**	400	20	08/25/21	08/25/21	

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed Battery	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Matt Buckles	8/26/2021 2:53:10PM

Volatile Organic Compounds by EPA 8260B

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2135022-BLK1)									Prepared: 08/24/21 Analyzed: 08/24/21
Benzene	ND	0.0250							
Ethylbenzene	ND	0.0250							
Toluene	ND	0.0250							
o-Xylene	ND	0.0250							
p,m-Xylene	ND	0.0500							
Total Xylenes	ND	0.0250							
Surrogate: Bromofluorobenzene	*0.490*		*0.500*		*97.9*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.489*		*0.500*		*97.7*	*70-130*			
Surrogate: Toluene-d8	*0.476*		*0.500*		*95.2*	*70-130*			
LCS (2135022-BS1)									Prepared: 08/24/21 Analyzed: 08/24/21
Benzene	3.00	0.0250	2.50		120	70-130			
Ethylbenzene	2.74	0.0250	2.50		110	70-130			
Toluene	2.75	0.0250	2.50		110	70-130			
o-Xylene	2.63	0.0250	2.50		105	70-130			
p,m-Xylene	5.40	0.0500	5.00		108	70-130			
Total Xylenes	8.03	0.0250	7.50		107	70-130			
Surrogate: Bromofluorobenzene	*0.507*		*0.500*		*101*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.506*		*0.500*		*101*	*70-130*			
Surrogate: Toluene-d8	*0.482*		*0.500*		*96.4*	*70-130*			
Matrix Spike (2135022-MS1)				**Source: E108091-02**					Prepared: 08/24/21 Analyzed: 08/24/21
Benzene	3.04	0.0250	2.50	ND	121	48-131			
Ethylbenzene	2.77	0.0250	2.50	ND	111	45-135			
Toluene	2.77	0.0250	2.50	ND	111	48-130			
o-Xylene	2.68	0.0250	2.50	ND	107	43-135			
p,m-Xylene	5.46	0.0500	5.00	ND	109	43-135			
Total Xylenes	8.13	0.0250	7.50	ND	108	43-135			
Surrogate: Bromofluorobenzene	*0.503*		*0.500*		*101*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.517*		*0.500*		*103*	*70-130*			
Surrogate: Toluene-d8	*0.480*		*0.500*		*95.9*	*70-130*			
Matrix Spike Dup (2135022-MSD1)				**Source: E108091-02**					Prepared: 08/24/21 Analyzed: 08/24/21
Benzene	2.90	0.0250	2.50	ND	116	48-131	4.58	23	
Ethylbenzene	2.72	0.0250	2.50	ND	109	45-135	1.60	27	
Toluene	2.71	0.0250	2.50	ND	108	48-130	2.34	24	
o-Xylene	2.60	0.0250	2.50	ND	104	43-135	2.84	27	
p,m-Xylene	5.34	0.0500	5.00	ND	107	43-135	2.18	27	
Total Xylenes	7.94	0.0250	7.50	ND	106	43-135	2.39	27	
Surrogate: Bromofluorobenzene	*0.495*		*0.500*		*98.9*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.495*		*0.500*		*98.9*	*70-130*			
Surrogate: Toluene-d8	*0.487*		*0.500*		*97.3*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed Battery	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Matt Buckles	8/26/2021 2:53:10PM

Nonhalogenated Organics by EPA 8015D - GRO

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2135022-BLK1)									Prepared: 08/24/21 Analyzed: 08/24/21
Gasoline Range Organics (C6-C10)	ND	20.0							
Surrogate: Bromofluorobenzene	*0.490*		*0.500*		*97.9*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.489*		*0.500*		*97.7*	*70-130*			
Surrogate: Toluene-d8	*0.476*		*0.500*		*95.2*	*70-130*			
LCS (2135022-BS2)									Prepared: 08/24/21 Analyzed: 08/24/21
Gasoline Range Organics (C6-C10)	56.1	20.0	50.0		112	70-130			
Surrogate: Bromofluorobenzene	*0.493*		*0.500*		*98.6*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.491*		*0.500*		*98.2*	*70-130*			
Surrogate: Toluene-d8	*0.489*		*0.500*		*97.7*	*70-130*			
Matrix Spike (2135022-MS2)				**Source: E108091-02**					Prepared: 08/24/21 Analyzed: 08/24/21
Gasoline Range Organics (C6-C10)	57.1	20.0	50.0	ND	114	70-130			
Surrogate: Bromofluorobenzene	*0.489*		*0.500*		*97.7*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.517*		*0.500*		*103*	*70-130*			
Surrogate: Toluene-d8	*0.476*		*0.500*		*95.1*	*70-130*			
Matrix Spike Dup (2135022-MSD2)				**Source: E108091-02**					Prepared: 08/24/21 Analyzed: 08/24/21
Gasoline Range Organics (C6-C10)	59.6	20.0	50.0	ND	119	70-130	4.17	20	
Surrogate: Bromofluorobenzene	*0.488*		*0.500*		*97.5*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.519*		*0.500*		*104*	*70-130*			
Surrogate: Toluene-d8	*0.483*		*0.500*		*96.5*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed Battery	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Matt Buckles	8/26/2021 2:53:10PM

Nonhalogenated Organics by EPA 8015D - DRO/ORO

Analyst: JL

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2135024-BLK1)									Prepared: 08/25/21 Analyzed: 08/25/21
Diesel Range Organics (C10-C28)	ND	25.0							
Oil Range Organics (C28-C36)	ND	50.0							
Surrogate: n-Nonane	*52.6*		*50.0*		*105*	*50-200*			
LCS (2135024-BS1)									Prepared: 08/25/21 Analyzed: 08/25/21
Diesel Range Organics (C10-C28)	529	25.0	500		106	38-132			
Surrogate: n-Nonane	*52.3*		*50.0*		*105*	*50-200*			
Matrix Spike (2135024-MS1)				**Source: E108091-06**					Prepared: 08/25/21 Analyzed: 08/25/21
Diesel Range Organics (C10-C28)	546	25.0	500	ND	109	38-132			
Surrogate: n-Nonane	*53.4*		*50.0*		*107*	*50-200*			
Matrix Spike Dup (2135024-MSD1)				**Source: E108091-06**					Prepared: 08/25/21 Analyzed: 08/25/21
Diesel Range Organics (C10-C28)	547	25.0	500	ND	109	38-132	0.212	20	
Surrogate: n-Nonane	*53.6*		*50.0*		*107*	*50-200*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed Battery	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Matt Buckles	8/26/2021 2:53:10PM

Anions by EPA 300.0/9056A

Analyst: IY

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2135023-BLK1)									Prepared: 08/25/21 Analyzed: 08/25/21
Chloride	ND	20.0							
LCS (2135023-BS1)									Prepared: 08/25/21 Analyzed: 08/25/21
Chloride	251	20.0	250		100	90-110			
Matrix Spike (2135023-MS1)				**Source: E108091-01**					Prepared: 08/25/21 Analyzed: 08/25/21
Chloride	279	20.0	250	22.6	102	80-120			
Matrix Spike Dup (2135023-MSD1)				**Source: E108091-01**					Prepared: 08/25/21 Analyzed: 08/25/21
Chloride	279	20.0	250	22.6	103	80-120	0.0968	20	

QC Summary Report Comment:
Calculations are based off of the raw (non-rounded) data. However, for reporting purposes all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Definitions and Notes

Mack Energy	Project Name:	Logan 35 Fed Battery	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	08/26/21 14:53

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference
DNI	Did Not Ignite

Note (1): Methods marked with ** are non-accredited methods.

Note (2): Soil data is reported on an "as received" weight basis, unless reported otherwise.

Project Information | Chain of Custody | Page 1 of 1

(2 days)

Client:	Mack Energy
Project:	Logan 35 Fed Battery
Project Manager:	Matt
Address:	
City, State, Zip	
Phone:	
Email:	
Report due by:	

Bill To

Attention:	ESS
Address:	7 west compress rd
City, State, Zip	Artesia NM 88210
Phone:	
Email:	Natalie@energystaffingllc.com

Lab Use Only

Lab WO# PE108092 RAS 8/24/21

Job Number 20046-0001

TAT: 1D | 3D

EPA Program: RCRA | CWA | SDWA

State: NM | CO | UT | AZ — X

TX | OK

Analysis and Method

Time Sampled	Date Sampled	Matrix	No Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0			BGDOC - NM	BGDOC - TX			Remarks
	8/21	S	1	SP1 surf	1									\				
		S	1	SP2 surf	2									\				
		S	1	SP3 surf	3									\				
		S	1	SP4 surf	4									\				
		S	1	SP5 surf	5									\				
		S	1	SP6 surf	6									\				
		S	1	SP7 surf	7									\				
		S	1	SP8 surf	8									\				

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by:

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Juan Talavera	8/23/21	7:15pm		8.24.21	920
	8.24.21	1135	Raina Schwanz	8/24/21	18:00

Lab Use Only

Received on ice: (Y) / N

T1 T2 T3

AVG Temp °C 4

Sample Matrix: S - Soil, Sd - Solid, Sg - Sludge, A - Aqueous, O - Other

Container Type: g - glass, p - poly/plastic, ag - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

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Report to:

Matt Buckles

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envirotech

Practical Solutions for a Better Tomorrow

Analytical Report

Mack Energy

Project Name:	Logan 35 Fed #9
Work Order:	E108112
Job Number:	20046-0001
Received:	8/28/2021

Revision: 1

Report Reviewed By:

Walter Hinchman
Laboratory Director
8/31/21

Envirotech Inc. certifies the test results meet all requirements of TNI unless noted otherwise.
Statement of Data Authenticity: Envirotech Inc, attests the data reported has not been altered in any way.
Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech Inc.
Envirotech Inc, holds the Utah TNI certification NM00979 for data reported.
Envirotech Inc, holds the Texas TNI certification T104704557 for data reported.

Date Reported: 8/31/21

Matt Buckles
7 W. Compress Road
Artesia, NM 88210

Project Name: Logan 35 Fed #9
Workorder: E108112
Date Received: 8/28/2021 2:56:00PM

Matt Buckles,

Thank you for choosing Envirotech, Inc. as your analytical testing laboratory for the sample(s) received on, 8/28/2021 2:56:00PM, under the Project Name: Logan 35 Fed #9.

The analytical test results summarized in this report with the Project Name: Logan 35 Fed #9 apply to the individual samples collected, identified and submitted bearing the project name on the enclosed chain-of-custody. Subcontracted sample analyses not conducted by Envirotech, Inc., are attached in full as issued by the subcontract laboratory.

Please review the Chain-of-Custody (COC) and Sample Receipt Checklist (SRC) for any issues reguarding sample receipt temperature, containers, preservation etc. To best understand your test results, review the entire report summarizing your sample data and the associated quality control batch data.

All reported data in this analytical report were analyzed according to the referenced method(s) and are in compliance with the latest NELAC/TNI standards, unless otherwise noted. Samples or analytical quality control parameters not meeting specific QC criteria are qualified with a data flag. Data flag definitions are located in the Notes and Definitions section of this analytical report.

If you have any questions concerning this report, please feel free to contact Envirotech, Inc.

Respectfully,

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Sample Summary

Mack Energy	Project Name:	Logan 35 Fed #9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Matt Buckles	08/31/21 11:25

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
SP1 8'	E108112-01A	Soil	08/26/21	08/28/21	Glass Jar, 4 oz.
SP2 6'	E108112-02A	Soil	08/26/21	08/28/21	Glass Jar, 4 oz.
SP3 10'	E108112-03A	Soil	08/26/21	08/28/21	Glass Jar, 4 oz.
SP5 6'	E108112-04A	Soil	08/26/21	08/28/21	Glass Jar, 4 oz.

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	8/31/2021 11:25:35AM

SP1 8'

E108112-01

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2136001
Benzene	ND	0.0250	1	08/29/21	08/29/21	
Ethylbenzene	ND	0.0250	1	08/29/21	08/29/21	
Toluene	ND	0.0250	1	08/29/21	08/29/21	
o-Xylene	ND	0.0250	1	08/29/21	08/29/21	
p,m-Xylene	ND	0.0500	1	08/29/21	08/29/21	
Total Xylenes	ND	0.0250	1	08/29/21	08/29/21	
Surrogate: Bromofluorobenzene		*94.1 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: 1,2-Dichloroethane-d4		*101 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: Toluene-d8		*94.6 %*	*70-130*	*08/29/21*	*08/29/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2136001
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/29/21	08/29/21	
Surrogate: Bromofluorobenzene		*94.1 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: 1,2-Dichloroethane-d4		*101 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: Toluene-d8		*94.6 %*	*70-130*	*08/29/21*	*08/29/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2136002
Diesel Range Organics (C10-C28)	ND	25.0	1	08/30/21	08/30/21	
Oil Range Organics (C28-C36)	ND	50.0	1	08/30/21	08/30/21	
Surrogate: n-Nonane		*89.1 %*	*50-200*	*08/30/21*	*08/30/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: IY			Batch: 2135047
Chloride	**527**	200	10	08/30/21	08/30/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	8/31/2021 11:25:35AM

SP2 6'

E108112-02

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2136001
Benzene	ND	0.0250	1	08/29/21	08/29/21	
Ethylbenzene	ND	0.0250	1	08/29/21	08/29/21	
Toluene	ND	0.0250	1	08/29/21	08/29/21	
o-Xylene	ND	0.0250	1	08/29/21	08/29/21	
p,m-Xylene	ND	0.0500	1	08/29/21	08/29/21	
Total Xylenes	ND	0.0250	1	08/29/21	08/29/21	
Surrogate: Bromofluorobenzene		*94.7 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: 1,2-Dichloroethane-d4		*98.9 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: Toluene-d8		*98.9 %*	*70-130*	*08/29/21*	*08/29/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2136001
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/29/21	08/29/21	
Surrogate: Bromofluorobenzene		*94.7 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: 1,2-Dichloroethane-d4		*98.9 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: Toluene-d8		*98.9 %*	*70-130*	*08/29/21*	*08/29/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2136002
Diesel Range Organics (C10-C28)	ND	25.0	1	08/30/21	08/30/21	
Oil Range Organics (C28-C36)	ND	50.0	1	08/30/21	08/30/21	
Surrogate: n-Nonane		*94.3 %*	*50-200*	*08/30/21*	*08/30/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: IY			Batch: 2135047
Chloride	ND	200	10	08/30/21	08/30/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	8/31/2021 11:25:35AM

SP3 10'

E108112-03

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2136001
Benzene	ND	0.0250	1	08/29/21	08/29/21	
Ethylbenzene	ND	0.0250	1	08/29/21	08/29/21	
Toluene	ND	0.0250	1	08/29/21	08/29/21	
o-Xylene	ND	0.0250	1	08/29/21	08/29/21	
p,m-Xylene	ND	0.0500	1	08/29/21	08/29/21	
Total Xylenes	ND	0.0250	1	08/29/21	08/29/21	
Surrogate: Bromofluorobenzene		*96.8 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: Toluene-d8		*97.4 %*	*70-130*	*08/29/21*	*08/29/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2136001
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/29/21	08/29/21	
Surrogate: Bromofluorobenzene		*96.8 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: Toluene-d8		*97.4 %*	*70-130*	*08/29/21*	*08/29/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2136002
Diesel Range Organics (C10-C28)	ND	25.0	1	08/30/21	08/30/21	
Oil Range Organics (C28-C36)	ND	50.0	1	08/30/21	08/30/21	
Surrogate: n-Nonane		*90.4 %*	*50-200*	*08/30/21*	*08/30/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: IY			Batch: 2135047
Chloride	ND	200	10	08/30/21	08/30/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	8/31/2021 11:25:35AM

SP5 6'

E108112-04

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2136001
Benzene	ND	0.0250	1	08/29/21	08/29/21	
Ethylbenzene	ND	0.0250	1	08/29/21	08/29/21	
Toluene	ND	0.0250	1	08/29/21	08/29/21	
o-Xylene	ND	0.0250	1	08/29/21	08/29/21	
p,m-Xylene	ND	0.0500	1	08/29/21	08/29/21	
Total Xylenes	ND	0.0250	1	08/29/21	08/29/21	
Surrogate: Bromofluorobenzene		*95.0 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: Toluene-d8		*93.5 %*	*70-130*	*08/29/21*	*08/29/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2136001
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/29/21	08/29/21	
Surrogate: Bromofluorobenzene		*95.0 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*70-130*	*08/29/21*	*08/29/21*	
Surrogate: Toluene-d8		*93.5 %*	*70-130*	*08/29/21*	*08/29/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2136002
Diesel Range Organics (C10-C28)	ND	25.0	1	08/30/21	08/30/21	
Oil Range Organics (C28-C36)	ND	50.0	1	08/30/21	08/30/21	
Surrogate: n-Nonane		*83.6 %*	*50-200*	*08/30/21*	*08/30/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: IY			Batch: 2135047
Chloride	ND	200	10	08/30/21	08/30/21	

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed #9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Matt Buckles	8/31/2021 11:25:35AM

Volatile Organic Compounds by EPA 8260B

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2136001-BLK1)									Prepared: 08/29/21 Analyzed: 08/29/21
Benzene	ND	0.0250							
Ethylbenzene	ND	0.0250							
Toluene	ND	0.0250							
o-Xylene	ND	0.0250							
p,m-Xylene	ND	0.0500							
Total Xylenes	ND	0.0250							
Surrogate: Bromofluorobenzene	*0.483*		*0.500*		*96.5*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.510*		*0.500*		*102*	*70-130*			
Surrogate: Toluene-d8	*0.492*		*0.500*		*98.4*	*70-130*			
LCS (2136001-BS1)									Prepared: 08/29/21 Analyzed: 08/29/21
Benzene	2.34	0.0250	2.50		93.5	70-130			
Ethylbenzene	2.45	0.0250	2.50		98.1	70-130			
Toluene	2.44	0.0250	2.50		97.6	70-130			
o-Xylene	2.36	0.0250	2.50		94.3	70-130			
p,m-Xylene	4.86	0.0500	5.00		97.2	70-130			
Total Xylenes	7.22	0.0250	7.50		96.3	70-130			
Surrogate: Bromofluorobenzene	*0.480*		*0.500*		*96.0*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.487*		*0.500*		*97.3*	*70-130*			
Surrogate: Toluene-d8	*0.490*		*0.500*		*97.9*	*70-130*			
Matrix Spike (2136001-MS1)				**Source: E108112-01**					Prepared: 08/29/21 Analyzed: 08/29/21
Benzene	2.30	0.0250	2.50	ND	92.0	48-131			
Ethylbenzene	2.37	0.0250	2.50	ND	94.6	45-135			
Toluene	2.36	0.0250	2.50	ND	94.4	48-130			
o-Xylene	2.28	0.0250	2.50	ND	91.0	43-135			
p,m-Xylene	4.70	0.0500	5.00	ND	93.9	43-135			
Total Xylenes	6.97	0.0250	7.50	ND	93.0	43-135			
Surrogate: Bromofluorobenzene	*0.490*		*0.500*		*97.9*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.481*		*0.500*		*96.2*	*70-130*			
Surrogate: Toluene-d8	*0.484*		*0.500*		*96.7*	*70-130*			
Matrix Spike Dup (2136001-MSD1)				**Source: E108112-01**					Prepared: 08/29/21 Analyzed: 08/29/21
Benzene	2.55	0.0250	2.50	ND	102	48-131	10.3	23	
Ethylbenzene	2.64	0.0250	2.50	ND	105	45-135	10.8	27	
Toluene	2.62	0.0250	2.50	ND	105	48-130	10.4	24	
o-Xylene	2.53	0.0250	2.50	ND	101	43-135	10.6	27	
p,m-Xylene	5.23	0.0500	5.00	ND	105	43-135	10.7	27	
Total Xylenes	7.76	0.0250	7.50	ND	103	43-135	10.6	27	
Surrogate: Bromofluorobenzene	*0.484*		*0.500*		*96.7*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.503*		*0.500*		*101*	*70-130*			
Surrogate: Toluene-d8	*0.490*		*0.500*		*97.9*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed #9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Matt Buckles	8/31/2021 11:25:35AM

Nonhalogenated Organics by EPA 8015D - GRO

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2136001-BLK1)									Prepared: 08/29/21 Analyzed: 08/29/21
Gasoline Range Organics (C6-C10)	ND	20.0							
Surrogate: Bromofluorobenzene	*0.483*		*0.500*		*96.5*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.510*		*0.500*		*102*	*70-130*			
Surrogate: Toluene-d8	*0.492*		*0.500*		*98.4*	*70-130*			
LCS (2136001-BS2)									Prepared: 08/29/21 Analyzed: 08/29/21
Gasoline Range Organics (C6-C10)	48.4	20.0	50.0		96.8	70-130			
Surrogate: Bromofluorobenzene	*0.472*		*0.500*		*94.3*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.487*		*0.500*		*97.3*	*70-130*			
Surrogate: Toluene-d8	*0.498*		*0.500*		*99.6*	*70-130*			
Matrix Spike (2136001-MS2)				**Source: E108112-01**					Prepared: 08/29/21 Analyzed: 08/29/21
Gasoline Range Organics (C6-C10)	44.8	20.0	50.0	ND	89.5	70-130			
Surrogate: Bromofluorobenzene	*0.474*		*0.500*		*94.7*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.482*		*0.500*		*96.3*	*70-130*			
Surrogate: Toluene-d8	*0.493*		*0.500*		*98.6*	*70-130*			
Matrix Spike Dup (2136001-MSD2)				**Source: E108112-01**					Prepared: 08/29/21 Analyzed: 08/29/21
Gasoline Range Organics (C6-C10)	46.6	20.0	50.0	ND	93.2	70-130	4.05	20	
Surrogate: Bromofluorobenzene	*0.467*		*0.500*		*93.3*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.491*		*0.500*		*98.1*	*70-130*			
Surrogate: Toluene-d8	*0.489*		*0.500*		*97.8*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed #9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Matt Buckles	8/31/2021 11:25:35AM

Nonhalogenated Organics by EPA 8015D - DRO/ORO

Analyst: JL

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2136002-BLK1)									Prepared: 08/30/21 Analyzed: 08/30/21
Diesel Range Organics (C10-C28)	ND	25.0							
Oil Range Organics (C28-C36)	ND	50.0							
Surrogate: n-Nonane	*43.9*		*50.0*		*87.9*	*50-200*			
LCS (2136002-BS1)									Prepared: 08/30/21 Analyzed: 08/30/21
Diesel Range Organics (C10-C28)	485	25.0	500		96.9	38-132			
Surrogate: n-Nonane	*43.3*		*50.0*		*86.6*	*50-200*			
Matrix Spike (2136002-MS1)				**Source: E108112-02**					Prepared: 08/30/21 Analyzed: 08/30/21
Diesel Range Organics (C10-C28)	500	25.0	500	ND	100	38-132			
Surrogate: n-Nonane	*44.5*		*50.0*		*89.1*	*50-200*			
Matrix Spike Dup (2136002-MSD1)				**Source: E108112-02**					Prepared: 08/30/21 Analyzed: 08/30/21
Diesel Range Organics (C10-C28)	491	25.0	500	ND	98.2	38-132	1.88	20	
Surrogate: n-Nonane	*45.5*		*50.0*		*91.0*	*50-200*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed #9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Matt Buckles	8/31/2021 11:25:35AM

Anions by EPA 300.0/9056A

Analyst: IY

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2135047-BLK1)									Prepared: 08/27/21 Analyzed: 08/30/21
Chloride	ND	20.0							
LCS (2135047-BS1)									Prepared: 08/27/21 Analyzed: 08/30/21
Chloride	242	20.0	250		96.9	90-110			
Matrix Spike (2135047-MS1)				**Source: E108097-01**					Prepared: 08/27/21 Analyzed: 08/30/21
Chloride	4790	40.0	250	4480	124	80-120			M5
Matrix Spike Dup (2135047-MSD1)				**Source: E108097-01**					Prepared: 08/27/21 Analyzed: 08/30/21
Chloride	4960	40.0	250	4480	189	80-120	3.33	20	M5

QC Summary Report Comment:
Calculations are based off of the raw (non-rounded) data. However, for reporting purposes all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Definitions and Notes

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	08/31/21 11:25

M5	The analysis of the MS sample required a dilution such that the spike recovery calculation does not provide useful information. The accociated LCS spike recovery was acceptable.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference
DNI	Did Not Ignite

Note (1): Methods marked with ** are non-accredited methods.

Note (2): Soil data is reported on an "as received" weight basis, unless reported otherwise.

Project Information | Chain of Custody | Page 1 of 1

(2 days)

Client:	Mack Energy
Project:	Logan 35 Fed #9
Project Manager:	Matt
Address:	
City, State, Zip	
Phone:	
Email:	
Report due by:	

Bill To

Attention:	ESS
Address:	7 w compress rd
City, State, Zip	Artesia NM 88210
Phone:	
Email:	Natalie@energystaffingllc.com

Lab Use Only

Lab WO#	Job Number
PE108112	200446-0001

AM 8/28

TAT: 1D | 3D

EPA Program: RCRA | CWA | SDWA

State: NM | CO | UT | AZ — X

TX | OK

Analysis and Method

Time Sampled	Date Sampled	Matrix	No Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0			BGDOC - NM	BGDOC - TX			Remarks
9:20	8/26	S	1	SP1 8'	1									/				SP1 6'
10:24	8/26	S	1	SP2 6'	2									/				
11:43	8/26	S	1	SP3 [redacted] 10'	3									/				
3:18	8/26	S	1	SP5 6'	4									/				

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by:

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	8/26/21	5:30pm		8.27.21	1210
	8.27.21	1400		8/28/21	14:56

Lab Use Only

Received on ice: (Y) N

T1 T2 T3

AVG Temp °C 4

Sample Matrix: S - Soil, Sd - Solid, Sg - Sludge, A - Aqueous, O - Other

Container Type: g - glass, p - poly/plastic, ag - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

envirotech Analytical Laboratory
5795 US Highway 64, Farmington, NM 87401
24 Hour Emergency Response Phone (800) 362-1879
Ph (505) 632-1881 Fx (505) 632-1865
envirotech-inc.com
labadmin@envirotech-inc.com

Envirotech Analytical Laboratory

Printed: 8/28/2021 3:09:15PM

Sample Receipt Checklist (SRC)

Instructions: Please take note of any NO checkmarks.
If we receive no response concerning these items within 24 hours of the date of this notice, all the samples will be analyzed as requested.

Client:	Mack Energy	Date Received:	08/28/21 14:56	Work Order ID:	E108112
Phone:	(575) 746-9547	Date Logged In:	08/28/21 15:03	Logged In By:	Alexa Michaels
Email:	natalie@energystaffingllc.com	Due Date:	08/31/21 17:00 (1 day TAT)		

Chain of Custody (COC)

1. Does the sample ID match the COC?	No	
2. Does the number of samples per sampling site location match the COC	Yes	
3. Were samples dropped off by client or carrier?	Yes	Carrier: Courrier
4. Was the COC complete, i.e., signatures, dates/times, requested analyses?	Yes	
5. Were all samples received within holding time? Note: Analysis, such as pH which should be conducted in the field, i.e, 15 minute hold time, are not included in this disucssion.	Yes	

Sample Turn Around Time (TAT)

6. Did the COC indicate standard TAT, or Expedited TAT?	Yes	

Sample Cooler

7. Was a sample cooler received?	Yes	
8. If yes, was cooler received in good condition?	Yes	
9. Was the sample(s) received intact, i.e., not broken?	Yes	
10. Were custody/security seals present?	No	
11. If yes, were custody/security seals intact?	NA	
12. Was the sample received on ice? If yes, the recorded temp is 4°C, i.e., 6°±2°C Note: Thermal preservation is not required, if samples are received w/i 15 minutes of sampling	Yes	
13. If no visible ice, record the temperature. Actual sample temperature: 4°C		

Sample Container

14. Are aqueous VOC samples present?	No	
15. Are VOC samples collected in VOA Vials?	NA	
16. Is the head space less than 6-8 mm (pea sized or less)?	NA	
17. Was a trip blank (TB) included for VOC analyses?	NA	
18. Are non-VOC samples collected in the correct containers?	Yes	
19. Is the appropriate volume/weight or number of sample containers collected?	Yes	

Field Label

20. Were field sample labels filled out with the minimum information:		
Sample ID?	Yes	
Date/Time Collected?	Yes	
Collectors name?	Yes	

Sample Preservation

21. Does the COC or field labels indicate the samples were preserved?	No	
22. Are sample(s) correctly preserved?	NA	
24. Is lab filteration required and/or requested for dissolved metals?	No	

Multiphase Sample Matrix

26. Does the sample have more than one phase, i.e., multiphase?	No	
27. If yes, does the COC specify which phase(s) is to be analyzed?	NA	

Subcontract Laboratory

28. Are samples required to get sent to a subcontract laboratory?	No	
29. Was a subcontract laboratory specified by the client and if so who?	NA	Subcontract Lab: NA

Comments/Resolution

Sample ID on physical sample #1 is SP1 6.
Sample ID on COC for sample #1 is SP1 8.

Client Instruction

Signature of client authorizing changes to the COC or sample disposition.

Date

envirotech Inc.

Report to:

Matt Buckles

5796 U.S. Hwy 64
Farmington, NM 87401

Phone: (505) 632-1881
Envirotech-inc.com

envirotech

Practical Solutions for a Better Tomorrow

Analytical Report

Mack Energy

Project Name:	Logan 35 Fed #9
Work Order:	E108120
Job Number:	20046-0001
Received:	8/31/2021

Revision: 1

Report Reviewed By:

Walter Hinchman
Laboratory Director
9/1/21

Date Reported: 9/1/21

Matt Buckles
7 W. Compress Road
Artesia, NM 88210

Project Name: Logan 35 Fed #9
Workorder: E108120
Date Received: 8/31/2021 1:29:00PM

Matt Buckles,

Thank you for choosing Envirotech, Inc. as your analytical testing laboratory for the sample(s) received on, 8/31/2021 1:29:00PM, under the Project Name: Logan 35 Fed #9.

The analytical test results summarized in this report with the Project Name: Logan 35 Fed #9 apply to the individual samples collected, identified and submitted bearing the project name on the enclosed chain-of-custody. Subcontracted sample analyses not conducted by Envirotech, Inc., are attached in full as issued by the subcontract laboratory.

Please review the Chain-of-Custody (COC) and Sample Receipt Checklist (SRC) for any issues reguarding sample receipt temperature, containers, preservation etc. To best understand your test results, review the entire report summarizing your sample data and the associated quality control batch data.

All reported data in this analytical report were analyzed according to the referenced method(s) and are in compliance with the latest NELAC/TNI standards, unless otherwise noted. Samples or analytical quality control parameters not meeting specific QC criteria are qualified with a data flag. Data flag definitions are located in the Notes and Definitions section of this analytical report.

If you have any questions concerning this report, please feel free to contact Envirotech, Inc.

Respectfully,

Walter Hinchman
Laboratory Director
Office: 505-632-1881
Cell: 775-287-1762
whinchman@envirotech-inc.com

Raina Schwanz
Laboratory Administrator
Office: 505-632-1881
rainaschwanz@envirotech-inc.com

Alexa Michaels
Sample Custody Officer
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Technical Representative
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tbrown@envirotech-inc.com

Envirotech Web Address: www.envirotech-inc.com

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Sample Summary

Mack Energy	Project Name:	Logan 35 Fed #9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Matt Buckles	09/01/21 12:51

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
SW1 3'	E108120-01A	Soil	08/27/21	08/31/21	Glass Jar, 4 oz.
SW2 3'	E108120-02A	Soil	08/27/21	08/31/21	Glass Jar, 4 oz.
SW3 3'	E108120-03A	Soil	08/27/21	08/31/21	Glass Jar, 4 oz.
SW4 3'	E108120-04A	Soil	08/27/21	08/31/21	Glass Jar, 4 oz.
SW5 3'	E108120-05A	Soil	08/27/21	08/31/21	Glass Jar, 4 oz.
SW11 3'	E108120-06A	Soil	08/27/21	08/31/21	Glass Jar, 4 oz.
SW12 2'	E108120-07A	Soil	08/27/21	08/31/21	Glass Jar, 4 oz.

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	9/1/2021 12:51:49PM

SW1 3'

E108120-01

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2136018
Benzene	ND	0.0250	1	08/31/21	08/31/21	
Ethylbenzene	ND	0.0250	1	08/31/21	08/31/21	
Toluene	ND	0.0250	1	08/31/21	08/31/21	
o-Xylene	ND	0.0250	1	08/31/21	08/31/21	
p,m-Xylene	ND	0.0500	1	08/31/21	08/31/21	
Total Xylenes	ND	0.0250	1	08/31/21	08/31/21	
Surrogate: 4-Bromochlorobenzene-PID		*95.6 %*	*70-130*	*08/31/21*	*08/31/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2136018
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/31/21	08/31/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*99.2 %*	*70-130*	*08/31/21*	*08/31/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2136020
Diesel Range Organics (C10-C28)	ND	25.0	1	08/31/21	08/31/21	
Oil Range Organics (C28-C36)	ND	50.0	1	08/31/21	08/31/21	
Surrogate: n-Nonane		*91.4 %*	*50-200*	*08/31/21*	*08/31/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: AC			Batch: 2136019
Chloride	**74.3**	20.0	1	08/31/21	09/01/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	9/1/2021 12:51:49PM

SW2 3'

E108120-02

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2136018
Benzene	ND	0.0250	1	08/31/21	08/31/21	
Ethylbenzene	ND	0.0250	1	08/31/21	08/31/21	
Toluene	ND	0.0250	1	08/31/21	08/31/21	
o-Xylene	ND	0.0250	1	08/31/21	08/31/21	
p,m-Xylene	ND	0.0500	1	08/31/21	08/31/21	
Total Xylenes	ND	0.0250	1	08/31/21	08/31/21	
Surrogate: 4-Bromochlorobenzene-PID		*99.0 %*	*70-130*	*08/31/21*	*08/31/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2136018
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/31/21	08/31/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*93.2 %*	*70-130*	*08/31/21*	*08/31/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2136020
Diesel Range Organics (C10-C28)	ND	25.0	1	08/31/21	09/01/21	
Oil Range Organics (C28-C36)	ND	50.0	1	08/31/21	09/01/21	
Surrogate: n-Nonane		*72.1 %*	*50-200*	*08/31/21*	*09/01/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: AC			Batch: 2136019
Chloride	ND	20.0	1	08/31/21	09/01/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	9/1/2021 12:51:49PM

SW3 3'

E108120-03

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2136018
Benzene	ND	0.0250	1	08/31/21	08/31/21	
Ethylbenzene	ND	0.0250	1	08/31/21	08/31/21	
Toluene	ND	0.0250	1	08/31/21	08/31/21	
o-Xylene	ND	0.0250	1	08/31/21	08/31/21	
p,m-Xylene	ND	0.0500	1	08/31/21	08/31/21	
Total Xylenes	ND	0.0250	1	08/31/21	08/31/21	
Surrogate: 4-Bromochlorobenzene-PID		*95.2 %*	*70-130*	*08/31/21*	*08/31/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2136018
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/31/21	08/31/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*97.5 %*	*70-130*	*08/31/21*	*08/31/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2136020
Diesel Range Organics (C10-C28)	ND	25.0	1	08/31/21	08/31/21	
Oil Range Organics (C28-C36)	ND	50.0	1	08/31/21	08/31/21	
Surrogate: n-Nonane		*89.3 %*	*50-200*	*08/31/21*	*08/31/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: AC			Batch: 2136019
Chloride	**57.0**	40.0	2	08/31/21	09/01/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	9/1/2021 12:51:49PM

SW4 3'

E108120-04

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2136018
Benzene	ND	0.0250	1	08/31/21	08/31/21	
Ethylbenzene	ND	0.0250	1	08/31/21	08/31/21	
Toluene	ND	0.0250	1	08/31/21	08/31/21	
o-Xylene	ND	0.0250	1	08/31/21	08/31/21	
p,m-Xylene	ND	0.0500	1	08/31/21	08/31/21	
Total Xylenes	ND	0.0250	1	08/31/21	08/31/21	
Surrogate: 4-Bromochlorobenzene-PID		*95.8 %*	*70-130*	*08/31/21*	*08/31/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2136018
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/31/21	08/31/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*100 %*	*70-130*	*08/31/21*	*08/31/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2136020
Diesel Range Organics (C10-C28)	ND	25.0	1	08/31/21	08/31/21	
Oil Range Organics (C28-C36)	ND	50.0	1	08/31/21	08/31/21	
Surrogate: n-Nonane		*82.3 %*	*50-200*	*08/31/21*	*08/31/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: AC			Batch: 2136019
Chloride	ND	100	5	08/31/21	09/01/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	9/1/2021 12:51:49PM

SW5 3'

E108120-05

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2136018
Benzene	ND	0.0250	1	08/31/21	09/01/21	
Ethylbenzene	ND	0.0250	1	08/31/21	09/01/21	
Toluene	ND	0.0250	1	08/31/21	09/01/21	
o-Xylene	ND	0.0250	1	08/31/21	09/01/21	
p,m-Xylene	ND	0.0500	1	08/31/21	09/01/21	
Total Xylenes	ND	0.0250	1	08/31/21	09/01/21	
Surrogate: 4-Bromochlorobenzene-PID		*100 %*	*70-130*	*08/31/21*	*09/01/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2136018
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/31/21	09/01/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*96.2 %*	*70-130*	*08/31/21*	*09/01/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2136020
Diesel Range Organics (C10-C28)	ND	25.0	1	08/31/21	08/31/21	
Oil Range Organics (C28-C36)	ND	50.0	1	08/31/21	08/31/21	
Surrogate: n-Nonane		*92.8 %*	*50-200*	*08/31/21*	*08/31/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: AC			Batch: 2136019
Chloride	ND	20.0	1	08/31/21	09/01/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	9/1/2021 12:51:49PM

SW11 3'

E108120-06

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2136018
Benzene	ND	0.0250	1	08/31/21	09/01/21	
Ethylbenzene	ND	0.0250	1	08/31/21	09/01/21	
Toluene	ND	0.0250	1	08/31/21	09/01/21	
o-Xylene	ND	0.0250	1	08/31/21	09/01/21	
p,m-Xylene	ND	0.0500	1	08/31/21	09/01/21	
Total Xylenes	ND	0.0250	1	08/31/21	09/01/21	
Surrogate: 4-Bromochlorobenzene-PID		*94.8 %*	*70-130*	*08/31/21*	*09/01/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2136018
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/31/21	09/01/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*95.9 %*	*70-130*	*08/31/21*	*09/01/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2136020
Diesel Range Organics (C10-C28)	**92.1**	50.0	2	08/31/21	08/31/21	
Oil Range Organics (C28-C36)	**157**	100	2	08/31/21	08/31/21	
Surrogate: n-Nonane		*102 %*	*50-200*	*08/31/21*	*08/31/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: AC			Batch: 2136019
Chloride	**45.7**	20.0	1	08/31/21	09/01/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	9/1/2021 12:51:49PM

SW12 2'

E108120-07

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2136018
Benzene	ND	0.0250	1	08/31/21	09/01/21	
Ethylbenzene	ND	0.0250	1	08/31/21	09/01/21	
Toluene	ND	0.0250	1	08/31/21	09/01/21	
o-Xylene	ND	0.0250	1	08/31/21	09/01/21	
p,m-Xylene	ND	0.0500	1	08/31/21	09/01/21	
Total Xylenes	ND	0.0250	1	08/31/21	09/01/21	
Surrogate: 4-Bromochlorobenzene-PID		*95.1 %*	*70-130*	*08/31/21*	*09/01/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2136018
Gasoline Range Organics (C6-C10)	ND	20.0	1	08/31/21	09/01/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*97.5 %*	*70-130*	*08/31/21*	*09/01/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2136020
Diesel Range Organics (C10-C28)	ND	25.0	1	08/31/21	08/31/21	
Oil Range Organics (C28-C36)	ND	50.0	1	08/31/21	08/31/21	
Surrogate: n-Nonane		*96.5 %*	*50-200*	*08/31/21*	*08/31/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: AC			Batch: 2136019
Chloride	**32.5**	20.0	1	08/31/21	09/01/21	

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed #9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Matt Buckles	9/1/2021 12:51:49PM

Volatile Organics by EPA 8021B

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2136018-BLK1)									Prepared: 08/31/21 Analyzed: 08/31/21
Benzene	ND	0.0250							
Ethylbenzene	ND	0.0250							
Toluene	ND	0.0250							
o-Xylene	ND	0.0250							
p,m-Xylene	ND	0.0500							
Total Xylenes	ND	0.0250							
Surrogate: 4-Bromochlorobenzene-PID	*8.41*		*8.00*		*105*	*70-130*			
LCS (2136018-BS1)									Prepared: 08/31/21 Analyzed: 08/31/21
Benzene	4.80	0.0250	5.00		95.9	70-130			
Ethylbenzene	4.73	0.0250	5.00		94.6	70-130			
Toluene	4.92	0.0250	5.00		98.4	70-130			
o-Xylene	4.83	0.0250	5.00		96.5	70-130			
p,m-Xylene	9.66	0.0500	10.0		96.6	70-130			
Total Xylenes	14.5	0.0250	15.0		96.5	70-130			
Surrogate: 4-Bromochlorobenzene-PID	*8.33*		*8.00*		*104*	*70-130*			
Matrix Spike (2136018-MS1)				**Source: E108120-01**					Prepared: 08/31/21 Analyzed: 08/31/21
Benzene	4.96	0.0250	5.00	ND	99.2	54-133			
Ethylbenzene	4.80	0.0250	5.00	ND	96.0	61-133			
Toluene	4.99	0.0250	5.00	ND	99.8	61-130			
o-Xylene	4.92	0.0250	5.00	ND	98.3	63-131			
p,m-Xylene	9.76	0.0500	10.0	ND	97.6	63-131			
Total Xylenes	14.7	0.0250	15.0	ND	97.8	63-131			
Surrogate: 4-Bromochlorobenzene-PID	*7.79*		*8.00*		*97.4*	*70-130*			
Matrix Spike Dup (2136018-MSD1)				**Source: E108120-01**					Prepared: 08/31/21 Analyzed: 08/31/21
Benzene	5.01	0.0250	5.00	ND	100	54-133	0.925	20	
Ethylbenzene	4.84	0.0250	5.00	ND	96.8	61-133	0.824	20	
Toluene	5.02	0.0250	5.00	ND	100	61-130	0.652	20	
o-Xylene	4.96	0.0250	5.00	ND	99.2	63-131	0.942	20	
p,m-Xylene	9.84	0.0500	10.0	ND	98.4	63-131	0.787	20	
Total Xylenes	14.8	0.0250	15.0	ND	98.7	63-131	0.839	20	
Surrogate: 4-Bromochlorobenzene-PID	*7.88*		*8.00*		*98.4*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed #9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Matt Buckles	9/1/2021 12:51:49PM

Nonhalogenated Organics by EPA 8015D - GRO

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2136018-BLK1)									Prepared: 08/31/21 Analyzed: 08/31/21
Gasoline Range Organics (C6-C10)	ND	20.0							
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.77*		*8.00*		*97.1*	*70-130*			
LCS (2136018-BS2)									Prepared: 08/31/21 Analyzed: 08/31/21
Gasoline Range Organics (C6-C10)	52.9	20.0	50.0		106	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.85*		*8.00*		*98.2*	*70-130*			
Matrix Spike (2136018-MS2)				**Source: E108120-01**					Prepared: 08/31/21 Analyzed: 08/31/21
Gasoline Range Organics (C6-C10)	56.0	20.0	50.0	ND	112	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	*8.02*		*8.00*		*100*	*70-130*			
Matrix Spike Dup (2136018-MSD2)				**Source: E108120-01**					Prepared: 08/31/21 Analyzed: 08/31/21
Gasoline Range Organics (C6-C10)	56.7	20.0	50.0	ND	113	70-130	1.35	20	
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.95*		*8.00*		*99.4*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed #9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Matt Buckles	9/1/2021 12:51:49PM

Nonhalogenated Organics by EPA 8015D - DRO/ORO

Analyst: JL

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2136020-BLK1)									Prepared: 08/31/21 Analyzed: 08/31/21
Diesel Range Organics (C10-C28)	ND	25.0							
Oil Range Organics (C28-C36)	ND	50.0							
Surrogate: n-Nonane	*44.8*		*50.0*		*89.5*	*50-200*			
LCS (2136020-BS1)									Prepared: 08/31/21 Analyzed: 08/31/21
Diesel Range Organics (C10-C28)	459	25.0	500		91.8	38-132			
Surrogate: n-Nonane	*45.5*		*50.0*		*91.0*	*50-200*			
Matrix Spike (2136020-MS1)				**Source: E108120-04**					Prepared: 08/31/21 Analyzed: 08/31/21
Diesel Range Organics (C10-C28)	476	25.0	500	ND	95.2	38-132			
Surrogate: n-Nonane	*28.3*		*50.0*		*56.7*	*50-200*			
Matrix Spike Dup (2136020-MSD1)				**Source: E108120-04**					Prepared: 08/31/21 Analyzed: 08/31/21
Diesel Range Organics (C10-C28)	477	25.0	500	ND	95.4	38-132	0.166	20	
Surrogate: n-Nonane	*41.2*		*50.0*		*82.3*	*50-200*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed #9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Matt Buckles	9/1/2021 12:51:49PM

Anions by EPA 300.0/9056A

Analyst: AC

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2136019-BLK1)									Prepared: 08/31/21 Analyzed: 09/01/21
Chloride	ND	20.0							
LCS (2136019-BS1)									Prepared: 08/31/21 Analyzed: 09/01/21
Chloride	241	20.0	250		96.5	90-110			
Matrix Spike (2136019-MS1)				**Source: E108120-01**					Prepared: 08/31/21 Analyzed: 09/01/21
Chloride	319	20.0	250	74.3	97.9	80-120			
Matrix Spike Dup (2136019-MSD1)				**Source: E108120-01**					Prepared: 08/31/21 Analyzed: 09/01/21
Chloride	319	20.0	250	74.3	97.7	80-120	0.107	20	

QC Summary Report Comment:
Calculations are based off of the raw (non-rounded) data. However, for reporting purposes all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Definitions and Notes

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Matt Buckles	09/01/21 12:51

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference
DNI	Did Not Ignite

Note (1): Methods marked with ** are non-accredited methods.

Note (2): Soil data is reported on an "as received" weight basis, unless reported otherwise.

Project Information | Chain of Custody | Page 1 of 1

(2 days)

Client:	Mack Energy
Project:	Logan 35 Fed #9
Project Manager:	Moff
Address:	
City, State, Zip	
Phone:	
Email:	
Report due by:	

Bill To

Attention:	ESS
Address:	7 W compress rd
City, State, Zip	Artesia NM 88210
Phone:	
Email:	Natalie@energystaffingllc.com

Lab Use Only

Lab WO# P[illegible] 6108120 | Job Number 20046-0001

TAT: 1D | 3D

EPA Program: RCRA | CWA | SDWA

State: NM (X) | CO | UT | AZ | TX | OK

Time Sampled	Date Sampled	Matrix	No Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0			BGDOC - NM	BGDOC - TX			Remarks
8:03	8/27	S	1	SW1 3'	1									/				
9:23	8/27	S	1	SW2 3'	2									/				
10:00	8/27	S	1	SW3 3'	3									/				
11:18	8/27	S	1	SW4 3'	4									/				
11:33	8/27	S	1	SW5 3'	5									/				
11:50	8/27	S	1	SW[illegible]3'	6									/				
1:28	8/27	S	1	SW12 2'	7									/				

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: Juan Talavera

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	8/27/21	5:30pm	[signature]	8-30-21	1400
[signature]	8-31-21	940	[signature]	8-31-21	13:29
[signature]					

Lab Use Only

Received on ice: (Y) / N

T1 _____ T2 _____ T3 _____

AVG Temp °C 4

Sample Matrix: S - Soil, Sd - Solid, Sg - Sludge, A - Aqueous, O - Other _____

Container Type: g - glass, p - poly/plastic, ag - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

envirotech Analytical Laboratory
5795 US Highway 64, Farmington, NM 87401
24 Hour Emergency Response Phone (800) 362-1879
Ph (505) 632-1881 Fx (505) 632-1865
envirotech-inc.com
labadmin@envirotech-inc.com

Envirotech Analytical Laboratory

Printed: 8/31/2021 1:40:47PM

Sample Receipt Checklist (SRC)

Instructions: Please take note of any NO checkmarks.
If we receive no response concerning these items within 24 hours of the date of this notice, all the samples will be analyzed as requested.

Client:	Mack Energy	Date Received:	08/31/21 13:29	Work Order ID:	E108120
Phone:	(575) 746-9547	Date Logged In:	08/31/21 13:31	Logged In By:	Jessica Liesse
Email:	natalie@energystaffingllc.com	Due Date:	09/01/21 17:00 (1 day TAT)		

Chain of Custody (COC)

1. Does the sample ID match the COC?	Yes	
2. Does the number of samples per sampling site location match the COC	Yes	
3. Were samples dropped off by client or carrier?	Yes	Carrier: Lab Carrier
4. Was the COC complete, i.e., signatures, dates/times, requested analyses?	Yes	
5. Were all samples received within holding time? Note: Analysis, such as pH which should be conducted in the field, i.e, 15 minute hold time, are not included in this disucssion.	Yes	

Comments/Resolution

Sample Turn Around Time (TAT)

6. Did the COC indicate standard TAT, or Expedited TAT?	Yes

Sample Cooler

7. Was a sample cooler received?	Yes
8. If yes, was cooler received in good condition?	Yes
9. Was the sample(s) received intact, i.e., not broken?	Yes
10. Were custody/security seals present?	No
11. If yes, were custody/security seals intact?	NA
12. Was the sample received on ice? If yes, the recorded temp is 4°C, i.e., 6°±2°C Note: Thermal preservation is not required, if samples are received w/i 15 minutes of sampling	Yes
13. If no visible ice, record the temperature. Actual sample temperature: 4°C	

Sample Container

14. Are aqueous VOC samples present?	No
15. Are VOC samples collected in VOA Vials?	NA
16. Is the head space less than 6-8 mm (pea sized or less)?	NA
17. Was a trip blank (TB) included for VOC analyses?	NA
18. Are non-VOC samples collected in the correct containers?	Yes
19. Is the appropriate volume/weight or number of sample containers collected?	Yes

Field Label

20. Were field sample labels filled out with the minimum information:	
Sample ID?	Yes
Date/Time Collected?	Yes
Collectors name?	No

Sample Preservation

21. Does the COC or field labels indicate the samples were preserved?	No
22. Are sample(s) correctly preserved?	NA
24. Is lab filteration required and/or requested for dissolved metals?	No

Multiphase Sample Matrix

26. Does the sample have more than one phase, i.e., multiphase?	No
27. If yes, does the COC specify which phase(s) is to be analyzed?	NA

Subcontract Laboratory

28. Are samples required to get sent to a subcontract laboratory?	No	
29. Was a subcontract laboratory specified by the client and if so who?	NA	Subcontract Lab: NA

Client Instruction

Signature of client authorizing changes to the COC or sample disposition.

Date

envirotech Inc.

Report to:

Natalie Gladden

5796 U.S. Hwy 64
Farmington, NM 87401

Phone: (505) 632-1881
Envirotech-inc.com

envirotech

Practical Solutions for a Better Tomorrow

Analytical Report

Mack Energy

Project Name:	Logan 35 Fed #9
Work Order:	E109112
Job Number:	20046-0001
Received:	9/30/2021

Revision: 1

Report Reviewed By:

Walter Hinchman
Laboratory Director
10/1/21

Date Reported: 10/1/21

Natalie Gladden
7 W. Compress Road
Artesia, NM 88210

Project Name: Logan 35 Fed #9
Workorder: E109112
Date Received: 9/30/2021 9:30:00AM

Natalie Gladden,

Thank you for choosing Envirotech, Inc. as your analytical testing laboratory for the sample(s) received on, 9/30/2021 9:30:00AM, under the Project Name: Logan 35 Fed #9.

The analytical test results summarized in this report with the Project Name: Logan 35 Fed #9 apply to the individual samples collected, identified and submitted bearing the project name on the enclosed chain-of-custody. Subcontracted sample analyses not conducted by Envirotech, Inc., are attached in full as issued by the subcontract laboratory.

Please review the Chain-of-Custody (COC) and Sample Receipt Checklist (SRC) for any issues reguarding sample receipt temperature, containers, preservation etc. To best understand your test results, review the entire report summarizing your sample data and the associated quality control batch data.

All reported data in this analytical report were analyzed according to the referenced method(s) and are in compliance with the latest NELAC/TNI standards, unless otherwise noted. Samples or analytical quality control parameters not meeting specific QC criteria are qualified with a data flag. Data flag definitions are located in the Notes and Definitions section of this analytical report.

If you have any questions concerning this report, please feel free to contact Envirotech, Inc.

Respectfully,

Walter Hinchman
Laboratory Director
Office: 505-632-1881
Cell: 775-287-1762
whinchman@envirotech-inc.com

Raina Schwanz
Laboratory Administrator
Office: 505-632-1881
rainaschwanz@envirotech-inc.com

Alexa Michaels
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tbrown@envirotech-inc.com

Envirotech Web Address: www.envirotech-inc.com

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Sample Summary

Mack Energy	Project Name:	Logan 35 Fed #9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/01/21 16:41

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
SP 4-9'	E109112-01A	Soil	09/28/21	09/30/21	Glass Jar, 4 oz.
SP 7-10'	E109112-02A	Soil	09/28/21	09/30/21	Glass Jar, 4 oz.
SP 8-9'	E109112-03A	Soil	09/28/21	09/30/21	Glass Jar, 4 oz.
SP 9-8'	E109112-04A	Soil	09/28/21	09/30/21	Glass Jar, 4 oz.
SP 10-8'	E109112-05A	Soil	09/28/21	09/30/21	Glass Jar, 4 oz.

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/1/2021 4:41:03PM

SP 4-9'

E109112-01

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2140016
Benzene	ND	0.0250	1	09/30/21	10/01/21	
Ethylbenzene	ND	0.0250	1	09/30/21	10/01/21	
Toluene	ND	0.0250	1	09/30/21	10/01/21	
o-Xylene	ND	0.0250	1	09/30/21	10/01/21	
p,m-Xylene	ND	0.0500	1	09/30/21	10/01/21	
Total Xylenes	ND	0.0250	1	09/30/21	10/01/21	
Surrogate: 4-Bromochlorobenzene-PID		*95.4 %*	*70-130*	*09/30/21*	*10/01/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2140016
Gasoline Range Organics (C6-C10)	ND	20.0	1	09/30/21	10/01/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.0 %*	*70-130*	*09/30/21*	*10/01/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2140025
Diesel Range Organics (C10-C28)	ND	25.0	1	09/30/21	10/01/21	
Oil Range Organics (C28-C36)	ND	50.0	1	09/30/21	10/01/21	
Surrogate: n-Nonane		*114 %*	*50-200*	*09/30/21*	*10/01/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2140019
Chloride	ND	200	10	09/29/21	09/30/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/1/2021 4:41:03PM

SP 7-10'

E109112-02

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2140016
Benzene	ND	0.0250	1	09/30/21	10/01/21	
Ethylbenzene	ND	0.0250	1	09/30/21	10/01/21	
Toluene	ND	0.0250	1	09/30/21	10/01/21	
o-Xylene	ND	0.0250	1	09/30/21	10/01/21	
p,m-Xylene	ND	0.0500	1	09/30/21	10/01/21	
Total Xylenes	ND	0.0250	1	09/30/21	10/01/21	
Surrogate: 4-Bromochlorobenzene-PID		*97.7 %*	*70-130*	*09/30/21*	*10/01/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2140016
Gasoline Range Organics (C6-C10)	ND	20.0	1	09/30/21	10/01/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*90.0 %*	*70-130*	*09/30/21*	*10/01/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2140025
Diesel Range Organics (C10-C28)	ND	25.0	1	09/30/21	10/01/21	
Oil Range Organics (C28-C36)	ND	50.0	1	09/30/21	10/01/21	
Surrogate: n-Nonane		*116 %*	*50-200*	*09/30/21*	*10/01/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2140019
Chloride	**382**	200	10	09/29/21	09/30/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/1/2021 4:41:03PM

SP 8-9'

E109112-03

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2140016
Benzene	ND	0.0250	1	09/30/21	10/01/21	
Ethylbenzene	ND	0.0250	1	09/30/21	10/01/21	
Toluene	ND	0.0250	1	09/30/21	10/01/21	
o-Xylene	ND	0.0250	1	09/30/21	10/01/21	
p,m-Xylene	ND	0.0500	1	09/30/21	10/01/21	
Total Xylenes	ND	0.0250	1	09/30/21	10/01/21	
Surrogate: 4-Bromochlorobenzene-PID		*97.8 %*	*70-130*	*09/30/21*	*10/01/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2140016
Gasoline Range Organics (C6-C10)	ND	20.0	1	09/30/21	10/01/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.9 %*	*70-130*	*09/30/21*	*10/01/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2140025
Diesel Range Organics (C10-C28)	ND	25.0	1	09/30/21	10/01/21	
Oil Range Organics (C28-C36)	ND	50.0	1	09/30/21	10/01/21	
Surrogate: n-Nonane		*111 %*	*50-200*	*09/30/21*	*10/01/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2140019
Chloride	**221**	200	10	09/29/21	09/30/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/1/2021 4:41:03PM

SP 9-8'

E109112-04

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2140016
Benzene	ND	0.0250	1	09/30/21	10/01/21	
Ethylbenzene	ND	0.0250	1	09/30/21	10/01/21	
Toluene	ND	0.0250	1	09/30/21	10/01/21	
o-Xylene	ND	0.0250	1	09/30/21	10/01/21	
p,m-Xylene	ND	0.0500	1	09/30/21	10/01/21	
Total Xylenes	ND	0.0250	1	09/30/21	10/01/21	
Surrogate: 4-Bromochlorobenzene-PID		*97.7 %*	*70-130*	*09/30/21*	*10/01/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2140016
Gasoline Range Organics (C6-C10)	ND	20.0	1	09/30/21	10/01/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.3 %*	*70-130*	*09/30/21*	*10/01/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2140025
Diesel Range Organics (C10-C28)	ND	25.0	1	09/30/21	10/01/21	
Oil Range Organics (C28-C36)	ND	50.0	1	09/30/21	10/01/21	
Surrogate: n-Nonane		*111 %*	*50-200*	*09/30/21*	*10/01/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2140019
Chloride	**445**	200	10	09/29/21	09/30/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/1/2021 4:41:03PM

SP 10-8'

E109112-05

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2140016
Benzene	ND	0.0250	1	09/30/21	10/01/21	
Ethylbenzene	ND	0.0250	1	09/30/21	10/01/21	
Toluene	ND	0.0250	1	09/30/21	10/01/21	
o-Xylene	ND	0.0250	1	09/30/21	10/01/21	
p,m-Xylene	ND	0.0500	1	09/30/21	10/01/21	
Total Xylenes	ND	0.0250	1	09/30/21	10/01/21	
Surrogate: 4-Bromochlorobenzene-PID		*96.4 %*	*70-130*	*09/30/21*	*10/01/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2140016
Gasoline Range Organics (C6-C10)	ND	20.0	1	09/30/21	10/01/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*90.2 %*	*70-130*	*09/30/21*	*10/01/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2140025
Diesel Range Organics (C10-C28)	ND	25.0	1	09/30/21	10/01/21	
Oil Range Organics (C28-C36)	ND	50.0	1	09/30/21	10/01/21	
Surrogate: n-Nonane		*98.6 %*	*50-200*	*09/30/21*	*10/01/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2140019
Chloride	**503**	200	10	09/29/21	09/30/21	

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed #9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/1/2021 4:41:03PM

Volatile Organics by EPA 8021B

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2140016-BLK1)									Prepared: 09/29/21 Analyzed: 09/30/21
Benzene	ND	0.0250							
Ethylbenzene	ND	0.0250							
Toluene	ND	0.0250							
o-Xylene	ND	0.0250							
p,m-Xylene	ND	0.0500							
Total Xylenes	ND	0.0250							
Surrogate: 4-Bromochlorobenzene-PID	*7.71*		*8.00*		*96.4*	*70-130*			
LCS (2140016-BS1)									Prepared: 09/29/21 Analyzed: 09/30/21
Benzene	4.95	0.0250	5.00		98.9	70-130			
Ethylbenzene	4.80	0.0250	5.00		96.0	70-130			
Toluene	4.96	0.0250	5.00		99.3	70-130			
o-Xylene	4.89	0.0250	5.00		97.7	70-130			
p,m-Xylene	9.77	0.0500	10.0		97.7	70-130			
Total Xylenes	14.7	0.0250	15.0		97.7	70-130			
Surrogate: 4-Bromochlorobenzene-PID	*8.33*		*8.00*		*104*	*70-130*			
Matrix Spike (2140016-MS1)				**Source: E109101-01**					Prepared: 09/29/21 Analyzed: 09/30/21
Benzene	5.12	0.0250	5.00	ND	102	54-133			
Ethylbenzene	4.90	0.0250	5.00	ND	98.0	61-133			
Toluene	5.10	0.0250	5.00	ND	102	61-130			
o-Xylene	5.01	0.0250	5.00	ND	100	63-131			
p,m-Xylene	9.96	0.0500	10.0	ND	99.5	63-131			
Total Xylenes	15.0	0.0250	15.0	ND	99.8	63-131			
Surrogate: 4-Bromochlorobenzene-PID	*8.10*		*8.00*		*101*	*70-130*			
Matrix Spike Dup (2140016-MSD1)				**Source: E109101-01**					Prepared: 09/29/21 Analyzed: 09/30/21
Benzene	5.02	0.0250	5.00	ND	100	54-133	2.01	20	
Ethylbenzene	4.80	0.0250	5.00	ND	96.1	61-133	1.97	20	
Toluene	5.00	0.0250	5.00	ND	99.9	61-130	2.05	20	
o-Xylene	4.92	0.0250	5.00	ND	98.4	63-131	1.81	20	
p,m-Xylene	9.76	0.0500	10.0	ND	97.6	63-131	1.93	20	
Total Xylenes	14.7	0.0250	15.0	ND	97.9	63-131	1.89	20	
Surrogate: 4-Bromochlorobenzene-PID	*7.99*		*8.00*		*99.8*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed #9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/1/2021 4:41:03PM

Nonhalogenated Organics by EPA 8015D - GRO

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2140016-BLK1)									Prepared: 09/29/21 Analyzed: 09/30/21
Gasoline Range Organics (C6-C10)	ND	20.0							
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.17*		*8.00*		*89.6*	*70-130*			
LCS (2140016-BS2)									Prepared: 09/29/21 Analyzed: 09/30/21
Gasoline Range Organics (C6-C10)	47.3	20.0	50.0		94.6	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.20*		*8.00*		*90.1*	*70-130*			
Matrix Spike (2140016-MS2)				**Source: E109101-01**					Prepared: 09/29/21 Analyzed: 09/30/21
Gasoline Range Organics (C6-C10)	50.7	20.0	50.0	ND	101	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.19*		*8.00*		*89.9*	*70-130*			
Matrix Spike Dup (2140016-MSD2)				**Source: E109101-01**					Prepared: 09/29/21 Analyzed: 10/01/21
Gasoline Range Organics (C6-C10)	50.3	20.0	50.0	ND	101	70-130	0.782	20	
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.17*		*8.00*		*89.6*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed #9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/1/2021 4:41:03PM

Nonhalogenated Organics by EPA 8015D - DRO/ORO

Analyst: JL

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2140025-BLK1)									Prepared: 09/30/21 Analyzed: 10/01/21
Diesel Range Organics (C10-C28)	ND	25.0							
Oil Range Organics (C28-C36)	ND	50.0							
Surrogate: n-Nonane	*55.0*		*50.0*		*110*	*50-200*			
LCS (2140025-BS1)									Prepared: 09/30/21 Analyzed: 10/01/21
Diesel Range Organics (C10-C28)	450	25.0	500		90.1	38-132			
Surrogate: n-Nonane	*53.7*		*50.0*		*107*	*50-200*			
Matrix Spike (2140025-MS1)				**Source: E109112-01**					Prepared: 09/30/21 Analyzed: 10/01/21
Diesel Range Organics (C10-C28)	459	25.0	500	ND	91.8	38-132			
Surrogate: n-Nonane	*54.8*		*50.0*		*110*	*50-200*			
Matrix Spike Dup (2140025-MSD1)				**Source: E109112-01**					Prepared: 09/30/21 Analyzed: 10/01/21
Diesel Range Organics (C10-C28)	472	25.0	500	ND	94.5	38-132	2.84	20	
Surrogate: n-Nonane	*56.6*		*50.0*		*113*	*50-200*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed #9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/1/2021 4:41:03PM

Anions by EPA 300.0/9056A

Analyst: RAS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2140019-BLK1)									Prepared: 09/29/21 Analyzed: 09/29/21
Chloride	ND	20.0							
LCS (2140019-BS1)									Prepared: 09/29/21 Analyzed: 09/29/21
Chloride	248	20.0	250		99.3	90-110			
Matrix Spike (2140019-MS1)				**Source: E109101-01**					Prepared: 09/29/21 Analyzed: 09/29/21
Chloride	298	20.0	250	47.7	100	80-120			
Matrix Spike Dup (2140019-MSD1)				**Source: E109101-01**					Prepared: 09/29/21 Analyzed: 09/29/21
Chloride	296	20.0	250	47.7	99.3	80-120	0.794	20	

QC Summary Report Comment:
Calculations are based off of the raw (non-rounded) data. However, for reporting purposes all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Definitions and Notes

Mack Energy	Project Name:	Logan 35 Fed #9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/01/21 16:41

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference
DNI	Did Not Ignite

Note (1): Methods marked with ** are non-accredited methods.

Note (2): Soil data is reported on an "as received" weight basis, unless reported otherwise.

Project Information		Bill To	
Client:	~~[illegible]~~ Mack Energy	Attention:	ESS
Project:	Logan 35 Fed 9	Address:	
Project Manager:	Natalie	City, State, Zip	
Address:		Phone:	
City, State, Zip		Email:	
Phone:			
Email:	Natalie		
Report due by:			

Lab Use Only: Lab WO#	Job Number	TAT: 1D	2D	3D	Standard	EPA Program: CWA	SDWA
E109112	20046-0001		X				

RCRA

State: NM	CO	UT	AZ	TX
X				

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0			BGDOC NM	BGDOC TX			Remarks
	9/28	S	1	SP4 - 9'	1									X				
	9/28	S	1	SP7 - 10'	2									X				
	9/28	S	1	SP8 - 9'	3									X				
	9/28	S	1	SP9 - 8'	4									X				
	9/28	S	1	SP10 - 8'	5									X				

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: [signature]

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	9/29/21	1140	[signature]	9·29·21	1140
[signature]	9·29·21	1630	[signature]	9/30/21	9:30

Lab Use Only
Received on ice: (Y) / N
T1 ______ T2 ______ T3 ______
AVG Temp °C 4

Sample Matrix: **S** - Soil, **Sd** - Solid, **Sg** - Sludge, **A** - Aqueous, **O** - Other ______

Container Type: **g** - glass, **p** - poly/plastic, **ag** - amber glass, **v** - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

envirotech

Envirotech Analytical Laboratory

Printed: 9/30/2021 9:38:47AM

Sample Receipt Checklist (SRC)

Instructions: Please take note of any NO checkmarks.
If we receive no response concerning these items within 24 hours of the date of this notice, all the samples will be analyzed as requested.

Client:	Mack Energy	Date Received:	09/30/21 09:30	Work Order ID:	E109112
Phone:	(575) 390-6397	Date Logged In:	09/30/21 09:34	Logged In By:	Alexa Michaels
Email:	Natalie@energystaffingllc.com	Due Date:	10/01/21 17:00 (1 day TAT)		

Chain of Custody (COC)

1. Does the sample ID match the COC?	Yes	
2. Does the number of samples per sampling site location match the COC	Yes	
3. Were samples dropped off by client or carrier?	Yes	Carrier: FedEx
4. Was the COC complete, i.e., signatures, dates/times, requested analyses?	Yes	
5. Were all samples received within holding time? Note: Analysis, such as pH which should be conducted in the field, i.e, 15 minute hold time, are not included in this disucssion.	Yes	

Comments/Resolution

Sample Turn Around Time (TAT)

6. Did the COC indicate standard TAT, or Expedited TAT?	Yes	

Sample Cooler

7. Was a sample cooler received?	Yes	
8. If yes, was cooler received in good condition?	Yes	
9. Was the sample(s) received intact, i.e., not broken?	Yes	
10. Were custody/security seals present?	No	
11. If yes, were custody/security seals intact?	NA	
12. Was the sample received on ice? If yes, the recorded temp is 4°C, i.e., 6°±2°C Note: Thermal preservation is not required, if samples are received w/i 15 minutes of sampling	Yes	
13. If no visible ice, record the temperature. Actual sample temperature: 4°C		

Sample Container

14. Are aqueous VOC samples present?	No	
15. Are VOC samples collected in VOA Vials?	NA	
16. Is the head space less than 6-8 mm (pea sized or less)?	NA	
17. Was a trip blank (TB) included for VOC analyses?	NA	
18. Are non-VOC samples collected in the correct containers?	Yes	
19. Is the appropriate volume/weight or number of sample containers collected?	Yes	

Field Label

20. Were field sample labels filled out with the minimum information:		
Sample ID?	Yes	
Date/Time Collected?	Yes	
Collectors name?	No	

Sample Preservation

21. Does the COC or field labels indicate the samples were preserved?	No	
22. Are sample(s) correctly preserved?	NA	
24. Is lab filteration required and/or requested for dissolved metals?	No	

Multiphase Sample Matrix

26. Does the sample have more than one phase, i.e., multiphase?	No	
27. If yes, does the COC specify which phase(s) is to be analyzed?	NA	

Subcontract Laboratory

28. Are samples required to get sent to a subcontract laboratory?	No	
29. Was a subcontract laboratory specified by the client and if so who?	NA	Subcontract Lab: NA

Client Instruction

Signature of client authorizing changes to the COC or sample disposition.

Date

envirotech Inc.

Report to:

Natalie Gladden

5796 U.S. Hwy 64
Farmington, NM 87401

Phone: (505) 632-1881
Envirotech-inc.com

envirotech

Practical Solutions for a Better Tomorrow

Analytical Report

Mack Energy

Project Name:	Logan 35 Fed 9
Work Order:	E110004
Job Number:	20046-0001
Received:	10/2/2021

Revision: 1

Report Reviewed By:

Walter Hinchman
Laboratory Director
10/5/21

Envirotech Inc. certifies the test results meet all requirements of TNI unless noted otherwise.
Statement of Data Authenticity: Envirotech Inc, attests the data reported has not been altered in any way.
Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech Inc.
Envirotech Inc, holds the Utah TNI certification NM00979 for data reported.
Envirotech Inc, holds the Texas TNI certification T104704557 for data reported.
Envirotech Inc, holds the NM SDWA certification for data reported. (Lab #NM00979)

Date Reported: 10/5/21

Natalie Gladden
7 W. Compress Road
Artesia, NM 88210

Project Name: Logan 35 Fed 9
Workorder: E110004
Date Received: 10/2/2021 11:00:00AM

Natalie Gladden,

Thank you for choosing Envirotech, Inc. as your analytical testing laboratory for the sample(s) received on, 10/2/2021 11:00:00AM, under the Project Name: Logan 35 Fed 9.

The analytical test results summarized in this report with the Project Name: Logan 35 Fed 9 apply to the individual samples collected, identified and submitted bearing the project name on the enclosed chain-of-custody. Subcontracted sample analyses not conducted by Envirotech, Inc., are attached in full as issued by the subcontract laboratory.

Please review the Chain-of-Custody (COC) and Sample Receipt Checklist (SRC) for any issues reguarding sample receipt temperature, containers, preservation etc. To best understand your test results, review the entire report summarizing your sample data and the associated quality control batch data.

All reported data in this analytical report were analyzed according to the referenced method(s) and are in compliance with the latest NELAC/TNI standards, unless otherwise noted. Samples or analytical quality control parameters not meeting specific QC criteria are qualified with a data flag. Data flag definitions are located in the Notes and Definitions section of this analytical report.

If you have any questions concerning this report, please feel free to contact Envirotech, Inc.

Respectfully,

Walter Hinchman
Laboratory Director
Office: 505-632-1881
Cell: 775-287-1762
whinchman@envirotech-inc.com

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tbrown@envirotech-inc.com

Envirotech Web Address: www.envirotech-inc.com

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Sample Summary

Mack Energy	Project Name:	Logan 35 Fed 9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/05/21 17:02

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
SP6-10'	E110004-01A	Soil	09/28/21	10/02/21	Glass Jar, 4 oz.
SW6-2'	E110004-02A	Soil	09/28/21	10/02/21	Glass Jar, 4 oz.
SW7-2'	E110004-03A	Soil	09/28/21	10/02/21	Glass Jar, 4 oz.
SW8-2'	E110004-04A	Soil	09/28/21	10/02/21	Glass Jar, 4 oz.
SW9-2'	E110004-05A	Soil	09/28/21	10/02/21	Glass Jar, 4 oz.
SW10-2'	E110004-06A	Soil	09/28/21	10/02/21	Glass Jar, 4 oz.
SW13-2'	E110004-07A	Soil	09/28/21	10/02/21	Glass Jar, 4 oz.
SW14-2'	E110004-08A	Soil	09/28/21	10/02/21	Glass Jar, 4 oz.

Sample Data

Mack Energy	Project Name:	Logan 35 Fed 9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/5/2021 5:02:32PM

SP6-10'

E110004-01

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Benzene	ND	0.0250	1	10/04/21	10/04/21	
Ethylbenzene	ND	0.0250	1	10/04/21	10/04/21	
Toluene	ND	0.0250	1	10/04/21	10/04/21	
o-Xylene	ND	0.0250	1	10/04/21	10/04/21	
p,m-Xylene	ND	0.0500	1	10/04/21	10/04/21	
Total Xylenes	ND	0.0250	1	10/04/21	10/04/21	
Surrogate: 4-Bromochlorobenzene-PID		*98.4 %*	*70-130*	*10/04/21*	*10/04/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Gasoline Range Organics (C6-C10)	ND	20.0	1	10/04/21	10/04/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*87.0 %*	*70-130*	*10/04/21*	*10/04/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2141009
Diesel Range Organics (C10-C28)	**34.4**	25.0	1	10/04/21	10/04/21	
Oil Range Organics (C28-C36)	ND	50.0	1	10/04/21	10/04/21	
Surrogate: n-Nonane		*93.6 %*	*50-200*	*10/04/21*	*10/04/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2141003
Chloride	**20200**	1000	50	10/04/21	10/04/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed 9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/5/2021 5:02:32PM

SW6-2'

E110004-02

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Benzene	ND	0.0250	1	10/04/21	10/04/21	
Ethylbenzene	ND	0.0250	1	10/04/21	10/04/21	
Toluene	ND	0.0250	1	10/04/21	10/04/21	
o-Xylene	ND	0.0250	1	10/04/21	10/04/21	
p,m-Xylene	ND	0.0500	1	10/04/21	10/04/21	
Total Xylenes	ND	0.0250	1	10/04/21	10/04/21	
Surrogate: 4-Bromochlorobenzene-PID		*94.8 %*	*70-130*	*10/04/21*	*10/04/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Gasoline Range Organics (C6-C10)	ND	20.0	1	10/04/21	10/04/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*87.1 %*	*70-130*	*10/04/21*	*10/04/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2141009
Diesel Range Organics (C10-C28)	ND	25.0	1	10/04/21	10/04/21	
Oil Range Organics (C28-C36)	ND	50.0	1	10/04/21	10/04/21	
Surrogate: n-Nonane		*110 %*	*50-200*	*10/04/21*	*10/04/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2141003
Chloride	**143**	20.0	1	10/04/21	10/04/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed 9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/5/2021 5:02:32PM

SW7-2'

E110004-03

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Benzene	ND	0.0250	1	10/04/21	10/04/21	
Ethylbenzene	ND	0.0250	1	10/04/21	10/04/21	
Toluene	ND	0.0250	1	10/04/21	10/04/21	
o-Xylene	ND	0.0250	1	10/04/21	10/04/21	
p,m-Xylene	ND	0.0500	1	10/04/21	10/04/21	
Total Xylenes	ND	0.0250	1	10/04/21	10/04/21	
Surrogate: 4-Bromochlorobenzene-PID		*97.7 %*	*70-130*	*10/04/21*	*10/04/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Gasoline Range Organics (C6-C10)	ND	20.0	1	10/04/21	10/04/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*88.3 %*	*70-130*	*10/04/21*	*10/04/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2141009
Diesel Range Organics (C10-C28)	ND	25.0	1	10/04/21	10/04/21	
Oil Range Organics (C28-C36)	ND	50.0	1	10/04/21	10/04/21	
Surrogate: n-Nonane		*110 %*	*50-200*	*10/04/21*	*10/04/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2141003
Chloride	**137**	20.0	1	10/04/21	10/04/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed 9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/5/2021 5:02:32PM

SW8-2'

E110004-04

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Benzene	ND	0.0250	1	10/04/21	10/04/21	
Ethylbenzene	ND	0.0250	1	10/04/21	10/04/21	
Toluene	ND	0.0250	1	10/04/21	10/04/21	
o-Xylene	ND	0.0250	1	10/04/21	10/04/21	
p,m-Xylene	ND	0.0500	1	10/04/21	10/04/21	
Total Xylenes	ND	0.0250	1	10/04/21	10/04/21	
Surrogate: 4-Bromochlorobenzene-PID		*100 %*	*70-130*	*10/04/21*	*10/04/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Gasoline Range Organics (C6-C10)	ND	20.0	1	10/04/21	10/04/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*85.5 %*	*70-130*	*10/04/21*	*10/04/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2141009
Diesel Range Organics (C10-C28)	ND	25.0	1	10/04/21	10/04/21	
Oil Range Organics (C28-C36)	ND	50.0	1	10/04/21	10/04/21	
Surrogate: n-Nonane		*109 %*	*50-200*	*10/04/21*	*10/04/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2141003
Chloride	**181**	20.0	1	10/04/21	10/04/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed 9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/5/2021 5:02:32PM

SW9-2'

E110004-05

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Benzene	ND	0.0250	1	10/04/21	10/05/21	
Ethylbenzene	ND	0.0250	1	10/04/21	10/05/21	
Toluene	ND	0.0250	1	10/04/21	10/05/21	
o-Xylene	ND	0.0250	1	10/04/21	10/05/21	
p,m-Xylene	ND	0.0500	1	10/04/21	10/05/21	
Total Xylenes	ND	0.0250	1	10/04/21	10/05/21	
Surrogate: 4-Bromochlorobenzene-PID		*101 %*	*70-130*	*10/04/21*	*10/05/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Gasoline Range Organics (C6-C10)	ND	20.0	1	10/04/21	10/05/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*86.0 %*	*70-130*	*10/04/21*	*10/05/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2141009
Diesel Range Organics (C10-C28)	**58.2**	25.0	1	10/04/21	10/04/21	
Oil Range Organics (C28-C36)	ND	50.0	1	10/04/21	10/04/21	
Surrogate: n-Nonane		*106 %*	*50-200*	*10/04/21*	*10/04/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2141003
Chloride	**279**	20.0	1	10/04/21	10/04/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed 9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/5/2021 5:02:32PM

SW10-2'

E110004-06

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Benzene	ND	0.0250	1	10/04/21	10/05/21	
Ethylbenzene	ND	0.0250	1	10/04/21	10/05/21	
Toluene	ND	0.0250	1	10/04/21	10/05/21	
o-Xylene	ND	0.0250	1	10/04/21	10/05/21	
p,m-Xylene	ND	0.0500	1	10/04/21	10/05/21	
Total Xylenes	ND	0.0250	1	10/04/21	10/05/21	
Surrogate: 4-Bromochlorobenzene-PID		*98.9 %*	*70-130*	*10/04/21*	*10/05/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Gasoline Range Organics (C6-C10)	ND	20.0	1	10/04/21	10/05/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*87.9 %*	*70-130*	*10/04/21*	*10/05/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2141009
Diesel Range Organics (C10-C28)	**74.8**	25.0	1	10/04/21	10/04/21	
Oil Range Organics (C28-C36)	ND	50.0	1	10/04/21	10/04/21	
Surrogate: n-Nonane		*107 %*	*50-200*	*10/04/21*	*10/04/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2141003
Chloride	**295**	20.0	1	10/04/21	10/04/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed 9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/5/2021 5:02:32PM

SW13-2'

E110004-07

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Benzene	ND	0.0250	1	10/04/21	10/05/21	
Ethylbenzene	ND	0.0250	1	10/04/21	10/05/21	
Toluene	ND	0.0250	1	10/04/21	10/05/21	
o-Xylene	ND	0.0250	1	10/04/21	10/05/21	
p,m-Xylene	ND	0.0500	1	10/04/21	10/05/21	
Total Xylenes	ND	0.0250	1	10/04/21	10/05/21	
Surrogate: 4-Bromochlorobenzene-PID		*105 %*	*70-130*	*10/04/21*	*10/05/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Gasoline Range Organics (C6-C10)	ND	20.0	1	10/04/21	10/05/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*87.0 %*	*70-130*	*10/04/21*	*10/05/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2141009
Diesel Range Organics (C10-C28)	**52.3**	25.0	1	10/04/21	10/04/21	
Oil Range Organics (C28-C36)	ND	50.0	1	10/04/21	10/04/21	
Surrogate: n-Nonane		*114 %*	*50-200*	*10/04/21*	*10/04/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2141003
Chloride	**242**	40.0	2	10/04/21	10/04/21	

Sample Data

Mack Energy	Project Name:	Logan 35 Fed 9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/5/2021 5:02:32PM

SW14-2'

E110004-08

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Benzene	ND	0.0250	1	10/04/21	10/05/21	
Ethylbenzene	ND	0.0250	1	10/04/21	10/05/21	
Toluene	ND	0.0250	1	10/04/21	10/05/21	
o-Xylene	ND	0.0250	1	10/04/21	10/05/21	
p,m-Xylene	ND	0.0500	1	10/04/21	10/05/21	
Total Xylenes	ND	0.0250	1	10/04/21	10/05/21	
Surrogate: 4-Bromochlorobenzene-PID		*104 %*	*70-130*	*10/04/21*	*10/05/21*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2141007
Gasoline Range Organics (C6-C10)	ND	20.0	1	10/04/21	10/05/21	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*85.9 %*	*70-130*	*10/04/21*	*10/05/21*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2141009
Diesel Range Organics (C10-C28)	**48.1**	25.0	1	10/04/21	10/04/21	
Oil Range Organics (C28-C36)	ND	50.0	1	10/04/21	10/04/21	
Surrogate: n-Nonane		*105 %*	*50-200*	*10/04/21*	*10/04/21*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2141003
Chloride	**227**	40.0	2	10/04/21	10/04/21	

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed 9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/5/2021 5:02:32PM

Volatile Organics by EPA 8021B

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2141007-BLK1)									Prepared: 10/04/21 Analyzed: 10/04/21
Benzene	ND	0.0250							
Ethylbenzene	ND	0.0250							
Toluene	ND	0.0250							
o-Xylene	ND	0.0250							
p,m-Xylene	ND	0.0500							
Total Xylenes	ND	0.0250							
Surrogate: 4-Bromochlorobenzene-PID	*7.71*		*8.00*		*96.3*	*70-130*			
LCS (2141007-BS1)									Prepared: 10/04/21 Analyzed: 10/04/21
Benzene	5.20	0.0250	5.00		104	70-130			
Ethylbenzene	5.05	0.0250	5.00		101	70-130			
Toluene	5.22	0.0250	5.00		104	70-130			
o-Xylene	5.11	0.0250	5.00		102	70-130			
p,m-Xylene	10.3	0.0500	10.0		103	70-130			
Total Xylenes	15.4	0.0250	15.0		102	70-130			
Surrogate: 4-Bromochlorobenzene-PID	*8.03*		*8.00*		*100*	*70-130*			
Matrix Spike (2141007-MS1)				**Source: E110004-01**					Prepared: 10/04/21 Analyzed: 10/04/21
Benzene	5.12	0.0250	5.00	ND	102	54-133			
Ethylbenzene	4.90	0.0250	5.00	ND	98.0	61-133			
Toluene	5.10	0.0250	5.00	ND	102	61-130			
o-Xylene	4.97	0.0250	5.00	ND	99.4	63-131			
p,m-Xylene	9.95	0.0500	10.0	ND	99.5	63-131			
Total Xylenes	14.9	0.0250	15.0	ND	99.5	63-131			
Surrogate: 4-Bromochlorobenzene-PID	*7.83*		*8.00*		*97.9*	*70-130*			
Matrix Spike Dup (2141007-MSD1)				**Source: E110004-01**					Prepared: 10/04/21 Analyzed: 10/04/21
Benzene	5.09	0.0250	5.00	ND	102	54-133	0.614	20	
Ethylbenzene	4.91	0.0250	5.00	ND	98.3	61-133	0.299	20	
Toluene	5.09	0.0250	5.00	ND	102	61-130	0.224	20	
o-Xylene	4.99	0.0250	5.00	ND	99.8	63-131	0.393	20	
p,m-Xylene	9.99	0.0500	10.0	ND	99.9	63-131	0.399	20	
Total Xylenes	15.0	0.0250	15.0	ND	99.9	63-131	0.397	20	
Surrogate: 4-Bromochlorobenzene-PID	*8.18*		*8.00*		*102*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed 9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/5/2021 5:02:32PM

Nonhalogenated Organics by EPA 8015D - GRO

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2141007-BLK1)									Prepared: 10/04/21 Analyzed: 10/04/21
Gasoline Range Organics (C6-C10)	ND	20.0							
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.07*		*8.00*		*88.3*	*70-130*			
LCS (2141007-BS2)									Prepared: 10/04/21 Analyzed: 10/04/21
Gasoline Range Organics (C6-C10)	52.2	20.0	50.0		104	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.04*		*8.00*		*88.1*	*70-130*			
Matrix Spike (2141007-MS2)				**Source: E110004-01**					Prepared: 10/04/21 Analyzed: 10/04/21
Gasoline Range Organics (C6-C10)	51.2	20.0	50.0	ND	102	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.06*		*8.00*		*88.3*	*70-130*			
Matrix Spike Dup (2141007-MSD2)				**Source: E110004-01**					Prepared: 10/04/21 Analyzed: 10/04/21
Gasoline Range Organics (C6-C10)	49.9	20.0	50.0	ND	99.8	70-130	2.59	20	
Surrogate: 1-Chloro-4-fluorobenzene-FID	*6.98*		*8.00*		*87.2*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed 9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/5/2021 5:02:32PM

Nonhalogenated Organics by EPA 8015D - DRO/ORO

Analyst: JL

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2141009-BLK1)									Prepared: 10/04/21 Analyzed: 10/04/21
Diesel Range Organics (C10-C28)	ND	25.0							
Oil Range Organics (C28-C36)	ND	50.0							
Surrogate: n-Nonane	*51.3*		*50.0*		*103*	*50-200*			
LCS (2141009-BS1)									Prepared: 10/04/21 Analyzed: 10/04/21
Diesel Range Organics (C10-C28)	542	25.0	500		108	38-132			
Surrogate: n-Nonane	*52.5*		*50.0*		*105*	*50-200*			
Matrix Spike (2141009-MS1)				**Source: E110004-06**					Prepared: 10/04/21 Analyzed: 10/04/21
Diesel Range Organics (C10-C28)	614	25.0	500	74.8	108	38-132			
Surrogate: n-Nonane	*51.9*		*50.0*		*104*	*50-200*			
Matrix Spike Dup (2141009-MSD1)				**Source: E110004-06**					Prepared: 10/04/21 Analyzed: 10/04/21
Diesel Range Organics (C10-C28)	634	25.0	500	74.8	112	38-132	3.25	20	
Surrogate: n-Nonane	*51.9*		*50.0*		*104*	*50-200*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 Fed 9	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/5/2021 5:02:32PM

Anions by EPA 300.0/9056A

Analyst: RAS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2141003-BLK1)									Prepared: 10/04/21 Analyzed: 10/04/21
Chloride	ND	20.0							
LCS (2141003-BS1)									Prepared: 10/04/21 Analyzed: 10/04/21
Chloride	246	20.0	250		98.5	90-110			
Matrix Spike (2141003-MS1)				**Source: E110002-01**					Prepared: 10/04/21 Analyzed: 10/04/21
Chloride	309	20.0	250	60.0	99.5	80-120			
Matrix Spike Dup (2141003-MSD1)				**Source: E110002-01**					Prepared: 10/04/21 Analyzed: 10/04/21
Chloride	300	20.0	250	60.0	96.2	80-120	2.74	20	

QC Summary Report Comment:
Calculations are based off of the raw (non-rounded) data. However, for reporting purposes all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Definitions and Notes

Mack Energy	Project Name:	Logan 35 Fed 9	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	10/05/21 17:02

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference
DNI	Did Not Ignite

Note (1): Methods marked with ** are non-accredited methods.

Note (2): Soil data is reported on an "as received" weight basis, unless reported otherwise.

Project Information | Chain of Custody | Page 1 of 1

Client:	Hilcorp Energy
Project:	Logan 35 Fed 4
Project Manager:	
Address:	
City, State, Zip	
Phone:	
Email:	
Report due by:	

Bill To

Attention:	ES
Address:	7 w compress
City, State, Zip	Aztec NM
Phone:	
Email:	Natalie

Lab Use Only

Lab WO#	Job Number
E110004	20046.0001

TAT

1D	2D	3D	Standard
	X		

EPA Program

CWA	SDWA	RCRA

State

NM	CO	UT	AZ	TX	
X					

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0			BGDOC NM	BGDOC TX			Remarks
	9/28/21	S	1	SW6-10'	1									X				
				SW6-2'	2													
				SW7-2'	3													
				SW8-2'	4													
				SW9-2'	5													
				SW10-2'	6													
				SW13-2'	7													
				SW14-2'	8													

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: 10.1.21

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	9/30/21	6:05pm		10.1.21	1005
	10.1.21	1345	Raven Schwenn	10/1/21	15:00

Lab Use Only

Received on ice: (Y) / N

T1 _____ T2 _____ T3 _____

AVG Temp °C 4

Sample Matrix: **S** - Soil, **Sd** - Solid, **Sg** - Sludge, **A** - Aqueous, **O** - Other _____

Container Type: **g** - glass, **p** - poly/plastic, **ag** - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

envirotech

Envirotech Analytical Laboratory

Printed: 10/2/2021 11:47:18AM

Sample Receipt Checklist (SRC)

Instructions: Please take note of any NO checkmarks.
If we receive no response concerning these items within 24 hours of the date of this notice, all the samples will be analyzed as requested.

Client:	Mack Energy	Date Received:	10/02/21 11:43	Work Order ID:	E110004
Phone:	(575) 390-6397	Date Logged In:	10/02/21 11:43	Logged In By:	Raina Schwanz
Email:	Natalie@energystaffingllc.com	Due Date:	10/05/21 17:00 (1 day TAT)		

Chain of Custody (COC)

1. Does the sample ID match the COC?	Yes	
2. Does the number of samples per sampling site location match the COC	Yes	
3. Were samples dropped off by client or carrier?	Yes	Carrier: Lab Courier
4. Was the COC complete, i.e., signatures, dates/times, requested analyses?	Yes	
5. Were all samples received within holding time? Note: Analysis, such as pH which should be conducted in the field, i.e, 15 minute hold time, are not included in this disucssion.	Yes	

Comments/Resolution

Sample Turn Around Time (TAT)

6. Did the COC indicate standard TAT, or Expedited TAT?	Yes	

Sample Cooler

7. Was a sample cooler received?	Yes	
8. If yes, was cooler received in good condition?	Yes	
9. Was the sample(s) received intact, i.e., not broken?	Yes	
10. Were custody/security seals present?	No	
11. If yes, were custody/security seals intact?	NA	
12. Was the sample received on ice? If yes, the recorded temp is 4°C, i.e., 6°±2°C Note: Thermal preservation is not required, if samples are received w/i 15 minutes of sampling	Yes	
13. If no visible ice, record the temperature. Actual sample temperature: 4°C		

Sample Container

14. Are aqueous VOC samples present?	No	
15. Are VOC samples collected in VOA Vials?	NA	
16. Is the head space less than 6-8 mm (pea sized or less)?	NA	
17. Was a trip blank (TB) included for VOC analyses?	NA	
18. Are non-VOC samples collected in the correct containers?	Yes	
19. Is the appropriate volume/weight or number of sample containers collected?	Yes	

Field Label

20. Were field sample labels filled out with the minimum information:		
Sample ID?	Yes	
Date/Time Collected?	Yes	
Collectors name?	No	

Sample Preservation

21. Does the COC or field labels indicate the samples were preserved?	No	
22. Are sample(s) correctly preserved?	NA	
24. Is lab filteration required and/or requested for dissolved metals?	No	

Multiphase Sample Matrix

26. Does the sample have more than one phase, i.e., multiphase?	No	
27. If yes, does the COC specify which phase(s) is to be analyzed?	NA	

Subcontract Laboratory

28. Are samples required to get sent to a subcontract laboratory?	No	
29. Was a subcontract laboratory specified by the client and if so who?	NA	Subcontract Lab: NA

Client Instruction

Signature of client authorizing changes to the COC or sample disposition.

Date

envirotech Inc.

Report to:

Natalie Gladden

5796 U.S. Hwy 64
Farmington, NM 87401

Phone: (505) 632-1881
Envirotech-inc.com

envirotech

Practical Solutions for a Better Tomorrow

Analytical Report

Mack Energy

Project Name:	Logan SWD
Work Order:	E204099
Job Number:	20046-0001
Received:	4/20/2022

Revision: 1

Report Reviewed By:

Walter Hinchman
Laboratory Director
4/22/22

Date Reported: 4/22/22

Natalie Gladden
7 W. Compress Road
Artesia, NM 88210

Project Name: Logan SWD
Workorder: E204099
Date Received: 4/20/2022 6:30:00AM

Natalie Gladden,

Thank you for choosing Envirotech, Inc. as your analytical testing laboratory for the sample(s) received on, 4/20/2022 6:30:00AM, under the Project Name: Logan SWD.

The analytical test results summarized in this report with the Project Name: Logan SWD apply to the individual samples collected, identified and submitted bearing the project name on the enclosed chain-of-custody. Subcontracted sample analyses not conducted by Envirotech, Inc., are attached in full as issued by the subcontract laboratory.

Please review the Chain-of-Custody (COC) and Sample Receipt Checklist (SRC) for any issues reguarding sample receipt temperature, containers, preservation etc. To best understand your test results, review the entire report summarizing your sample data and the associated quality control batch data.

All reported data in this analytical report were analyzed according to the referenced method(s) and are in compliance with the latest NELAC/TNI standards, unless otherwise noted. Samples or analytical quality control parameters not meeting specific QC criteria are qualified with a data flag. Data flag definitions are located in the Notes and Definitions section of this analytical report.

If you have any questions concerning this report, please feel free to contact Envirotech, Inc.

Respectfully,

Walter Hinchman
Laboratory Director
Office: 505-632-1881
Cell: 775-287-1762
whinchman@envirotech-inc.com

Raina Schwanz
Laboratory Administrator
Office: 505-632-1881
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Envirotech Web Address: www.envirotech-inc.com

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Sample Summary

Mack Energy	Project Name:	Logan SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	04/22/22 13:43

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
Comp 1	E204099-01A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 2	E204099-02A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 3	E204099-03A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 4	E204099-04A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 5	E204099-05A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 6	E204099-06A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 7	E204099-07A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 8	E204099-08A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 9	E204099-09A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 10	E204099-10A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 11	E204099-11A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 12	E204099-12A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 13	E204099-13A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 14	E204099-14A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 15	E204099-15A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 16	E204099-16A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 17	E204099-17A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 18	E204099-18A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 19	E204099-19A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 20	E204099-20A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 21	E204099-21A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 22	E204099-22A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.
Comp 23	E204099-23A	Soil	04/14/22	04/20/22	Glass Jar, 4 oz.

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 1

E204099-01

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/22/22	
Toluene	ND	0.0250	1	04/20/22	04/22/22	
o-Xylene	ND	0.0250	1	04/20/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*89.9 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*107 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*89.9 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*107 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/20/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/20/22	
Surrogate: n-Nonane		*96.9 %*	*50-200*	*04/20/22*	*04/20/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**46.7**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 2

E204099-02

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/22/22	
Toluene	ND	0.0250	1	04/20/22	04/22/22	
o-Xylene	ND	0.0250	1	04/20/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*87.7 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*100 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*87.7 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*100 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/20/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/20/22	
Surrogate: n-Nonane		*108 %*	*50-200*	*04/20/22*	*04/20/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**30.2**	20.0	1	04/20/22	04/20/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 3

E204099-03

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/22/22	
Toluene	ND	0.0250	1	04/20/22	04/22/22	
o-Xylene	ND	0.0250	1	04/20/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*88.7 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*88.7 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/20/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/20/22	
Surrogate: n-Nonane		*83.2 %*	*50-200*	*04/20/22*	*04/20/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**56.9**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 4

E204099-04

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/22/22	
Toluene	ND	0.0250	1	04/20/22	04/22/22	
o-Xylene	ND	0.0250	1	04/20/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*88.9 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*99.9 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*88.9 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*99.9 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/20/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/20/22	
Surrogate: n-Nonane		*90.4 %*	*50-200*	*04/20/22*	*04/20/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**76.0**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 5

E204099-05

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/22/22	
Toluene	ND	0.0250	1	04/20/22	04/22/22	
o-Xylene	ND	0.0250	1	04/20/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*89.2 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*99.4 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*89.2 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*99.4 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/20/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/20/22	
Surrogate: n-Nonane		*111 %*	*50-200*	*04/20/22*	*04/20/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**50.3**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 6

E204099-06

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/22/22	
Toluene	ND	0.0250	1	04/20/22	04/22/22	
o-Xylene	ND	0.0250	1	04/20/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*88.6 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*102 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*88.6 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*102 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/20/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/20/22	
Surrogate: n-Nonane		*88.3 %*	*50-200*	*04/20/22*	*04/20/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**80.2**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 7

E204099-07

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/21/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/21/22	
Toluene	ND	0.0250	1	04/20/22	04/21/22	
o-Xylene	ND	0.0250	1	04/20/22	04/21/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/21/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*88.1 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*103 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*102 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*88.1 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*103 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*102 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/20/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/20/22	
Surrogate: n-Nonane		*86.3 %*	*50-200*	*04/20/22*	*04/20/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**223**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 8

E204099-08

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/21/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/21/22	
Toluene	ND	0.0250	1	04/20/22	04/21/22	
o-Xylene	ND	0.0250	1	04/20/22	04/21/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/21/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*89.6 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*102 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*89.6 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*102 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*90.3 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**146**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 9

E204099-09

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/21/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/21/22	
Toluene	ND	0.0250	1	04/20/22	04/21/22	
o-Xylene	ND	0.0250	1	04/20/22	04/21/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/21/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*89.1 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*89.1 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*93.8 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**116**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 10

E204099-10

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/21/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/21/22	
Toluene	ND	0.0250	1	04/20/22	04/21/22	
o-Xylene	ND	0.0250	1	04/20/22	04/21/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/21/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*87.4 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*87.4 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*71.3 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**23.7**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 11

E204099-11

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/21/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/21/22	
Toluene	ND	0.0250	1	04/20/22	04/21/22	
o-Xylene	ND	0.0250	1	04/20/22	04/21/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/21/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*87.9 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*102 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*87.9 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*102 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*85.8 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**69.6**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 12

E204099-12

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/21/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/21/22	
Toluene	ND	0.0250	1	04/20/22	04/21/22	
o-Xylene	ND	0.0250	1	04/20/22	04/21/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/21/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*88.1 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*100 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*88.1 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*100 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*84.3 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**113**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 13

E204099-13

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/21/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/21/22	
Toluene	ND	0.0250	1	04/20/22	04/21/22	
o-Xylene	ND	0.0250	1	04/20/22	04/21/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/21/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*88.7 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*103 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*88.7 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*103 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*92.2 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**32.7**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 14

E204099-14

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/21/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/21/22	
Toluene	ND	0.0250	1	04/20/22	04/21/22	
o-Xylene	ND	0.0250	1	04/20/22	04/21/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/21/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*88.5 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*88.5 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*92.2 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**76.2**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 15

E204099-15

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/21/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/21/22	
Toluene	ND	0.0250	1	04/20/22	04/21/22	
o-Xylene	ND	0.0250	1	04/20/22	04/21/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/21/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*87.5 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*103 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*87.5 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*103 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*91.4 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**93.9**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 16

E204099-16

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/21/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/21/22	
Toluene	ND	0.0250	1	04/20/22	04/21/22	
o-Xylene	ND	0.0250	1	04/20/22	04/21/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/21/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*88.0 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*103 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*100 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*88.0 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*103 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*100 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*85.3 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**110**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 17

E204099-17

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/21/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/21/22	
Toluene	ND	0.0250	1	04/20/22	04/21/22	
o-Xylene	ND	0.0250	1	04/20/22	04/21/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/21/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*86.8 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*86.8 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*88.9 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**66.8**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 18

E204099-18

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/21/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/21/22	
Toluene	ND	0.0250	1	04/20/22	04/21/22	
o-Xylene	ND	0.0250	1	04/20/22	04/21/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/21/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*88.7 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*107 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*103 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/21/22	
Surrogate: Bromofluorobenzene		*88.7 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: 1,2-Dichloroethane-d4		*107 %*	*70-130*	*04/20/22*	*04/21/22*	
Surrogate: Toluene-d8		*103 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*90.0 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**204**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 19

E204099-19

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/22/22	
Toluene	ND	0.0250	1	04/20/22	04/22/22	
o-Xylene	ND	0.0250	1	04/20/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*90.4 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*102 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*90.4 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*102 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*91.3 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**106**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 20

E204099-20

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Benzene	ND	0.0250	1	04/20/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/22/22	
Toluene	ND	0.0250	1	04/20/22	04/22/22	
o-Xylene	ND	0.0250	1	04/20/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*88.5 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217026
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/22/22	
Surrogate: Bromofluorobenzene		*88.5 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/20/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/20/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: AK			Batch: 2217020
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*93.7 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217019
Chloride	**72.0**	20.0	1	04/20/22	04/21/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 21

E204099-21

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2217027
Benzene	ND	0.0250	1	04/20/22	04/21/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/21/22	
Toluene	ND	0.0250	1	04/20/22	04/21/22	
o-Xylene	**0.0314**	0.0250	1	04/20/22	04/21/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/21/22	
Total Xylenes	**0.0314**	0.0250	1	04/20/22	04/21/22	
Surrogate: 4-Bromochlorobenzene-PID		*97.8 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217027
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/21/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.8 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217021
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*91.4 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: CS			Batch: 2217018
Chloride	**52.1**	20.0	1	04/20/22	04/20/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 22

E204099-22

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2217027
Benzene	ND	0.0250	1	04/20/22	04/21/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/21/22	
Toluene	ND	0.0250	1	04/20/22	04/21/22	
o-Xylene	ND	0.0250	1	04/20/22	04/21/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/21/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/21/22	
Surrogate: 4-Bromochlorobenzene-PID		*97.5 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217027
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/21/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*93.4 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217021
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*71.9 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: CS			Batch: 2217018
Chloride	**109**	20.0	1	04/20/22	04/20/22	

Sample Data

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Comp 23

E204099-23

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2217027
Benzene	ND	0.0250	1	04/20/22	04/21/22	
Ethylbenzene	ND	0.0250	1	04/20/22	04/21/22	
Toluene	ND	0.0250	1	04/20/22	04/21/22	
o-Xylene	ND	0.0250	1	04/20/22	04/21/22	
p,m-Xylene	ND	0.0500	1	04/20/22	04/21/22	
Total Xylenes	ND	0.0250	1	04/20/22	04/21/22	
Surrogate: 4-Bromochlorobenzene-PID		*95.8 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2217027
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/20/22	04/21/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*94.6 %*	*70-130*	*04/20/22*	*04/21/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217021
Diesel Range Organics (C10-C28)	ND	25.0	1	04/20/22	04/21/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/20/22	04/21/22	
Surrogate: n-Nonane		*88.6 %*	*50-200*	*04/20/22*	*04/21/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: CS			Batch: 2217018
Chloride	**120**	20.0	1	04/20/22	04/20/22	

QC Summary Data

Mack Energy	Project Name:	Logan SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Volatile Organic Compounds by EPA 8260B

Analyst: IY

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217026-BLK1)									Prepared: 04/20/22 Analyzed: 04/21/22
Benzene	ND	0.0250							
Ethylbenzene	ND	0.0250							
Toluene	ND	0.0250							
o-Xylene	ND	0.0250							
p,m-Xylene	ND	0.0500							
Total Xylenes	ND	0.0250							
Surrogate: Bromofluorobenzene	*0.448*		*0.500*		*89.5*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.531*		*0.500*		*106*	*70-130*			
Surrogate: Toluene-d8	*0.492*		*0.500*		*98.3*	*70-130*			
LCS (2217026-BS1)									Prepared: 04/20/22 Analyzed: 04/21/22
Benzene	2.61	0.0250	2.50		104	70-130			
Ethylbenzene	2.57	0.0250	2.50		103	70-130			
Toluene	2.60	0.0250	2.50		104	70-130			
o-Xylene	2.47	0.0250	2.50		98.7	70-130			
p,m-Xylene	4.99	0.0500	5.00		99.8	70-130			
Total Xylenes	7.46	0.0250	7.50		99.4	70-130			
Surrogate: Bromofluorobenzene	*0.477*		*0.500*		*95.4*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.509*		*0.500*		*102*	*70-130*			
Surrogate: Toluene-d8	*0.515*		*0.500*		*103*	*70-130*			
LCS Dup (2217026-BSD1)									Prepared: 04/20/22 Analyzed: 04/21/22
Benzene	2.58	0.0250	2.50		103	70-130	1.00	23	
Ethylbenzene	2.55	0.0250	2.50		102	70-130	0.860	27	
Toluene	2.56	0.0250	2.50		102	70-130	1.84	24	
o-Xylene	2.46	0.0250	2.50		98.5	70-130	0.203	27	
p,m-Xylene	4.96	0.0500	5.00		99.2	70-130	0.563	27	
Total Xylenes	7.42	0.0250	7.50		99.0	70-130	0.444	27	
Surrogate: Bromofluorobenzene	*0.483*		*0.500*		*96.6*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.492*		*0.500*		*98.4*	*70-130*			
Surrogate: Toluene-d8	*0.506*		*0.500*		*101*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Volatile Organics by EPA 8021B

Analyst: IY

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217027-BLK1)									Prepared: 04/20/22 Analyzed: 04/20/22
Benzene	ND	0.0250							
Ethylbenzene	ND	0.0250							
Toluene	ND	0.0250							
o-Xylene	ND	0.0250							
p,m-Xylene	ND	0.0500							
Total Xylenes	ND	0.0250							
Surrogate: 4-Bromochlorobenzene-PID	*7.81*		*8.00*		*97.7*	*70-130*			
LCS (2217027-BS1)									Prepared: 04/20/22 Analyzed: 04/21/22
Benzene	4.67	0.0250	5.00		93.3	70-130			
Ethylbenzene	5.16	0.0250	5.00		103	70-130			
Toluene	5.30	0.0250	5.00		106	70-130			
o-Xylene	5.13	0.0250	5.00		103	70-130			
p,m-Xylene	10.5	0.0500	10.0		105	70-130			
Total Xylenes	15.6	0.0250	15.0		104	70-130			
Surrogate: 4-Bromochlorobenzene-PID	*7.86*		*8.00*		*98.3*	*70-130*			
LCS Dup (2217027-BSD1)									Prepared: 04/20/22 Analyzed: 04/20/22
Benzene	5.17	0.0250	5.00		103	70-130	10.2	20	
Ethylbenzene	5.60	0.0250	5.00		112	70-130	8.17	20	
Toluene	5.78	0.0250	5.00		116	70-130	8.77	20	
o-Xylene	5.56	0.0250	5.00		111	70-130	8.16	20	
p,m-Xylene	11.4	0.0500	10.0		114	70-130	8.00	20	
Total Xylenes	16.9	0.0250	15.0		113	70-130	8.05	20	
Surrogate: 4-Bromochlorobenzene-PID	*7.89*		*8.00*		*98.6*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Nonhalogenated Organics by EPA 8015D - GRO

Analyst: IY

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217026-BLK1)									Prepared: 04/20/22 Analyzed: 04/21/22
Gasoline Range Organics (C6-C10)	ND	20.0							
Surrogate: Bromofluorobenzene	*0.448*		*0.500*		*89.5*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.531*		*0.500*		*106*	*70-130*			
Surrogate: Toluene-d8	*0.492*		*0.500*		*98.3*	*70-130*			
LCS (2217026-BS2)									Prepared: 04/20/22 Analyzed: 04/21/22
Gasoline Range Organics (C6-C10)	55.0	20.0	50.0		110	70-130			
Surrogate: Bromofluorobenzene	*0.468*		*0.500*		*93.5*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.480*		*0.500*		*96.0*	*70-130*			
Surrogate: Toluene-d8	*0.505*		*0.500*		*101*	*70-130*			
LCS Dup (2217026-BSD2)									Prepared: 04/20/22 Analyzed: 04/21/22
Gasoline Range Organics (C6-C10)	53.4	20.0	50.0		107	70-130	2.94	20	
Surrogate: Bromofluorobenzene	*0.468*		*0.500*		*93.6*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.500*		*0.500*		*99.9*	*70-130*			
Surrogate: Toluene-d8	*0.502*		*0.500*		*100*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Nonhalogenated Organics by EPA 8015D - GRO

Analyst: IY

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217027-BLK1)									Prepared: 04/20/22 Analyzed: 04/20/22
Gasoline Range Organics (C6-C10)	ND	20.0							
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.88*		*8.00*		*98.5*	*70-130*			
LCS (2217027-BS2)									Prepared: 04/20/22 Analyzed: 04/20/22
Gasoline Range Organics (C6-C10)	53.7	20.0	50.0		107	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.78*		*8.00*		*97.2*	*70-130*			
LCS Dup (2217027-BSD2)									Prepared: 04/20/22 Analyzed: 04/20/22
Gasoline Range Organics (C6-C10)	52.1	20.0	50.0		104	70-130	3.01	20	
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.62*		*8.00*		*95.2*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Nonhalogenated Organics by EPA 8015D - DRO/ORO

Analyst: AK

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217020-BLK1)									Prepared: 04/20/22 Analyzed: 04/20/22
Diesel Range Organics (C10-C28)	ND	25.0							
Oil Range Organics (C28-C36)	ND	50.0							
Surrogate: n-Nonane	*52.0*		*50.0*		*104*	*50-200*			
LCS (2217020-BS1)									Prepared: 04/20/22 Analyzed: 04/20/22
Diesel Range Organics (C10-C28)	484	25.0	500		96.7	38-132			
Surrogate: n-Nonane	*47.7*		*50.0*		*95.5*	*50-200*			
Matrix Spike (2217020-MS1)				**Source: E204099-15**					Prepared: 04/20/22 Analyzed: 04/20/22
Diesel Range Organics (C10-C28)	488	25.0	500	ND	97.6	38-132			
Surrogate: n-Nonane	*51.7*		*50.0*		*103*	*50-200*			
Matrix Spike Dup (2217020-MSD1)				**Source: E204099-15**					Prepared: 04/20/22 Analyzed: 04/20/22
Diesel Range Organics (C10-C28)	480	25.0	500	ND	96.0	38-132	1.59	20	
Surrogate: n-Nonane	*53.0*		*50.0*		*106*	*50-200*			

QC Summary Data

Mack Energy	Project Name:	Logan SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Nonhalogenated Organics by EPA 8015D - DRO/ORO

Analyst: JL

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217021-BLK1)									Prepared: 04/20/22 Analyzed: 04/20/22
Diesel Range Organics (C10-C28)	ND	25.0							
Oil Range Organics (C28-C36)	ND	50.0							
Surrogate: n-Nonane	*41.5*		*50.0*		*82.9*	*50-200*			
LCS (2217021-BS1)									Prepared: 04/20/22 Analyzed: 04/20/22
Diesel Range Organics (C10-C28)	496	25.0	500		99.2	38-132			
Surrogate: n-Nonane	*44.1*		*50.0*		*88.1*	*50-200*			
Matrix Spike (2217021-MS1)				**Source: E204098-03**					Prepared: 04/20/22 Analyzed: 04/20/22
Diesel Range Organics (C10-C28)	533	25.0	500	ND	107	38-132			
Surrogate: n-Nonane	*47.4*		*50.0*		*94.8*	*50-200*			
Matrix Spike Dup (2217021-MSD1)				**Source: E204098-03**					Prepared: 04/20/22 Analyzed: 04/20/22
Diesel Range Organics (C10-C28)	540	25.0	500	ND	108	38-132	1.27	20	
Surrogate: n-Nonane	*48.8*		*50.0*		*97.7*	*50-200*			

QC Summary Data

Mack Energy	Project Name:	Logan SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Anions by EPA 300.0/9056A

Analyst: CS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217018-BLK1)									Prepared: 04/20/22 Analyzed: 04/20/22
Chloride	ND	20.0							
LCS (2217018-BS1)									Prepared: 04/20/22 Analyzed: 04/20/22
Chloride	250	20.0	250		100	90-110			
Matrix Spike (2217018-MS1)				**Source: E204098-01**					Prepared: 04/20/22 Analyzed: 04/20/22
Chloride	340	20.0	250	74.5	106	80-120			
Matrix Spike Dup (2217018-MSD1)				**Source: E204098-01**					Prepared: 04/20/22 Analyzed: 04/20/22
Chloride	324	20.0	250	74.5	99.9	80-120	4.62	20	

QC Summary Data

Mack Energy	Project Name:	Logan SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/22/2022 1:43:40PM

Anions by EPA 300.0/9056A

Analyst: RAS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217019-BLK1)									Prepared: 04/20/22 Analyzed: 04/20/22
Chloride	ND	20.0							
LCS (2217019-BS1)									Prepared: 04/20/22 Analyzed: 04/21/22
Chloride	253	20.0	250		101	90-110			
Matrix Spike (2217019-MS1)				**Source: E204099-01**					Prepared: 04/20/22 Analyzed: 04/21/22
Chloride	290	20.0	250	46.7	97.2	80-120			
Matrix Spike Dup (2217019-MSD1)				**Source: E204099-01**					Prepared: 04/20/22 Analyzed: 04/21/22
Chloride	283	20.0	250	46.7	94.4	80-120	2.44	20	

QC Summary Report Comment:
Calculations are based off of the raw (non-rounded) data. However, for reporting purposes all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Definitions and Notes

Mack Energy	Project Name:	Logan SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	04/22/22 13:43

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference
DNI	Did Not Ignite

Note (1): Methods marked with ** are non-accredited methods.

Note (2): Soil data is reported on an "as received" weight basis, unless reported otherwise.

Chain of Custody

ct Information

t: Mack Energy
ct: Logan Swd
ct Manager:
ess:
State, Zip
e:
il:
ort due by:

Bill To
Attention: ESS
Address: 2724 NW CR
City, State, Zip Hobbs, NM 88240
Phone:
Email: Natalie

Lab Use Only
Lab WO# E204099
Job Number 20046-0001

TAT: 1D | 2D | 3D (X) | Standard

EPA Program: CWA | SDWA | RCRA

State: NM (X) | CO | UT | AZ | TX

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0			BGDOC NM	BGDOC TX			Remarks
8	4-14	S	1	Comp 1	1									X				
				Comp 2	2													
				Comp 3	3													
				Comp 4	4													
				Comp 5	5													
				Comp 6	6													
				Comp 7	7													
				Comp 8	8													
				Comp 9	9													
				Comp 10	10													

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by:

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	4-14-22	10:43	JR Bradley	4/19/22	10:43
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	4/19/22	14:30	Caitlin Christian	4/20/22	6:30
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Lab Use Only
Received on ice: (Y) / N
T1 T2 T3
AVG Temp °C 4

Sample Matrix: **S** - Soil, **Sd** - Solid, **Sg** - Sludge, **A** - Aqueous, **O** - Other

Container Type: **g** - glass, **p** - poly/plastic, **ag** - amber glass, **v** - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

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Project Information | Chain of Custody | Page 2 of 3

Client: Mewbourne	
Project: Logan SWD	
Project Manager:	
Address:	
City, State, Zip	
Phone:	
Email:	
Report due by:	

Bill To

Attention: Ellis	
Address: 2724 NW CR	
City, State, Zip Hobbs, NM 88240	
Phone:	
Email: Natalie	

Lab Use Only

Lab WO#	Job Number
E204099	20046-0001

TAT

1D	2D	3D	Standard
		X	

EPA Program

CWA	SDWA	RCRA

State

NM	CO	UT	AZ	TX	
X					

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0	BGDOC NM	BGDOC TX	Remarks
	4-14	S	1	Comp 11	11							X		
				Comp 12	12									
				Comp 13	13									
				Comp 14	14									
				Comp 15	15									
				Comp 16	16									
				Comp 17	17									
				Comp 18	18									
				Comp 19	19									
				Comp 20	20									

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by:

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	4-14-22	10:43	JR Bradley	4/19/22	10:43
HB	4/19/22	14:30	Caitlin Christian	4/20/22	6:30

Lab Use Only

Received on ice: (Y) N

T1 T2 T3

AVG Temp °C 4

Sample Matrix: **S** - Soil, **Sd** - Solid, **Sg** - Sludge, **A** - Aqueous, **O** - Other

Container Type: **g** - glass, **p** - poly/plastic, **ag** - amber glass, **v** - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

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Project Information | Chain of Custody | Page 3 of 3

Client:	Mack
Project:	Logan Swd
Project Manager:	
Address:	
City, State, Zip	
Phone:	
Email:	
Report due by:	

Bill To

Attention:	Ess
Address:	2724 NW CR
City, State, Zip	Hobbs, NM 88240
Phone:	
Email:	Nichlie

Lab Use Only

Lab WO#	Job Number
E204099	20046-0001

TAT

1D	2D	3D	Standard
		X	

EPA Program

CWA	SDWA	RCRA

State

NM	CO	UT	AZ	TX	
X					

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0			BGDOC NM	BGDOC TX			Remarks
	4-14	S	1	Comp 21	21									X				
	"	"	"	Comp 22	22									"				
	"	"	"	Comp 23	23									"				

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by:

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	4.14.22	4/19/22	AR Bolley	4/19/22	10:43
AR Bolley	4/19/22	14:30	Caitlin Christian	4/20/22	6:30

Lab Use Only
Received on ice: (Y) / N
T1 T2 T3
AVG Temp °C 4

Sample Matrix: **S** - Soil, **Sd** - Solid, **Sg** - Sludge, **A** - Aqueous, **O** - Other

Container Type: **g** - glass, **p** - poly/plastic, **ag** - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

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Envirotech Analytical Laboratory

Printed: 4/20/2022 9:32:43AM

Sample Receipt Checklist (SRC)

Instructions: Please take note of any NO checkmarks.
If we receive no response concerning these items within 24 hours of the date of this notice, all the samples will be analyzed as requested.

Client:	Mack Energy	Date Received:	04/20/22 06:30	Work Order ID:	E204099
Phone:	(575) 390-6397	Date Logged In:	04/19/22 15:58	Logged In By:	Caitlin Christian
Email:	Natalie@energystaffingllc.com	Due Date:	04/22/22 17:00 (2 day TAT)		

Chain of Custody (COC)		
1. Does the sample ID match the COC?	Yes	
2. Does the number of samples per sampling site location match the COC	Yes	
3. Were samples dropped off by client or carrier?	Yes	Carrier: Courrier
4. Was the COC complete, i.e., signatures, dates/times, requested analyses?	No	
5. Were all samples received within holding time? Note: Analysis, such as pH which should be conducted in the field, i.e, 15 minute hold time, are not included in this disucssion.	Yes	
Sample Turn Around Time (TAT)		
6. Did the COC indicate standard TAT, or Expedited TAT?	Yes	
Sample Cooler		
7. Was a sample cooler received?	Yes	
8. If yes, was cooler received in good condition?	Yes	
9. Was the sample(s) received intact, i.e., not broken?	Yes	
10. Were custody/security seals present?	No	
11. If yes, were custody/security seals intact?	NA	
12. Was the sample received on ice? If yes, the recorded temp is 4°C, i.e., 6°±2°C Note: Thermal preservation is not required, if samples are received w/i 15 minutes of sampling	Yes	
13. If no visible ice, record the temperature. Actual sample temperature: 4°C		
Sample Container		
14. Are aqueous VOC samples present?	No	
15. Are VOC samples collected in VOA Vials?	NA	
16. Is the head space less than 6-8 mm (pea sized or less)?	NA	
17. Was a trip blank (TB) included for VOC analyses?	NA	
18. Are non-VOC samples collected in the correct containers?	Yes	
19. Is the appropriate volume/weight or number of sample containers collected?	Yes	
Field Label		
20. Were field sample labels filled out with the minimum information:		
Sample ID?	Yes	
Date/Time Collected?	No	
Collectors name?	No	
Sample Preservation		
21. Does the COC or field labels indicate the samples were preserved?	No	
22. Are sample(s) correctly preserved?	NA	
24. Is lab filteration required and/or requested for dissolved metals?	No	
Multiphase Sample Matrix		
26. Does the sample have more than one phase, i.e., multiphase?	No	
27. If yes, does the COC specify which phase(s) is to be analyzed?	NA	
Subcontract Laboratory		
28. Are samples required to get sent to a subcontract laboratory?	No	
29. Was a subcontract laboratory specified by the client and if so who?	NA	Subcontract Lab: na

Comments/Resolution

Time sampled not provided on COC.

Client Instruction

Signature of client authorizing changes to the COC or sample disposition.

Date

envirotech Inc.

Report to:

Natalie Gladden

5796 U.S. Hwy 64
Farmington, NM 87401

Phone: (505) 632-1881
Envirotech-inc.com

envirotech

Practical Solutions for a Better Tomorrow

Analytical Report

Mack Energy

Project Name: Logan 35 SWD

Work Order: E204117

Job Number: 20046-0001

Received: 4/22/2022

Revision: 1

Report Reviewed By:

Walter Hinchman
Laboratory Director
4/25/22

Date Reported: 4/25/22

Natalie Gladden
7 W. Compress Road
Artesia, NM 88210

Project Name: Logan 35 SWD
Workorder: E204117
Date Received: 4/22/2022 10:00:00AM

Natalie Gladden,

Thank you for choosing Envirotech, Inc. as your analytical testing laboratory for the sample(s) received on, 4/22/2022 10:00:00AM, under the Project Name: Logan 35 SWD.

The analytical test results summarized in this report with the Project Name: Logan 35 SWD apply to the individual samples collected, identified and submitted bearing the project name on the enclosed chain-of-custody. Subcontracted sample analyses not conducted by Envirotech, Inc., are attached in full as issued by the subcontract laboratory.

Please review the Chain-of-Custody (COC) and Sample Receipt Checklist (SRC) for any issues reguarding sample receipt temperature, containers, preservation etc. To best understand your test results, review the entire report summarizing your sample data and the associated quality control batch data.

All reported data in this analytical report were analyzed according to the referenced method(s) and are in compliance with the latest NELAC/TNI standards, unless otherwise noted. Samples or analytical quality control parameters not meeting specific QC criteria are qualified with a data flag. Data flag definitions are located in the Notes and Definitions section of this analytical report.

If you have any questions concerning this report, please feel free to contact Envirotech, Inc.

Respectfully,

Walter Hinchman
Laboratory Director
Office: 505-632-1881
Cell: 775-287-1762
whinchman@envirotech-inc.com

Raina Schwanz
Laboratory Administrator
Office: 505-632-1881
rainaschwanz@envirotech-inc.com

Alexa Michaels
Sample Custody Officer
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Rayny Hagan
Technical Representative
Office: 505-421-LABS(5227)

Envirotech Web Address: www.envirotech-inc.com

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Sample Summary

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	04/25/22 17:04

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
Comp 24	E204117-01A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 25	E204117-02A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 26	E204117-03A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 27	E204117-04A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 28	E204117-05A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 29	E204117-06A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 30	E204117-07A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 31	E204117-08A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 32	E204117-09A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 33	E204117-10A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 34	E204117-11A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 35	E204117-12A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 36	E204117-13A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 37	E204117-14A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 38	E204117-15A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 39	E204117-16A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 40	E204117-17A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 41	E204117-18A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 42	E204117-19A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 43	E204117-20A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 24

E204117-01

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*96.1 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*93.1 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*102 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	40.0	2	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 25

E204117-02

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*97.3 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.9 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*104 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 26

E204117-03

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*97.2 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*91.0 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*103 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 27

E204117-04

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*97.2 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.8 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*102 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 28

E204117-05

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*97.5 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.5 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*108 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 29

E204117-06

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*95.8 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*90.6 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*115 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 30

E204117-07

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*106 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.0 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*117 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 31

E204117-08

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*104 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*88.2 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*117 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 32

E204117-09

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*98.9 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.6 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*118 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 33

E204117-10

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*103 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*88.9 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*114 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 34

E204117-11

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*104 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*88.4 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*96.9 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 35

E204117-12

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*102 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*88.0 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*96.5 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 36

E204117-13

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*97.4 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217042
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.3 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*117 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 37

E204117-14

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*88.9 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*88.9 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*108 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 38

E204117-15

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*87.0 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*107 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*100 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*87.0 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*107 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*100 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*104 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 39

E204117-16

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*89.3 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*100 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*89.3 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*100 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*109 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 40

E204117-17

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*86.2 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*86.2 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*111 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 41

E204117-18

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*87.8 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*103 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*87.8 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*103 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*106 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 42

E204117-19

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*85.8 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*108 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*98.8 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*85.8 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*108 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*98.8 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*108 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Comp 43

E204117-20

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*87.7 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*110 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*100 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*87.7 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*110 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*100 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217048
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*111 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217040
Chloride	ND	200	10	04/22/22	04/22/22	

QC Summary Data

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Volatile Organic Compounds by EPA 8260B

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217045-BLK1)									Prepared: 04/22/22 Analyzed: 04/22/22
Benzene	ND	0.0250							
Ethylbenzene	ND	0.0250							
Toluene	ND	0.0250							
o-Xylene	ND	0.0250							
p,m-Xylene	ND	0.0500							
Total Xylenes	ND	0.0250							
Surrogate: Bromofluorobenzene	*0.425*		*0.500*		*84.9*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.548*		*0.500*		*110*	*70-130*			
Surrogate: Toluene-d8	*0.500*		*0.500*		*100*	*70-130*			
LCS (2217045-BS1)									Prepared: 04/22/22 Analyzed: 04/22/22
Benzene	2.39	0.0250	2.50		95.5	70-130			
Ethylbenzene	2.43	0.0250	2.50		97.2	70-130			
Toluene	2.45	0.0250	2.50		97.9	70-130			
o-Xylene	2.35	0.0250	2.50		93.9	70-130			
p,m-Xylene	4.76	0.0500	5.00		95.2	70-130			
Total Xylenes	7.11	0.0250	7.50		94.8	70-130			
Surrogate: Bromofluorobenzene	*0.472*		*0.500*		*94.4*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.502*		*0.500*		*100*	*70-130*			
Surrogate: Toluene-d8	*0.531*		*0.500*		*106*	*70-130*			
Matrix Spike (2217045-MS1)				**Source: E204117-14**					Prepared: 04/22/22 Analyzed: 04/22/22
Benzene	2.44	0.0250	2.50	ND	97.6	48-131			
Ethylbenzene	2.50	0.0250	2.50	ND	100	45-135			
Toluene	2.49	0.0250	2.50	ND	99.8	48-130			
o-Xylene	2.41	0.0250	2.50	ND	96.4	43-135			
p,m-Xylene	4.84	0.0500	5.00	ND	96.8	43-135			
Total Xylenes	7.25	0.0250	7.50	ND	96.7	43-135			
Surrogate: Bromofluorobenzene	*0.479*		*0.500*		*95.7*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.523*		*0.500*		*105*	*70-130*			
Surrogate: Toluene-d8	*0.526*		*0.500*		*105*	*70-130*			
Matrix Spike Dup (2217045-MSD1)				**Source: E204117-14**					Prepared: 04/22/22 Analyzed: 04/22/22
Benzene	2.42	0.0250	2.50	ND	96.9	48-131	0.699	23	
Ethylbenzene	2.50	0.0250	2.50	ND	100	45-135	0.100	27	
Toluene	2.51	0.0250	2.50	ND	100	48-130	0.540	24	
o-Xylene	2.42	0.0250	2.50	ND	96.8	43-135	0.352	27	
p,m-Xylene	4.86	0.0500	5.00	ND	97.2	43-135	0.443	27	
Total Xylenes	7.28	0.0250	7.50	ND	97.1	43-135	0.413	27	
Surrogate: Bromofluorobenzene	*0.481*		*0.500*		*96.2*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.512*		*0.500*		*102*	*70-130*			
Surrogate: Toluene-d8	*0.528*		*0.500*		*106*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Volatile Organics by EPA 8021B

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217042-BLK1)									Prepared: 04/22/22 Analyzed: 04/24/22
Benzene	ND	0.0250							
Ethylbenzene	ND	0.0250							
Toluene	ND	0.0250							
o-Xylene	ND	0.0250							
p,m-Xylene	ND	0.0500							
Total Xylenes	ND	0.0250							
Surrogate: 4-Bromochlorobenzene-PID	*8.10*		*8.00*		*101*	*70-130*			
LCS (2217042-BS1)									Prepared: 04/22/22 Analyzed: 04/24/22
Benzene	5.25	0.0250	5.00		105	70-130			
Ethylbenzene	4.71	0.0250	5.00		94.2	70-130			
Toluene	5.00	0.0250	5.00		100	70-130			
o-Xylene	4.90	0.0250	5.00		98.1	70-130			
p,m-Xylene	9.68	0.0500	10.0		96.8	70-130			
Total Xylenes	14.6	0.0250	15.0		97.2	70-130			
Surrogate: 4-Bromochlorobenzene-PID	*8.00*		*8.00*		*100*	*70-130*			
LCS Dup (2217042-BSD1)									Prepared: 04/22/22 Analyzed: 04/24/22
Benzene	5.57	0.0250	5.00		111	70-130	5.90	20	
Ethylbenzene	4.99	0.0250	5.00		99.8	70-130	5.77	20	
Toluene	5.31	0.0250	5.00		106	70-130	5.89	20	
o-Xylene	5.20	0.0250	5.00		104	70-130	5.88	20	
p,m-Xylene	10.3	0.0500	10.0		103	70-130	5.78	20	
Total Xylenes	15.5	0.0250	15.0		103	70-130	5.81	20	
Surrogate: 4-Bromochlorobenzene-PID	*7.99*		*8.00*		*99.9*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Nonhalogenated Organics by EPA 8015D - GRO

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217042-BLK1)									Prepared: 04/22/22 Analyzed: 04/24/22
Gasoline Range Organics (C6-C10)	ND	20.0							
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.04*		*8.00*		*88.1*	*70-130*			
LCS (2217042-BS2)									Prepared: 04/22/22 Analyzed: 04/24/22
Gasoline Range Organics (C6-C10)	44.1	20.0	50.0		88.1	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.07*		*8.00*		*88.4*	*70-130*			
LCS Dup (2217042-BSD2)									Prepared: 04/22/22 Analyzed: 04/24/22
Gasoline Range Organics (C6-C10)	45.4	20.0	50.0		90.8	70-130	2.97	20	
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.11*		*8.00*		*88.9*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Nonhalogenated Organics by EPA 8015D - GRO

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217045-BLK1)									Prepared: 04/22/22 Analyzed: 04/22/22
Gasoline Range Organics (C6-C10)	ND	20.0							
Surrogate: Bromofluorobenzene	*0.425*		*0.500*		*84.9*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.548*		*0.500*		*110*	*70-130*			
Surrogate: Toluene-d8	*0.500*		*0.500*		*100*	*70-130*			
LCS (2217045-BS2)									Prepared: 04/22/22 Analyzed: 04/22/22
Gasoline Range Organics (C6-C10)	55.8	20.0	50.0		112	70-130			
Surrogate: Bromofluorobenzene	*0.459*		*0.500*		*91.8*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.503*		*0.500*		*101*	*70-130*			
Surrogate: Toluene-d8	*0.533*		*0.500*		*107*	*70-130*			
Matrix Spike (2217045-MS2)				**Source: E204117-14**					Prepared: 04/22/22 Analyzed: 04/25/22
Gasoline Range Organics (C6-C10)	53.1	20.0	50.0	ND	106	70-130			
Surrogate: Bromofluorobenzene	*0.496*		*0.500*		*99.2*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.481*		*0.500*		*96.1*	*70-130*			
Surrogate: Toluene-d8	*0.501*		*0.500*		*100*	*70-130*			
Matrix Spike Dup (2217045-MSD2)				**Source: E204117-14**					Prepared: 04/22/22 Analyzed: 04/25/22
Gasoline Range Organics (C6-C10)	53.3	20.0	50.0	ND	107	70-130	0.354	20	
Surrogate: Bromofluorobenzene	*0.491*		*0.500*		*98.1*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.486*		*0.500*		*97.2*	*70-130*			
Surrogate: Toluene-d8	*0.509*		*0.500*		*102*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Nonhalogenated Organics by EPA 8015D - DRO/ORO

Analyst: JL

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217048-BLK1)									Prepared: 04/22/22 Analyzed: 04/22/22
Diesel Range Organics (C10-C28)	ND	25.0							
Oil Range Organics (C28-C36)	ND	50.0							
Surrogate: n-Nonane	*52.9*		*50.0*		*106*	*50-200*			
LCS (2217048-BS1)									Prepared: 04/22/22 Analyzed: 04/22/22
Diesel Range Organics (C10-C28)	476	25.0	500		95.3	38-132			
Surrogate: n-Nonane	*53.1*		*50.0*		*106*	*50-200*			
Matrix Spike (2217048-MS1)				**Source: E204117-12**					Prepared: 04/22/22 Analyzed: 04/22/22
Diesel Range Organics (C10-C28)	518	25.0	500	ND	104	38-132			
Surrogate: n-Nonane	*55.3*		*50.0*		*111*	*50-200*			
Matrix Spike Dup (2217048-MSD1)				**Source: E204117-12**					Prepared: 04/22/22 Analyzed: 04/22/22
Diesel Range Organics (C10-C28)	516	25.0	500	ND	103	38-132	0.277	20	
Surrogate: n-Nonane	*55.4*		*50.0*		*111*	*50-200*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 5:04:33PM

Anions by EPA 300.0/9056A

Analyst: RAS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217040-BLK1)									Prepared: 04/22/22 Analyzed: 04/22/22
Chloride	ND	20.0							
LCS (2217040-BS1)									Prepared: 04/22/22 Analyzed: 04/22/22
Chloride	248	20.0	250		99.4	90-110			
Matrix Spike (2217040-MS1)				**Source: E204117-01**					Prepared: 04/22/22 Analyzed: 04/22/22
Chloride	263	40.0	250	ND	105	80-120			
Matrix Spike Dup (2217040-MSD1)				**Source: E204117-01**					Prepared: 04/22/22 Analyzed: 04/25/22
Chloride	252	40.0	250	ND	101	80-120	4.35	20	

QC Summary Report Comment:
Calculations are based off of the raw (non-rounded) data. However, for reporting purposes all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Definitions and Notes

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	04/25/22 17:04

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference
DNI	Did Not Ignite

Note (1): Methods marked with ** are non-accredited methods.

Note (2): Soil data is reported on an "as received" weight basis, unless reported otherwise.

Project Information | Chain of Custody | Page 1 of 5

Client:	Mack
Project:	Logan 35
Project Manager:	
Address:	
City, State, Zip	Artesia, NM
Phone:	
Email:	
Report due by:	

Bill To

Attention:	ESS
Address:	2427 ~~Competes~~ County Rd
City, State, Zip	Hobbs, NM
Phone:	
Email:	Natalie

Lab Use Only

Lab WO#	Job Number
E204117	20046-0001

TAT

1D	2D	3D	Standard
X	~~X~~		

EPA Program

CWA	SDWA	RCRA

State

NM	CO	UT	AZ	TX	
X					

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0			BGDOC NM	BGDOC TX			Remarks
	4/20	S	1	Comp 24	1									X				
				Comp 25	2													
				Comp 26	3													
				Comp 27	4													
				Comp 28	5													
				Comp 29	6													
				Comp 30	7													
				Comp 31	8													
				Comp 32	9													
				Comp 33	10													

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: Tanner Mack

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Tanner Mack	4/20	14:00	A.R.B.	4/21/22	14:00
A.R.B.	4/21/22	15:15	Caitlin Chatman	4/22/22	10:00
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Lab Use Only
Received on ice: (Y) / N
T1 T2 T3
AVG Temp °C 4

Sample Matrix: **S** - Soil, **Sd** - Solid, **Sg** - Sludge, **A** - Aqueous, **O** - Other _____

Container Type: **g** - glass, **p** - poly/plastic, **ag** - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

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Project Information | Chain of Custody | Page 2 of 5

Client:	Mack
Project:	Logan 35
Project Manager:	
Address:	
City, State, Zip	Artesia, NM
Phone:	
Email:	
Report due by:	

Bill To

Attention:	ESS
Address:	2427 W County Rd
City, State, Zip	Hobbs, NM
Phone:	
Email:	Natalie

Lab Use Only

Lab WO#	Job Number
E204117	20046-0001

TAT

1D	2D	3D	Standard
1	~~2~~		

EPA Program

CWA	SDWA	RCRA

State

NM	CO	UT	AZ	TX	
X					

Analysis and Method

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0			BGDOC NM	BGDOC TX			Remarks
	4/20	S	1	Comp 34	11									X				
				Comp 35	12													
				Comp 36	13													
				Comp 37	14													
				Comp 38	15													
				Comp 39	16													
				Comp 40	17													
				Comp 41	18													
				Comp 42	19													
				Comp 43	20													

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: Dakota Tang

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Dakota Tang	4/20	14:00	[illegible]	4/21/22	14:00
[illegible]		15:15	Caitlin Christian	4/22/22	10:00

Lab Use Only

Received on ice: (Y) / N

T1 _____ T2 _____ T3 _____

AVG Temp °C 4

Sample Matrix: **S** - Soil, **Sd** - Solid, **Sg** - Sludge, **A** - Aqueous, **O** - Other _____

Container Type: **g** - glass, **p** - poly/plastic, **ag** - amber glass, **v** - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

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Envirotech Analytical Laboratory

Printed: 4/22/2022 11:37:24AM

Sample Receipt Checklist (SRC)

Instructions: Please take note of any NO checkmarks.
If we receive no response concerning these items within 24 hours of the date of this notice, all the samples will be analyzed as requested.

Client:	Mack Energy	Date Received:	04/22/22 10:00	Work Order ID:	E204117
Phone:	(575) 390-6397	Date Logged In:	04/22/22 08:56	Logged In By:	Caitlin Christian
Email:	Natalie@energystaffingllc.com	Due Date:	04/22/22 17:00 (0 day TAT)		

Chain of Custody (COC)

1. Does the sample ID match the COC?	Yes	
2. Does the number of samples per sampling site location match the COC	Yes	
3. Were samples dropped off by client or carrier?	Yes	Carrier: FedEx
4. Was the COC complete, i.e., signatures, dates/times, requested analyses?	No	
5. Were all samples received within holding time? Note: Analysis, such as pH which should be conducted in the field, i.e, 15 minute hold time, are not included in this disucssion.	Yes	

Sample Turn Around Time (TAT)

6. Did the COC indicate standard TAT, or Expedited TAT?	Yes	

Sample Cooler

7. Was a sample cooler received?	Yes	
8. If yes, was cooler received in good condition?	Yes	
9. Was the sample(s) received intact, i.e., not broken?	Yes	
10. Were custody/security seals present?	No	
11. If yes, were custody/security seals intact?	NA	
12. Was the sample received on ice? If yes, the recorded temp is 4°C, i.e., 6°±2°C Note: Thermal preservation is not required, if samples are received w/i 15 minutes of sampling	Yes	
13. If no visible ice, record the temperature. Actual sample temperature: 4°C		

Sample Container

14. Are aqueous VOC samples present?	No	
15. Are VOC samples collected in VOA Vials?	NA	
16. Is the head space less than 6-8 mm (pea sized or less)?	NA	
17. Was a trip blank (TB) included for VOC analyses?	NA	
18. Are non-VOC samples collected in the correct containers?	Yes	
19. Is the appropriate volume/weight or number of sample containers collected?	Yes	

Field Label

20. Were field sample labels filled out with the minimum information:		
Sample ID?	Yes	
Date/Time Collected?	No	
Collectors name?	No	

Sample Preservation

21. Does the COC or field labels indicate the samples were preserved?	No	
22. Are sample(s) correctly preserved?	NA	
24. Is lab filteration required and/or requested for dissolved metals?	No	

Multiphase Sample Matrix

26. Does the sample have more than one phase, i.e., multiphase?	No	
27. If yes, does the COC specify which phase(s) is to be analyzed?	NA	

Subcontract Laboratory

28. Are samples required to get sent to a subcontract laboratory?	No	
29. Was a subcontract laboratory specified by the client and if so who?	NA	Subcontract Lab: na

Comments/Resolution

Project has been seperated into 2 reports due to amount of samples. Workorders are as follows:
E204117 COC page 1&2 of 5, E204118 COC page 3,4 &5 of 5. Time sampled not provided on COC.

Client Instruction

Signature of client authorizing changes to the COC or sample disposition.

Date

envirotech Inc.

Project Information | Chain of Custody | Page 1 of 5

4/25/22 CC Per Client

Client: Mack
Project: Logan 35 SWD
Project Manager:
Address:
City, State, Zip Artesia, NM
Phone:
Email:
Report due by:

Bill To
Attention: ESS
Address: 2427 ~~Compress~~ County Rd
City, State, Zip Hobbs, NM
Phone:
Email: Natalie

Lab Use Only
Lab WO# E204117 | Job Number 20046-0001

TAT: 1D X | 2D ~~X~~ | 3D | Standard

EPA Program: CWA | SDWA | RCRA

State: NM X | CO | UT | AZ | TX

Analysis and Method: DRO/ORO by 8015 | GRO/DRO by 8015 | BTEX by 8021 | VOC by 8260 | Metals 6010 | Chloride 300.0 | BGDOC NM | BGDOC TX

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	BGDOC NM	Remarks
	4/20	S	1	Comp 24	1	X	
	〃	〃	〃	Comp 25	2	〃	
				Comp 26	3		
				Comp 27	4		
				Comp 28	5		
				Comp 29	6		
				Comp 30	7		
				Comp 31	8		
				Comp 32	9		
				Comp 33	10		

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by:

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	4/20	14:00		4/21/22	14:00
	4/21/22	15:15		4/22/22	10:00

Lab Use Only
Received on ice: Y / N
T1 T2 T3
AVG Temp °C 4

Sample Matrix: S - Soil, Sd - Solid, Sg - Sludge, A - Aqueous, O - Other
Container Type: g - glass, p - poly/plastic, ag - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

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Project Information

Chain of Custody

4/25/22 CC Per Client

Client: Mack	Bill To	Lab Use Only
Project: Logan 35 SWD	Attention: ESS	Lab WO# E204117
Project Manager:	Address: 2427 W County Rd	Job Number 20046-0001
Address:	City, State, Zip Hobbs, NM	
City, State, Zip Artesia, NM	Phone:	
Phone:	Email: Natalie	
Email:		
Report due by:		

TAT: 1D | 2D (marked) | 3D | Standard

EPA Program: CWA | SDWA | RCRA

State: NM (X) | CO | UT | AZ | TX

Analysis and Method

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0			BGDOC NM	BGDOC TX			Remarks
	4/20	S	1	Comp 34	11									X				
	4/20	S	1	Comp 35	12									X				
	4/20	S	1	Comp 36	13									X				
	4/20	S	1	Comp 37	14									X				
	4/20	S	1	Comp 38	15									X				
	4/20	S	1	Comp 39	16									X				
	4/20	S	1	Comp 40	17									X				
	4/20	S	1	Comp 41	18									X				
	4/20	S	1	Comp 42	19									X				
	4/20	S	1	Comp 43	20									X				

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: [signature]

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	4/20	14:00	[signature] KRB	4/21/22	14:00
[signature] KRB		15:15	[signature]	4/22/22	10:00

Lab Use Only

Received on ice: (Y) / N

T1 ____ T2 ____ T3 ____

AVG Temp °C 4

Sample Matrix: S - Soil, Sd - Solid, Sg - Sludge, A - Aqueous, O - Other ________

Container Type: g - glass, p - poly/plastic, ag - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

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Report to:

Natalie Gladden

5796 U.S. Hwy 64
Farmington, NM 87401

Phone: (505) 632-1881
Envirotech-inc.com

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Practical Solutions for a Better Tomorrow

Analytical Report

Mack Energy

Project Name: Logan 35 SWD

Work Order: E204118

Job Number: 20046-0001

Received: 4/22/2022

Revision: 1

Report Reviewed By:

Walter Hinchman
Laboratory Director
4/25/22

Envirotech Inc. certifies the test results meet all requirements of TNI unless noted otherwise.
Statement of Data Authenticity: Envirotech Inc, attests the data reported has not been altered in any way.
Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech Inc.
Envirotech Inc, holds the Utah TNI certification NM00979 for data reported.
Envirotech Inc, holds the Texas TNI certification T104704557 for data reported.
Envirotech Inc, holds the NM SDWA certification for data reported. (Lab #NM00979)

Date Reported: 4/25/22

Natalie Gladden
7 W. Compress Road
Artesia, NM 88210

Project Name: Logan 35 SWD
Workorder: E204118
Date Received: 4/22/2022 10:00:00AM

Natalie Gladden,

Thank you for choosing Envirotech, Inc. as your analytical testing laboratory for the sample(s) received on, 4/22/2022 10:00:00AM, under the Project Name: Logan 35 SWD.

The analytical test results summarized in this report with the Project Name: Logan 35 SWD apply to the individual samples collected, identified and submitted bearing the project name on the enclosed chain-of-custody. Subcontracted sample analyses not conducted by Envirotech, Inc., are attached in full as issued by the subcontract laboratory.

Please review the Chain-of-Custody (COC) and Sample Receipt Checklist (SRC) for any issues reguarding sample receipt temperature, containers, preservation etc. To best understand your test results, review the entire report summarizing your sample data and the associated quality control batch data.

All reported data in this analytical report were analyzed according to the referenced method(s) and are in compliance with the latest NELAC/TNI standards, unless otherwise noted. Samples or analytical quality control parameters not meeting specific QC criteria are qualified with a data flag. Data flag definitions are located in the Notes and Definitions section of this analytical report.

If you have any questions concerning this report, please feel free to contact Envirotech, Inc.

Respectfully,

Walter Hinchman
Laboratory Director
Office: 505-632-1881
Cell: 775-287-1762
whinchman@envirotech-inc.com

Raina Schwanz
Laboratory Administrator
Office: 505-632-1881
rainaschwanz@envirotech-inc.com

Alexa Michaels
Sample Custody Officer
Office: 505-632-1881
labadmin@envirotech-inc.com

Field Offices:

Southern New Mexico Area
Lynn Jarboe
Technical Representative/Client Services
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Sample Summary

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	04/25/22 16:52

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
Comp 44	E204118-01A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 45	E204118-02A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 46	E204118-03A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 47	E204118-04A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 48	E204118-05A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 49	E204118-06A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 50	E204118-07A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 51	E204118-08A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 52	E204118-09A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 53	E204118-10A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 54	E204118-11A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 55	E204118-12A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
Comp 56	E204118-13A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
SW Comp 1	E204118-14A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
SW Comp 2	E204118-15A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
SW Comp 3	E204118-16A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
SW Comp 4	E204118-17A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
SW Comp 5	E204118-18A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
SW Comp 6	E204118-19A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
SW Comp 7	E204118-20A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
SW Comp 8	E204118-21A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
SW Comp 9	E204118-22A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
SW Comp 10	E204118-23A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
SW Comp 11	E204118-24A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
SW Comp 12	E204118-25A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.
SW Comp 13	E204118-26A	Soil	04/20/22	04/22/22	Glass Jar, 4 oz.

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Comp 44

E204118-01

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*97.1 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.7 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*108 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Comp 45

E204118-02

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*105 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*88.4 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*112 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Comp 46

E204118-03

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*105 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*88.2 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*102 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Comp 47

E204118-04

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*105 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*87.7 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*105 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Comp 48

E204118-05

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*98.4 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*88.7 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*115 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Comp 49

E204118-06

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*97.7 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*88.8 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*114 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Comp 50

E204118-07

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*103 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*87.9 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*107 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Comp 51

E204118-08

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*107 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*87.6 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*127 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Comp 52

E204118-09

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*99.1 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*88.3 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*122 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Comp 53

E204118-10

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*99.7 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*88.8 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*121 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Comp 54

E204118-11

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/23/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/23/22	
Toluene	ND	0.0250	1	04/22/22	04/23/22	
o-Xylene	ND	0.0250	1	04/22/22	04/23/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/23/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/23/22	
Surrogate: 4-Bromochlorobenzene-PID		*104 %*	*70-130*	*04/22/22*	*04/23/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/23/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.4 %*	*70-130*	*04/22/22*	*04/23/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*120 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Comp 55

E204118-12

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: 4-Bromochlorobenzene-PID		*97.2 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*90.5 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*123 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Comp 56

E204118-13

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/23/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/23/22	
Toluene	ND	0.0250	1	04/22/22	04/23/22	
o-Xylene	ND	0.0250	1	04/22/22	04/23/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/23/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/23/22	
Surrogate: 4-Bromochlorobenzene-PID		*97.3 %*	*70-130*	*04/22/22*	*04/23/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/23/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.9 %*	*70-130*	*04/22/22*	*04/23/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*125 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

SW Comp 1

E204118-14

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/23/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/23/22	
Toluene	ND	0.0250	1	04/22/22	04/23/22	
o-Xylene	ND	0.0250	1	04/22/22	04/23/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/23/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/23/22	
Surrogate: 4-Bromochlorobenzene-PID		*97.1 %*	*70-130*	*04/22/22*	*04/23/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/23/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.7 %*	*70-130*	*04/22/22*	*04/23/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*128 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

SW Comp 2

E204118-15

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/23/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/23/22	
Toluene	ND	0.0250	1	04/22/22	04/23/22	
o-Xylene	ND	0.0250	1	04/22/22	04/23/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/23/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/23/22	
Surrogate: 4-Bromochlorobenzene-PID		*103 %*	*70-130*	*04/22/22*	*04/23/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/23/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.3 %*	*70-130*	*04/22/22*	*04/23/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*118 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

SW Comp 3

E204118-16

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/23/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/23/22	
Toluene	ND	0.0250	1	04/22/22	04/23/22	
o-Xylene	ND	0.0250	1	04/22/22	04/23/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/23/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/23/22	
Surrogate: 4-Bromochlorobenzene-PID		*96.0 %*	*70-130*	*04/22/22*	*04/23/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/23/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.7 %*	*70-130*	*04/22/22*	*04/23/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*113 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

SW Comp 4

E204118-17

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Benzene	ND	0.0250	1	04/22/22	04/23/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/23/22	
Toluene	ND	0.0250	1	04/22/22	04/23/22	
o-Xylene	ND	0.0250	1	04/22/22	04/23/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/23/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/23/22	
Surrogate: 4-Bromochlorobenzene-PID		*99.2 %*	*70-130*	*04/22/22*	*04/23/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217044
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/23/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*88.7 %*	*70-130*	*04/22/22*	*04/23/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*113 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

SW Comp 5

E204118-18

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*86.6 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*99.4 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*86.6 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*99.4 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*114 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

SW Comp 6

E204118-19

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*85.3 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*100 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*85.3 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*100 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*137 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

SW Comp 7

E204118-20

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*86.0 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*99.0 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*86.0 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*99.0 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217047
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*128 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217041
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

SW Comp 8

E204118-21

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*85.7 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*107 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*85.7 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*107 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217049
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*123 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217039
Chloride	ND	100	5	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

SW Comp 9

E204118-22

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*87.1 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*87.1 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*101 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217049
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*131 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217039
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

SW Comp 10

E204118-23

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*85.9 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*99.5 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*85.9 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*99.5 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217049
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*131 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217039
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

SW Comp 11

E204118-24

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*85.7 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*98.9 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*85.7 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*98.9 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217049
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*129 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217039
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

SW Comp 12

E204118-25

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*85.5 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*111 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*98.6 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*85.5 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*111 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*98.6 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217049
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*133 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217039
Chloride	ND	200	10	04/22/22	04/22/22	

Sample Data

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

SW Comp 13

E204118-26

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Benzene	ND	0.0250	1	04/22/22	04/22/22	
Ethylbenzene	ND	0.0250	1	04/22/22	04/22/22	
Toluene	ND	0.0250	1	04/22/22	04/22/22	
o-Xylene	ND	0.0250	1	04/22/22	04/22/22	
p,m-Xylene	ND	0.0500	1	04/22/22	04/22/22	
Total Xylenes	ND	0.0250	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*83.7 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*108 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*98.9 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: RKS			Batch: 2217045
Gasoline Range Organics (C6-C10)	ND	20.0	1	04/22/22	04/22/22	
Surrogate: Bromofluorobenzene		*83.7 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: 1,2-Dichloroethane-d4		*108 %*	*70-130*	*04/22/22*	*04/22/22*	
Surrogate: Toluene-d8		*98.9 %*	*70-130*	*04/22/22*	*04/22/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2217049
Diesel Range Organics (C10-C28)	ND	25.0	1	04/22/22	04/22/22	
Oil Range Organics (C28-C36)	ND	50.0	1	04/22/22	04/22/22	
Surrogate: n-Nonane		*92.0 %*	*50-200*	*04/22/22*	*04/22/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: RAS			Batch: 2217039
Chloride	ND	200	10	04/22/22	04/22/22	

QC Summary Data

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Volatile Organic Compounds by EPA 8260B

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217045-BLK1)									Prepared: 04/22/22 Analyzed: 04/22/22
Benzene	ND	0.0250							
Ethylbenzene	ND	0.0250							
Toluene	ND	0.0250							
o-Xylene	ND	0.0250							
p,m-Xylene	ND	0.0500							
Total Xylenes	ND	0.0250							
Surrogate: Bromofluorobenzene	*0.425*		*0.500*		*84.9*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.548*		*0.500*		*110*	*70-130*			
Surrogate: Toluene-d8	*0.500*		*0.500*		*100*	*70-130*			
LCS (2217045-BS1)									Prepared: 04/22/22 Analyzed: 04/22/22
Benzene	2.39	0.0250	2.50		95.5	70-130			
Ethylbenzene	2.43	0.0250	2.50		97.2	70-130			
Toluene	2.45	0.0250	2.50		97.9	70-130			
o-Xylene	2.35	0.0250	2.50		93.9	70-130			
p,m-Xylene	4.76	0.0500	5.00		95.2	70-130			
Total Xylenes	7.11	0.0250	7.50		94.8	70-130			
Surrogate: Bromofluorobenzene	*0.472*		*0.500*		*94.4*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.502*		*0.500*		*100*	*70-130*			
Surrogate: Toluene-d8	*0.531*		*0.500*		*106*	*70-130*			
Matrix Spike (2217045-MS1)				**Source: E204117-14**					Prepared: 04/22/22 Analyzed: 04/22/22
Benzene	2.44	0.0250	2.50	ND	97.6	48-131			
Ethylbenzene	2.50	0.0250	2.50	ND	100	45-135			
Toluene	2.49	0.0250	2.50	ND	99.8	48-130			
o-Xylene	2.41	0.0250	2.50	ND	96.4	43-135			
p,m-Xylene	4.84	0.0500	5.00	ND	96.8	43-135			
Total Xylenes	7.25	0.0250	7.50	ND	96.7	43-135			
Surrogate: Bromofluorobenzene	*0.479*		*0.500*		*95.7*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.523*		*0.500*		*105*	*70-130*			
Surrogate: Toluene-d8	*0.526*		*0.500*		*105*	*70-130*			
Matrix Spike Dup (2217045-MSD1)				**Source: E204117-14**					Prepared: 04/22/22 Analyzed: 04/22/22
Benzene	2.42	0.0250	2.50	ND	96.9	48-131	0.699	23	
Ethylbenzene	2.50	0.0250	2.50	ND	100	45-135	0.100	27	
Toluene	2.51	0.0250	2.50	ND	100	48-130	0.540	24	
o-Xylene	2.42	0.0250	2.50	ND	96.8	43-135	0.352	27	
p,m-Xylene	4.86	0.0500	5.00	ND	97.2	43-135	0.443	27	
Total Xylenes	7.28	0.0250	7.50	ND	97.1	43-135	0.413	27	
Surrogate: Bromofluorobenzene	*0.481*		*0.500*		*96.2*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.512*		*0.500*		*102*	*70-130*			
Surrogate: Toluene-d8	*0.528*		*0.500*		*106*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Volatile Organics by EPA 8021B

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217044-BLK1)									Prepared: 04/22/22 Analyzed: 04/23/22
Benzene	ND	0.0250							
Ethylbenzene	ND	0.0250							
Toluene	ND	0.0250							
o-Xylene	ND	0.0250							
p,m-Xylene	ND	0.0500							
Total Xylenes	ND	0.0250							
Surrogate: 4-Bromochlorobenzene-PID	*8.37*		*8.00*		*105*	*70-130*			
LCS (2217044-BS1)									Prepared: 04/22/22 Analyzed: 04/23/22
Benzene	4.21	0.0250	5.00		84.2	70-130			
Ethylbenzene	4.46	0.0250	5.00		89.2	70-130			
Toluene	4.52	0.0250	5.00		90.4	70-130			
o-Xylene	4.69	0.0250	5.00		93.7	70-130			
p,m-Xylene	9.21	0.0500	10.0		92.1	70-130			
Total Xylenes	13.9	0.0250	15.0		92.7	70-130			
Surrogate: 4-Bromochlorobenzene-PID	*8.39*		*8.00*		*105*	*70-130*			
Matrix Spike (2217044-MS1)				**Source: E204118-01**					Prepared: 04/22/22 Analyzed: 04/23/22
Benzene	4.62	0.0250	5.00	ND	92.4	54-133			
Ethylbenzene	4.87	0.0250	5.00	ND	97.4	61-133			
Toluene	4.96	0.0250	5.00	ND	99.1	61-130			
o-Xylene	5.12	0.0250	5.00	ND	102	63-131			
p,m-Xylene	10.0	0.0500	10.0	ND	100	63-131			
Total Xylenes	15.2	0.0250	15.0	ND	101	63-131			
Surrogate: 4-Bromochlorobenzene-PID	*7.96*		*8.00*		*99.5*	*70-130*			
Matrix Spike Dup (2217044-MSD1)				**Source: E204118-01**					Prepared: 04/22/22 Analyzed: 04/23/22
Benzene	4.47	0.0250	5.00	ND	89.3	54-133	3.38	20	
Ethylbenzene	4.71	0.0250	5.00	ND	94.2	61-133	3.39	20	
Toluene	4.79	0.0250	5.00	ND	95.8	61-130	3.42	20	
o-Xylene	4.95	0.0250	5.00	ND	99.0	63-131	3.40	20	
p,m-Xylene	9.70	0.0500	10.0	ND	97.0	63-131	3.51	20	
Total Xylenes	14.7	0.0250	15.0	ND	97.7	63-131	3.47	20	
Surrogate: 4-Bromochlorobenzene-PID	*7.92*		*8.00*		*99.0*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Nonhalogenated Organics by EPA 8015D - GRO

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217044-BLK1)									Prepared: 04/22/22 Analyzed: 04/23/22
Gasoline Range Organics (C6-C10)	ND	20.0							
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.08*		*8.00*		*88.5*	*70-130*			
LCS (2217044-BS2)									Prepared: 04/22/22 Analyzed: 04/23/22
Gasoline Range Organics (C6-C10)	46.8	20.0	50.0		93.6	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.18*		*8.00*		*89.8*	*70-130*			
Matrix Spike (2217044-MS2)				**Source: E204118-01**					Prepared: 04/22/22 Analyzed: 04/23/22
Gasoline Range Organics (C6-C10)	50.9	20.0	50.0	ND	102	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.12*		*8.00*		*89.0*	*70-130*			
Matrix Spike Dup (2217044-MSD2)				**Source: E204118-01**					Prepared: 04/22/22 Analyzed: 04/23/22
Gasoline Range Organics (C6-C10)	49.5	20.0	50.0	ND	98.9	70-130	2.90	20	
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.01*		*8.00*		*87.7*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Nonhalogenated Organics by EPA 8015D - GRO

Analyst: RKS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217045-BLK1)									Prepared: 04/22/22 Analyzed: 04/22/22
Gasoline Range Organics (C6-C10)	ND	20.0							
Surrogate: Bromofluorobenzene	*0.425*		*0.500*		*84.9*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.548*		*0.500*		*110*	*70-130*			
Surrogate: Toluene-d8	*0.500*		*0.500*		*100*	*70-130*			
LCS (2217045-BS2)									Prepared: 04/22/22 Analyzed: 04/22/22
Gasoline Range Organics (C6-C10)	55.8	20.0	50.0		112	70-130			
Surrogate: Bromofluorobenzene	*0.459*		*0.500*		*91.8*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.503*		*0.500*		*101*	*70-130*			
Surrogate: Toluene-d8	*0.533*		*0.500*		*107*	*70-130*			
Matrix Spike (2217045-MS2)				**Source: E204117-14**					Prepared: 04/22/22 Analyzed: 04/25/22
Gasoline Range Organics (C6-C10)	53.1	20.0	50.0	ND	106	70-130			
Surrogate: Bromofluorobenzene	*0.496*		*0.500*		*99.2*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.481*		*0.500*		*96.1*	*70-130*			
Surrogate: Toluene-d8	*0.501*		*0.500*		*100*	*70-130*			
Matrix Spike Dup (2217045-MSD2)				**Source: E204117-14**					Prepared: 04/22/22 Analyzed: 04/25/22
Gasoline Range Organics (C6-C10)	53.3	20.0	50.0	ND	107	70-130	0.354	20	
Surrogate: Bromofluorobenzene	*0.491*		*0.500*		*98.1*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*0.486*		*0.500*		*97.2*	*70-130*			
Surrogate: Toluene-d8	*0.509*		*0.500*		*102*	*70-130*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Nonhalogenated Organics by EPA 8015D - DRO/ORO

Analyst: JL

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217047-BLK1)									Prepared: 04/22/22 Analyzed: 04/22/22
Diesel Range Organics (C10-C28)	ND	25.0							
Oil Range Organics (C28-C36)	ND	50.0							
Surrogate: n-Nonane	*52.3*		*50.0*		*105*	*50-200*			
LCS (2217047-BS1)									Prepared: 04/22/22 Analyzed: 04/22/22
Diesel Range Organics (C10-C28)	518	25.0	500		104	38-132			
Surrogate: n-Nonane	*58.2*		*50.0*		*116*	*50-200*			
Matrix Spike (2217047-MS1)				**Source: E204118-14**					Prepared: 04/22/22 Analyzed: 04/22/22
Diesel Range Organics (C10-C28)	513	25.0	500	ND	103	38-132			
Surrogate: n-Nonane	*54.6*		*50.0*		*109*	*50-200*			
Matrix Spike Dup (2217047-MSD1)				**Source: E204118-14**					Prepared: 04/22/22 Analyzed: 04/22/22
Diesel Range Organics (C10-C28)	489	25.0	500	ND	97.7	38-132	4.91	20	
Surrogate: n-Nonane	*52.5*		*50.0*		*105*	*50-200*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Nonhalogenated Organics by EPA 8015D - DRO/ORO

Analyst: JL

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217049-BLK1)									Prepared: 04/22/22 Analyzed: 04/22/22
Diesel Range Organics (C10-C28)	ND	25.0							
Oil Range Organics (C28-C36)	ND	50.0							
Surrogate: n-Nonane	*56.2*		*50.0*		*112*	*50-200*			
LCS (2217049-BS1)									Prepared: 04/22/22 Analyzed: 04/22/22
Diesel Range Organics (C10-C28)	509	25.0	500		102	38-132			
Surrogate: n-Nonane	*58.8*		*50.0*		*118*	*50-200*			
Matrix Spike (2217049-MS1)				**Source: E204118-21**					Prepared: 04/22/22 Analyzed: 04/22/22
Diesel Range Organics (C10-C28)	519	25.0	500	ND	104	38-132			
Surrogate: n-Nonane	*59.1*		*50.0*		*118*	*50-200*			
Matrix Spike Dup (2217049-MSD1)				**Source: E204118-21**					Prepared: 04/22/22 Analyzed: 04/22/22
Diesel Range Organics (C10-C28)	521	25.0	500	ND	104	38-132	0.265	20	
Surrogate: n-Nonane	*57.9*		*50.0*		*116*	*50-200*			

QC Summary Data

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Anions by EPA 300.0/9056A

Analyst: RAS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217039-BLK1)									Prepared: 04/22/22 Analyzed: 04/22/22
Chloride	ND	20.0							
LCS (2217039-BS1)									Prepared: 04/22/22 Analyzed: 04/22/22
Chloride	254	20.0	250		102	90-110			
Matrix Spike (2217039-MS1)				**Source: E204116-01**					Prepared: 04/22/22 Analyzed: 04/22/22
Chloride	259	20.0	250	ND	104	80-120			
Matrix Spike Dup (2217039-MSD1)				**Source: E204116-01**					Prepared: 04/22/22 Analyzed: 04/22/22
Chloride	297	20.0	250	ND	119	80-120	13.6	20	

QC Summary Data

Mack Energy	Project Name:	Logan 35 SWD	**Reported:**
7 W. Compress Road	Project Number:	20046-0001	
Artesia NM, 88210	Project Manager:	Natalie Gladden	4/25/2022 4:52:31PM

Anions by EPA 300.0/9056A

Analyst: RAS

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2217041-BLK1)									Prepared: 04/22/22 Analyzed: 04/22/22
Chloride	ND	20.0							
LCS (2217041-BS1)									Prepared: 04/22/22 Analyzed: 04/22/22
Chloride	251	20.0	250		101	90-110			
Matrix Spike (2217041-MS1)				**Source: E204118-01**					Prepared: 04/22/22 Analyzed: 04/22/22
Chloride	318	200	250	ND	127	80-120			M6
Matrix Spike Dup (2217041-MSD1)				**Source: E204118-01**					Prepared: 04/22/22 Analyzed: 04/22/22
Chloride	406	200	250	ND	162	80-120	24.2	20	M6, R3

QC Summary Report Comment:
Calculations are based off of the raw (non-rounded) data. However, for reporting purposes all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Definitions and Notes

Mack Energy	Project Name:	Logan 35 SWD	
7 W. Compress Road	Project Number:	20046-0001	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gladden	04/25/22 16:52

M6	Matrix spike recovery has a high bias. The native sample results were below the RL, but appears to have contributed to high MS recoveries.
R3	The RPD exceeded the acceptance limit. LCS spike recovery met acceptance criteria.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference
DNI	Did Not Ignite

Note (1): Methods marked with ** are non-accredited methods.

Note (2): Soil data is reported on an "as received" weight basis, unless reported otherwise.

Project Information | Chain of Custody | Page 3 of 5

Client:	Mack
Project:	Logan 35
Project Manager:	
Address:	
City, State, Zip	Artesia, NM
Phone:	
Email:	
Report due by:	

Bill To

Attention:	ESS
Address:	2427 County Rd
City, State, Zip	Hobbs, NM
Phone:	
Email:	Natalie

Lab Use Only

Lab WO#	Job Number
E 204118	20046-0001

TAT

1D	2D	3D	Standard
1	2		

EPA Program

CWA	SDWA	RCRA

State

NM	CO	UT	AZ	TX	
X					

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0			BGDOC NM	BGDOC TX			Remarks
	4/20	S	1	Comp 44	1									X				
				Comp 45	2													
				Comp 46	3													
				Comp 47	4													
				Comp 48	5													
				Comp 49	6													
				Comp 50	7													
				Comp 51	8													
				Comp 52	9													
				Comp 53	10													

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: Dakota Young

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Dakota Young	4/20	14:00	RB	4/21/22	14:00
RB	4/21/22	15:15	Caitlin Christian	4/22/22	10:00

Lab Use Only
Received on ice: (Y) / N
T1 T2 T3
AVG Temp °C 4

Sample Matrix: **S** - Soil, **Sd** - Solid, **Sg** - Sludge, **A** - Aqueous, **O** - Other _____

Container Type: **g** - glass, **p** - poly/plastic, **ag** - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

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Project Information | Chain of Custody | Page 4 of 5

Client:	Mack
Project:	Logan 35
Project Manager:	
Address:	
City, State, Zip	Artesia, NM
Phone:	
Email:	
Report due by:	

Bill To

Attention:	ESS
Address:	2427 W County Rd
City, State, Zip	Hobbs, NM
Phone:	
Email:	Natalie

Lab Use Only

Lab WO#	Job Number
E204118	20046-0001

TAT

1D	2D	3D	Standard
1	~~2~~		

EPA Program

CWA	SDWA	RCRA

State

NM	CO	UT	AZ	TX	
X					

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0			BGDOC NM	BGDOC TX			Remarks
	4/20	S	1	Comp 54	11									X				
				Comp 55	12													
				comp 56	13													
				SW Comp 1	14													
				SW comp 2	15													
				SW comp 3	16													
				SW Comp 4	17													
				SW Comp 5	18													
				SW Comp 6	19													
				SW Comp 7	20													

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. 14:00 Sampled by:

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	4/20	~~14:00~~		4/21/22	14:00
	4/21/22	15:45		4/22/22	10:00

Lab Use Only
Received on ice: (Y) / N
T1 T2 T3
AVG Temp °C 4

Sample Matrix: **S** - Soil, **Sd** - Solid, **Sg** - Sludge, **A** - Aqueous, **O** - Other _____

Container Type: **g** - glass, **p** - poly/plastic, **ag** - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

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Project Information | Chain of Custody | Page 5 of 5

Client:	Mack
Project:	Logan 35
Project Manager:	
Address:	
City, State, Zip	Artesia, NM
Phone:	
Email:	
Report due by:	

Bill To

Attention:	ESS
Address:	2427 W County Rd
City, State, Zip	Hobbs, NM
Phone:	
Email:	Natalie

Lab Use Only

Lab WO#	Job Number
E204118	20046-0001

TAT

1D	2D	3D	Standard
1	2		

EPA Program

CWA	SDWA	RCRA

State

NM	CO	UT	AZ	TX	
X					

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0			BGDOC NM	BGDOC TX			Remarks
	4/20	S	1	SW Comp 8	21									X				
				SW Comp 9	22													
				SW Comp 10	23													
				SW Comp 11	24													
				SW Comp 12	25													
				SW Comp 13	26													

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by:

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	4/20	14:00		4/21/22	14:00
	4/21/22	17:15		4/22/22	10:00

Lab Use Only

Received on ice: (Y)/ N

T1 T2 T3

AVG Temp °C 4

Sample Matrix: **S** - Soil, **Sd** - Solid, **Sg** - Sludge, **A** - Aqueous, **O** - Other

Container Type: **g** - glass, **p** - poly/plastic, **ag** - amber glass, **v** - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

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Envirotech Analytical Laboratory

Printed: 4/22/2022 11:41:26AM

Sample Receipt Checklist (SRC)

Instructions: Please take note of any NO checkmarks.
If we receive no response concerning these items within 24 hours of the date of this notice, all the samples will be analyzed as requested.

Client:	Mack Energy	Date Received:	04/22/22 10:00	Work Order ID:	E204118
Phone:	(575) 390-6397	Date Logged In:	04/22/22 09:00	Logged In By:	Caitlin Christian
Email:	Natalie@energystaffingllc.com	Due Date:	04/22/22 17:00 (0 day TAT)		

Chain of Custody (COC)

1. Does the sample ID match the COC?	Yes	
2. Does the number of samples per sampling site location match the COC	Yes	
3. Were samples dropped off by client or carrier?	Yes	Carrier: FedEx
4. Was the COC complete, i.e., signatures, dates/times, requested analyses?	No	
5. Were all samples received within holding time? Note: Analysis, such as pH which should be conducted in the field, i.e, 15 minute hold time, are not included in this disucssion.	Yes	

Sample Turn Around Time (TAT)

6. Did the COC indicate standard TAT, or Expedited TAT?	Yes	

Sample Cooler

7. Was a sample cooler received?	Yes	
8. If yes, was cooler received in good condition?	Yes	
9. Was the sample(s) received intact, i.e., not broken?	Yes	
10. Were custody/security seals present?	No	
11. If yes, were custody/security seals intact?	NA	
12. Was the sample received on ice? If yes, the recorded temp is 4°C, i.e., 6°±2°C Note: Thermal preservation is not required, if samples are received w/i 15 minutes of sampling	Yes	
13. If no visible ice, record the temperature. Actual sample temperature: 4°C		

Sample Container

14. Are aqueous VOC samples present?	No	
15. Are VOC samples collected in VOA Vials?	NA	
16. Is the head space less than 6-8 mm (pea sized or less)?	NA	
17. Was a trip blank (TB) included for VOC analyses?	NA	
18. Are non-VOC samples collected in the correct containers?	Yes	
19. Is the appropriate volume/weight or number of sample containers collected?	Yes	

Field Label

20. Were field sample labels filled out with the minimum information:		
Sample ID?	Yes	
Date/Time Collected?	No	
Collectors name?	No	

Sample Preservation

21. Does the COC or field labels indicate the samples were preserved?	No	
22. Are sample(s) correctly preserved?	NA	
24. Is lab filteration required and/or requested for dissolved metals?	No	

Multiphase Sample Matrix

26. Does the sample have more than one phase, i.e., multiphase?	No	
27. If yes, does the COC specify which phase(s) is to be analyzed?	NA	

Subcontract Laboratory

28. Are samples required to get sent to a subcontract laboratory?	No	
29. Was a subcontract laboratory specified by the client and if so who?	NA	Subcontract Lab: na

Comments/Resolution

Project has been seperated into 2 reports due to amount of samples. Workorders are as follows:
E204117 COC page 1&2 of 5, E204118 COC page 3,4 &5 of 5. Time sampled not provided on COC.

Client Instruction

Signature of client authorizing changes to the COC or sample disposition.

Date

envirotech Inc.

Project Information

Chain of Custody

4/25/22 CC Per Client

Client: Mack
Project: Logan 35 SWD
Project Manager:
Address:
City, State, Zip Artesia, NM
Phone:
Email:
Report due by:

Bill To
Attention: ESS
Address: 2427 County Rd
City, State, Zip Hobbs, NM
Phone:
Email: Natalie

Lab Use Only
Lab WO#: E204118
Job Number: 20046-0001

TAT: 1D | 2D | 3D | Standard — 1D (crossed out 2D)

EPA Program: CWA | SDWA | RCRA

State: NM (X) | CO | UT | AZ | TX

Analysis and Method

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0			BGDOC NM	BGDOC TX			Remarks
	4/20	S	1	Comp 44	1									X				
				Comp 45	2													
				Comp 46	3													
				Comp 47	4													
				Comp 48	5													
				Comp 49	6													
				Comp 50	7													
				Comp 51	8													
				Comp 52	9													
				Comp 53	10													

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: [illegible]

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Traiku durof	4/20	14:00	TRB	4/21/22	14:00
TRB	4/21/22	15:15	Caitlin Christen	4/22/22	10:00

Lab Use Only
Received on ice: (Y) / N
T1 ____ T2 ____ T3 ____
AVG Temp °C 4

Sample Matrix: S - Soil, Sd - Solid, Sg - Sludge, A - Aqueous, O - Other ______

Container Type: g - glass, p - poly/plastic, ag - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

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Project Information | Chain of Custody | Page 4 of 5

4/25/22 CC Per Client

Client: Mack
Project: Logan 35 SWD
Project Manager:
Address:
City, State, Zip Artesia, NM
Phone:
Email:
Report due by:

Bill To
Attention: ESS
Address: 2427 W County Rd
City, State, Zip Hobbs, NM
Phone:
Email: Natalie

Lab Use Only
Lab WO# E204118 | Job Number 20046-0001

TAT: 1D | 2D | 3D | Standard

EPA Program: CWA | SDWA | RCRA

State: NM | CO | UT | AZ | TX

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0	BGDOC NM	BGDOC TX	Remarks
	4/20	S	1	Comp 54	11							X		
				Comp 55	12									
				comp 56	13									
				SW Comp 1	14									
				SW comp 2	15									
				SW comp 3	16									
				SW Comp 4	17									
				SW Comp 5	18									
				SW Comp 6	19									
				SW Comp 7	20									

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by:

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	4/20	14:00		4/21/22	14:00
	4/21/22	15:45		4/22/22	10:00

Lab Use Only
Received on ice: Y / N
T1 T2 T3
AVG Temp °C 4

Sample Matrix: S - Soil, Sd - Solid, Sg - Sludge, A - Aqueous, O - Other
Container Type: g - glass, p - poly/plastic, ag - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

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Project Information | Chain of Custody | Page 5 of 5

4/25/22 CC Per Client

Client: Mack	
Project: Logan 35 SWD	
Project Manager:	
Address:	
City, State, Zip Artesia, NM	
Phone:	
Email:	
Report due by:	

Bill To

Attention: ESS	
Address: 2427 W County Rd	
City, State, Zip Hobbs, NM	
Phone:	
Email: Natalie	

Lab Use Only		TAT				EPA Program	
Lab WO# E204118	Job Number 20046-0001	1D	2D	3D	Standard	CWA	SDWA
		1	X				

Analysis and Method

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0			BGDOC NM	BGDOC TX			Remarks
	4/20	S	1	SW Comp 8	21									X				
				SW Comp 9	22													
				SW Comp 10	23													
				SW Comp 11	24													
				SW Comp 12	25													
				SW Comp 13	26													

RCRA	State						
	NM	CO	UT	AZ	TX		
	X						

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by:

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	4/20	14:00		4/21/22	14:00
	4/21/22	15:15		4/22/22	10:00

Lab Use Only
Received on ice: Y / N
T1 T2 T3
AVG Temp °C 4

Sample Matrix: S - Soil, Sd - Solid, Sg - Sludge, A - Aqueous, O - Other _____

Container Type: g - glass, p - poly/plastic, ag - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

envirotech

REDWOOD OPERATING LLC

LOGAN 35 SWD

EXCAVATION AND FINAL PHOTOS


Apr 4, 2022 13:13:19
32.684897N 104.396468W
5805 7 Rivers Highway
Artesia
Eddy County
New Mexico
Redwood Logan SWD . Remediation


Apr 4, 2022 08:35:54
32.784813N 104.249956W
Little Diamond Road
Artesia
Eddy County
New Mexico
Redwood Logan SWD ..Remediation


Apr 4, 2022 14:34:29
32.784419N 104.250378W
5805 7 Rivers Highway
Artesia
Eddy County
New Mexico
Redwood Logan SWD ..Remediation


WGS84 32.78573,
±16ft -104.24987
ft
±11ft 3617
°,T
±12 SW226
18Apr22 08:41 Ad-hoc Redwood Logan 35 SWD
163 Little Diamond Rd, Artesia NM 88210, US 18-Apr-22 08:41:40


WGS84 32.78478,
±16ft -104.24997
ft
±11ft 3614
°,T
±12 NW341
18Apr22 08:44 Ad-hoc Redwood Logan 35 SWD
Artesia NM 88210, United States 18-Apr-22 08:44:23


WGS84 32.78539,
±16ft -104.25004
ft
±11ft 3615
°,T
±12 S187
18Apr22 08:43 Ad-hoc Redwood Logan 35 SWD
163 Little Diamond Rd, Artesia NM 88210, US 18-Apr-22 08:43:04


WGS84 32.78536,
±16ft -104.25006
ft
±11ft 3618
°T
±12 S180
18Apr22 08:45 Ad-hoc Redwood Logan 35 SWD
163 Little Diamond Rd, Artesia NM 88210, US @ 18-Apr-22 08:45:35


WGS84 32.78514,
±12ft -104.24994
ft
±10ft 3613
°,T
±13 SW235
11Apr22 13:17 Ad-hoc Redwood Logan 35 SWD
163 Little Diamond Rd, Artesia NM 88210, US 11-Apr-22 13:17:42


WGS84 32.78480,
±16ft -104.25005
ft
±11ft 3613
°,T
±12 N5
11Apr22 10:42 Ad-hoc Redwood Logan 35 SWD
Artesia NM 88210, United States © 11-Apr-22 10:42:37


WGS84 32.78513,
±12ft -104.24995
ft
±10ft 3609
°,T
±13 SW249
DEERE
11Apr22 13:17 Ad-hoc Redwood Logan 35 SWD
163 Little Diamond Rd, Artesia NM 88210, US 11-Apr-22 13:17:37


WGS84 32.78505,
±15ft -104.25001
ft
±12ft 3611
°,T
±12 N348
DEERE
11Apr22 10:41 Ad-hoc Redwood Logan 35 SWD
163 Little Diamond Rd, Artesia NM 88210, US 11-Apr-22 10:41:48


WGS84 32.78511,
±12ft -104.25004
ft
±10ft 3619
°,T
±12 NW337
DEERE
11Apr22 10:43 Ad-hoc Redwood Logan 35 SWD
163 Little Diamond Rd, Artesia NM 88210, US 11-Apr-22 10:43:30


WGS84 32.78479,
±16ft -104.24997
ft
±11ft 3613
°,T
±12 N348
11Apr22 10:42 Ad-hoc Redwood Logan 35 SWD
Artesia NM 88210, United States 11-Apr-22 10:42:27


WGS84 32.78567,
±12ft -104.25021
ft
±10ft 3615
°,T
±12 E94
18Apr22 08:42 Ad-hoc Redwood Logan 35 SWD
163 Little Diamond Rd, Artesia NM 88210, US
18-Apr-22 08:42:22

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Page 3

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	<50 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☒ Yes ☐ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

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

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

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

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Page 4

State of New Mexico
Oil Conservation Division

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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: Natalie Gladden Title: Env + Reg Director

Signature: Natalie Gladden Date: 7/17/22

email: natalie@energystaffingllc.com Telephone: 575-390-6397

OCD Only

Received by: _____ Date: _____

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Page 6

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

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

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

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

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

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

☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Natalie Gladden Title: Env. + Reg. Director

Signature: Natalie Gladden Date: 7/17/22

email: natalie@energystaffingllc.com Telephone: 575-390-6357

OCD Only

Received by: _____ Date: _____

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

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 128371

CONDITIONS

Operator:	OGRID:
Redwood Operating LLC PO Box 1370 Artesia, NM 88210	330211
	Action Number: 128371
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
rhamlet	We have received your closure report and final C-141 for Incident #NAPP2124247509 LOGAN 35 SWD, thank you. This closure is approved.	11/17/2022