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

State of New Mexico
Energy Minerals and Natural Resources Department

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

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

Incident ID	NCS1913741281
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party Hilcorp Energy Company	OGRID 372171
Contact Name Jennifer Deal	Contact Telephone 505-801-6517
Contact email jdeal@hilcorp.com	Incident # NCS1913741281
Contact mailing address 382 Road 3100, Aztec NM 87410	

Location of Release Source

Latitude 36.7778969 Longitude -107.8062668
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Mansfield 11	Site Type Gas Well
Date Release Discovered 5/2/2019 @ 4:00pm	API# *30-045-20992*

Unit Letter	Section	Township	Range	County
N	29	30N	09W	San Juan

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

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls) 10.44	Volume Recovered (bbls) 0
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☒ Other (describe) Historic Contamination	Volume/Weight Released (provide units) Unknown	Volume/Weight Recovered (provide units)

Cause of Release
While digging to install a new BGT at the Mansfield 11 historic contamination was encountered at approximately 4 feet deep. Hilcorp will assess the contamination to determine a path forward.

Incident ID	NCS1913741281
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?	25-28 (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.

State of New Mexico
Oil Conservation Division

Incident ID	NCS1913741281
District RP	
Facility ID	
Application ID	

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

Printed Name: ___Jennifer Deal_____ Title: ____Environmental Specialist_____

Signature:_____ Jennifer Deal _____ Date: __2/19/2020_____

email: ___jdeal@hilcorp.com_____ Telephone: ___(505) 324-5128_____

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	NCS1913741281
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

☒ Detailed description of proposed remediation technique
☒ Scaled sitemap with GPS coordinates showing delineation points
☒ Estimated volume of material to be remediated
☒ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
☒ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☐ Extents of contamination must be fully delineated.

☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: ____Jennifer Deal_____ Title: ___Environmental Specialist_____

Signature: _____ Jennifer Deal _____ Date: __2/19/2020_____

email: ___jdeal@hilcorp.com_____ Telephone: ____505-324-5128_____

OCD Only

Received by: OCD Date: 2/16/2020

☐ Approved ☒ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____ Date: 6/12/2020

COA attached/Emailed to Operator

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: Mitch Killough Title: Environmental Specialist

Signature: _____ Date: 1/13/2023

email: mkillough@hilcorp.com Telephone: 713-757-5247

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: Nelson Velez Date: 03/20/2023

Printed Name: Nelson Velez Title: Environmental Specialist – Adv

ENSOLUM

CLOSURE REPORT

Property:

Mansfield 11
Hilcorp Energy Company
San Juan County, New Mexico

New Mexico EMNRD OCD Incident No. NCS1913741281

January 13, 2023

Prepared for:

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

Prepared by:

Stuart Hyde, LG
Senior Geologist

Ashley Ager, MS, PG
Principal

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ATTACHMENTS

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Appendices

1.0 INTRODUCTION

Ensolum, LLC (Ensolum), on behalf of Hilcorp Energy Company (Hilcorp), presents this *Closure Report* for a historical release at the Mansfield 11 natural gas production well (Site). The Site is located on land managed by the Bureau of Land Management (BLM) in Unit N, Section 29, Township 30 South, Range 9 West in rural San Juan County, New Mexico (Figure 1).

1.1 Site Background

On May 2, 2019, Hilcorp discovered soil impacted by a historical release of unknown volume during installation of a new below grade tank (BGT). Upon discovery, Hilcorp submitted an initial Form C-141 *Release Notification* to the New Mexico Oil Conservation Division (NMOCD) and the release was assigned incident number NCS1913741281. In May of 2019, initial excavation activities were performed by Hilcorp and approximately 2,000 cubic yards of impacted soil and clean overburden were excavated at the Site. In total, 1,425 cubic yards of impacted soil were transported for off-Site disposal to a landfarm operated by Envirotech, Inc. in San Juan County, New Mexico. Based on the continued presence of petroleum hydrocarbons in the floor and sidewalls of the excavation, Hilcorp retained LT Environmental, Inc. (LTE) to conduct delineation activities and assess the vertical and lateral extent of impacts. Further information regarding delineation and remediation activities were presented in LTE's *Remediation Work Plan* dated September 13, 2019 and summarized below.

1.2 Site Characterization and Closure Criteria

As presented in LTE's 2019 *Remediation Work Plan*, the Site was characterized to determine applicability of Table I, *Closure Criteria for Soils Impacted by a Release*, of Title 19, Chapter 15, Part 29 (19.15.29) of the New Mexico Administrative Code (NMAC). Based on the assessment, the following NMOCD Table I Closure Criteria (Closure Criteria) apply to the Site:

- Benzene: 10 milligrams per kilogram (mg/kg)
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX): 50 mg/kg
- Total petroleum hydrocarbons (TPH) as gasoline range organics (GRO), diesel range organics (DRO), and motor oil range organics (MRO): 100 mg/kg
- Chloride: 600 mg/kg

2.0 2019 SITE INVESTIGATION ACTIVITIES

Between August 19, 2019, and August 22, 2019, five borings (shown on Figure 2) were advanced at the Site using a 75 Central Mining Equipment (CME) hollow-stem auger drilling rig to depths ranging from 28 feet to 32 feet below ground surface (bgs). Soil borings were advanced in each cardinal direction outside of the known impacted area and open excavation. During drilling, soil was inspected for the presence or absence of petroleum hydrocarbon odor and/or staining. Soil samples were also field screened using a photoionization detector (PID) to monitor for the presence of volatile organic compounds (VOCs). Two soil samples from each soil boring were submitted for laboratory analysis; one from the most impacted interval based on field screening results and one at the terminus of the boring. Soil samples were submitted for laboratory analysis of BTEX by United States Environmental Protection Agency (EPA) Method 8021, TPH-gasoline range organics (GRO), TPH-diesel range organics (DRO), and TPH-motor oil range organics (MRO) by EPA Method 8015, and chloride by EPA Method 300.0.

Soil analytical results indicated that benzene, BTEX, TPH, and chloride concentrations were all in compliance with the applicable Site Closure Criteria. Based on this data, the aerial extent of impacted soil was limited to areas within the bounds of borings MW01 to MW04 shown on Figure 2. Soil analytical results collected from borings MW01 through MW05 are summarized in attached Table 1.

2.1 Groundwater Monitoring Well Installation and Sampling

Groundwater was encountered during drilling and all borings were converted to permanent groundwater monitoring wells MW01 through MW05. As requested by the NMOCD in their July 22, 2019 email (Appendix A), groundwater samples were submitted for laboratory analysis of VOCs by EPA Method 8260B, general water chemistry parameters including total dissolved solids (TDS) by EPA Standard Method 2540C, alkalinity by EPA Standard Method 2320B, anions (bromide, chloride, sulfate, fluoride, nitrite-nitrate, and phosphorus) by EPA Method 300.0, and cations (calcium, iron, magnesium, potassium, and sodium) by EPA Method 200.7.

As recommended in LTE's *Remediation Work Plan* and approved by the NMOCD on December 3, 2019 (Appendix A), Hilcorp and/or a third-party environmental consultant has continued to perform quarterly groundwater gauging and sampling since the installation of the monitoring wells (between August 2019 and December 2022). Groundwater sampling results are further summarized in Section 5.0.

3.0 SMALL LANDFARM REGISTRATION

LTE's *Remediation Work Plan* recommended excavating the remaining TPH impacted soil at the Site and disposing at an off-Site permitted facility. However, a *Revised Remediation Work Plan* (prepared by LTE and dated February 18, 2020) was submitted to the NMOCD requesting that the impacted soil be excavated and remediated using biopiles at the nearby Mansfield #11N well pad. The NMOCD approved the *Revised Remediation Work Plan* (email dated June 12, 2020, Appendix A) but presented a Condition of Approval that Hilcorp must remediate soils through the construction of a "small landfarm" pursuant to 19.15.36.16 NMAC (regulations governing surface waste management facilities) instead of through the use of biopiles.

As such, Hilcorp submitted *Form C-137 EZ Registration/ Final Closure Report for Small Landfarm* on September 13, 2021 to the NMOCD Permitting Group for review and approval of a small landfarm at the Mansfield #11N well pad. The small landfarm registration was approved by the NMOCD on October 15, 2021 (Appendix B) and the landfarm was constructed in June 2022 prior to beginning additional remediation activities.

4.0 2022 REMEDIATION ACTIVITIES

Based on the soil and groundwater sample results collected in 2019 from the initial excavation and the soil and groundwater subsurface investigation, additional excavation activities were performed in June 2022. Prior to beginning work, the NMOCD and BLM were notified on June 13, 2022 via email of excavation and sampling activities (Appendix A). To direct excavation activities during these events, Ensolum personnel were on Site on June 15, 16, and 17, 2022 to field screen soil for VOCs using a calibrated PID. Approximately 210 cubic yards of impacted soil were removed from the Site and transported to the small landfarm located at the nearby Mansfield #11N well pad.

Based on field screening results, a majority of the impacted soil had been removed from the excavation by June 17, 2022. However, a thin interval of impacted soil (approximately 8 to 12 inches thick) remained at the base of the east sidewall of the excavation, at the interface between unconsolidated soil and consolidated sandstone. Because of the depth of the excavation (20 feet) and the slope of the east sidewall extending toward well MW04 (approximately 14 feet east of the toe and 2 feet from the top of the excavation), additional soil could not be removed without compromising or destroying the well. At that point, all accessible impacted soil had been removed. Based on the location of the toe of the excavation in relation to monitoring well MW04, the remaining impacted soil measured approximately 25 feet (north-south) by 15 feet (to the east) by 10 inches thick. Based on these measurements, the remaining volume of impacted soil was conservatively estimated to be 10 cubic yards.

4.1 Request for an Alternative Remedial Approach

Based on the minimal volume of impacted soil remaining at the Site, the close proximity of well MW04, and historical groundwater results collected over three years (further described below), Hilcorp requested that the remaining impacted soil be treated *in-situ*. Specifically, *in-situ* treatment included three applications of Micro-Blaze® Emergency Liquid Spill Control liquid (brochure attached as Appendix C) directly to the impacted area. During each application, Micro-Blaze® was diluted per the manufacturer's specifications, applied until the impacted layer was fully saturated, then allowed to infiltrate into the soil for one week. Once three applications were applied, Hilcorp recommended that a composite soil sample from the east sidewall be collected to include soil from the impacted layer. This alternative remedial approach was provided to and approved by the NMOCD on June 17, 2022 (Appendix A).

4.2 Excavation Confirmation Soil Sampling and Results

As proposed in the *Remediation Work Plan* and approved by the NMOCD in their December 3, 2019 email (Appendix A), five-point composite soil samples were collected from the sidewalls and floor of the excavation at a frequency of one sample per 500 square feet. The 5-point composite samples were collected on June 21, 2022 by placing five equivalent aliquots of soil into a 1-gallon, resealable plastic bag and homogenizing the samples by thoroughly mixing. The soil samples were placed directly into pre-cleaned glass jars, labeled with the location, date, time, sampler name, method of analysis, and immediately placed on ice. The soil samples were transported at or below 6 degrees Celsius (°C) under strict chain-of-custody procedures to Hall Environmental Analysis Laboratory (Hall) in Albuquerque, New Mexico. All samples were submitted for analyses of BTEX by EPA Method 8021B and TPH following EPA Method 8015M/D.

The excavation was completed to depths up to 20 feet bgs. In total, four floor and 12 sidewall composite soil samples were collected from the excavation on June 21, 2022. The lateral extent of the excavation and confirmation sampling areas are shown on Figure 3. Of note, sidewall

sample LWC-04 was collected during the initial sampling event from the east sidewall and directly above the residual impacted layer (being treated by Micro-Blaze®). This sample did not include the impacted soil but was collected to assess contaminant concentrations and ensure that the soil from this area did not require removal and/or treatment.

Micro-Blaze® applications were subsequently applied on June 30, July 7, and July 13, 2022 to the impacted layer (at the base of area LWC-04) in order to enhance the bioremediation of residual petroleum hydrocarbons. As approved by the NMOCD, a supplemental sidewall sample was collected on November 17, 2022 (LWC-04B) which included the thin impacted layer. Based on the analytical results, all confirmation samples were in compliance with NMOCD Table I Closure Criteria for BTEX and TPH. Analytical results are summarized in Table 1, with complete laboratory reports attached as Appendix D. Photographs taken by Hilcorp and Ensolum during the excavation work are included in Appendix E.

5.0 GROUNDWATER SAMPLING RESULTS

Quarterly groundwater monitoring and sampling has been conducted at the Site beginning in August 2019. During each sampling event, static groundwater levels were measured in all five monitoring wells using an oil/water interface probe. The interface probe was decontaminated with Alconox™ soap and rinsed with deionized water prior to each measurement. Groundwater elevations at the Site are summarized on Table 2. In general, depth to groundwater ranges between 14 and 24 feet below the top of well casing, with groundwater flow direction to the southeast following the general topography of the Site. Groundwater elevation contours for each 2022 quarterly sampling event are presented in Figures 4 through 7.

5.1 Quarterly Groundwater Sampling and Results

Groundwater monitoring wells were sampled by purging a minimum of three casing volumes or purging until the well bails dry. Water quality parameters were collected during the purging process from each well. Once purging was complete, groundwater samples were collected directly into laboratory provided containers. All samples were immediately placed on ice to maintain a temperature of approximately 6 degrees Celsius (°C) and sealed in a cooler for delivery to Hall for analysis. Samples were labeled with the date and time of collection, sample name, sampler's name, and parameters to be analyzed. Strict chain-of-custody procedures were documented and include the date and time sampled, sample number, type of sample, sampler's name and signature, preservative used, and analysis required. As requested by the NMOCD, VOCs by EPA Method 8260B, TDS by EPA Standard Method 2540C, alkalinity by EPA Standard Method 2320B, anions (bromide, chloride, sulfate, fluoride, nitrite-nitrate, and phosphorus) by EPA Method 300.0, and cations (calcium, iron, magnesium, potassium, and sodium) by EPA Method 200.7.

Based on current and historical analytical results, there have been no detections of VOCs above the laboratory reporting limits from wells MW01 through MW05. Of the general water chemistry parameters, concentrations of sulfate and TDS are the only constituents with exceedances of the New Mexico Water Quality Control Commission (NMWQCC) standards at the Site. No other constituents have been detected at concentrations exceeding NMWQCC standards during any quarterly sampling events. Groundwater analytical results are summarized in Table 3 and presented on Figure 8, with complete laboratory analytical reports attached in Appendix D.

5.2 Excavation Grab-Groundwater Sampling and Results

During periods of historically high groundwater elevations (fall and winter), groundwater has been encountered seeping into the open excavation at a depth of approximately 20 feet bgs. In order to assess groundwater conditions below the historically impacted area, and based on discussions with the NMOCD in December 2022, a grab-groundwater sample was collected from the open excavation on December 15, 2022 (sample EX WS on Table 3). Prior to sampling, groundwater that had accumulated at the bottom of the excavation had been removed by vacuum truck in November and December 2022 in an attempt to remove stagnant water. Once sufficient volumes of groundwater had re-accumulated into the excavation, the grab-groundwater sample was collected and submitted to Hall for the same analyses conducted for the quarterly groundwater sampling events.

Of the analyzed VOCs, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, total naphthalenes, acetone, 4-isopropyltoluene, and total xylenes were detected above laboratory reporting limits, but below the applicable NMWQCC standards. No other VOCs were detected above the laboratory reporting limits in this sample. Concentrations of general water chemistry parameters

were generally higher than those detected in samples collected from the surrounding monitoring wells. Concentrations of chloride, sulfate, and TDS are the only constituents with exceedances of the New Mexico Water Quality Control Commission (NMWQCC) standards at the Site. Groundwater analytical results for this sample are included in Table 3 and presented on Figure 8, with complete laboratory analytical reports attached in Appendix D.

6.0 CONCLUSIONS

Site assessment activities, including soil and groundwater sampling, were conducted to investigate historical soil impacts originally discovered in 2019. Based on the initial assessment results, excavation activities were conducted in 2019 and 2022 to remove TPH impacted soil. Laboratory analytical results for the excavation soil samples, collected from the final excavation extent, indicate that concentrations were compliant with the Site Closure Criteria and no further soil remediation is required.

Additionally, due to the presence of shallow groundwater at the Site, five groundwater monitoring wells were installed to assess groundwater conditions. Quarterly sampling was conducted between 2019 and 2022 and, based on historical results, sulfate and TDS were the only constituents detected at concentrations exceeding NMWQCC standards. Based on groundwater flow direction to the southeast and the lack of detections of BTEX and other petroleum hydrocarbon constituents, wells MW01 and MW02 are upgradient of historical impacts and represent naturally occurring background conditions at the Site. As such, background concentrations in wells MW01 and MW02 range from 1,800 to 2,210 mg/kg for sulfate and 2,730 to 4,160 mg/kg for TDS. In comparison, the historical concentrations in all other wells located cross- and downgradient of the historical impacts range from 1,600 to 3,180 mg/kg sulfate and 2,640 to 4,000 mg/kg TDS, which are within range of naturally occurring groundwater conditions observed in the upgradient wells at the Site.

As noted in Section 4.2, the grab-groundwater sample collected from the open excavation contained chloride, sulfate, and TDS concentrations exceeding the applicable NMWQCC standards. Concentrations of these constituents were also elevated when compared to naturally occurring groundwater conditions encountered in the permanent monitoring wells at the Site. The elevated concentrations are restricted to groundwater pooling in the open excavation and can likely be attributed to the remedial solutions, specifically the application of Micro-Blaze® amendment to the excavation and the exposure of groundwater to ambient air conditions. Specifically, Micro-Blaze® is a liquid amendment that contains a proprietary substrate of microorganisms and a significant percentage of dissolved additives and organic material used to enhance the bioremediation processes in impacted soil. The liquid amendment concentrated on the targeted portion of the sidewall containing residual TPH concentrations; however, it also collected in the bottom of the excavation during each application. The amendment likely introduced a proprietary blend of minerals and chemical constituents to the soil, and ultimately any groundwater, in the excavation.

Additional contribution of sulfate and chloride to the groundwater in the excavation may have been caused by exposure of the soil and groundwater to the ambient air compared to surrounding groundwater conditions. Sulfate can be affected by increased oxygen availability and chloride concentrations are likely present due to exposure to ambient air causing evaporation of water, concentrating naturally occurring chloride in the groundwater and surrounding soil/sediment. Additionally, chloride was never present at elevated concentrations in preliminary excavation or boring soil samples collected in 2019; as such, chloride is not a constituent of concern related to the historical release. As indicated by the groundwater sampling results from the surrounding monitoring wells at the Site, these elevated constituent concentrations are localized and stable and are not indicative of Site-wide groundwater conditions. They will likely decrease with time and eventual backfilling.

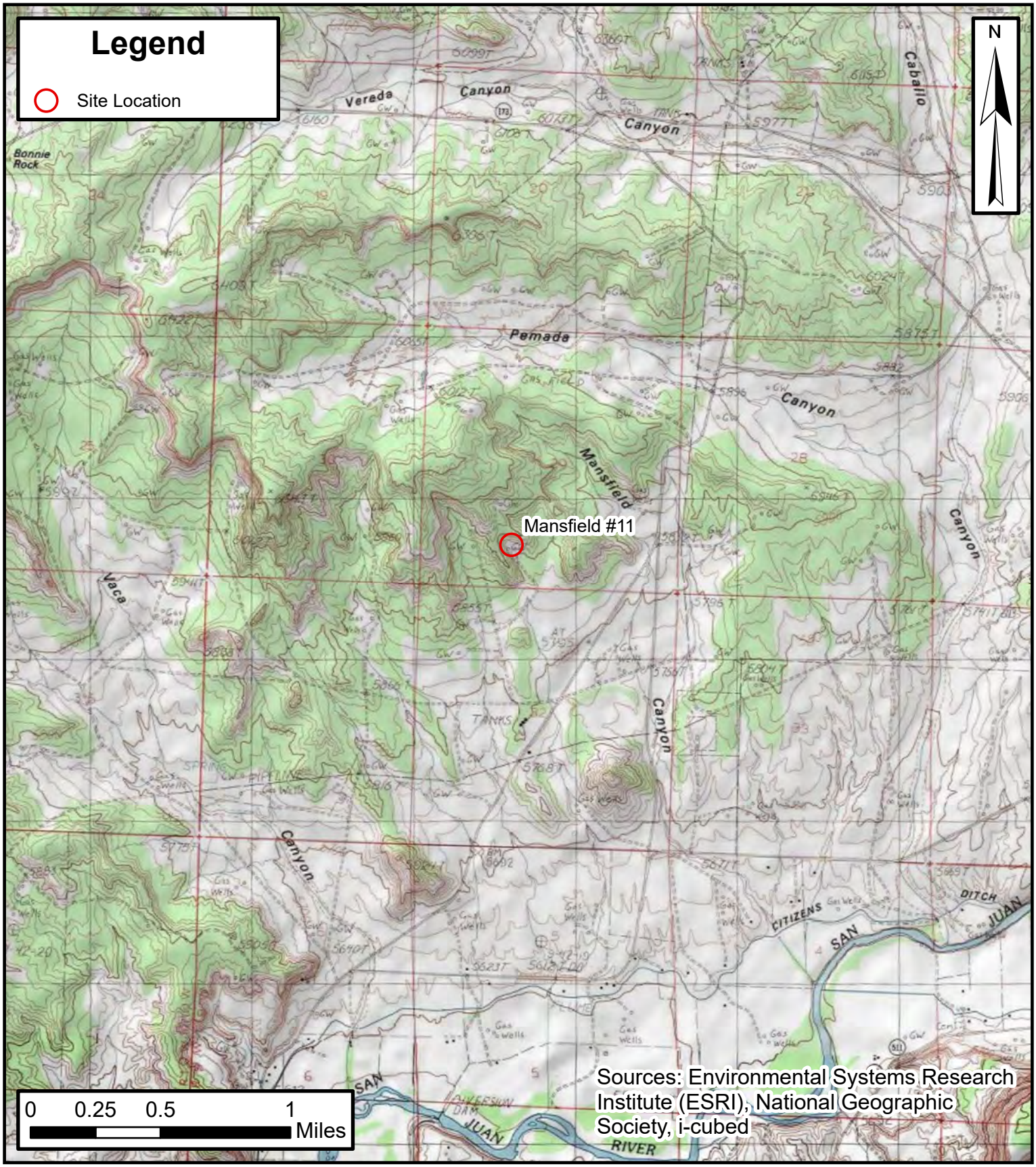
7.0 CLOSURE REQUEST

Based on the data collected between 2019 and 2022 and the information provided in this document, excavation of impacted soil has mitigated impacts at the Site. Furthermore, quarterly sampling conducted at the Site has shown that groundwater has not been negatively impacted by the historical release. As such, these remedial actions are protective of human health, the environment, and groundwater and Hilcorp respectfully requests closure for Incident Number NCS1913741281.

With NMOCD approval of this closure request, soil remediated to below Site Closure Criteria concentrations at the small landfarm will be used to backfill the Site excavation. Additional clean material will be used to backfill and recontour the Site to match pre-existing conditions. Wells MW01 through MW05 will also be plugged and abandoned in accordance with New Mexico Office of the State Engineer regulations and requirements.

ENSOLUM

FIGURES

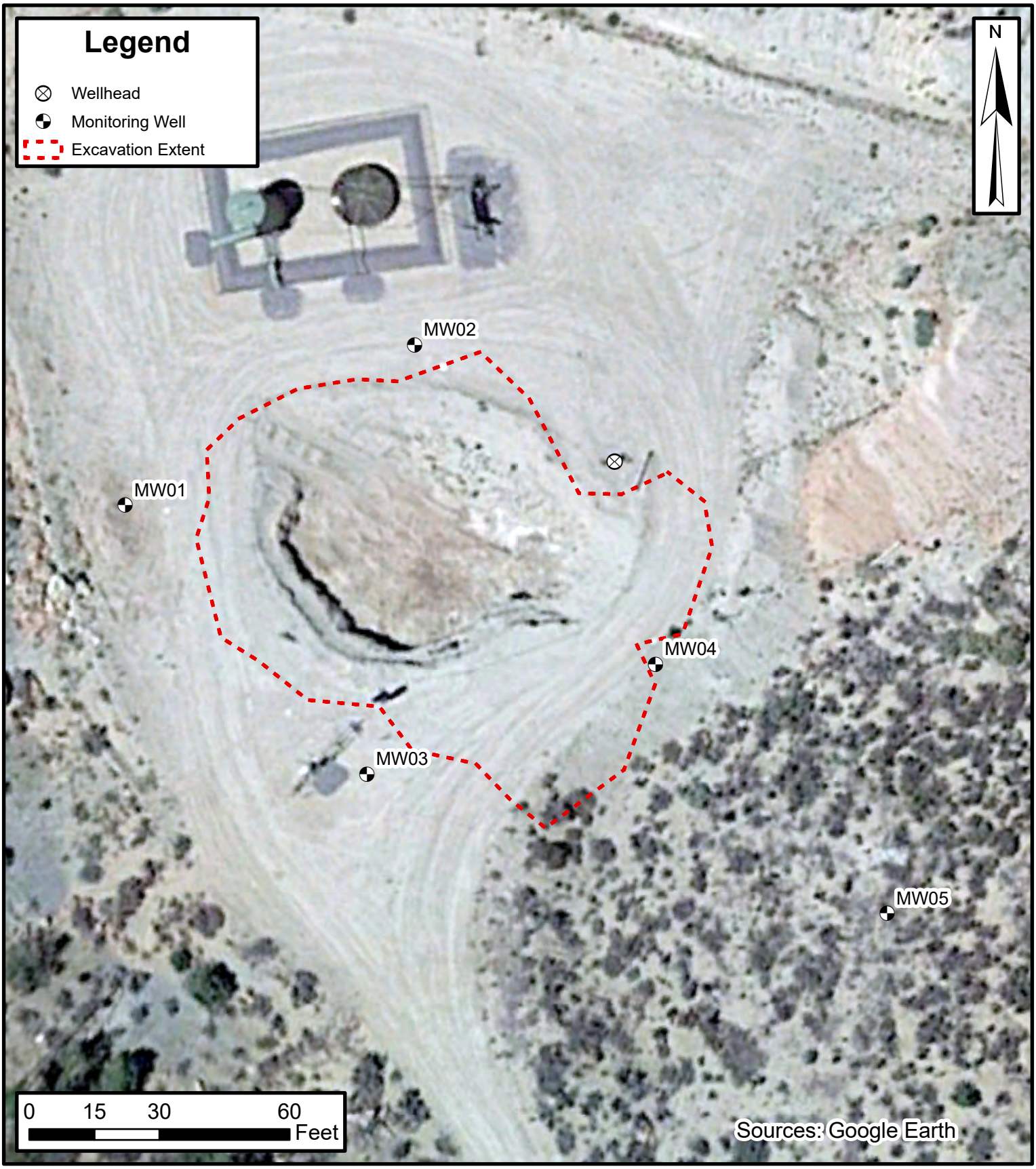


ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

Site Location Map

Mansfield 11
Hilcorp Energy Company
SESW Sec 29, T30N, R9W
San Juan County, New Mexico

FIGURE
1

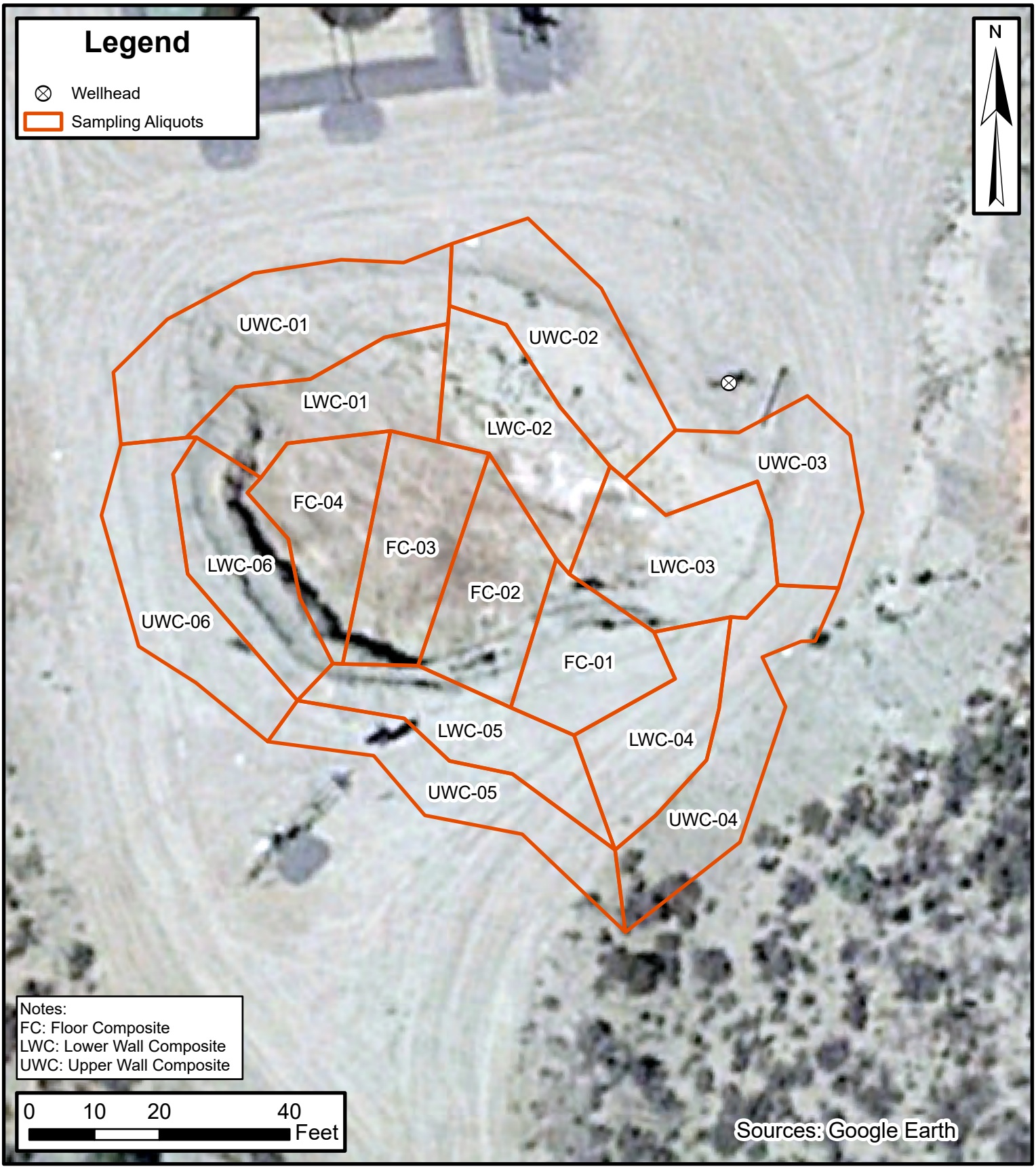


ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

Site Features

Mansfield 11
Hilcorp Energy Company
SESW Sec 29, T30N, R9W
San Juan County, New Mexico

FIGURE
2



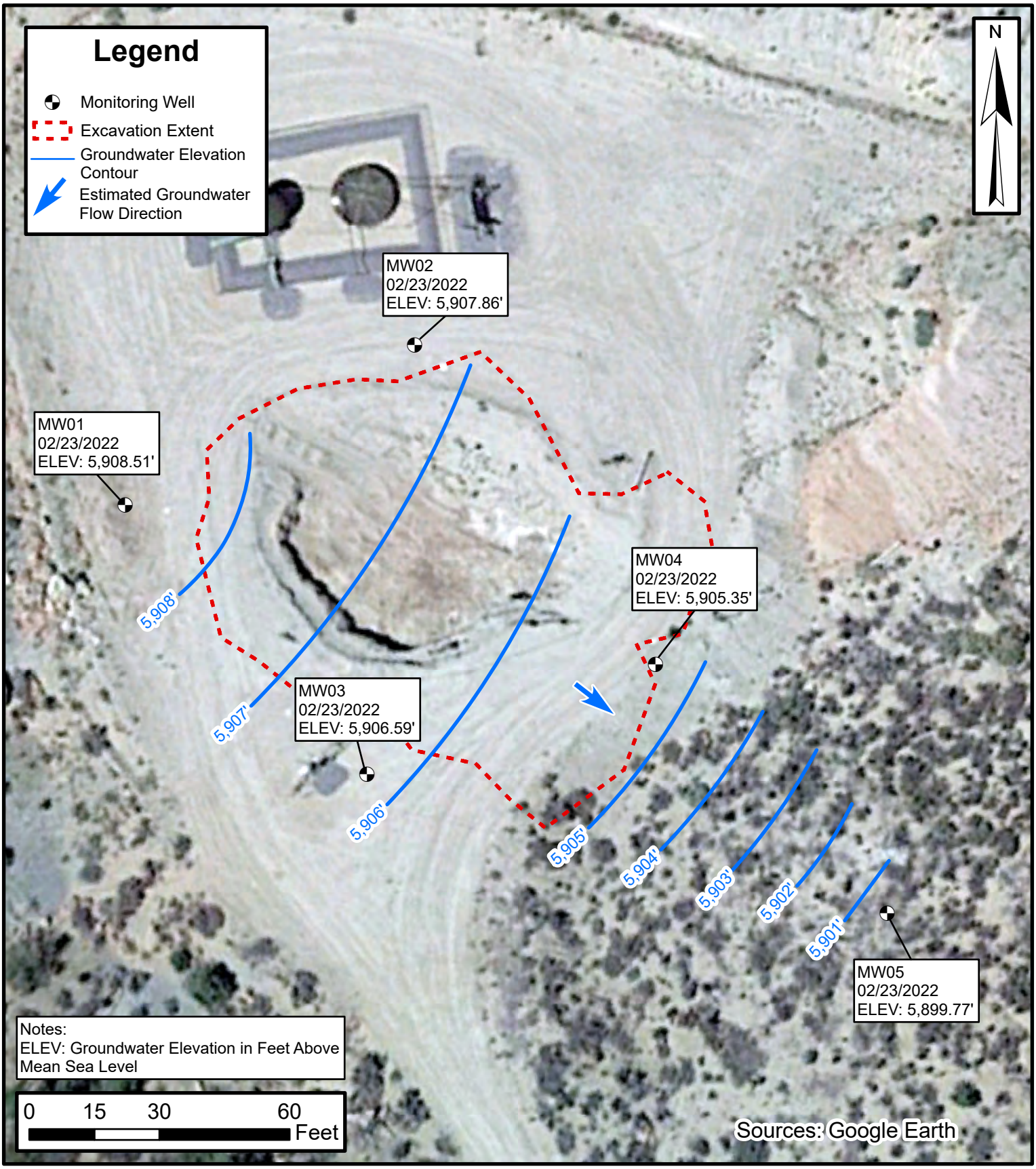
ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

2022 Confirmation Soil Samples

Mansfield 11
Hilcorp Energy Company

SESW Sec 29, T30N, R9W
San Juan County, New Mexico

FIGURE
3

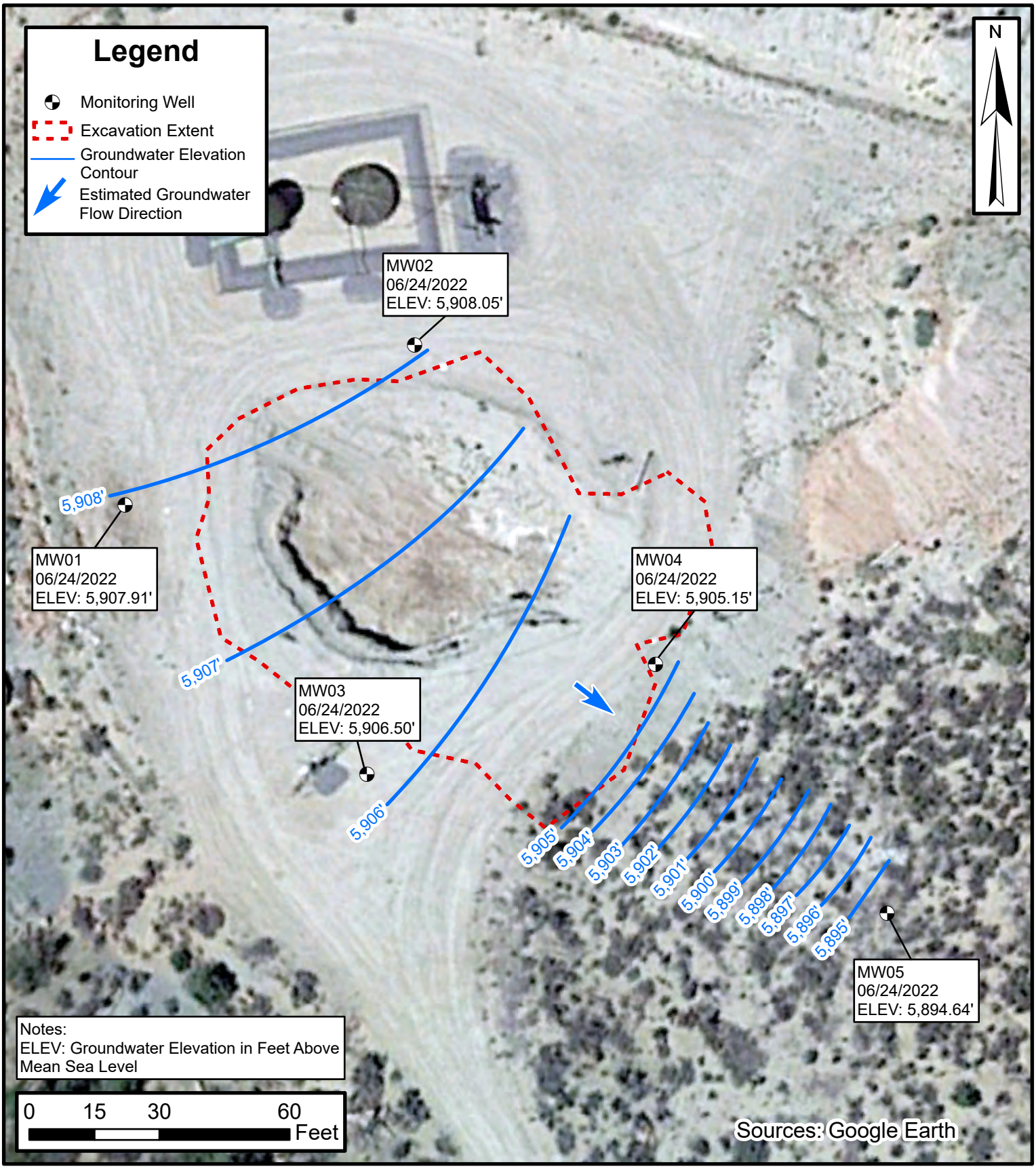


ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

Q1 2022 Groundwater Elevation Contours

Mansfield #11
Hilcorp Energy Company
SESW Sec 29, T30N, R9W
San Juan County, New Mexico

FIGURE
4

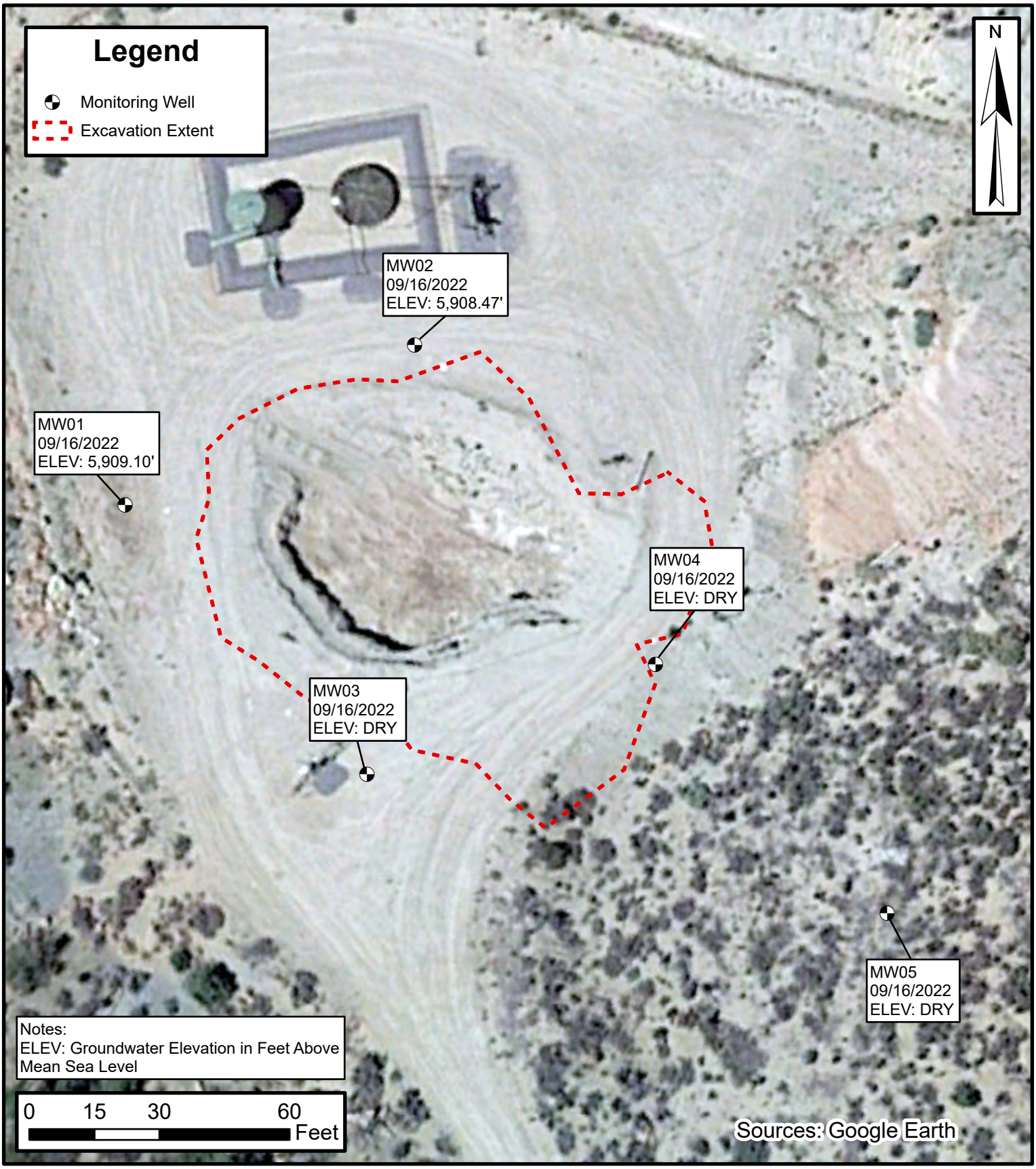


ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

Q2 2022 Groundwater Elevation Contours

Mansfield 11
Hilcorp Energy Company
SESW Sec 29, T30N, R9W
San Juan County, New Mexico

FIGURE
5



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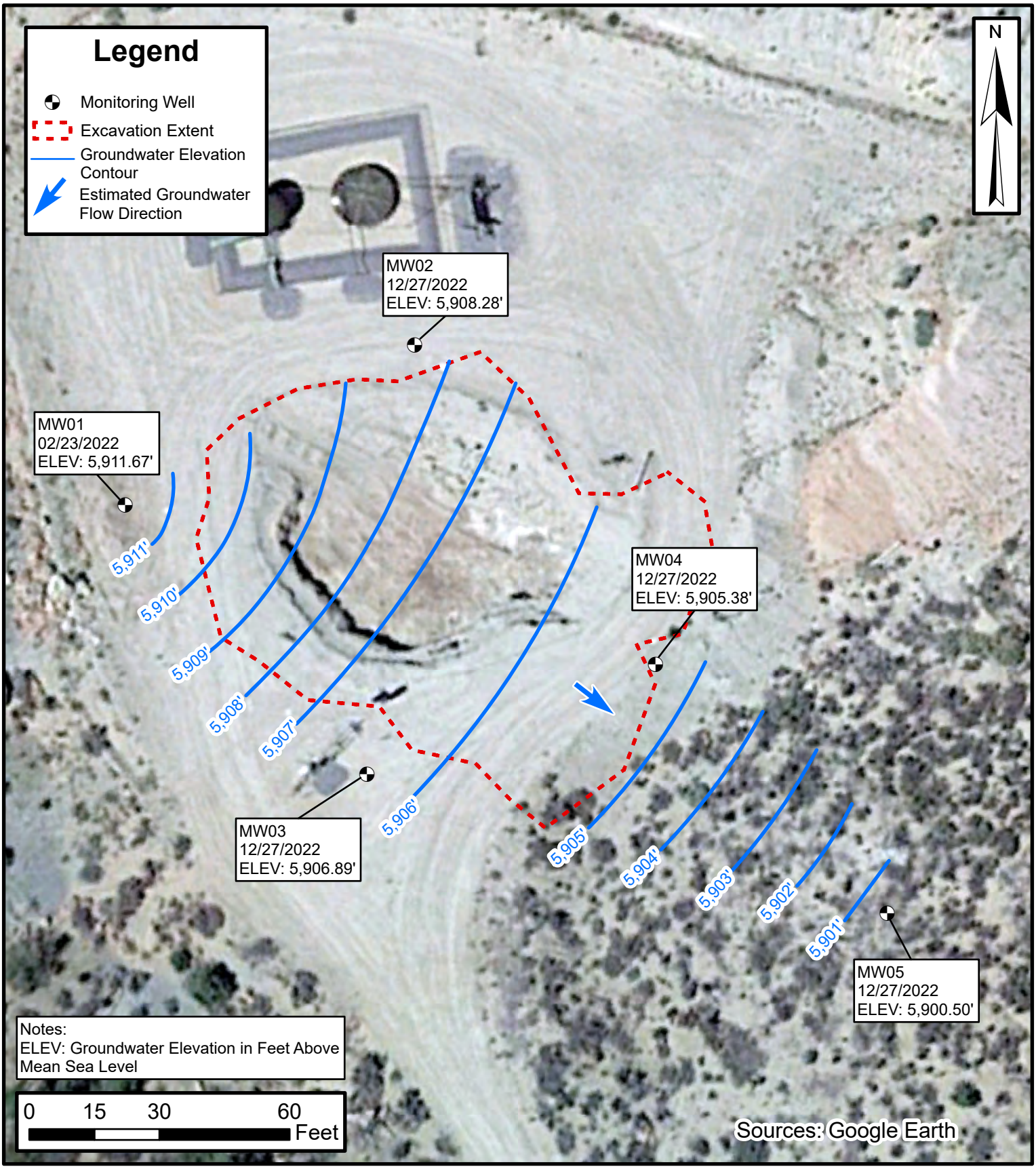
Q3 2022 Groundwater Elevations

Mansfield 11
Hilcorp Energy Company
SESW Sec 29, T30N, R9W
San Juan County, New Mexico

FIGURE
6

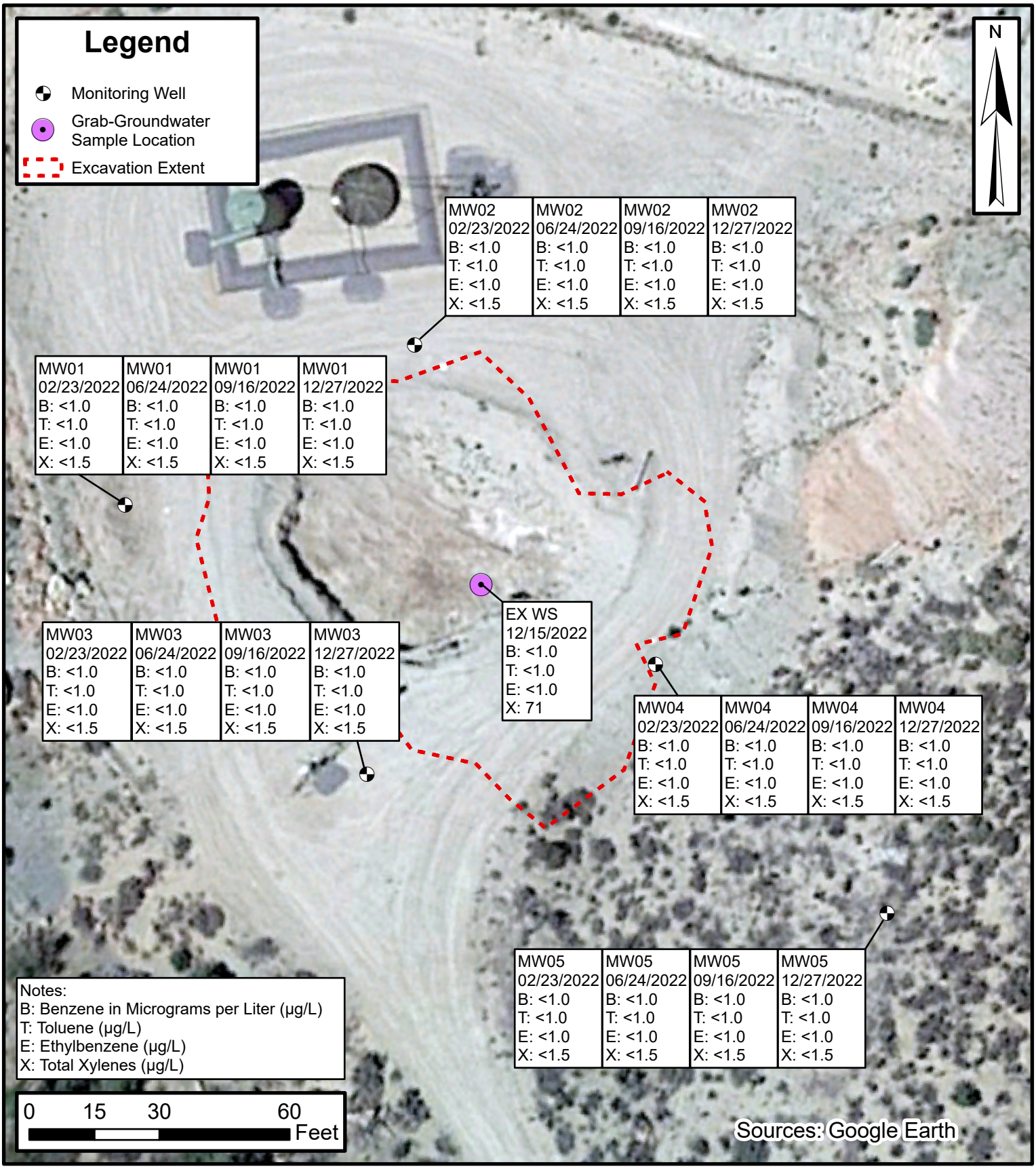


ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

Q4 2022 Groundwater Elevation Contours

Mansfield 11
Hilcorp Energy Company
SESW Sec 29, T30N, R9W
San Juan County, New Mexico

FIGURE
7



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Groundwater Analytical Results

Mansfield #11
Hilcorp Energy Company

SESW Sec 29, T30S, R9W
San Juan County, New Mexico

FIGURE
8

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TABLES

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TABLE 1
CONFIRMATION SOIL SAMPLE ANALYTICAL RESULTS
Mansfield #11
Hilcorp Energy Company
San Juan County, New Mexico

Sample Identification	Sample Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH MRO (mg/kg)	Total TPH (GRO+DRO+MRO) (mg/kg)	Chloride (mg/kg)
NMOCD Closure Criteria for Soils Impacted by a Release (Groundwater <50 feet)			10	NE	NE	NE	50	NE	NE	NE	100	600
2019 Delineation Soil Samples												
MW01 @ 10'-11'	8/19/2019	10-11	<0.024	<0.049	<0.049	<0.098	<0.220	<4.9	11	<46	11	<60
MW01 @ 23'-25'	8/19/2019	23-25	<0.024	<0.048	<0.048	<0.097	<0.217	<4.8	<9.6	<48	<61.3	<60
MW02 @ 10'-11'	8/19/2019	10-11	<0.024	<0.049	<0.049	<0.097	<0.219	<4.9	<9.2	<46	<60.1	<60
MW02 @ 23'-25'	8/19/2019	23-25	<0.025	<0.050	<0.050	<0.099	<0.224	<5.0	<9.7	<48	<62.7	<61
MW03 @ 4'-6'	8/20/2019	4-6	<0.024	<0.048	<0.048	<0.097	<0.217	<4.8	<9.4	<47	<61.2	<60
MW03 @ 25'-27'	8/20/2019	25-27	<0.023	<0.046	<0.046	<0.092	<0.207	<4.6	<9.3	<46	<59.9	<60
MW04 @ 19'-21'	8/21/2019	19-21	<0.024	<0.049	<0.049	<0.098	<0.220	<4.9	<9.9	<50	<64.8	<60
MW04 @ 25'-27'	8/21/2019	25-27	<0.024	<0.047	<0.047	<0.095	<0.213	6.3	14	<50	20.3	<60
MW05 @ 17'-19'	8/22/2019	17-19	<0.024	<0.049	<0.049	<0.097	<0.219	<4.9	<9.9	<50	<64.8	<60
MW05 @ 24'-26'	8/22/2019	24-26	<0.023	<0.046	<0.046	<0.092	<0.207	<4.6	<9.5	<47	<61.1	<60
2022 Excavation Floor Confirmation Soil Sample Analytical Results												
FC-01	6/21/2022	15-20	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	36	<48	36	NS
FC-02	6/21/2022	15-20	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	44	<49	44	NS
FC-03	6/21/2022	15-20	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<14	<48	<48	NS
FC-04	6/21/2022	15-20	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	<13	<43	<43	NS
2022 Excavation Sidewall Confirmation Soil Sample Analytical Results												
LWC-01	6/21/2022	10-20	<0.023	<0.046	<0.046	<0.092	<0.092	<4.6	<15	<49	<49	NS
UWC-01	6/21/2022	0-10	<0.023	<0.046	<0.046	<0.092	<0.092	<4.6	<14	<46	<46	NS
LWC-02	6/21/2022	10-20	<0.023	<0.046	<0.046	<0.092	<0.092	<4.6	<15	<49	<49	NS
UWC-02	6/21/2022	0-10	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<13	<44	<44	NS
LWC-03	6/21/2022	10-20	<0.024	<0.047	<0.047	<0.095	<0.095	<4.7	<13	<43	<43	NS
UWC-03	6/21/2022	0-10	<0.023	<0.046	<0.046	<0.091	<0.091	<4.6	<13	<43	<43	NS
LWC-04	6/21/2022	10-20	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<14	<46	<46	NS
LWC-04B (1)	6/21/2022	10-20	<0.020	<0.040	<0.040	<0.080	<0.080	<4.0	<13	<43	<43	<60
UWC-04	6/21/2022	0-10	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<14	<46	<46	NS
LWC-05	6/21/2022	10-20	<0.023	<0.047	<0.047	<0.094	<0.094	<4.7	17	<43	17	NS
UWC-05	6/21/2022	0-10	<0.024	<0.047	<0.047	<0.095	<0.095	<4.7	<14	<47	<47	NS
LWC-06	6/21/2022	10-20	<0.023	<0.047	<0.047	<0.093	<0.093	<4.7	21	<44	21	NS

Notes:

(1): sample collected after the application of Microblaze
bgs: below ground surface
BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes
mg/kg: milligrams per kilogram
NE: Not Established
NMOCD: New Mexico Oil Conservation Division
NS: not sampled

GRO: Gasoline Range Organics
DRO: Diesel Range Organics
MRO: Motor Oil/Lube Oil Range Organics
TPH: Total Petroleum Hydrocarbon
<49.9: indicates result less than the stated laboratory reporting limit (RL)
*Concentrations in **bold** and shaded exceed the New Mexico Oil Conservation Division Table 1 Closure Criteria for Soils Impacted by a Release*

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TABLE 2
GROUNDWATER ELEVATION SUMMARY
Mansfield #11
Hilcorp Energy Company
San Juan County, New Mexico

Well ID	Top of Casing Elevation (feet AMSL)	Sample Date	Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet AMSL)
MW01	5,923.46	8/26/2019	14.74	5,908.72
		12/2/2019	14.81	5,908.65
		3/5/2020	15.28	5,908.18
		6/12/2020	15.12	5,908.34
		9/1/2020	14.91	5,908.55
		11/16/2020	15.25	5,908.21
		2/12/2021	14.98	5,908.48
		6/30/2021	15.12	5,908.34
		9/7/2021	18.97	5,904.49
		10/13/2021	14.76	5,908.70
		2/23/2022	14.95	5,908.51
		6/24/2022	15.55	5,907.91
		9/16/2022	14.36	5,909.10
		12/27/2022	11.79	5,911.67
MW02	5,922.75	8/26/2019	14.46	5,908.29
		12/2/2019	14.36	5,908.39
		3/5/2020	14.93	5,907.82
		6/12/2020	15.12	5,907.63
		9/1/2020	14.96	5,907.79
		11/16/2020	15.18	5,907.57
		2/15/2021	14.78	5,907.97
		6/30/2021	15.08	5,907.67
		9/7/2021	14.84	5,907.91
		10/14/2021	14.73	5,908.02
		2/23/2022	14.89	5,907.86
		6/24/2022	14.70	5,908.05
		9/16/2022	14.28	5,908.47
		12/27/2022	14.47	5,908.28

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TABLE 2
GROUNDWATER ELEVATION SUMMARY
Mansfield #11
Hilcorp Energy Company
San Juan County, New Mexico

Well ID	Top of Casing Elevation (feet AMSL)	Sample Date	Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet AMSL)
MW03	5,925.81	8/26/2019	21.00	5,904.81
		12/2/2019	19.01	5,906.80
		3/5/2020	19.41	5,906.40
		6/12/2020	19.40	5,906.41
		9/1/2020	19.04	5,906.77
		11/18/2020	19.07	5,906.74
		2/15/2021	19.24	5,906.57
		6/30/2021	19.31	5,906.50
		9/7/2021	14.68	5,911.13
		10/14/2021	18.95	5,906.86
		2/23/2022	19.22	5,906.59
		6/24/2022	19.31	5,906.50
		9/16/2022	Dry	---
		12/27/2022	18.92	5,906.89
MW04	5,922.58	8/26/2019	17.78	5,904.80
		12/2/2019	17.23	5,905.35
		3/5/2020	17.41	5,905.17
		6/12/2020	17.60	5,904.98
		9/1/2020	17.62	5,904.96
		11/16/2020	17.67	5,904.91
		2/15/2021	17.43	5,905.15
		6/30/2021	17.61	5,904.97
		9/7/2021	17.45	5,905.13
		10/14/2021	17.37	5,905.21
		2/23/2022	17.23	5,905.35
		6/24/2022	17.43	5,905.15
		9/16/2022	Dry	---
		12/27/2022	17.20	5,905.38

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TABLE 2
GROUNDWATER ELEVATION SUMMARY
Mansfield #11
Hilcorp Energy Company
San Juan County, New Mexico

Well ID	Top of Casing Elevation (feet AMSL)	Sample Date	Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet AMSL)
MW05	5,912.29	8/26/2019	Dry	Dry
		12/2/2019	17.64	5,894.65
		3/5/2020	13.10	5,899.19
		6/12/2020	24.00	5,888.29
		9/1/2020	20.77	5,891.52
		11/18/2020	11.79	5,900.50
		2/12/2021	13.38	5,898.91
		6/30/2021	16.26	5,896.03
		9/7/2021	17.19	5,895.10
		10/15/2021	24.51	5,887.78
		2/22/2022	12.52	5,899.77
		6/24/2022	17.65	5,894.64
		9/16/2022	Dry	---
		12/27/2022	11.79	5,900.50

Notes:

AMSL: above mean sea level

BTOC: below top of casing

--: indicates no GWEL or PSH measured

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TABLE 3
GROUNDWATER ANALYTICAL RESULTS
Mansfield #11
Hilcorp Energy Company
San Juan County, New Mexico

Analyte	NMWQCC Standard	Unit	MW01													
			8/26/19	12/2/19	3/5/20	6/12/20	9/1/20	11/16/20	2/12/21	6/30/21	9/7/21	10/13/21	2/23/22	6/24/22	9/16/22	12/27/22
USEPA Method 8260B - Volatiles																
benzene	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
toluene	**1,000**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	**700**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trimethylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3,5-trimethylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane (EDC)	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromoethane (EDB)	**0.005**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
total naphthalenes	**30**	µg/L	<4.0	<4.0	<4.0	<4.0	<5.0	<5.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<2.0
acetone	NE	µg/L	<10	<10	<10	<10	<50	<50	<50	<10	<10	<10	<10	<10	<10	<10
bromobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromodichloromethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromoform	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromomethane	NE	µg/L	<3.0	<3.0	<3.0	<3.0	<5.0	<5.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-butanone	NE	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
carbon disulfide	NE	µg/L	<10	<10	<10	<10	NA	NA	NA	<10	<10	<10	<10	<10	<10	<10
carbon tetrachloride	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chlorobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chloroethane	NE	µg/L	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
chloroform	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chloromethane	NE	µg/L	<3.0	<3.0	<3.0	<3.0	<2.5	<2.5	<2.5	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-chlorotoluene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-chlorotoluene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	**70**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-dichloropropene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromo-3-chloropropane	NE	µg/L	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
dibromochloromethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
dibromomethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichlorobenzene	**600**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichlorobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-dichlorobenzene	**75**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
dichlorodifluoromethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethane	**25**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethene	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloropropane	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichloropropane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,2-dichloropropane	NE	µg/L	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,1-dichloropropene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
hexachlorobutadiene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-hexanone	NE	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
isopropylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-isopropytoluene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-methyl-2-pentanone	NE	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
methylene chloride	**5**	µg/L	<3.0	<3.0	<3.0	<3.0	<5.0	<5.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
n-butylbenzene	NE	µg/L	<3.0	<3.0	<3.0	<3.0	<1.0	<1.0	<1.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
n-propylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
sec-butylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
styrene	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
tert-butylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1,2-tetrachloroethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-tetrachloroethane	**10**	µg/L	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
tetrachloroethene (PCE)	**20**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-dichloropropene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichlorobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trichlorobenzene	**70**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-trichloroethane	**200**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-trichloroethane	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichlorofluoromethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichloropropane	NE	µg/L	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
vinyl chloride	**2**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
xylenes, total	**620**	µg/L	<1.0	<1.0	<1.5	<1.5	<3.0	<3.0	<3.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
USEPA Method 300.0: Anions																
bromide	NE	mg/L	0.13	<0.50	<0.50	0.12	<100	<100	<1.00	<0.50	<0.50	0.53	<0.50	<0.50	<0.50	<0.50
chloride	**250**	mg/L	28	24	21	23	24.9	26.1	24.1	22	19	23	23	23	21	21
sulfate	**600**	mg/L	**2,100**	**1,800**	**2,000**	**1,900**	**2,040**	**2,080**	**2,050**	**2,000**	**1,800**	**2,100**	**2,000**	**2,100**	**1,900**	**2,000**
fluoride	**1.6**	mg/L	1.3	<0.50	<0.50	1.3	0.331	0.386	0.477	<0.50	<0.50	<0.50	<0.50	<0.50	0.69	<0.50
nitrate + nitrite as N	NE	mg/L	<0.10	<1.0	<0.50	<1.0	<0.100	<0.100	<0.100	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<0.50
phosphorus, orthophosphate (As P)	NE	mg/L	<0.50	<2.5	<2.5	<10	NA	NA	NA	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
USEPA Method 200.7: Metals																
Calcium	NE	mg/L	580	570	540	610	NA	NA	NA	550	640	580	610	550	560	550
Magnesium	NE	mg/L	130	130	110	120	NA	NA	NA	130	35	140	150	120	130	120
Potassium	NE	mg/L	10	4.2	4.1	3.3	NA	NA	NA	6.6	5.0	9.4	9.8	6.2	5.4	3.4
Sodium	NE	mg/L	230	220	200	210	NA	NA	NA	210	190	220	230	200	220	210
SM 2320B Alkalinity																
Bicarbonate	NE	mg/L	NA	NA	NA	NA	NA	NA	NA	284.5	262.8	285.3	278.8	281.5	286.7	287.6
Carbonate	NE	mg/L	NA	NA	NA	NA	NA	NA	NA	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.000
Total Alkalinity	NE	mg/L	NA	NA	NA	NA	NA	NA	NA	284.5	262.8	285.3	278.8	281.5	286.7	287.6
USEPA Method SM2540C Modified: Total Dissolved Solids																
Total Dissolved Solids	**1,000**	mg/L	**3,400**	**3,330**	**3,040**	**3,020**	**3,160**	**3,380**	**3,290**	**2,730**	**2,900**	**3,220**	**3,240**	**3,010**	**3,260**	**3,160**

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
NA: not analyzed
NMWQCC: New Mexico Water Quality Control Commission
<: indicates result less than the stated laboratory reporting limit (RL)
*Concentrations in **bold** and shaded exceed the New Mexico Water Quality Control Commission Standards, 20.6.2 of the New Mexico Administrative Code*

ENSOLUM

TABLE 3
GROUNDWATER ANALYTICAL RESULTS
Mansfield #11
Hilcorp Energy Company
San Juan County, New Mexico

Analyte	NMWQCC Standard	Unit	MW02													
			8/26/19	12/2/19	3/5/20	6/12/20	9/1/20	11/16/20	2/12/21	6/30/21	9/7/21	10/13/21	2/23/22	6/24/22	9/16/22	12/27/22
USEPA Method 8260B - Volatiles																
benzene	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
toluene	**1,000**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	**700**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trimethylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3,5-trimethylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane (EDC)	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromoethane (EDB)	**0.005**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
total naphthalenes	**30**	µg/L	<4.0	<4.0	<4.0	<4.0	<5.0	<5.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
acetone	NE	µg/L	<10	<10	<10	<10	<50	<50	<50	<10	<10	<10	<10	<10	<10	<10
bromobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromodichloromethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromoform	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromomethane	NE	µg/L	<3.0	<3.0	<3.0	<3.0	<5.0	<5.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-butanone	NE	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
carbon disulfide	NE	µg/L	<10	<10	<10	<10	NA	NA	NA	<10	<10	<10	<10	<10	<10	<10
carbon tetrachloride	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chlorobenzene	NE	µg/L	<1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chloroethane	NE	µg/L	<1.2	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
chloroform	**100**	µg/L	<1.3	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chloromethane	NE	µg/L	<1.4	<3.0	<3.0	<3.0	<2.5	<2.5	<2.5	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-chlorotoluene	NE	µg/L	<1.5	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-chlorotoluene	NE	µg/L	<1.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	**70**	µg/L	<1.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-dichloropropene	NE	µg/L	<1.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromo-3-chloropropane	NE	µg/L	<1.9	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
dibromochloromethane	NE	µg/L	<1.10	<1.0	<1.0	<1.0	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
dibromomethane	NE	µg/L	<1.11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichlorobenzene	**600**	µg/L	<1.12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichlorobenzene	NE	µg/L	<1.13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-dichlorobenzene	**75**	µg/L	<1.14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
dichlorodifluoromethane	NE	µg/L	<1.15	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethane	**25**	µg/L	<1.16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethene	**5**	µg/L	<1.17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloropropane	**5**	µg/L	<1.18	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichloropropane	NE	µg/L	<1.19	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,2-dichloropropane	NE	µg/L	<1.20	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,1-dichloropropene	NE	µg/L	<1.21	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
hexachlorobutadiene	NE	µg/L	<1.22	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-hexanone	NE	µg/L	<1.23	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
isopropylbenzene	NE	µg/L	<1.24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-isopropytoluene	NE	µg/L	<1.25	<1.0	<1.0	<1.0	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-methyl-2-pentanone	NE	µg/L	<1.26	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
methylene chloride	**5**	µg/L	<1.27	<3.0	<3.0	<3.0	<5.0	<5.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
n-butylbenzene	NE	µg/L	<1.28	<3.0	<3.0	<3.0	<1.0	<1.0	<1.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
n-propylbenzene	NE	µg/L	<1.29	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
sec-butylbenzene	NE	µg/L	<1.30	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
styrene	**100**	µg/L	<1.31	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
tert-butylbenzene	NE	µg/L	<1.32	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1,2-tetrachloroethane	NE	µg/L	<1.33	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-tetrachloroethane	**10**	µg/L	<1.34	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
tetrachloroethene (PCE)	**20**	µg/L	<1.35	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	**100**	µg/L	<1.36	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-dichloropropene	NE	µg/L	<1.37	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichlorobenzene	NE	µg/L	<1.38	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trichlorobenzene	**70**	µg/L	<1.39	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-trichloroethane	**200**	µg/L	<1.40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-trichloroethane	**5**	µg/L	<1.41	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	**5**	µg/L	<1.42	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichlorofluoromethane	NE	µg/L	<1.43	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichloropropane	NE	µg/L	<1.44	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
vinyl chloride	**2**	µg/L	<1.45	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
xylenes, total	**620**	µg/L	<1.46	<1.5	<1.5	<1.5	<3.0	<3.0	<3.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
USEPA Method 300.0: Anions																
bromide	NE	mg/L	0.13	<0.50	<0.50	0.12	<100	<100	<1.00	<0.50	<0.50	0.59	<0.50	<0.50	<0.50	<0.50
chloride	**250**	mg/L	22	22	21	22	23.2	22.8	22.3	20	23	22	21	21	20	20
sulfate	**600**	mg/L	**2,200**	**1,800**	**2,200**	**1,900**	**2,070**	**2,210**	**2,070**	**2,000**	**2,100**	**2,100**	**1,900**	**2,100**	**1,900**	**1,800**
fluoride	**1.6**	mg/L	1.3	<0.50	<0.50	1.1	0.381	0.421	0.51	<0.50	<0.50	<0.50	<0.50	<0.50	0.87	1.3
nitrate + nitrite as N	NE	mg/L	<0.10	<0.10	<0.50	<1.0	<0.100	<0.100	<0.100	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<0.50
phosphorus, orthophosphate (As P)	NE	mg/L	<0.50	<2.5	<2.5	<10	NA	NA	NA	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
USEPA Method 200.7: Metals																
Calcium	NE	mg/L	650	580	550	620	NA	NA	NA	560	570	590	580	540	530	550
Magnesium	NE	mg/L	150	140	140	140	NA	NA	NA	130	110	150	150	140	150	140
Potassium	NE	mg/L	16	3.9	3.6	3.6	NA	NA	NA	6.4	5.5	9.1	8.0	5.7	5.4	3.6
Sodium	NE	mg/L	210	210	200	210	NA	NA	NA	190	190	210	200	190	200	200
SM 2320B Alkalinity																
Bicarbonate	NE	mg/L	NA	NA	NA	NA	NA	NA	NA	285.2	283.5	286.6	283.8	284.4	289	288.3
Carbonate	NE	mg/L	NA	NA	NA	NA	NA	NA	NA	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.000
Total Alkalinity	NE	mg/L	NA	NA	NA	NA	NA	NA	NA	285.2	283.5	286.6	283.8	284.4	289	288.3
USEPA Method SM2540C Modified: Total Dissolved Solids																
Total Dissolved Solids	**1,000**	mg/L	**4,160**	**3,460**	**3,570**	**3,770**	**3,500**	**3,170**	**3,010**	**2,950**	**3,150**	**3,130**	**3,270**	**3,430**	**3,300**	**3,070**

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
NA: not analyzed
NMWQCC: New Mexico Water Quality Control Commission
<: indicates result less than the stated laboratory reporting limit (RL)
*Concentrations in **bold** and shaded exceed the New Mexico Water Quality Control Commission Standards, 20.6.2 of the New Mexico Administrative Code*

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TABLE 3
GROUNDWATER ANALYTICAL RESULTS
Mansfield #11
Hilcorp Energy Company
San Juan County, New Mexico

Analyte	NMWQCC Standard	Unit	MW03													
			8/26/19	12/2/19	3/5/20	6/12/20	9/1/20	11/16/20	2/12/21	6/30/21	9/7/21	10/13/21	2/23/22	6/24/22	9/16/22	12/27/22
USEPA Method 8260B - Volatiles																
benzene	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
toluene	**1,000**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	**700**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trimethylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3,5-trimethylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane (EDC)	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromoethane (EDB)	**0.005**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
total naphthalenes	**30**	µg/L	<4.0	<4.0	<4.0	<4.0	<5.0	<5.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
acetone	NE	µg/L	<10	<10	<10	<10	<50	<50	<50	<10	<10	<10	<10	<10	<10	<10
bromobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromodichloromethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromoform	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromomethane	NE	µg/L	<3.0	<3.0	<3.0	<3.0	<5.0	<5.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-butanone	NE	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
carbon disulfide	NE	µg/L	<10	<10	<10	<10	NA	NA	NA	<10	<10	<10	<10	<10	<10	<10
carbon tetrachloride	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chlorobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chloroethane	NE	µg/L	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
chloroform	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chloromethane	NE	µg/L	<3.0	<3.0	<3.0	<3.0	<2.5	<2.5	<2.5	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-chlorotoluene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-chlorotoluene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	**70**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-dichloropropene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromo-3-chloropropane	NE	µg/L	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
dibromochloromethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
dibromomethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichlorobenzene	**600**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichlorobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-dichlorobenzene	**75**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
dichlorodifluoromethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethane	**25**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethene	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloropropane	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichloropropane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,2-dichloropropane	NE	µg/L	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,1-dichloropropene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
hexachlorobutadiene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-hexanone	NE	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
isopropylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-isopropytoluene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-methyl-2-pentanone	NE	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
methylene chloride	**5**	µg/L	<3.0	<3.0	<3.0	<3.0	<5.0	<5.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
n-butylbenzene	NE	µg/L	<3.0	<3.0	<3.0	<3.0	<1.0	<1.0	<1.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
n-propylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
sec-butylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
styrene	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
tert-butylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1,2-tetrachloroethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-tetrachloroethane	**10**	µg/L	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
tetrachloroethene (PCE)	**20**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-dichloropropene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichlorobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trichlorobenzene	**70**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-trichloroethane	**200**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-trichloroethane	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichlorofluoromethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichloropropane	NE	µg/L	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
vinyl chloride	**2**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
xylenes, total	**620**	µg/L	<1.5	<1.5	<1.5	<1.5	<3.0	<3.0	<3.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
USEPA Method 300.0: Anions																
bromide	NE	mg/L	0.32	<0.50	<0.50	<0.50	<100	<100	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloride	**250**	mg/L	88	19	18	18	19.6	18.8	19.4	18	21	20	19	20	20	20
sulfate	**600**	mg/L	**2,000**	**1,600**	**1,700**	**1,700**	**1,700**	**1,770**	**1,790**	**1,700**	**2,000**	**1,700**	**1,600**	**1,900**	**1,600**	**1,600**
fluoride	**1.6**	mg/L	1.4	<0.50	<0.50	<0.50	0.236	0.246	0.288	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
nitrate + nitrite as N	NE	mg/L	<0.10	<0.10	<0.50	<1.0	<0.100	<0.100	<0.100	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<0.50
phosphorus, orthophosphate (As P)	NE	mg/L	<0.50	<2.5	<2.5	<2.5	NA	NA	NA	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
USEPA Method 200.7: Metals																
Calcium	NE	mg/L	620	600	560	630	NA	NA	NA	550	610	600	610	590	600	610
Magnesium	NE	mg/L	83	36	35	35	NA	NA	NA	33	140	35	33	34	36	35
Potassium	NE	mg/L	13	3.6	2.9	2.6	NA	NA	NA	190	8.9	3.1	3.3	4.6	3.4	2.6
Sodium	NE	mg/L	510	190	200	200	NA	NA	NA	190	190	200	200	190	210	200
SM 2320B Alkalinity																
Bicarbonate	NE	mg/L	NA	NA	NA	NA	NA	NA	NA	264.3	285.1	263.6	263.7	265.8	273.7	274.0
Carbonate	NE	mg/L	NA	NA	NA	NA	NA	NA	NA	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.000
Total Alkalinity	NE	mg/L	NA	NA	NA	NA	NA	NA	NA	<264.3	285.1	263.6	263.7	265.8	273.7	274.0
USEPA Method SM2540C Modified: Total Dissolved Solids																
Total Dissolved Solids	**1,000**	mg/L	**3,250**	**2,860**	**2,990**	**2,860**	**2,830**	**2,820**	**2,640**	**2,910**	**3,260**	**2,750**	**2,860**	**3,000**	**2,850**	**2,850**

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
NA: not analyzed
NMWQCC: New Mexico Water Quality Control Commission
<: indicates result less than the stated laboratory reporting limit (RL)
*Concentrations in **bold** and shaded exceed the New Mexico Water Quality Control Commission Standards, 20.6.2 of the New Mexico Administrative Code*

ENSOLUM

TABLE 3
GROUNDWATER ANALYTICAL RESULTS
Mansfield #11
Hilcorp Energy Company
San Juan County, New Mexico

Analyte	NMWQCC Standard	Unit	MW04													
			8/26/19	12/2/19	3/5/20	6/12/20	9/1/20	11/16/20	2/12/21	6/30/21	9/7/21	10/13/21	2/23/22	6/24/22	9/16/22	12/27/22
USEPA Method 8260B - Volatiles																
benzene	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
toluene	**1,000**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	**700**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trimethylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3,5-trimethylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane (EDC)	**5**	µg/L	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromoethane (EDB)	**0.005**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
total naphthalenes	**30**	µg/L	<4.0	<4.0	<4.0	<4.0	<5.0	<5.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
acetone	NE	µg/L	<10	<10	<10	<10	<50	<50	<50	<10	<10	<10	<10	<10	<10	<10
bromobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromodichloromethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromoform	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromomethane	NE	µg/L	<3.0	<3.0	<3.0	<3.0	<5.0	<5.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-butanone	NE	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
carbon disulfide	NE	µg/L	<10	<10	<10	<10	NA	NA	NA	<10	<10	<10	<10	<10	<10	<10
carbon tetrachloride	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chlorobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chloroethane	NE	µg/L	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
chloroform	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chloromethane	NE	µg/L	<3.0	<3.0	<3.0	<3.0	<2.5	<2.5	<2.5	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-chlorotoluene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-chlorotoluene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	**70**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-dichloropropene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromo-3-chloropropane	NE	µg/L	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
dibromochloromethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
dibromomethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichlorobenzene	**600**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichlorobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-dichlorobenzene	**75**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
dichlorodifluoromethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethane	**25**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethene	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloropropane	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichloropropane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,2-dichloropropane	NE	µg/L	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,1-dichloropropene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
hexachlorobutadiene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-hexanone	NE	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
isopropylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-isopropytoluene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-methyl-2-pentanone	NE	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
methylene chloride	**5**	µg/L	<3.0	<3.0	<3.0	<3.0	<5.0	<5.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
n-butylbenzene	NE	µg/L	<3.0	<3.0	<3.0	<3.0	<1.0	<1.0	<1.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
n-propylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
sec-butylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
styrene	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
tert-butylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1,2-tetrachloroethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-tetrachloroethane	**10**	µg/L	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
tetrachloroethene (PCE)	**20**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-dichloropropene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichlorobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trichlorobenzene	**70**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-trichloroethane	**200**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-trichloroethane	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichlorofluoromethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichloropropane	NE	µg/L	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
vinyl chloride	**2**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
xylenes, total	**620**	µg/L	<1.5	<1.5	<1.5	<1.5	<3.0	<3.0	<3.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
USEPA Method 300.0: Anions																
bromide	NE	mg/L	0.15	<0.50	<0.50	<0.50	<100	<100	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloride	**250**	mg/L	28	22	21	20	22.8	22.2	22.4	20	21	22	20	21	23	22
sulfate	**600**	mg/L	**2,300**	**1,900**	**2,100**	**2,000**	**2,120**	**2,180**	**2,190**	**2,100**	**1,900**	**2,200**	**2,000**	**2,000**	**1,800**	**2,000**
fluoride	**1.6**	mg/L	1.6	<0.50	<0.50	<0.50	0.373	0.420	0.522	<0.50	<0.50	<0.50	<0.50	<0.50	0.74	1.0
nitrate + nitrite as N	NE	mg/L	<0.10	<0.10	<0.50	<1.0	<0.100	<0.100	<0.100	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<0.50
phosphorus, orthophosphate (As P)	NE	mg/L	<0.50	<2.5	<2.5	<2.5	NA	NA	NA	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
USEPA Method 200.7: Metals																
Calcium	NE	mg/L	570	570	52	590	NA	NA	NA	530	580	610	620	590	560	580
Magnesium	NE	mg/L	140	150	14	150	NA	NA	NA	150	160	170	160	160	190	150
Potassium	NE	mg/L	11	5.1	3.2	3.7	NA	NA	NA	5.2	8.0	10.0	5.7	7.5	4.5	3.6
Sodium	NE	mg/L	220	210	21	210	NA	NA	NA	200	200	210	210	190	220	210
SM 2320B Alkalinity																
Bicarbonate	NE	mg/L	NA	NA	NA	NA	NA	NA	NA	281.6	280.6	282	280	279.9	281.5	278.1
Carbonate	NE	mg/L	NA	NA	NA	NA	NA	NA	NA	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.000
Total Alkalinity	NE	mg/L	NA	NA	NA	NA	NA	NA	NA	281.6	280.6	282	280	279.9	281.5	278.1
USEPA Method SM2540C Modified: Total Dissolved Solids																
Total Dissolved Solids	**1,000**	mg/L	**3,400**	**3,470**	**3,370**	**3,300**	**3,640**	**3,310**	**3,270**	**2,920**	**3,490**	**3,000**	**3,430**	**3,310**	**3,490**	**3,370**

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
NA: not analyzed
NMWQCC: New Mexico Water Quality Control Commission
<: indicates result less than the stated laboratory reporting limit (RL)
*Concentrations in **bold** and shaded exceed the New Mexico Water Quality Control Commission Standards, 20.6.2 of the New Mexico Administrative Code*

ENSOLUM

TABLE 3
GROUNDWATER ANALYTICAL RESULTS
Mansfield #11
Hilcorp Energy Company
San Juan County, New Mexico

Analyte	NMWQCC Standard	Unit	MW05													
			8/26/19	12/2/19	3/5/20	6/12/20	9/1/20	11/16/20	2/12/21	6/30/21	9/7/21	10/13/21	2/23/22	6/24/22	9/16/22	12/27/22
USEPA Method 8260B - Volatiles																
benzene	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
toluene	**1,000**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	**700**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trimethylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3,5-trimethylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane (EDC)	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromoethane (EDB)	**0.005**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
total naphthalenes	**30**	µg/L	<4.0	<4.0	<4.0	<5.0	<5.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
acetone	NE	µg/L	<10	<10	<10	<50	<50	<50	<10	<10	<10	<10	<10	<10	<10	<10
bromobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromodichloromethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromoform	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
bromomethane	NE	µg/L	<3.0	<3.0	<3.0	<5.0	<5.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-butanone	NE	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
carbon disulfide	NE	µg/L	<10	<10	<10	NA	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10
carbon tetrachloride	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chlorobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chloroethane	NE	µg/L	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
chloroform	**100**	µg/L	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
chloromethane	NE	µg/L	<3.0	<3.0	<3.0	<2.5	<2.5	<2.5	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-chlorotoluene	NE	µg/L	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-chlorotoluene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	**70**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-dichloropropene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromo-3-chloropropane	NE	µg/L	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
dibromochloromethane	NE	µg/L	<1.0	<1.0	<1.0	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
dibromomethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichlorobenzene	**600**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichlorobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-dichlorobenzene	**75**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
dichlorodifluoromethane	NE	µg/L	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethane	**25**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethene	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloropropane	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichloropropane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,2-dichloropropane	NE	µg/L	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,1-dichloropropene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
hexachlorobutadiene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-hexanone	NE	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
isopropylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-isopropytoluene	NE	µg/L	<1.0	<1.0	<1.0	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-methyl-2-pentanone	NE	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
methylene chloride	**5**	µg/L	<3.0	<3.0	<3.0	<5.0	<5.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
n-butylbenzene	NE	µg/L	<3.0	<3.0	<3.0	<1.0	<1.0	<1.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
n-propylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
sec-butylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
styrene	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
tert-butylbenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1,2-tetrachloroethane	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-tetrachloroethane	**10**	µg/L	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
tetrachloroethene (PCE)	**20**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	**100**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-dichloropropene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichlorobenzene	NE	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trichlorobenzene	**70**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-trichloroethane	**200**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-trichloroethane	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	**5**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichlorofluoromethane	NE	µg/L	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichloropropane	NE	µg/L	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
vinyl chloride	**2**	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
xylenes, total	**620**	µg/L	<1.5	<1.5	<1.5	<3.0	<3.0	<3.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
USEPA Method 300.0: Anions																
bromide	NE	mg/L	0.16	<0.50	<0.10	<100	<100	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloride	**250**	mg/L	32	16	21	29.7	19.1	18.4	17	17	15	17	15	17	16	15
sulfate	**600**	mg/L	**2,300**	**2,600**	**2,400**	**3,180**	**2,510**	**2,540**	**2,400**	**2,500**	**2,500**	**2,800**	**2,600**	**2,800**	**2,400**	**2,500**
fluoride	**1.6**	mg/L	0.96	<0.50	<0.10	0.325	0.375	0.483	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
nitrate + nitrite as N	NE	mg/L	<0.20	<0.50	<1.0	7.72	2.02	2.06	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	0.54
phosphorus, orthophosphate (As P)	NE	mg/L	<10	<10	<10	NA	NA	NA	<10	<2.5	<2.5	420	2.5	<10	<2.5	<2.5
USEPA Method 200.7: Metals																
Calcium	NE	mg/L	490	480	520	NA	NA	NA	470	500	490	470	500	470	490	500
Magnesium	NE	mg/L	21	21	19	NA	NA	NA	21	20	20	22	23	22	23	26
Potassium	NE	mg/L	11	6.3	5.3	NA	NA	NA	4.9	5.7	5.5	5.7	4.9	5.7	4.9	5.9
Sodium	NE	mg/L	590	580	640	NA	NA	NA	590	620	650	650	670	650	700	720
SM 2320B Alkalinity																
Bicarbonate	NE	mg/L	NA	NA	NA	NA	NA	NA	116.7	103.4	65.28	140.1	129.2	140.1	141.6	137.3
Carbonate	NE	mg/L	NA	NA	NA	NA	NA	NA	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.000
Total Alkalinity	NE	mg/L	NA	NA	NA	NA	NA	NA	116.7	103.4	65.28	140	129.2	140.1	141.6	137.3
USEPA Method SM2540C Modified: Total Dissolved Solids																
Total Dissolved Solids	**1,000**	mg/L	**3,740**	**3,830**	**3,780**	**3,780**	**3,510**	**3,570**	**3,750**	**3,890**	**3,650**	**3,980**	**3,860**	**3,980**	**4,000**	**4,000**

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
NA: not analyzed
NMWQCC: New Mexico Water Quality Control Commission
<: indicates result less than the stated laboratory reporting limit (RL)
*Concentrations in **bold** and shaded exceed the New Mexico Water Quality Control Commission Standards, 20.6.2 of the New Mexico Administrative Code*

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TABLE 3
GROUNDWATER ANALYTICAL RESULTS
Mansfield #11
Hilcorp Energy Company
San Juan County, New Mexico

Analyte	NMWQCC Standard	Unit	EX WS 12/15/22
USEPA Method 8260B - Volatiles			
benzene	**5**	µg/L	<1.0
toluene	**1,000**	µg/L	<1.0
ethylbenzene	**700**	µg/L	<1.0
methyl tert-butyl ether (MTBE)	**100**	µg/L	<1.0
1,2,4-trimethylbenzene	NE	µg/L	67
1,3,5-trimethylbenzene	NE	µg/L	140
1,2-dichloroethane (EDC)	**5**	µg/L	<1.0
1,2-dibromoethane (EDB)	**0.005**	µg/L	<1.0
total naphthalenes	**30**	µg/L	7.6
acetone	NE	µg/L	22
bromobenzene	NE	µg/L	<1.0
bromodichloromethane	NE	µg/L	<1.0
bromoform	NE	µg/L	<1.0
bromomethane	NE	µg/L	<3.0
2-butanone	NE	µg/L	<10
carbon disulfide	NE	µg/L	<10
carbon tetrachloride	**5**	µg/L	<1.0
chlorobenzene	NE	µg/L	<1.0
chloroethane	NE	µg/L	<2.0
chloroform	**100**	µg/L	<1.0
chloromethane	NE	µg/L	<3.0
2-chlorotoluene	NE	µg/L	<1.0
4-chlorotoluene	NE	µg/L	<1.0
cis-1,2-dichloroethene	**70**	µg/L	<1.0
cis-1,3-dichloropropene	NE	µg/L	<1.0
1,2-dibromo-3-chloropropane	NE	µg/L	<2.0
dibromochloromethane	NE	µg/L	<1.0
dibromomethane	NE	µg/L	<1.0
1,2-dichlorobenzene	**600**	µg/L	<1.0
1,3-dichlorobenzene	NE	µg/L	<1.0
1,4-dichlorobenzene	**75**	µg/L	<1.0
dichlorodifluoromethane	NE	µg/L	<1.0
1,1-dichloroethane	**25**	µg/L	<1.0
1,1-dichloroethene	**5**	µg/L	<1.0
1,2-dichloropropane	**5**	µg/L	<1.0
1,3-dichloropropane	NE	µg/L	<1.0
2,2-dichloropropane	NE	µg/L	<2.0
1,1-dichloropropene	NE	µg/L	<1.0
hexachlorobutadiene	NE	µg/L	<1.0
2-hexanone	NE	µg/L	<10
isopropylbenzene	NE	µg/L	<1.0
4-isopropytoluene	NE	µg/L	4.6
4-methyl-2-pentanone	NE	µg/L	<10
methylene chloride	**5**	µg/L	<3.0
n-butylbenzene	NE	µg/L	<3.0
n-propylbenzene	NE	µg/L	<1.0
sec-butylbenzene	NE	µg/L	<1.0
styrene	**100**	µg/L	<1.0
tert-butylbenzene	NE	µg/L	<1.0
1,1,1,2-tetrachloroethane	NE	µg/L	<1.0
1,1,2,2-tetrachloroethane	**10**	µg/L	<2.0
tetrachloroethene (PCE)	**20**	µg/L	<1.0
trans-1,2-dichloroethene	**100**	µg/L	<1.0
trans-1,3-dichloropropene	NE	µg/L	<1.0
1,2,3-trichlorobenzene	NE	µg/L	<1.0
1,2,4-trichlorobenzene	**70**	µg/L	<1.0
1,1,1-trichloroethane	**200**	µg/L	<1.0
1,1,2-trichloroethane	**5**	µg/L	<1.0
trichloroethene (TCE)	**5**	µg/L	<1.0
trichlorofluoromethane	NE	µg/L	<1.0
1,2,3-trichloropropane	NE	µg/L	<2.0
vinyl chloride	**2**	µg/L	<1.0
xylenes, total	**620**	µg/L	71
USEPA Method 300.0: Anions			
bromide	NE	mg/L	2.1
chloride	**250**	mg/L	**490**
sulfate	**600**	mg/L	**8,500**
fluoride	**1.6**	mg/L	1.6
nitrate + nitrite as N	NE	mg/L	2.8
phosphorus, orthophosphate (As P)	NE	mg/L	<50
USEPA Method 200.7: Metals			
Calcium	NE	mg/L	660
Magnesium	NE	mg/L	1,600
Potassium	NE	mg/L	23
Sodium	NE	mg/L	1,400
SM 2320B Alkalinity			
Bicarbonate	NE	mg/L	495.8
Carbonate	NE	mg/L	<2.00
Total Alkalinity	NE	mg/L	495.8
USEPA Method SM2540C Modified: Total Dissolved Solids			
Total Dissolved Solids	**1,000**	mg/L	**15,100**

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

NA: not analyzed

NMWQCC: New Mexico Water Quality Control Commission

<: indicates result less than the stated laboratory reporting limit (RL)

*Concentrations in **bold** and shaded exceed the New Mexico Water Quality Control Commission Standards, 20.6.2 of the New Mexico Administrative Code*

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APPENDIX A

NMOCD Correspondence

Josh Adams

From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Monday, July 22, 2019 8:12 AM
To: Jennifer Deal
Cc: Josh Adams; Ashley Ager
Subject: RE: NCS1913741281 Extension Request

Jennifer,

OCD approves HEC request for an extension for incident# nCS1913741281 to submit a completed Stage 1 and a proposed Stage 2 abatement plan no later than September 13, 2019.

For soil delineation at a minimum OCD recommends that HEC follows the guidelines of 19.15.29.11 NMAC for vertical and horizontal soil delineation. In addition please ensure that water samples collected for ground water delineation are sampled at a minimum for EPA 8260 (Full list), TDS and Cation/Anions. OCD also recommends the installation of an upgradient monitoring well.

Please include this approval in your Stage1/2 report.

If you have any questions please give me a call.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Ashley Ager <aager@ltenv.com>
Sent: Friday, July 19, 2019 8:51 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Jennifer Deal <jdeal@hilcorp.com>
Cc: Josh Adams <jadams@ltenv.com>
Subject: [EXT] RE: NCS1913741281 Extension Request

Cory,

Following our discussion yesterday regarding transitions from remediation of soil impact (Part 29) to include remediation of groundwater impact (Part 30) and conversations with Hilcorp about timelines for drilling and response: Hilcorp requests the original extension of the 90-day deadline in Part 29 to September 13, 2019 with the understanding that the report submitted to NMOCD by that deadline will consist of a combined Stage 1 and Stage 2 abatement plan as required by Part 30. That means we will report full vertical and lateral delineation of soil and groundwater, and provide a plan for remediation of both soil and groundwater. A proposal for public notification will also be included.

Please let us know if that is acceptable and thanks for your help.

Josh Adams

From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Tuesday, December 3, 2019 10:11 AM
To: Jennifer Deal
Cc: Josh Adams
Subject: Mansfield #11 Remediation plan approval incident# NCS1913741281

Ms. Deal,

OCD has reviewed the remediation plan received on September 9, 2019 for a suspected historic hydrocarbon release discovered on May 2, 2019 at the Mansfield #11 (30-045-20992). The release has been assigned to incident# nCS1913741281 the submitted remediation plan has been approved with the following conditions of approval.

- HEC will physically mark/identify the current excavation side walls prior to the construction of the slopes and will maintain this mark so accurate sampling can be collected during final confirmation.
    - HEC will observe and verify with field PID that soils removed for slope construction is not impacted, these soils must be segregated from any impacted soils.
    - Failure to mark/monitor the overburden soils may result in HEC being required to verify those area are not impacted via soil sampling.
- OCD denies HEC request to collect an open excavation water sample for the purpose determining ground water impacts in the source area.
    - HEC will return to the site to install a temporary monitor well, develop and collect a ground water sample from the source area.
- HEC will provide OCD notice prior to the collection of final confirmation sampling per 19.15.29.12 NMAC.
- OCD has granted HEC an extension to submit the final closure report no later than February 21, 2020.
    - If additional ground water impacts are found, HEC will submit an updated remediation plan that includes all of the soil sampling results, updated maps, etc. no later than February 21, 2020.

This condition of approval will be attached to the signed copy of the remediation plan and uploaded to the OCD imaging system. If you have any additional questions please give me a call.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Smith, Cory, EMNRD
To: jdeal@hilcorp.com
Cc: Devin Hencmann; Ashley Ager; "Josh Adams"
Subject: RE: Mansfield #11 (NCS1913741281) and Salty Dog (NCS1916853082)
Date: Friday, June 12, 2020 9:46:00 AM
Attachments: image002.png
image003.png
image004.png

All,

I have reviewed the Remediation plan for the Mansfield #11 incident nCS1913741281 and have approved it with the following conditions of Approval

- HEC must submit and get approval of a small Land farm permit pursuant to 19.15.36.16 NMAC and follow all applicable requirements.
- Once a small Land Farm permit is approved HEC will send notification of the approval to the Division District Office via email notifying of the approval.
- HEC vadose zone sampling request does not meet the requirement of part 36 and is denied
- During remediation HEC must maintain site security(fencing) and an egress at the open excavation to ensure the protection of fresh water, human health and the environment. If HEC chooses to back fill the excavation prior to completion of land farmed remediation this requirement is null.
- A full closure report for the excavation is due no later than July 15, 2022

The basis of this approval is that this landform will be onsite for an extended period of time and needs to be approved by the land owner. If you have any additional questions please give me a call.

Please keep a copy of this electronic communication for your files, as no paper copy of the approval will be delivered. The signed C-147 will be saved in 3RF-28 electronic file on the OCD website.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Josh Adams <jadams@ltenv.com>
Sent: Thursday, June 4, 2020 1:31 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>

Cc: Devin Hencmann <dhencmann@ltenv.com>; Ashley Ager <aager@ltenv.com>; jdeal@hilcorp.com
Subject: [EXT] RE: Mansfield #11 (NCS1913741281) and Salty Dog (NCS1916853082)

Thank you and hope you are doing well.

A proud member of WSP

Joshua G. Adams, G.I.T.
Staff Geologist
970.456.5750 *cell*
970.385.1096 *direct*
848 East Second Avenue Durango, CO 81301
www.ltenv.com

From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Thursday, June 4, 2020 1:28 PM
To: Josh Adams <jadams@ltenv.com>
Cc: Devin Hencmann <dhencmann@ltenv.com>; Ashley Ager <aager@ltenv.com>
Subject: RE: Mansfield #11 (NCS1913741281) and Salty Dog (NCS1916853082)

Josh,

Unfortunately I know they are there.. trying to get to them please do not resubmit duplicate copies

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Josh Adams <jadams@ltenv.com>
Sent: Thursday, June 4, 2020 1:27 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Devin Hencmann <dhencmann@ltenv.com>; Ashley Ager <aager@ltenv.com>
Subject: [EXT] Mansfield #11 (NCS1913741281) and Salty Dog (NCS1916853082)

Cory,
It's been more than 60 since the below reports were submitted for Hilcorp. I know you just haven't gotten to it yet, but we wanted to keep it on your radar. Thank you.

Mansfield #11 updated Remediation Work Plan (NCS1913741281) (PO: YRHNM-190912-C-1410)

- Salt Dog Water Transfer Station Stage 1 Abatement Plan (NCS1916853082) (PO: XK8BS-191220-C-1410)

A proud member of WSP

Joshua G. Adams, G.I.T.
Staff Geologist
970.456.5750 *cell*
970.385.1096 *direct*
848 East Second Avenue Durango, CO 81301
www.ltenv.com

From: Velez, Nelson, EMNRD
To: Stuart Hyde; Enviro, OCD, EMNRD
Cc: Devin Hencmann; Reece Hanson; Mitch Killough
Subject: RE: [EXTERNAL] NCS1913741281 - Mansfield #11 Excavation Confirmation Sampling Notification
Date: Monday, June 13, 2022 8:47:03 AM
Attachments: image001.png
image002.png
image003.png
image004.png

[**EXTERNAL EMAIL**]

Stuart,

Thank you for the notice. If an OCD representative is not on-site on the date &/or time given, please sample per 19.15.29 NMAC. For whatever reason, if the sampling timeframe is altered, please notify the OCD as soon as possible so we may adjust our schedule(s). Failure to notify the OCD of this change may result in the closure sample(s) not being accepted.

Please keep a copy of this communication for inclusion within the appropriate report submittal.

The OCD requires a copy of all correspondence relative to remedial activities be included in all proposals and/or final closure reports. Correspondence required to be included in reports may include, but not limited to, notifications for liner inspections, sample events, spill/release/fire, and request for time extensions or variances.

Regards

Nelson Velez ● Environmental Specialist - Adv
Environmental Bureau | EMNRD - Oil Conservation Division
1000 Rio Brazos Road | Aztec, NM 87410
(505) 469-6146 | nelson.velez@state.nm.us

Hrs.: 7:00–11:00 am & 12:00–3:30 pm Mon.–Thur.
7:00-11:00 am & 12:00-4:00 pm Fri.

From: Stuart Hyde <shyde@ensolum.com>
Sent: Monday, June 13, 2022 8:42 AM
To: Velez, Nelson, EMNRD <Nelson.Velez@state.nm.us>; Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>
Cc: Devin Hencmann <dhencmann@ensolum.com>; Reece Hanson <rhanson@ensolum.com>; Mitch Killough <mkillough@hilcorp.com>
Subject: [EXTERNAL] NCS1913741281 - Mansfield #11 Excavation Confirmation Sampling Notification

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

Nelson,

On behalf of Hilcorp, we are submitting this confirmation sampling notification for the Mansfield #11 excavation located at coordinates 36.7778969, -107.8062668. Confirmation soil samples will be collected on Wednesday June 15, Thursday June 16, and Friday June 17. We will keep you informed of any changes to this schedule. Please reach out with any questions regarding the upcoming sampling. Thank you.

Stuart Hyde, LG
Senior Geologist
970-903-1607
Ensolum, LLC

From: Velez, Nelson, EMNRD
To: Stuart Hyde
Cc: Devin Hencmann; Mitch Killough; Bratcher, Mike, EMNRD
Subject: Re: [EXTERNAL] NCS1913741281 - Mansfield #11 Request to Perform Alternative Remediation Activities
Date: Friday, June 17, 2022 3:34:58 PM
Attachments: image001.png
image002.png
image003.png
image004.png
image001.png
image002.png
image003.png
image004.png
Microblaze.pdf

[**EXTERNAL EMAIL**]

Stuart,

My apologies for the late response. Computer & internet issues all afternoon.

Hilcorp's amendment to its remediation plan is approved.

Please keep a copy of this communication for inclusion within the appropriate reporting documentation.

Thanks and have an enjoyable weekend.

FYI, NMOCD will be closed this Monday, June 20, 2022.

Nelson V.
(505) 469-6146
Sent from my iPhone

> On Jun 17, 2022, at 10:10 AM, Stuart Hyde <shyde@ensolum.com> wrote:
>
> CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.
> Nelson,
>
> Per our phone discussion yesterday, Hilcorp is currently excavating the remaining impacted soil at the Mansfield #11 site, NMOCD incident number NCS1913741281. As discussed, a majority of the impacted material has been removed from the excavation; however, there is a thin layer of impacted soil approximately 8 to 12 inches in thickness that is present at the interface between unconsolidated soil and consolidated sandstone along the east wall of the excavation. Monitoring well MW-4 is located east approximately 14 feet of this remaining impacted soil and is preventing further soil removal without compromising or destroying the well. At this point, all accessible impacted soil that can be excavated without compromising well MW-4 has been

removed.

Attached photograph “Excavation 1” is looking north, with the remaining impacts on the right of the photograph along the east sidewall. Photograph “Excavation 2” is looking east at the remaining impacted layer, which consists of dark gray stained soil with hydrocarbon odors and elevated PID readings. Of note, the blue/gray material beneath this stained layer is within the sandstone unit and is not believed to be impacted based on PID field screening and olfactory observations. However, we have sampled this blue/gray material to confirm that it does not exceed closure standards and are awaiting analytical results. The remaining impacted soil measures approximately 25 feet (north-south) by 15 feet (to the east) by 10 inches thick. Based on these measurements, the remaining volume of impacted soil is conservatively estimated to be 10 cubic yards.

At this site, VOCs analyzed by EPA Method 8260 have never been detected in any of the wells samples collected quarterly between 2019 and 2022 (including MW-4). Soil samples collected from MW-4 also indicated that BTEX and TPH concentrations in this area are below NMOCD Closure Criteria. Based on the minimal volume of impacted soil remaining at the site, the presence of well MW-4 located very close to the remaining impacted soil, and the groundwater results collected over the past three years, Hilcorp is requesting that the remaining impacted soil be treated in-situ and left in place. In-situ treatment will include the application of Micro-Blaze Emergency Liquid Spill Control amendment (see attached brochure) directly to the impacted area. Micro-Blaze will be applied until the impacted zone is fully saturated then allowed to infiltrate into the soil. At least three applications will be applied prior to backfilling the excavation. Based on the minimal volume of remaining impacted soil, as well as the soil and groundwater results gathered from the wells located at the site, this alternative remedial approach is believed to be equally protective of human health, the environment, and groundwater/surface water.

Hilcorp is requesting formal approval of this alternative remedial approach prior to conducting additional work at the site. Please feel free to reach out with any questions or comments regarding this plan or current site conditions. Thank you and talk to you soon.

Stuart Hyde, LG
Senior Geologist
970-903-1607
Ensolum, LLC

From: Velez, Nelson, EMNRD
To: Stuart Hyde; Adeloye, Abiodun A
Cc: Mitch Killough; Devin Hencmann; Enviro, OCD, EMNRD
Subject: RE: [EXTERNAL] NCS1913741281 - Mansfield #11 Remediation and Reporting Extension Request
Date: Thursday, July 14, 2022 9:47:18 AM
Attachments: image001.png
image002.png
image003.png
image004.png

[**EXTERNAL EMAIL**]

Stuart,

Time extension request is approved. The remediation due date will be updated within the incident page to October 13, 2022 (approximately 90 days).

Please keep a copy of this communication for inclusion within the appropriate report submittal.

The OCD requires a copy of all correspondence relative to remedial activities be included in all proposals and/or final closure reports. Correspondence required to be included in reports may include, but not limited to, notifications for liner inspections, sample events, spill/release/fire, and request for time extensions or variances.

Regards

Nelson Velez ● Environmental Specialist - Adv
Environmental Bureau | EMNRD - Oil Conservation Division
1000 Rio Brazos Road | Aztec, NM 87410
(505) 469-6146 | nelson.velez@state.nm.us

Hrs.: 7:00–11:00 am & 12:00–3:30 pm Mon.–Thur.
7:00-11:00 am & 12:00-4:00 pm Fri.

From: Stuart Hyde <shyde@ensolum.com>
Sent: Wednesday, July 13, 2022 5:08 PM
To: Velez, Nelson, EMNRD <Nelson.Velez@state.nm.us>; Adeloye, Abiodun A <aadeloye@blm.gov>
Cc: Mitch Killough <mkillough@hilcorp.com>; Devin Hencmann <dhencmann@ensolum.com>; Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>
Subject: [EXTERNAL] NCS1913741281 - Mansfield #11 Remediation and Reporting Extension Request

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

Nelson and Emmanuel,

Hilcorp has completed the excavation of impacted soil and application of Micro-Blaze

bioamendment to remediate TPH-impacted soil at the Mansfield #11 site. As approved by the BLM and NMOCD, impacted soil was brought to the small landfarm constructed on the Mansfield #11N well pad just north of the site. The landfarm was constructed and will be operated in accordance with the BLM conditions of approval and 19.15.36 NMAC.

Confirmation floor and sidewall samples collected from the excavation indicate that TPH-impacted soil has been successfully removed, with the exception of a small lens of residual impacts located near well MW-4. As approved by the NMOCD on June 17, 2022, this small area of remaining impacted soil (conservatively estimated to be 10 cubic yards) was subsequently treated with three applications of Micro-Blaze Emergency Liquid Spill Control amendment. The three applications occurred on June 30, July 7, and July 14, 2022. To allow the Micro-Blaze to penetrate into the impacted zone and remediate the remaining TPH concentrations, Ensolum recommends waiting at least two weeks after the last application to resample the excavation sidewalls in this area for final closure (sidewall area "LWC-04"). Additionally, Hilcorp has delayed the installation of a temporary monitoring well in the excavation until the final soil confirmation samples are collected.

The original deadline for closure reporting for the site is July 15, 2022. Because of the alternative remediation approach implemented to specifically address the identified lens, Hilcorp is requesting a 90-day extension (October 13, 2022) to the remediation and reporting deadline in order to collect final confirmation samples within the excavation, as well as collect a groundwater grab sample from a temporary monitoring well, to be installed within the footprint of the excavation. Hilcorp will provide a full report documenting all remediation and sampling activities. If groundwater analytical results collected from the temporary monitoring well are below NMWQCC standards, Hilcorp will pursue closure for the release.

Stuart Hyde, LG
Senior Geologist
970-903-1607
Ensolum, LLC

From: Velez, Nelson, EMNRD
To: Stuart Hyde; Adeloye, Abiodun A
Cc: Mitch Killough; Devin Hencmann; Chad Perkins; Reece Hanson
Subject: RE: [EXTERNAL] NCS1913741281 - Mansfield #11 Excavation Confirmation Sampling Notification
Date: Monday, November 14, 2022 3:00:50 PM
Attachments: image006.png
image007.png
image008.png
image009.png

[**EXTERNAL EMAIL**]

Stuart,

Thank you for the notice. If an OCD representative is not on-site on the date &/or time given, please sample per 19.15.29 NMAC. For whatever reason, if the sampling timeframe is altered, please notify the OCD as soon as possible so we may adjust our schedule(s). Failure to notify the OCD of this change may result in the closure sample(s) not being accepted.

Please keep a copy of this communication for inclusion within the appropriate report submittal.

Regards

Nelson Velez ● Environmental Specialist - Adv
Environmental Bureau | EMNRD - Oil Conservation Division
1000 Rio Brazos Road | Aztec, NM 87410
(505) 469-6146 | nelson.velez@emnrd.nm.gov *NOTE NEW EMAIL ADDRESS*
http://www.emnrd.state.nm.us/OCD/

From: Stuart Hyde <shyde@ensolum.com>
Sent: Monday, November 14, 2022 12:59 PM
To: Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>; Adeloye, Abiodun A <aadeloye@blm.gov>
Cc: Mitch Killough <mkillough@hilcorp.com>; Devin Hencmann <dhencmann@ensolum.com>; Chad Perkins <cperkins@hilcorp.com>; Reece Hanson <rhanson@ensolum.com>
Subject: [EXTERNAL] NCS1913741281 - Mansfield #11 Excavation Confirmation Sampling Notification

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

On behalf of Hilcorp Energy Company, Ensolum is submitting this notification to collect confirmation soil samples at the Mansfield #11 site on Thursday November 17, 2022 at 10:00 AM. The site is

located at coordinates 36.7778969, -107.8062668. Please reach out with any questions regarding the upcoming sampling. Thank you.

Stuart Hyde, LG
Senior Geologist
970-903-1607
Ensolum, LLC

From: Stuart Hyde
To: Velez, Nelson, EMNRD; Adeloye, Abiodun A
Cc: Mitch Killough; Devin Hencmann; Chad Perkins; Eric Carroll
Subject: NCS1913741281 - Mansfield #11 Groundwater Sampling Notification
Date: Monday, December 12, 2022 10:23:00 AM
Attachments: image001.png
image002.png
image003.png
image004.png

Nelson and Emmanuel,

On behalf of Hilcorp Energy Company, Ensolum is submitting this notification to collect a confirmation groundwater sample at the Mansfield #11 site on Thursday December 15, 2022 at 10:00 AM. The site is located at coordinates 36.7778969, -107.8062668. As previous discussed with the NMOCD, a sample will be collected from the groundwater that has accumulated within the excavation footprint and analyzed for volatile organic compounds by EPA Method 8260, total dissolved solids, and cations/anions. With favorable groundwater analytical results, it is our intent to request final closure of both soil and groundwater portions of the site.

Please reach out with any questions regarding the upcoming sampling. Thank you.

Stuart Hyde, LG
Senior Geologist
970-903-1607
Ensolum, LLC

ENSOLUM

APPENDIX B

Form C-137 EZ – Small Landfarm Registration

State of New Mexico
Energy, Minerals and Natural Resources Department

October 15, 2021

Mr. Mitch Killough
Hilcorp Energy Company
1111 Travis Street
Houston, Texas 77002

RE: Small Registered Landfarm Approval
Hilcorp Energy Company
NM3-003 - Mansfield #11N Landfarm
NESW of Section 29, Township 30 North, Range 9 West, NMPM
San Juan County, New Mexico

Mr. Killough:

The Oil Conservation Division (OCD) has completed its review of Hilcorp Energy Company's (Hilcorp) registration application dated September 13, 20121 to construct and operate a small registered landfarm, referred to as Mansfield #11N, for the remediation of petroleum hydrocarbon-contaminated soils (excluding drill cuttings). The OCD hereby approves Hilcorp to construct and operate the registered small landfarm. Mansfield #11N, in compliance with the applicable requirements of 19.15.36.16 NMAC and with the following understanding and conditions:

- Hilcorp has proposed an area of 1.2 acres for their landfarm facility. The 1.2 acres shall incorporate the required landfarm cell berming to prevent rainwater run-on and run-off and *a single lift of eight inches or less* (approximately 1000 cubic yards per acre per eight-inch lift), as required of 19.15.36.7.A(5) NMAC; and

- Hilcorp shall achieve the following closure performance standards within three years from the registration date or shall remove landfarmed soils that have not or cannot be remediated to a division-approved surface waste management facility:
  - benzene, as determined by EPA SW-846 method 8021 B or 8260B, shall not exceed 0.2 mg/kg (per 19.15.36.16.E(1)(a) NMAC);
  - Total BTEX, as determined by EPA SW-846 method 8021 B or 8260B, shall not exceed 50 mg/kg (per 19.15.36.16.E(1)(b) NMAC);

- TPH, as determined by EPA SW-846 method 418.1 or the sum of GRO/DRO/MRO by EPA SW-846 method 8015M, shall not exceed 100 mg/kg (per Table I of 19.15.29.12 NMAC);
- the GRO and DRO combined fraction, as determined by EPA SW-846 method 8015M, shall not exceed 500 mg/kg (per 19.15.36.16.E(1)(c) NMAC); and
- chlorides, as determined by EPA method 300.1, shall not exceed 500 mg/kg (per 19.15.36.16.E(1)(d) NMAC).

If there are any questions, please do not hesitate to contact me at (505) 469-7486 or brad.a.jones@state.nm.us.

Respectfully,

Brad A. Jones
Environmental Specialist

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

State of New Mexico
Energy Minerals and Natural Resources

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

For State Use Only:
Registration #

Form C-137 EZ
Revised August 1, 2011

Submit 1 Copy to Santa Fe Office

REGISTRATION/ FINAL CLOSURE REPORT FOR SMALL LANDFARM

Section 7 of 19.15.36 NMAC defines a small landfarm as a centralized landfarm of two acres or less that has a total capacity of 2000 cubic yards or less in a single lift of eight inches or less, remains active for a maximum of three years from the date of its registration and that receives only petroleum hydrocarbon-contaminated soils (excluding drill cuttings) that are exempt or non-hazardous waste. The operator shall operate only one active small landfarm per governmental section at any time.

GENERAL INFORMATION

1. ☒ Small Landfarm Registration ☐ Small Landfarm Final Closure Report*
(*Must be submitted within three years from the registration date)

2. Operator: Hilcorp Energy Company
Address: 1111 Travis Street, Houston, TX 77002
Contact Person: Mitch Killough Phone: 713-757-5247

3. Location: NE /4 SW /4 Section 29 Township 30N Range 9W

REGISTRATION

1. As operator, are you the surface estate owner of the proposed site? ☐ Yes ☒ No If no, please attach a certification statement that demonstrates a written agreement is established with the surface estate owner authorizing the use of the site for the proposed small landfarm.

2. Will the proposed small landfarm comply with the siting requirements of Subsections A and B of 19.15.36.13 NMAC?
☒ Yes ☐ No

A. Depth to ground water.
- No small landfarm shall be located where ground water is less than 50 feet below the lowest elevation at which the operator will place oil field waste.

B. No surface waste management facility shall be located:
- within 200 feet of a watercourse, lakebed, sinkhole or playa lake;
- within an existing wellhead protection area or 100-year floodplain;
- within, or within 500 feet of, a wetland;
- within the area overlying a subsurface mine;
- within 500 feet from the nearest permanent residence, school, hospital, institution or church in existence at the time of initial application; or
- within an unstable area, unless the operator demonstrates that engineering measures have been incorporated into the surface waste management facility design to ensure that the surface waste management facility's integrity will not be compromised.

3. Attach a plat and topographic map showing the small landfarm's location in relation to governmental surveys (quarter-quarter section, township and range); highways or roads giving access to the small landfarm site; watercourses; fresh water sources, including wells and springs; oil and gas wells or other production facilities; and inhabited buildings within one mile of the site's perimeter.

Based on the information provided with this submittal, registration of a small landfarm can only be granted if the operator complies with the following understandings and conditions:

- The operator shall operate only one active small landfarm per governmental section at any time. No small landfarm shall be located more than one mile from the operator's nearest oil or gas well or other production facility.
- The operator shall accept only exempt or non-hazardous wastes consisting of soils (excluding drill cuttings) generated as a result of accidental releases from production operations, that are predominantly contaminated by petroleum hydrocarbons, do not contain free liquids, would pass the paint filter test and where testing shows chloride concentrations are 500 mg/kg or below.
- The operator shall berm the landfarm to prevent rainwater run-on and run-off.
- The operator shall post a sign at the site readable from a distance of 50 feet and listing the operator's name; small landfarm registration number; location by unit letter, section, township and range; expiration date; and an emergency contact telephone number.
- The operator shall spread and disk contaminated soils in a single eight inch or less lift within 72 hours of receipt. The operator shall conduct treatment zone monitoring to ensure that the TPH concentration, as determined by EPA SW-846 method 8015M or EPA method 418.1 or other EPA method approved by the division, does not exceed 2500 mg/kg; and that the chloride

concentration, as determined by EPA method 300.1, does not exceed 500 mg/kg. The operator shall treat soils by disking at least once a month and by watering and adding bioremediation enhancing materials when needed.

- The operator shall maintain records reflecting the generator, the location of origin, the volume and type of oil field waste, the date of acceptance and the hauling company for each load of oil field waste received. The division shall post on its website each small landfarm's location, operator and registration date. In addition, the operator shall maintain records of the small landfarm's remediation activities in a form readily accessible for division inspection. The operator shall maintain all records for five years following the small landfarm's closure.
- The operator shall submit a final closure report on a form C-137 EZ, together with photographs of the closed site, to the environmental bureau in the division's Santa Fe office.

CERTIFICATION

I hereby certify that the information submitted with this registration is true, accurate and complete to the best of my knowledge and belief and agree to the understandings and conditions of this registration.

Name: Mitch Killough Title: Environmental Specialist

Signature: Date: 9/13/2021

E-mail Address: mkillough@hilcorp.com

OCD REGISTRATION: ☒ Approved. Date : October 15, 2021 ☐ Denied. Date:

Comments: Please see the attached approval letter with conditions.

OCD Representative Signature:

Title: Environmental Specialist **OCD Registration Number:** NM3-003

FINAL CLOSURE REPORT

Were the landfarmed soils able to achieve the closure performance standards, listed below, within three years from the registration date? ☐ Yes ☐ No (Please provide laboratory analytical results)

- benzene, as determined by EPA SW-846 method 8021 B or 8260B, shall not exceed 0.2 mg/kg;
- Total BTEX, as determined by EPA SW-846 method 8021 B or 8260B, shall not exceed 50 mg/kg;
- TPH, as determined by EPA SW-846 method 418.1 or other EPA method approved by the division, shall not exceed 2500 mg/kg; the GRO and DRO combined fraction, as determined by EPA SW-846 method 8015M, shall not exceed 500 mg/kg; and
- chlorides, as determined by EPA method 300.1, shall not exceed 500 mg/kg.

If yes, were the additional closure requirements listed below satisfied? ☐ Yes ☐ No (Please provide photos)

- The operator shall re-vegetate soils remediated to the closure performance standards if left in place in accordance with Paragraph (6) of Subsection A of 19.15.36.18 NMAC.
- If the operator returns remediated soils to the original site, or with division permission, recycles them, re-vegetate the cell filled in with native soil to the standards in Paragraph (6) of Subsection A of 19.15.36.18 NMAC;
- The operator shall remove berms on the small landfarm and buildings, fences, roads and equipment; and
- The operator shall clean up the site and collect one vadose zone soil sample from three to five feet below the middle of the treatment zone, or in an area where liquids may have collected due to rainfall events; the vadose zone soil sample shall be collected and analyzed using the methods specified above for TPH, BTEX and chlorides.

If no, were the landfarmed soils that have not or cannot be remediated to the closure performance standards within three years removed to a division-approved surface waste management facility, and the cell filled in with native soil to the standards in Paragraph (6) of Subsection A of 19.15.36.18 NMAC and re-vegetated? ☐ Yes ☐ No (Please provide photos)

CERTIFICATION

I hereby certify that the information submitted with this final closure report is true, accurate and complete to the best of my knowledge and belief.

Name: Title:

Signature: Date:

E-mail Address:

OCD CLOSURE REVIEW: ☐ Closure Approved. Date : ☐ Closure Denied. Date:

Comments:

OCD Representative Signature:

Title: **OCD Registration Number:**

Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE *- Other instructions on page 2*

5. Lease Serial No.

6. If Indian, Allottee or Tribe Name

7. If Unit of CA/Agreement, Name and/or No.

1. Type of Well
☐ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.

2. Name of Operator

9. API Well No.

3a. Address

3b. Phone No. *(include area code)*

10. Field and Pool or Exploratory Area

4. Location of Well *(Footage, Sec., T.,R.,M., or Survey Description)*

11. Country or Parish, State

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Subsequent Report	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
☐ Final Abandonment Notice	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be perfonned or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has detennined that the site is ready for final inspection.)

14. I hereby certify that the foregoing is true and correct. Name *(Printed/Typed)*

Title

Signature

Date

THE SPACE FOR FEDERAL OR STATE OFICE USE

Approved by

Title

Date

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

January 19, 2021

Bureau of Land Management
Farmington Field Office
6251 College Boulevard
Farmington, New Mexico 87402

RE: Request to Amend Conditions of Approval
Hilcorp Energy Company
Mansfield #11 – NCS1913741281
San Juan County, New Mexico

To Whom It May Concern,

Following identification of a historical release by Hilcorp Energy Company (Hilcorp) at the Mansfield #11 natural gas production well, Hilcorp excavated approximately 2,000 cubic yards of soil and requested land use permission from the Bureau of Land Management (BLM) to remediate impacted soil via biopiling at the nearby Mansfield #11N, another well pad located on BLM surface with available space for remediation. Upon approval with conditions from the BLM, Hilcorp submitted a Revised Remediation Work Plan on February 19, 2020 to the New Mexico Oil Conservation Division (NMOCD). In response, the NMOCD is requiring Hilcorp to adhere to the requirements of the NMOCD small landfarm regulations (19.15.36.16 of the New Mexico Administrative Code [NMAC]), which differ slightly from the BLM conditions of approval (COAs) for the Site's biopiling work plan. The NMOCD has additionally requested that Hilcorp obtain acknowledgement from BLM of the differences between the NMOCD requirements and BLM's COAs. To comply with NMOCD's request, WSP USA Inc. (WSP) has attached for your review a table that summarizes the differences in the regulatory requirements and any proposed changes in landfarm construction, management, and closure based on compliance with 19.15.36.16 NMAC. In all but one case, Hilcorp will default to the more stringent of the BLM COAs and the NMOCD small landfarm regulations so that both regulatory directives can be met.

WSP has attempted to summarize the most significant differences below:

- Hilcorp will meet a closure standard for benzene of 0.2 milligrams per kilogram (mg/kg) as prescribed in the 19.15.36.16 NMAC instead of 10 mg/kg approved by the BLM. Hilcorp will comply with BLM's closure criteria of 100 mg/kg for TPH. Hilcorp will add NMOCD standards for BTEX, GRO+DRO, and chloride, which were not required by the BLM.
- Landfarm construction will comply with BLM requirements, but have stricter NMOCD constraints including:
    - The entire area will not exceed 2 acres,
    - Lift heights will be restricted to 8 inches instead of 24 inches,
    - No more than 2,000 cubic yards of soil will be treated.
- Due to the time it has taken to identify and comply with the NMOCD requirements, along with projected time to receive final approval to proceed from NMOCD, Hilcorp is requesting BLM change the timeline for remediation to three years from the landfarm application acceptance date instead of two years from the release date. Hilcorp will submit sundry notices to the BLM each year following the application acceptance from the NMOCD. The reports will include

laboratory analytical results soil sampling, evaluation of remediation progress, and anticipated timeline to closure.

As stated above, for NMOCD to proceed with approval of small landfarm registration, it requires BLM acknowledge differences between the BLM COAs and NMOCD small landfarm requirements and for BLM to approve of any modifications. All differences are summarized in the attached table and show the most stringent requirement will be met. Due to the extended timeline required to receive approval of a work plan from NMOCD and subsequent small landfarm registration, Hilcorp requests approval to modify the timeline in the original BLM COAs. Hilcorp respectfully requests extension of the timeline for remediation from two years from the date of the release to three years from the application acceptance date.

Upon approval of this Sundry, Hilcorp can proceed with the final steps required for NMOCD small landfarm registration and begin remediation at the site.

Sincerely,

Jennifer Deal

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Sundry Print Report

02/11/2021

Well Name: MANSFIELD

Well Location: T30N / R9W / SEC 29 / NESW / 36.780261 / 107.807377

County or Parish/State: SAN JUAN / NM

Well Number: 11N

Type of Well: CONVENTIONAL GAS WELL

Allottee or Tribe Name:

Lease Number: NMSF077833A

Unit or CA Name: MANSFIELD, MANSFIELD - W/2 MV

Unit or CA Number: NMNM73156, NMNM74066

US Well Number: 3004534321

Well Status: Producing Gas Well

Operator: HILCORP ENERGY COMPANY

Subsequent Report

Type of Submission: Subsequent Report

Type of Action: Surface Disturbance

Date Sundry Submitted: 02/10/2021

Time Sundry Submitted: 01:46

Date Operation Actually Began: 02/01/2021

Actual Procedure: Please see the attached Change of Plans. Attn: Ryan Joyner

SR Attachments

Actual Procedure

Sundry_Notice__Mansfield_11N_3160_005_1__20210210134541.pdf

Copy_of_Rule_36_BLM_COA_Comparison_JA_V2_20210210134541.pdf

Mansfield_11N_COA_20210210134541.pdf

BLM_letter_for_Sundry_20210210134541.pdf

EC504488_20210210134541.pdf

Well Name: MANSFIELD

Well Location: T30N / R9W / SEC 29 / NESW / 36.780261 / 107.807377

County or Parish/State: SAN JUAN / NM

Well Number: 11N

Type of Well: CONVENTIONAL GAS WELL

Allottee or Tribe Name:

Lease Number: NMSF077833A

Unit or CA Name: MANSFIELD, MANSFIELD - W/2 MV

Unit or CA Number: NMNM73156, NMNM74066

US Well Number: 3004534321

Well Status: Producing Gas Well

Operator: HILCORP ENERGY COMPANY

Operator Certification

I certify that the foregoing is true and correct. Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction. Electronic submission of Sundry Notices through this system satisfies regulations requiring a submission of Form 3160-5 or a Sundry Notice.

Operator Electronic Signature: WALKER

Signed on: FEB 10, 2021 01:45 PM

Name: HILCORP ENERGY COMPANY

Title: Operations/Regulatory Technician

Street Address: 1111 TRAVIS STREET

City: HOUSTON **State:** TX

Phone: (713) 209-2400

Email address: NOT ENTERED

Field Representative

Representative Name: Jennifer Deal

Street Address: 382 ROAD 3100

City: FARMINGTON **State:** NM **Zip:** 87401

Phone: (505)324-5128

Email address: jdeal@hilcorp.com

BLM Point of Contact

BLM POC Name: RYAN JOYNER

BLM POC Title: Physical Scientist

BLM POC Phone: 9703851242

BLM POC Email Address: rjoyner@blm.gov

Disposition: Approved

Disposition Date: 02/11/2021

Signature: Ryan Joyner

ENSOLUM

APPENDIX C

Micro-Blaze Brochure and Safety Data Sheet

Micro-Blaze®
MICROBIAL PRODUCTS

Micro-Blaze®

Emergency Liquid Spill Control

PRODUCT INFORMATION

EMERGENCY LIQUID SPILL CONTROL (ELSC)

REMEDIATES (LIST NOT EXHAUSTIVE)

- Acetone
- Acrylonitrite
- AFFF Waste
- Anti-Freeze
- Aviation Fuels
- Benzene & Benzene Compounds
- Crude Oil
- Diesel Fuel
- Dimethylformanide
- Fats
- Gasoline
- Grease
- Glycols
- Hydrocarbon Waste
- Kerosene
- Methanol
- Methyl Tertiary Butyl Ether (MTBE)
- Motor Oil
- Odor
- Organic Chemical Waste
- Organic Waste
- Paint Sludge
- Pipeline Condensation
- Polyurethane Resin Waste
- Sludge
- Toluene

Micro-Blaze®

Emergency Liquid Spill Control

Micro-Blaze® Emergency Liquid Spill Control is a safe, non-toxic, microbial formulation used for the bioremediation of hydrocarbons and other organic compounds. It breaks down, degrades, and digests organic waste while also suppressing vapors and eliminating flammability. The proprietary combination of wetting agents, nutrients, and microbes makes it an ideal formulation for use on many pollutants found in spills and contaminated sites.

Our microbes are naturally occurring, not genetically engineered, and found in soils and waters all over the earth. These microbes have been carefully researched, tested, and chosen for their affinity to degrade hydrocarbons and other organic waste.

USES

- Clean up hydrocarbon spills/leaks
- Soil bioremediation
- Vapor suppression
- Equipment, tank, and pipeline cleaning

BENEFITS

- Safe and cost-effective method for in-situ bioremediation of contaminated soils and water
- Elimination of vapors and LELs, creating a safe working environment
- Residue and runoff can be safely sent to industrial and municipal WWTPs
- 10-year shelf life and easy to use concentrate make it convenient to maintain on hand for future emergencies or everyday usage
- Listed on EPA NCP List as a bioremediation agent for 30 years*

** This listing does not mean the EPA approves, recommends, licenses, certifies or authorizes the use of Micro-Blaze® Emergency Liquid Spill Control or any other product on an oil discharge. This listing only means that data has been submitted to EPA as required by subpart J of the NCP §300.915.*

Product Details

Appearance:
Cream to tan, opaque liquid, perfumed

pH:
7.0 - 8.0

Shelf Life:
10 Years

Storage:
Avoid temperatures over 48°C for long periods of time. Avoid prolonged freezing.

CAUTION: KEEP OUT OF REACH OF CHILDREN. Do not take internally. Avoid contact with eyes. Wash thoroughly after handling. Avoid breathing mist. Contains surfactants (soaps) which may irritate eyes or respiratory system. Use with adequate ventilation.

APPLICATION

Micro-Blaze® is a liquid concentrate and must be diluted before application.

DILUTION
Dilute with water between a 3% solution (3 parts Micro-Blaze®, 97 parts water) and a 10% solution (10 parts Micro-Blaze®, 90 parts water). Shake well before dilution and before application.

APPLICATION
Spray the diluted Micro-Blaze® directly onto the contamination with as much agitation as possible until the area is completely saturated. You can use any delivery system/sprayer, such as hand-held sprayers, fire extinguishers, power washers, CAFS systems, and water trucks.
For soil remediation, tilling the soil after application will help in achieving optimal results, though it is not required where not feasible.

HOW MUCH MICRO-BLAZE® DO I NEED?
1 gallon of Micro-Blaze® concentrate, after diluted, will treat either of the following:

- 10 gallons of spilled contamination
- 500 – 700 square feet of contaminated surface
- 5 – 7 cubic yards of contaminated soil

Contact a Micro-Blaze® sales representative for any additional application questions:
technical@micro-blaze.com

PRODUCT SIZES & SPECS

1 Gallon Pail

SKU	MBELSC-1
Dimensions	8"x8"x12"
Weight	9 lbs

5 Gallon Pail

SKU	MBELSC-5
Dimensions	12"x12"x15"
Weight	47 lbs
	36 pails /pallet

55 Gallon Drum

SKU	MBELSC-55
Dimensions	24"x 24"x35"
Weight	500 lbs
	4 drums/pallet

275 Gallon Tote

SKU	MBELSC-275
Dimensions	40"x48"x45"
Weight	2,500 lbs

330 Gallon Tote

SKU	MBELSC-330
Dimensions	40"x48"x54"
Weight	3,000 lbs

RELATED PRODUCTS:

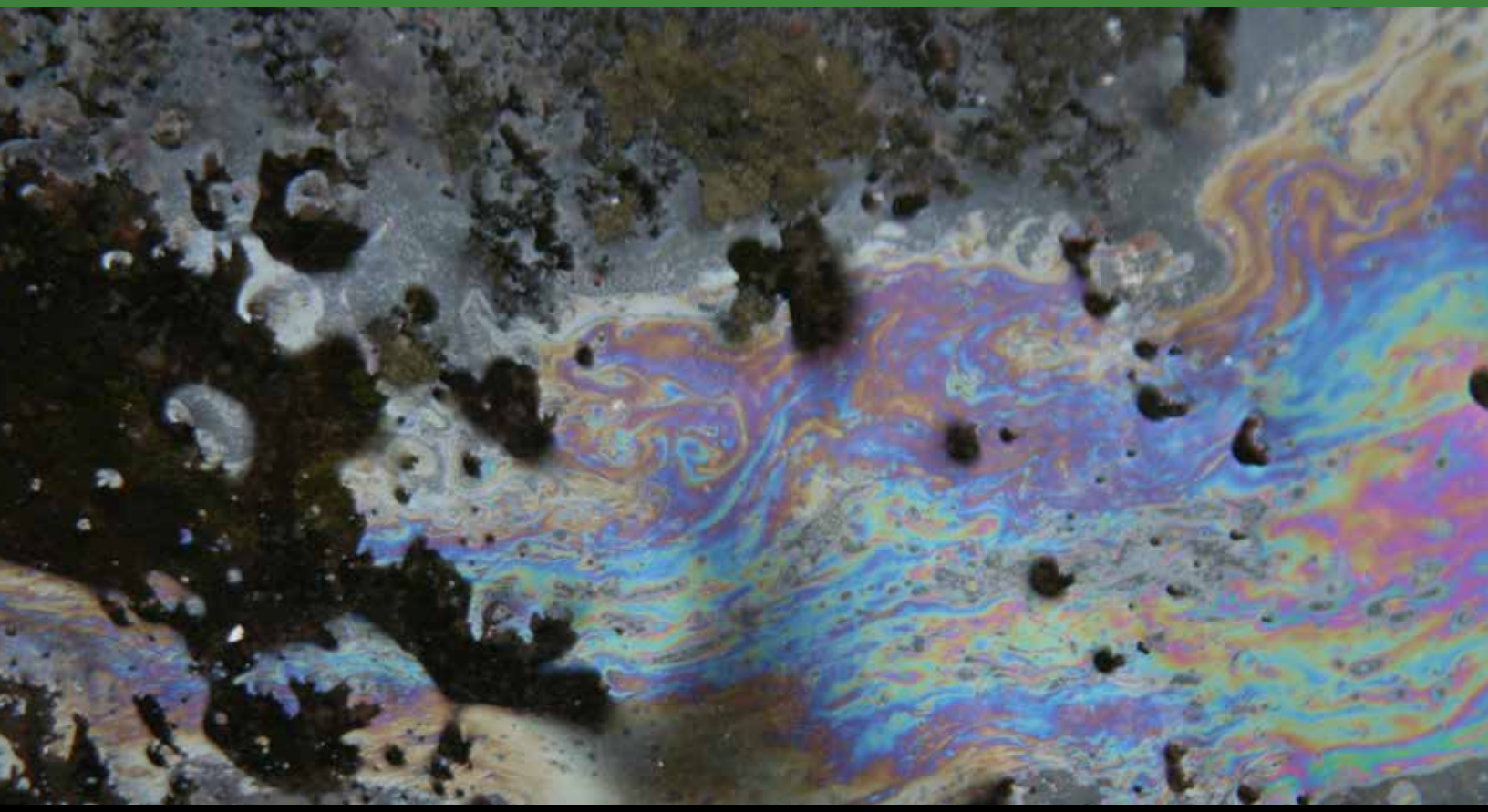
CONCRETE STAIN REMOVER (CSR)

NON-FORMULATED

SCAN FOR MSDS FOR ALL PRODUCTS

PARTNERING WITH NATURE

FOR A CLEANER TOMORROW



Verde Environmental, Inc.
9223 Eastex Freeway
Houston, TX 77093

Office: 713.691.6468
Toll Free: 800.626.6598

www.micro-blaze.com

Version 0522

Micro-Blaze
Microbial Products

Safety Data Sheet
Micro-Blaze® Emergency Liquid Spill Control

1. IDENTIFICATION OF THE SUBSTANCE

Product identifier

Product Name:	Micro-Blaze® Emergency Liquid Spill Control
Product Code:	MBELSC

Recommended use of the chemical and restrictions on use

Recommended Use:	Bioremediation/cleaning
Uses advised against:	Please refer to Product Data Sheet

Details of the supplier of the Safety Data Sheet

Contact Manufacturer:	Verde Environmental, Inc. 9223 Eastex Freeway Houston, TX USA 77093
Information Telephone Number:	1-713-691-6468
Emergency Telephone Number:	1-800-424-9300 (Chemtrec) 24 hours every day

2. HAZARDS IDENTIFICATION

Classification

Classification of the product is in accordance with 29CFR 1910.1200

Acute toxicity – Oral	Category 5
Serious eye damage/eye irritation	Category 2A
Skin sensitization	Category 1

Label elements

Emergency Overview

Warning

Hazard statements
May cause an allergic skin reaction
Causes serious eye irritation
May be harmful if swallowed

Appearance: Opaque **Physical State:** Liquid **Odor:** Slight fermentation odor

Micro-Blaze
Microbial Products

Safety Data Sheet
Micro-Blaze® Emergency Liquid Spill Control

Precautionary Statements – Prevention
Wear eye/face protection. Wear protective gloves. Avoid breathing dust/fume/gas/mist/vapors/spray.

Precautionary Statements – Response

Eyes	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Skin	IF ON SKIN: Gently wash with plenty of soap and water
Inhalation	IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
Ingestion	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

Precautionary Statements – Storage
Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F

Precautionary Statements – Disposal
Dispose of unused product and container in accordance with all applicable local and regional requirements

Hazards not otherwise classified (HNOC)
Not applicable

Other information

Health Hazard	1
Fire Hazard	0
Reactivity	0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	Weight - %
Water and Proprietary Viable Spore Forming Cultures	> 80
Proprietary blend of Ethoxylated Alcohols and other Organic materials	3 – 9
Additives	2 - 5

4. FIRST AID MEASURES

First aid measures

Micro-Blaze
Microbial Products

Safety Data Sheet
Micro-Blaze® Emergency Liquid Spill Control

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes
Skin Contact	Wash off immediately with soap and plenty of water
Inhalation	Move to fresh air
Ingestion	Clean mouth with water and afterwards drink plenty of water

Most important symptoms and effects, both acute and delayed

Main symptoms	No information available

Indication of any immediate medical attention and special treatment needed

Notes to physician	Treat symptomatically

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Specific Hazards Arising from the Chemical
No information available

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions	Ensure adequate ventilation

Environmental precautions

Environmental Precautions	It is not anticipated to be hazardous for the environment

Methods and material for containment and cleaning up

Methods for Clean-up	Pick up and transfer to properly labeled containers

7. HANDLING AND STORAGE

Precautions for safe handling

Handling	Handle in accordance with good industrial hygiene and safety practice

Micro-Blaze
Microbial Products

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Micro-Blaze® Emergency Liquid Spill Control

Conditions for safe storage, including any incompatibilities

Storage Conditions	Keep containers tightly closed in a dry, cool and well-ventilated place
Packaging Material	There could be many packaging types for the product. The details are given in other Verde Environmental, Inc. documents
Incompatible Materials	Strong acids or alkali compounds and strong oxidizing agents may inactivate biological cultures

8. EXPOSURE CONTROL/PERSONAL PROTECTION

Individual protection measures, such as personal protective equipment

Eye Protection	Avoid contact with eyes
Skin and body protection	No special technical protective measures are necessary
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment
General Hygiene Considerations	Handle in accordance with good industrial hygiene and safety practices

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Tan, Opaque
Odor	Pleasant (perfume)
Odor Threshold	No information available

Property	**Values**
pH	7.0 – 8.0
Melting/freezing point	freeze at 0°C/32°F
Evaporation rate VALUE	No information available
Flammability (solid, gas)	Not flammable
Burning rate 100mm VALUE	No information available
Vapor pressure	No information available
Vapor density	No information available
Specific gravity	No information available
Water solubility	99%
Solubility in other solvents	No information available
Partition Coefficient (n-octanol/water)	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Viscosity of product	No information available
Viscosity	No information available

Micro-Blaze
Microbial Products

Safety Data Sheet
Micro-Blaze® Emergency Liquid Spill Control

Explosive properties	No information available
Oxidizing properties	No information available

Other Information

Softening Point	No information available
VOC Content	No information available
Density	No information available

10. STABILITY AND REACTIVITY

Reactivity
No data available

Chemical stability
Stable under recommended storage conditions

Possibility of Hazardous Reactions
None under normal processing

Conditions to avoid
Extremes of temperature and direct sunlight

Incompatible materials
Strong acids or alkali compounds and strong oxidizing agents may inactivate biological cultures

Hazardous Decomposition Products
No information available

11. Toxicological Information

Information on likely routes of exposure

Inhalation	There is no data available for this product
Eye contact	Avoid contact with eyes. Severely irritating to eyes
Skin contact	Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.
Ingestion	Ingestion may cause stomach discomfort

Information on toxicological effects

Symptoms	No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Micro-Blaze
Microbial Products

Safety Data Sheet
Micro-Blaze® Emergency Liquid Spill Control

Sensitization	May cause sensitization of susceptible persons
Mutagenic Effects	No information available
Reproductive Effects	No information available
Specific target organ systemic toxicity	No information available
Aspiration hazard	No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Dahnia, acute	Algae, acute	Fish, acute
Proprietary blend of Ethoxylated Alcohols	EC50 (48 hours): 5-10 mg/l	EC50 (72 hours): 10- 100 mg/l	LC50: 1-10 mg/l

Persistence/Degradability
The organic components of the product are biodegradable.

Bioaccumulation/Accumulation

Chemical Name	Persistance and degradability	log Pow
Proprietary blend of Ethoxylated Alcohols	Readily biodegradable (OECD TG 301B	<0

Other adverse effects
No known effect

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste Disposal Method	Dispose of contents/container in accordance with local regulation
Contaminated Packaging	Empty containers should be taken for local recycling, recovery or waste disposal

14. TRANSPORT INFORMATION

Transport regulations:	No dangerous goods according to transport regulations No special precautions required
Transport hazard class(es):	N/A
Packing group:	N/A
Environmental hazards:	N/A

Micro-Blaze
Microbial Products

Safety Data Sheet
Micro-Blaze® Emergency Liquid Spill Control

15. REGULATORY INFORMATION

International Inventories
Legend:
TSCA – United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL – Canadian Domestic Substances List/Non-Domestic Substances List

Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and 40 CFR Part 372.

SARA 311/312 Hazardous Categorization

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals

State Right-to-Know
U.S. EPA Label Information
EPA Pesticide Registration Number Not Applicable

Canada

WHMIS Statement This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the CPR.

Micro-Blaze
Microbial Products

Safety Data Sheet
Micro-Blaze® Emergency Liquid Spill Control

16. OTHER INFORMATION

Revision date: 01.22.2021
Revision Summary

No information available

Disclaimer
The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text. Furthermore, as the conditions of use are beyond the control of Verde Environmental, Inc., it is the responsibility of the customer to determine the conditions of safe use of this preparation.

ENSOLUM

APPENDIX D

Laboratory Analytical Reports

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

March 10, 2022

Mitch Killough
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX:

RE: Mansfield 11 OrderNo.: 2202C18

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 5 sample(s) on 2/25/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2202C18**
Date Reported: **3/10/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW #1
Project: Mansfield 11
Collection Date: 2/23/2022 9:50:00 AM
Lab ID: 2202C18-001 **Matrix:** AQUEOUS **Received Date:** 2/25/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Fluoride	ND	0.50		mg/L	5	2/25/2022 5:43:50 PM
Chloride	23	2.5		mg/L	5	2/25/2022 5:43:50 PM
Bromide	ND	0.50		mg/L	5	2/25/2022 5:43:50 PM
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	2/25/2022 5:43:50 PM
Sulfate	2000	50	*	mg/L	100	3/8/2022 9:19:20 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	2/25/2022 10:39:57 PM
EPA METHOD 200.7: METALS						Analyst: **ELS**
Calcium	610	10		mg/L	10	3/2/2022 6:03:25 PM
Magnesium	150	10		mg/L	10	3/2/2022 6:03:25 PM
Potassium	9.8	1.0		mg/L	1	3/2/2022 6:01:02 PM
Sodium	230	10		mg/L	10	3/2/2022 6:03:25 PM
EPA METHOD 8260B: VOLATILES						Analyst: **JR**
Benzene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Toluene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Ethylbenzene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Naphthalene	ND	2.0		µg/L	1	3/1/2022 1:04:48 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	3/1/2022 1:04:48 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	3/1/2022 1:04:48 PM
Acetone	ND	10		µg/L	1	3/1/2022 1:04:48 PM
Bromobenzene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Bromodichloromethane	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Bromoform	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Bromomethane	ND	3.0		µg/L	1	3/1/2022 1:04:48 PM
2-Butanone	ND	10		µg/L	1	3/1/2022 1:04:48 PM
Carbon disulfide	ND	10		µg/L	1	3/1/2022 1:04:48 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Chlorobenzene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Chloroethane	ND	2.0		µg/L	1	3/1/2022 1:04:48 PM
Chloroform	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Chloromethane	ND	3.0		µg/L	1	3/1/2022 1:04:48 PM
2-Chlorotoluene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
4-Chlorotoluene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
cis-1,2-DCE	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2202C18**
Date Reported: **3/10/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW #1
Project: Mansfield 11
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Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **JR**
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	3/1/2022 1:04:48 PM
Dibromochloromethane	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Dibromomethane	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	3/1/2022 1:04:48 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
2-Hexanone	ND	10		µg/L	1	3/1/2022 1:04:48 PM
Isopropylbenzene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	3/1/2022 1:04:48 PM
Methylene Chloride	ND	3.0		µg/L	1	3/1/2022 1:04:48 PM
n-Butylbenzene	ND	3.0		µg/L	1	3/1/2022 1:04:48 PM
n-Propylbenzene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
sec-Butylbenzene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Styrene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
tert-Butylbenzene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	3/1/2022 1:04:48 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
trans-1,2-DCE	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	3/1/2022 1:04:48 PM
Vinyl chloride	ND	1.0		µg/L	1	3/1/2022 1:04:48 PM
Xylenes, Total	ND	1.5		µg/L	1	3/1/2022 1:04:48 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2202C18**
Date Reported: **3/10/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW #1
Project: Mansfield 11 **Collection Date:** 2/23/2022 9:50:00 AM
Lab ID: 2202C18-001 **Matrix:** AQUEOUS **Received Date:** 2/25/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **JR**
Surr: 1,2-Dichloroethane-d4	111	70-130		%Rec	1	3/1/2022 1:04:48 PM
Surr: 4-Bromofluorobenzene	109	70-130		%Rec	1	3/1/2022 1:04:48 PM
Surr: Dibromofluoromethane	107	70-130		%Rec	1	3/1/2022 1:04:48 PM
Surr: Toluene-d8	102	70-130		%Rec	1	3/1/2022 1:04:48 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **LRN**
Conductivity	3400	10		µmhos/c	1	3/1/2022 2:21:16 PM
SM2320B: ALKALINITY						Analyst: **LRN**
Bicarbonate (As CaCO3)	278.8	20.00		mg/L Ca	1	3/1/2022 2:21:16 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	3/1/2022 2:21:16 PM
Total Alkalinity (as CaCO3)	278.8	20.00		mg/L Ca	1	3/1/2022 2:21:16 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	3240	200	*D	mg/L	1	3/3/2022 1:01:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2202C18**
Date Reported: **3/10/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW #2
Project: Mansfield 11
Collection Date: 2/23/2022 10:55:00 AM
Lab ID: 2202C18-002 **Matrix:** AQUEOUS **Received Date:** 2/25/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Fluoride	ND	0.50		mg/L	5	2/25/2022 6:09:35 PM
Chloride	21	2.5		mg/L	5	2/25/2022 6:09:35 PM
Bromide	ND	0.50		mg/L	5	2/25/2022 6:09:35 PM
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	2/25/2022 6:09:35 PM
Sulfate	1900	50	*	mg/L	100	3/8/2022 9:31:44 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	2/25/2022 10:52:49 PM
EPA METHOD 200.7: METALS						Analyst: **ELS**
Calcium	580	10		mg/L	10	3/2/2022 6:08:09 PM
Magnesium	150	10		mg/L	10	3/2/2022 6:08:09 PM
Potassium	8.0	1.0		mg/L	1	3/2/2022 6:05:47 PM
Sodium	200	10		mg/L	10	3/2/2022 6:08:09 PM
EPA METHOD 8260B: VOLATILES						Analyst: **JR**
Benzene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Toluene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Ethylbenzene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Naphthalene	ND	2.0		µg/L	1	3/1/2022 2:30:30 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	3/1/2022 2:30:30 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	3/1/2022 2:30:30 PM
Acetone	ND	10		µg/L	1	3/1/2022 2:30:30 PM
Bromobenzene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Bromodichloromethane	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Bromoform	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Bromomethane	ND	3.0		µg/L	1	3/1/2022 2:30:30 PM
2-Butanone	ND	10		µg/L	1	3/1/2022 2:30:30 PM
Carbon disulfide	ND	10		µg/L	1	3/1/2022 2:30:30 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Chlorobenzene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Chloroethane	ND	2.0		µg/L	1	3/1/2022 2:30:30 PM
Chloroform	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Chloromethane	ND	3.0		µg/L	1	3/1/2022 2:30:30 PM
2-Chlorotoluene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
4-Chlorotoluene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
cis-1,2-DCE	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2202C18**
Date Reported: **3/10/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW #2
Project: Mansfield 11
Collection Date: 2/23/2022 10:55:00 AM
Lab ID: 2202C18-002 **Matrix:** AQUEOUS **Received Date:** 2/25/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **JR**
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	3/1/2022 2:30:30 PM
Dibromochloromethane	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Dibromomethane	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	3/1/2022 2:30:30 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
2-Hexanone	ND	10		µg/L	1	3/1/2022 2:30:30 PM
Isopropylbenzene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	3/1/2022 2:30:30 PM
Methylene Chloride	ND	3.0		µg/L	1	3/1/2022 2:30:30 PM
n-Butylbenzene	ND	3.0		µg/L	1	3/1/2022 2:30:30 PM
n-Propylbenzene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
sec-Butylbenzene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Styrene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
tert-Butylbenzene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	3/1/2022 2:30:30 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
trans-1,2-DCE	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	3/1/2022 2:30:30 PM
Vinyl chloride	ND	1.0		µg/L	1	3/1/2022 2:30:30 PM
Xylenes, Total	ND	1.5		µg/L	1	3/1/2022 2:30:30 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2202C18**
Date Reported: **3/10/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW #2
Project: Mansfield 11 **Collection Date:** 2/23/2022 10:55:00 AM
Lab ID: 2202C18-002 **Matrix:** AQUEOUS **Received Date:** 2/25/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **JR**
Surr: 1,2-Dichloroethane-d4	109	70-130		%Rec	1	3/1/2022 2:30:30 PM
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	3/1/2022 2:30:30 PM
Surr: Dibromofluoromethane	106	70-130		%Rec	1	3/1/2022 2:30:30 PM
Surr: Toluene-d8	102	70-130		%Rec	1	3/1/2022 2:30:30 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **LRN**
Conductivity	3300	10		µmhos/c	1	3/1/2022 2:35:35 PM
SM2320B: ALKALINITY						Analyst: **LRN**
Bicarbonate (As CaCO3)	283.8	20.00		mg/L Ca	1	3/1/2022 2:35:35 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	3/1/2022 2:35:35 PM
Total Alkalinity (as CaCO3)	283.8	20.00		mg/L Ca	1	3/1/2022 2:35:35 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	3270	200	*D	mg/L	1	3/3/2022 1:01:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2202C18**
Date Reported: **3/10/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW #3
Project: Mansfield 11 **Collection Date:** 2/23/2022 2:30:00 PM
Lab ID: 2202C18-003 **Matrix:** AQUEOUS **Received Date:** 2/25/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Fluoride	ND	0.50		mg/L	5	2/25/2022 6:35:19 PM
Chloride	19	2.5		mg/L	5	2/25/2022 6:35:19 PM
Bromide	ND	0.50		mg/L	5	2/25/2022 6:35:19 PM
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	2/25/2022 6:35:19 PM
Sulfate	1600	50	*	mg/L	100	3/8/2022 9:44:09 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	2/25/2022 11:05:41 PM
EPA METHOD 200.7: METALS						Analyst: **ELS**
Calcium	610	10		mg/L	10	3/2/2022 6:12:45 PM
Magnesium	33	1.0		mg/L	1	3/2/2022 6:10:30 PM
Potassium	3.3	1.0		mg/L	1	3/2/2022 6:10:30 PM
Sodium	200	10		mg/L	10	3/2/2022 6:12:45 PM
EPA METHOD 8260B: VOLATILES						Analyst: **JR**
Benzene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Toluene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Ethylbenzene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Naphthalene	ND	2.0		µg/L	1	3/1/2022 2:59:14 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	3/1/2022 2:59:14 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	3/1/2022 2:59:14 PM
Acetone	ND	10		µg/L	1	3/1/2022 2:59:14 PM
Bromobenzene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Bromodichloromethane	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Bromoform	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Bromomethane	ND	3.0		µg/L	1	3/1/2022 2:59:14 PM
2-Butanone	ND	10		µg/L	1	3/1/2022 2:59:14 PM
Carbon disulfide	ND	10		µg/L	1	3/1/2022 2:59:14 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Chlorobenzene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Chloroethane	ND	2.0		µg/L	1	3/1/2022 2:59:14 PM
Chloroform	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Chloromethane	ND	3.0		µg/L	1	3/1/2022 2:59:14 PM
2-Chlorotoluene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
4-Chlorotoluene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
cis-1,2-DCE	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2202C18**
Date Reported: **3/10/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW #3
Project: Mansfield 11
Collection Date: 2/23/2022 2:30:00 PM
Lab ID: 2202C18-003 **Matrix:** AQUEOUS **Received Date:** 2/25/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **JR**
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	3/1/2022 2:59:14 PM
Dibromochloromethane	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Dibromomethane	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	3/1/2022 2:59:14 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
2-Hexanone	ND	10		µg/L	1	3/1/2022 2:59:14 PM
Isopropylbenzene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	3/1/2022 2:59:14 PM
Methylene Chloride	ND	3.0		µg/L	1	3/1/2022 2:59:14 PM
n-Butylbenzene	ND	3.0		µg/L	1	3/1/2022 2:59:14 PM
n-Propylbenzene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
sec-Butylbenzene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Styrene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
tert-Butylbenzene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	3/1/2022 2:59:14 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
trans-1,2-DCE	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	3/1/2022 2:59:14 PM
Vinyl chloride	ND	1.0		µg/L	1	3/1/2022 2:59:14 PM
Xylenes, Total	ND	1.5		µg/L	1	3/1/2022 2:59:14 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2202C18**
Date Reported: **3/10/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW #3
Project: Mansfield 11 **Collection Date:** 2/23/2022 2:30:00 PM
Lab ID: 2202C18-003 **Matrix:** AQUEOUS **Received Date:** 2/25/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **JR**
Surr: 1,2-Dichloroethane-d4	113	70-130		%Rec	1	3/1/2022 2:59:14 PM
Surr: 4-Bromofluorobenzene	108	70-130		%Rec	1	3/1/2022 2:59:14 PM
Surr: Dibromofluoromethane	108	70-130		%Rec	1	3/1/2022 2:59:14 PM
Surr: Toluene-d8	101	70-130		%Rec	1	3/1/2022 2:59:14 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **LRN**
Conductivity	3000	10		µmhos/c	1	3/1/2022 2:50:13 PM
SM2320B: ALKALINITY						Analyst: **LRN**
Bicarbonate (As CaCO3)	263.7	20.00		mg/L Ca	1	3/1/2022 2:50:13 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	3/1/2022 2:50:13 PM
Total Alkalinity (as CaCO3)	263.7	20.00		mg/L Ca	1	3/1/2022 2:50:13 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	2860	100	*D	mg/L	1	3/3/2022 1:01:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2202C18**
Date Reported: **3/10/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW #4
Project: Mansfield 11 **Collection Date:** 2/23/2022 1:30:00 PM
Lab ID: 2202C18-004 **Matrix:** AQUEOUS **Received Date:** 2/25/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Fluoride	ND	0.50		mg/L	5	2/25/2022 7:01:03 PM
Chloride	20	2.5		mg/L	5	2/25/2022 7:01:03 PM
Bromide	ND	0.50		mg/L	5	2/25/2022 7:01:03 PM
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	2/25/2022 7:01:03 PM
Sulfate	2000	50	*	mg/L	100	3/8/2022 9:56:34 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	2/25/2022 11:18:34 PM
EPA METHOD 200.7: METALS						Analyst: **ELS**
Calcium	620	10		mg/L	10	3/2/2022 6:26:08 PM
Magnesium	160	10		mg/L	10	3/2/2022 6:26:08 PM
Potassium	5.7	1.0		mg/L	1	3/2/2022 6:23:50 PM
Sodium	210	10		mg/L	10	3/2/2022 6:26:08 PM
EPA METHOD 8260B: VOLATILES						Analyst: **JR**
Benzene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Toluene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Ethylbenzene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Naphthalene	ND	2.0		µg/L	1	3/1/2022 3:27:50 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	3/1/2022 3:27:50 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	3/1/2022 3:27:50 PM
Acetone	ND	10		µg/L	1	3/1/2022 3:27:50 PM
Bromobenzene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Bromodichloromethane	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Bromoform	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Bromomethane	ND	3.0		µg/L	1	3/1/2022 3:27:50 PM
2-Butanone	ND	10		µg/L	1	3/1/2022 3:27:50 PM
Carbon disulfide	ND	10		µg/L	1	3/1/2022 3:27:50 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Chlorobenzene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Chloroethane	ND	2.0		µg/L	1	3/1/2022 3:27:50 PM
Chloroform	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Chloromethane	ND	3.0		µg/L	1	3/1/2022 3:27:50 PM
2-Chlorotoluene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
4-Chlorotoluene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
cis-1,2-DCE	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2202C18**
Date Reported: **3/10/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW #4
Project: Mansfield 11 **Collection Date:** 2/23/2022 1:30:00 PM
Lab ID: 2202C18-004 **Matrix:** AQUEOUS **Received Date:** 2/25/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **JR**
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	3/1/2022 3:27:50 PM
Dibromochloromethane	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Dibromomethane	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	3/1/2022 3:27:50 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
2-Hexanone	ND	10		µg/L	1	3/1/2022 3:27:50 PM
Isopropylbenzene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	3/1/2022 3:27:50 PM
Methylene Chloride	ND	3.0		µg/L	1	3/1/2022 3:27:50 PM
n-Butylbenzene	ND	3.0		µg/L	1	3/1/2022 3:27:50 PM
n-Propylbenzene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
sec-Butylbenzene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Styrene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
tert-Butylbenzene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	3/1/2022 3:27:50 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
trans-1,2-DCE	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	3/1/2022 3:27:50 PM
Vinyl chloride	ND	1.0		µg/L	1	3/1/2022 3:27:50 PM
Xylenes, Total	ND	1.5		µg/L	1	3/1/2022 3:27:50 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Estimated value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference

Analytical Report
Lab Order **2202C18**
Date Reported: **3/10/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW #4
Project: Mansfield 11 **Collection Date:** 2/23/2022 1:30:00 PM
Lab ID: 2202C18-004 **Matrix:** AQUEOUS **Received Date:** 2/25/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **JR**
Surr: 1,2-Dichloroethane-d4	110	70-130		%Rec	1	3/1/2022 3:27:50 PM
Surr: 4-Bromofluorobenzene	108	70-130		%Rec	1	3/1/2022 3:27:50 PM
Surr: Dibromofluoromethane	103	70-130		%Rec	1	3/1/2022 3:27:50 PM
Surr: Toluene-d8	99.1	70-130		%Rec	1	3/1/2022 3:27:50 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **LRN**
Conductivity	3400	10		µmhos/c	1	3/1/2022 3:04:07 PM
SM2320B: ALKALINITY						Analyst: **LRN**
Bicarbonate (As CaCO3)	280.0	20.00		mg/L Ca	1	3/1/2022 3:04:07 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	3/1/2022 3:04:07 PM
Total Alkalinity (as CaCO3)	280.0	20.00		mg/L Ca	1	3/1/2022 3:04:07 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	3430	200	*D	mg/L	1	3/3/2022 1:01:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2202C18**
Date Reported: **3/10/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW #5
Project: Mansfield 11
Collection Date: 2/22/2022 12:55:00 PM
Lab ID: 2202C18-005 **Matrix:** AQUEOUS **Received Date:** 2/25/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Fluoride	ND	0.50		mg/L	5	2/25/2022 5:18:04 PM
Chloride	15	2.5		mg/L	5	2/25/2022 5:18:04 PM
Bromide	ND	0.50		mg/L	5	2/25/2022 5:18:04 PM
Phosphorus, Orthophosphate (As P)	2.5	2.5	H	mg/L	5	2/25/2022 5:18:04 PM
Sulfate	2600	50	*	mg/L	100	3/8/2022 10:08:59 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	2/25/2022 10:27:04 PM
EPA METHOD 200.7: METALS						Analyst: **ELS**
Calcium	500	10		mg/L	10	3/2/2022 6:30:42 PM
Magnesium	23	1.0		mg/L	1	3/2/2022 6:28:30 PM
Potassium	4.9	1.0		mg/L	1	3/2/2022 6:28:30 PM
Sodium	670	10		mg/L	10	3/2/2022 6:30:42 PM
EPA METHOD 8260B: VOLATILES						Analyst: **JR**
Benzene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Toluene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Ethylbenzene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Naphthalene	ND	2.0		µg/L	1	3/1/2022 3:56:21 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	3/1/2022 3:56:21 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	3/1/2022 3:56:21 PM
Acetone	ND	10		µg/L	1	3/1/2022 3:56:21 PM
Bromobenzene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Bromodichloromethane	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Bromoform	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Bromomethane	ND	3.0		µg/L	1	3/1/2022 3:56:21 PM
2-Butanone	ND	10		µg/L	1	3/1/2022 3:56:21 PM
Carbon disulfide	ND	10		µg/L	1	3/1/2022 3:56:21 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Chlorobenzene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Chloroethane	ND	2.0		µg/L	1	3/1/2022 3:56:21 PM
Chloroform	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Chloromethane	ND	3.0		µg/L	1	3/1/2022 3:56:21 PM
2-Chlorotoluene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
4-Chlorotoluene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
cis-1,2-DCE	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2202C18**
Date Reported: **3/10/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW #5
Project: Mansfield 11
Collection Date: 2/22/2022 12:55:00 PM
Lab ID: 2202C18-005 **Matrix:** AQUEOUS **Received Date:** 2/25/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **JR**
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	3/1/2022 3:56:21 PM
Dibromochloromethane	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Dibromomethane	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	3/1/2022 3:56:21 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
2-Hexanone	ND	10		µg/L	1	3/1/2022 3:56:21 PM
Isopropylbenzene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	3/1/2022 3:56:21 PM
Methylene Chloride	ND	3.0		µg/L	1	3/1/2022 3:56:21 PM
n-Butylbenzene	ND	3.0		µg/L	1	3/1/2022 3:56:21 PM
n-Propylbenzene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
sec-Butylbenzene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Styrene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
tert-Butylbenzene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	3/1/2022 3:56:21 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
trans-1,2-DCE	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	3/1/2022 3:56:21 PM
Vinyl chloride	ND	1.0		µg/L	1	3/1/2022 3:56:21 PM
Xylenes, Total	ND	1.5		µg/L	1	3/1/2022 3:56:21 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2202C18**
Date Reported: **3/10/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW #5
Project: Mansfield 11 **Collection Date:** 2/22/2022 12:55:00 PM
Lab ID: 2202C18-005 **Matrix:** AQUEOUS **Received Date:** 2/25/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **JR**
Surr: 1,2-Dichloroethane-d4	110	70-130		%Rec	1	3/1/2022 3:56:21 PM
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	3/1/2022 3:56:21 PM
Surr: Dibromofluoromethane	102	70-130		%Rec	1	3/1/2022 3:56:21 PM
Surr: Toluene-d8	102	70-130		%Rec	1	3/1/2022 3:56:21 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **LRN**
Conductivity	4400	10		µmhos/c	1	3/1/2022 3:18:35 PM
SM2320B: ALKALINITY						Analyst: **LRN**
Bicarbonate (As CaCO3)	129.2	20.00		mg/L Ca	1	3/1/2022 3:18:35 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	3/1/2022 3:18:35 PM
Total Alkalinity (as CaCO3)	129.2	20.00		mg/L Ca	1	3/1/2022 3:18:35 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	3860	40.0	*D	mg/L	1	3/3/2022 1:01:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2202C18**
10-Mar-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **MB-65862**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Metals**
Client ID: **PBW**	Batch ID: **65862**	RunNo: **86204**
Prep Date: **3/1/2022**	Analysis Date: **3/2/2022**	SeqNo: **3038167** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LLLCS-65862**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Metals**
Client ID: **BatchQC**	Batch ID: **65862**	RunNo: **86204**
Prep Date: **3/1/2022**	Analysis Date: **3/2/2022**	SeqNo: **3038169** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0	0.5000	0	103	50	150			
Magnesium	ND	1.0	0.5000	0	105	50	150			
Potassium	ND	1.0	0.5000	0	108	50	150			
Sodium	ND	1.0	0.5000	0	95.1	50	150			

Sample ID: **LCS-65862**	SampType: **LCS**	TestCode: **EPA Method 200.7: Metals**
Client ID: **LCSW**	Batch ID: **65862**	RunNo: **86204**
Prep Date: **3/1/2022**	Analysis Date: **3/2/2022**	SeqNo: **3038171** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	50	1.0	50.00	0	99.2	85	115			
Magnesium	51	1.0	50.00	0	102	85	115			
Potassium	50	1.0	50.00	0	100	85	115			
Sodium	51	1.0	50.00	0	102	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2202C18**
10-Mar-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R86110**	RunNo: **86110**
Prep Date:	Analysis Date: **2/25/2022**	SeqNo: **3035509** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R86110**	RunNo: **86110**
Prep Date:	Analysis Date: **2/25/2022**	SeqNo: **3035517** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.47	0.10	0.5000	0	93.1	90	110			
Chloride	4.7	0.50	5.000	0	93.3	90	110			
Bromide	2.4	0.10	2.500	0	96.7	90	110			
Phosphorus, Orthophosphate (As P	4.5	0.50	5.000	0	90.0	90	110			
Nitrate+Nitrite as N	3.4	0.20	3.500	0	98.6	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R86348**	RunNo: **86348**
Prep Date:	Analysis Date: **3/8/2022**	SeqNo: **3045446** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R86348**	RunNo: **86348**
Prep Date:	Analysis Date: **3/8/2022**	SeqNo: **3045447** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.9	0.50	10.00	0	98.7	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2202C18**
10-Mar-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R86177** RunNo: **86177**
Prep Date: Analysis Date: **3/1/2022** SeqNo: **3037528** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	108	70	130			
Toluene	21	1.0	20.00	0	107	70	130			
Chlorobenzene	21	1.0	20.00	0	105	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	107	70	130			
Trichloroethene (TCE)	21	1.0	20.00	0	104	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	11		10.00		109	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID: **2202c18-001ams** SampType: **MS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **MW #1** Batch ID: **R86177** RunNo: **86177**
Prep Date: Analysis Date: **3/1/2022** SeqNo: **3037530** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.6	70	130			
Toluene	20	1.0	20.00	0	98.0	70	130			
Chlorobenzene	19	1.0	20.00	0	93.9	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	91.6	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	91.7	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: **2202c18-001amsd** SampType: **MSD** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **MW #1** Batch ID: **R86177** RunNo: **86177**
Prep Date: Analysis Date: **3/1/2022** SeqNo: **3037531** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.0	70	130	0.643	20	
Toluene	18	1.0	20.00	0	92.1	70	130	6.21	20	
Chlorobenzene	18	1.0	20.00	0	88.7	70	130	5.73	20	
1,1-Dichloroethene	18	1.0	20.00	0	88.2	70	130	3.75	20	
Trichloroethene (TCE)	17	1.0	20.00	0	86.7	70	130	5.62	20	
Surr: 1,2-Dichloroethane-d4	10		10.00		102	70	130	0	0	
Surr: 4-Bromofluorobenzene	11		10.00		109	70	130	0	0	
Surr: Dibromofluoromethane	11		10.00		106	70	130	0	0	
Surr: Toluene-d8	9.8		10.00		98.4	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2202C18**
10-Mar-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R86177** RunNo: **86177**
Prep Date: Analysis Date: **3/1/2022** SeqNo: **3037548** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2202C18**
10-Mar-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R86177** RunNo: **86177**
Prep Date: Analysis Date: **3/1/2022** SeqNo: **3037548** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		110	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		104	70	130			
Surr: Dibromofluoromethane	11		10.00		108	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2202C18**
10-Mar-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **lcs-1 100.2uS eC** SampType: **lcs** TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW** Batch ID: **R86174** RunNo: **86174**
Prep Date: Analysis Date: **3/1/2022** SeqNo: **3037398** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	100.0	0	102	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2202C18**
10-Mar-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R86174**	RunNo: **86174**							
Prep Date:	Analysis Date: **3/1/2022**	SeqNo: **3037261**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R86174**	RunNo: **86174**							
Prep Date:	Analysis Date: **3/1/2022**	SeqNo: **3037262**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	73.80	20.00	80.00	0	92.2	90	110			

Sample ID: **MB-2 ALK**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R86174**	RunNo: **86174**							
Prep Date:	Analysis Date: **3/1/2022**	SeqNo: **3037284**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **LCS-2 ALK**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R86174**	RunNo: **86174**							
Prep Date:	Analysis Date: **3/1/2022**	SeqNo: **3037285**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	73.68	20.00	80.00	0	92.1	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2202C18**
10-Mar-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **MB-65858** SampType: **MBLK** TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW** Batch ID: **65858** RunNo: **86225**
Prep Date: **3/1/2022** Analysis Date: **3/3/2022** SeqNo: **3039204** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-65858** SampType: **LCS** TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW** Batch ID: **65858** RunNo: **86225**
Prep Date: **3/1/2022** Analysis Date: **3/3/2022** SeqNo: **3039205** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2202C18 RcptNo: 1

Received By: Cheyenne Cason 2/25/2022 8:00:00 AM

Completed By: Sean Livingston 2/25/2022 9:00:02 AM

Reviewed By: VDG 2/25/22

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: 10 (<2 or >12 unless noted)
Adjusted? NO
Checked by: SR 2/25/22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.2	Good				

Chain-of-Custody Record

Client: Hilcorp Farmington NM

Mailing Address: 382 Road 3100 Aztec, NM 87410

Billing Address: PO Box 61529 Houston, TX 77208

Phone #: 505-486-9543

email or Fax#: khoekstra@hilcorp.com

QA/QC Package: mkillough@hilcorp.com

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

X Standard ☐ Rush

Project Name: Mansfield #11

Project #:

Project Manager: Mitch Killough

Sampler: Kurt Hoekstra

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 2.3-0.1=2.2

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2202018	250 Cations/Anions/TDS 500ml, 125ml HNO3, 125ml H2SO4	Volatiles 8260 40ml VOA HCl	NO SAMPLES FIELD FILTERED	
2-23	9:50	Water	MW #1	Various	Various	001	X	X		
2-23	10:55	Water	MW #2	Various	Various	002	X	X		
2-23	2:30	Water	MW #3	Various	Various	003	X	X		
2-23	1:30	Water	MW #4	Various	Various	004	X	X		
2-22	12:55	Water	MW #5	Various	Various	005	X	X		

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
2-23	1536	Kurt Hoekstra		Courier	2/23/23	1536
2/23/23	1810					

Received by: Via: Date Time

Courier 2/25/23 0800

Remarks: Seal intact

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

July 12, 2022

Stuart Hyde
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX:

RE: Mansfield H11 OrderNo.: 2206E17

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 5 sample(s) on 6/25/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2206E17**
Date Reported: **7/12/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW01
Project: Mansfield H11 **Collection Date:** 6/24/2022 1:30:00 PM
Lab ID: 2206E17-001 **Matrix:** GROUNDWA **Received Date:** 6/25/2022 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Fluoride	ND	0.50		mg/L	5	6/27/2022 5:45:51 PM
Chloride	23	2.5		mg/L	5	6/27/2022 5:45:51 PM
Bromide	ND	0.50		mg/L	5	6/27/2022 5:45:51 PM
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	6/27/2022 5:45:51 PM
Sulfate	2100	50	*	mg/L	100	6/30/2022 3:48:58 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	7/5/2022 2:27:01 PM
EPA METHOD 200.7: METALS						Analyst: **JLF**
Calcium	550	10		mg/L	10	6/29/2022 9:09:00 PM
Magnesium	120	10		mg/L	10	6/29/2022 9:09:00 PM
Potassium	6.2	1.0		mg/L	1	6/29/2022 9:06:50 PM
Sodium	200	10		mg/L	10	6/29/2022 9:09:00 PM
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Benzene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Toluene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Ethylbenzene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Naphthalene	ND	2.0		µg/L	1	7/5/2022 12:02:13 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	7/5/2022 12:02:13 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	7/5/2022 12:02:13 PM
Acetone	ND	10		µg/L	1	7/5/2022 12:02:13 PM
Bromobenzene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Bromodichloromethane	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Bromoform	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Bromomethane	ND	3.0		µg/L	1	7/5/2022 12:02:13 PM
2-Butanone	ND	10		µg/L	1	7/5/2022 12:02:13 PM
Carbon disulfide	ND	10		µg/L	1	7/5/2022 12:02:13 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Chlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Chloroethane	ND	2.0		µg/L	1	7/5/2022 12:02:13 PM
Chloroform	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Chloromethane	ND	3.0		µg/L	1	7/5/2022 12:02:13 PM
2-Chlorotoluene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
4-Chlorotoluene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
cis-1,2-DCE	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206E17**
Date Reported: **7/12/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW01
Project: Mansfield H11 **Collection Date:** 6/24/2022 1:30:00 PM
Lab ID: 2206E17-001 **Matrix:** GROUNDWA **Received Date:** 6/25/2022 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	7/5/2022 12:02:13 PM
Dibromochloromethane	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Dibromomethane	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	7/5/2022 12:02:13 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
2-Hexanone	ND	10		µg/L	1	7/5/2022 12:02:13 PM
Isopropylbenzene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	7/5/2022 12:02:13 PM
Methylene Chloride	ND	3.0		µg/L	1	7/5/2022 12:02:13 PM
n-Butylbenzene	ND	3.0		µg/L	1	7/5/2022 12:02:13 PM
n-Propylbenzene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
sec-Butylbenzene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Styrene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
tert-Butylbenzene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	7/5/2022 12:02:13 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
trans-1,2-DCE	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	7/5/2022 12:02:13 PM
Vinyl chloride	ND	1.0		µg/L	1	7/5/2022 12:02:13 PM
Xylenes, Total	ND	1.5		µg/L	1	7/5/2022 12:02:13 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Estimated value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference

Analytical Report
Lab Order **2206E17**
Date Reported: **7/12/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW01
Project: Mansfield H11 **Collection Date:** 6/24/2022 1:30:00 PM
Lab ID: 2206E17-001 **Matrix:** GROUNDWA **Received Date:** 6/25/2022 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Surr: 1,2-Dichloroethane-d4	110	70-130		%Rec	1	7/5/2022 12:02:13 PM
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	1	7/5/2022 12:02:13 PM
Surr: Dibromofluoromethane	112	70-130		%Rec	1	7/5/2022 12:02:13 PM
Surr: Toluene-d8	102	70-130		%Rec	1	7/5/2022 12:02:13 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **LRN**
Conductivity	3500	10		µmhos/c	1	6/29/2022 1:52:48 PM
SM4500-H+B / 9040C: PH						Analyst: **CAS**
pH	7.32		H	pH units	1	6/27/2022 9:17:21 PM
SM2320B: ALKALINITY						Analyst: **CAS**
Bicarbonate (As CaCO3)	281.5	20.00		mg/L Ca	1	6/27/2022 9:17:21 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	6/27/2022 9:17:21 PM
Total Alkalinity (as CaCO3)	281.5	20.00		mg/L Ca	1	6/27/2022 9:17:21 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	3010	200	*D	mg/L	1	7/1/2022 6:39:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206E17**
Date Reported: **7/12/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW02
Project: Mansfield H11 **Collection Date:** 6/24/2022 12:47:00 PM
Lab ID: 2206E17-002 **Matrix:** GROUNDWA **Received Date:** 6/25/2022 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Fluoride	ND	0.50		mg/L	5	6/27/2022 6:11:35 PM
Chloride	21	2.5		mg/L	5	6/27/2022 6:11:35 PM
Bromide	ND	0.50		mg/L	5	6/27/2022 6:11:35 PM
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	6/27/2022 6:11:35 PM
Sulfate	2100	50	*	mg/L	100	6/30/2022 4:01:50 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	7/5/2022 2:39:53 PM
EPA METHOD 200.7: METALS						Analyst: **JLF**
Calcium	540	10		mg/L	10	6/29/2022 9:13:14 PM
Magnesium	140	10		mg/L	10	6/29/2022 9:13:14 PM
Potassium	5.7	1.0		mg/L	1	6/29/2022 9:11:10 PM
Sodium	190	10		mg/L	10	6/29/2022 9:13:14 PM
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Benzene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Toluene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Ethylbenzene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Naphthalene	ND	2.0		µg/L	1	7/5/2022 12:30:56 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	7/5/2022 12:30:56 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	7/5/2022 12:30:56 PM
Acetone	ND	10		µg/L	1	7/5/2022 12:30:56 PM
Bromobenzene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Bromodichloromethane	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Bromoform	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Bromomethane	ND	3.0		µg/L	1	7/5/2022 12:30:56 PM
2-Butanone	ND	10		µg/L	1	7/5/2022 12:30:56 PM
Carbon disulfide	ND	10		µg/L	1	7/5/2022 12:30:56 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Chlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Chloroethane	ND	2.0		µg/L	1	7/5/2022 12:30:56 PM
Chloroform	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Chloromethane	ND	3.0		µg/L	1	7/5/2022 12:30:56 PM
2-Chlorotoluene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
4-Chlorotoluene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
cis-1,2-DCE	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206E17**
Date Reported: **7/12/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW02
Project: Mansfield H11 **Collection Date:** 6/24/2022 12:47:00 PM
Lab ID: 2206E17-002 **Matrix:** GROUNDWA **Received Date:** 6/25/2022 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	7/5/2022 12:30:56 PM
Dibromochloromethane	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Dibromomethane	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	7/5/2022 12:30:56 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
2-Hexanone	ND	10		µg/L	1	7/5/2022 12:30:56 PM
Isopropylbenzene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	7/5/2022 12:30:56 PM
Methylene Chloride	ND	3.0		µg/L	1	7/5/2022 12:30:56 PM
n-Butylbenzene	ND	3.0		µg/L	1	7/5/2022 12:30:56 PM
n-Propylbenzene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
sec-Butylbenzene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Styrene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
tert-Butylbenzene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	7/5/2022 12:30:56 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
trans-1,2-DCE	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	7/5/2022 12:30:56 PM
Vinyl chloride	ND	1.0		µg/L	1	7/5/2022 12:30:56 PM
Xylenes, Total	ND	1.5		µg/L	1	7/5/2022 12:30:56 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2206E17**
Date Reported: **7/12/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW02
Project: Mansfield H11 **Collection Date:** 6/24/2022 12:47:00 PM
Lab ID: 2206E17-002 **Matrix:** GROUNDWA **Received Date:** 6/25/2022 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Surr: 1,2-Dichloroethane-d4	114	70-130		%Rec	1	7/5/2022 12:30:56 PM
Surr: 4-Bromofluorobenzene	105	70-130		%Rec	1	7/5/2022 12:30:56 PM
Surr: Dibromofluoromethane	118	70-130		%Rec	1	7/5/2022 12:30:56 PM
Surr: Toluene-d8	102	70-130		%Rec	1	7/5/2022 12:30:56 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **LRN**
Conductivity	3500	10		µmhos/c	1	6/29/2022 1:55:48 PM
SM4500-H+B / 9040C: PH						Analyst: **CAS**
pH	7.28		H	pH units	1	6/27/2022 9:31:32 PM
SM2320B: ALKALINITY						Analyst: **CAS**
Bicarbonate (As CaCO3)	284.4	20.00		mg/L Ca	1	6/27/2022 9:31:32 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	6/27/2022 9:31:32 PM
Total Alkalinity (as CaCO3)	284.4	20.00		mg/L Ca	1	6/27/2022 9:31:32 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	3430	200	*D	mg/L	1	7/1/2022 6:39:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206E17**
Date Reported: **7/12/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW03
Project: Mansfield H11 **Collection Date:** 6/24/2022 2:07:00 PM
Lab ID: 2206E17-003 **Matrix:** GROUNDWA **Received Date:** 6/25/2022 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Fluoride	ND	0.50		mg/L	5	6/27/2022 7:03:04 PM
Chloride	20	2.5		mg/L	5	6/27/2022 7:03:04 PM
Bromide	ND	0.50		mg/L	5	6/27/2022 7:03:04 PM
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	6/27/2022 7:03:04 PM
Sulfate	1900	25	*	mg/L	50	6/30/2022 4:14:43 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	7/5/2022 2:52:45 PM
EPA METHOD 200.7: METALS						Analyst: **JLF**
Calcium	590	10		mg/L	10	6/29/2022 9:17:29 PM
Magnesium	34	1.0		mg/L	1	6/29/2022 9:15:25 PM
Potassium	4.6	1.0		mg/L	1	6/29/2022 9:15:25 PM
Sodium	190	10		mg/L	10	6/29/2022 9:17:29 PM
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Benzene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Toluene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Ethylbenzene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Naphthalene	ND	2.0		µg/L	1	7/5/2022 12:59:33 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	7/5/2022 12:59:33 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	7/5/2022 12:59:33 PM
Acetone	ND	10		µg/L	1	7/5/2022 12:59:33 PM
Bromobenzene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Bromodichloromethane	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Bromoform	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Bromomethane	ND	3.0		µg/L	1	7/5/2022 12:59:33 PM
2-Butanone	ND	10		µg/L	1	7/5/2022 12:59:33 PM
Carbon disulfide	ND	10		µg/L	1	7/5/2022 12:59:33 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Chlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Chloroethane	ND	2.0		µg/L	1	7/5/2022 12:59:33 PM
Chloroform	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Chloromethane	ND	3.0		µg/L	1	7/5/2022 12:59:33 PM
2-Chlorotoluene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
4-Chlorotoluene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
cis-1,2-DCE	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206E17**
Date Reported: **7/12/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW03
Project: Mansfield H11 **Collection Date:** 6/24/2022 2:07:00 PM
Lab ID: 2206E17-003 **Matrix:** GROUNDWA **Received Date:** 6/25/2022 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	7/5/2022 12:59:33 PM
Dibromochloromethane	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Dibromomethane	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	7/5/2022 12:59:33 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
2-Hexanone	ND	10		µg/L	1	7/5/2022 12:59:33 PM
Isopropylbenzene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	7/5/2022 12:59:33 PM
Methylene Chloride	ND	3.0		µg/L	1	7/5/2022 12:59:33 PM
n-Butylbenzene	ND	3.0		µg/L	1	7/5/2022 12:59:33 PM
n-Propylbenzene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
sec-Butylbenzene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Styrene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
tert-Butylbenzene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	7/5/2022 12:59:33 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
trans-1,2-DCE	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	7/5/2022 12:59:33 PM
Vinyl chloride	ND	1.0		µg/L	1	7/5/2022 12:59:33 PM
Xylenes, Total	ND	1.5		µg/L	1	7/5/2022 12:59:33 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Estimated value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference

Analytical Report
Lab Order **2206E17**
Date Reported: **7/12/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW03
Project: Mansfield H11 **Collection Date:** 6/24/2022 2:07:00 PM
Lab ID: 2206E17-003 **Matrix:** GROUNDWA **Received Date:** 6/25/2022 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Surr: 1,2-Dichloroethane-d4	114	70-130		%Rec	1	7/5/2022 12:59:33 PM
Surr: 4-Bromofluorobenzene	109	70-130		%Rec	1	7/5/2022 12:59:33 PM
Surr: Dibromofluoromethane	118	70-130		%Rec	1	7/5/2022 12:59:33 PM
Surr: Toluene-d8	100	70-130		%Rec	1	7/5/2022 12:59:33 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **LRN**
Conductivity	3100	10		µmhos/c	1	6/29/2022 1:58:48 PM
SM4500-H+B / 9040C: PH						Analyst: **CAS**
pH	7.42		H	pH units	1	6/27/2022 9:45:54 PM
SM2320B: ALKALINITY						Analyst: **CAS**
Bicarbonate (As CaCO3)	265.8	20.00		mg/L Ca	1	6/27/2022 9:45:54 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	6/27/2022 9:45:54 PM
Total Alkalinity (as CaCO3)	265.8	20.00		mg/L Ca	1	6/27/2022 9:45:54 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	3000	100	*D	mg/L	1	7/1/2022 6:39:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206E17**
Date Reported: **7/12/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW04
Project: Mansfield H11 **Collection Date:** 6/24/2022 12:00:00 PM
Lab ID: 2206E17-004 **Matrix:** GROUNDWA **Received Date:** 6/25/2022 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Fluoride	ND	0.50		mg/L	5	6/27/2022 7:28:48 PM
Chloride	21	2.5		mg/L	5	6/27/2022 7:28:48 PM
Bromide	ND	0.50		mg/L	5	6/27/2022 7:28:48 PM
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	6/27/2022 7:28:48 PM
Sulfate	2000	50	*	mg/L	100	6/30/2022 4:53:19 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	7/5/2022 3:05:37 PM
EPA METHOD 200.7: METALS						Analyst: **JLF**
Calcium	590	10		mg/L	10	6/29/2022 9:21:54 PM
Magnesium	160	10		mg/L	10	6/29/2022 9:21:54 PM
Potassium	7.5	1.0		mg/L	1	6/29/2022 9:19:41 PM
Sodium	190	10		mg/L	10	6/29/2022 9:21:54 PM
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Benzene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Toluene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Ethylbenzene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Naphthalene	ND	2.0		µg/L	1	7/5/2022 1:28:08 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	7/5/2022 1:28:08 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	7/5/2022 1:28:08 PM
Acetone	ND	10		µg/L	1	7/5/2022 1:28:08 PM
Bromobenzene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Bromodichloromethane	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Bromoform	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Bromomethane	ND	3.0		µg/L	1	7/5/2022 1:28:08 PM
2-Butanone	ND	10		µg/L	1	7/5/2022 1:28:08 PM
Carbon disulfide	ND	10		µg/L	1	7/5/2022 1:28:08 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Chlorobenzene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Chloroethane	ND	2.0		µg/L	1	7/5/2022 1:28:08 PM
Chloroform	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Chloromethane	ND	3.0		µg/L	1	7/5/2022 1:28:08 PM
2-Chlorotoluene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
4-Chlorotoluene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
cis-1,2-DCE	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206E17**
Date Reported: **7/12/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW04
Project: Mansfield H11 **Collection Date:** 6/24/2022 12:00:00 PM
Lab ID: 2206E17-004 **Matrix:** GROUNDWA **Received Date:** 6/25/2022 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	7/5/2022 1:28:08 PM
Dibromochloromethane	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Dibromomethane	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	7/5/2022 1:28:08 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
2-Hexanone	ND	10		µg/L	1	7/5/2022 1:28:08 PM
Isopropylbenzene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	7/5/2022 1:28:08 PM
Methylene Chloride	ND	3.0		µg/L	1	7/5/2022 1:28:08 PM
n-Butylbenzene	ND	3.0		µg/L	1	7/5/2022 1:28:08 PM
n-Propylbenzene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
sec-Butylbenzene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Styrene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
tert-Butylbenzene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	7/5/2022 1:28:08 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
trans-1,2-DCE	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	7/5/2022 1:28:08 PM
Vinyl chloride	ND	1.0		µg/L	1	7/5/2022 1:28:08 PM
Xylenes, Total	ND	1.5		µg/L	1	7/5/2022 1:28:08 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206E17**
Date Reported: **7/12/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW04
Project: Mansfield H11 **Collection Date:** 6/24/2022 12:00:00 PM
Lab ID: 2206E17-004 **Matrix:** GROUNDWA **Received Date:** 6/25/2022 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Surr: 1,2-Dichloroethane-d4	114	70-130		%Rec	1	7/5/2022 1:28:08 PM
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	7/5/2022 1:28:08 PM
Surr: Dibromofluoromethane	118	70-130		%Rec	1	7/5/2022 1:28:08 PM
Surr: Toluene-d8	102	70-130		%Rec	1	7/5/2022 1:28:08 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **LRN**
Conductivity	3500	10		µmhos/c	1	6/29/2022 2:01:48 PM
SM4500-H+B / 9040C: PH						Analyst: **CAS**
pH	7.38		H	pH units	1	6/27/2022 9:59:31 PM
SM2320B: ALKALINITY						Analyst: **CAS**
Bicarbonate (As CaCO3)	279.9	20.00		mg/L Ca	1	6/27/2022 9:59:31 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	6/27/2022 9:59:31 PM
Total Alkalinity (as CaCO3)	279.9	20.00		mg/L Ca	1	6/27/2022 9:59:31 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	3310	200	*D	mg/L	1	7/1/2022 6:39:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206E17**
Date Reported: **7/12/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW05
Project: Mansfield H11 **Collection Date:** 6/24/2022 2:42:00 PM
Lab ID: 2206E17-005 **Matrix:** GROUNDWA **Received Date:** 6/25/2022 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Fluoride	ND	0.50		mg/L	5	6/27/2022 8:20:16 PM
Chloride	17	2.5		mg/L	5	6/27/2022 8:20:16 PM
Bromide	ND	0.50		mg/L	5	6/27/2022 8:20:16 PM
Phosphorus, Orthophosphate (As P)	ND	10	H	mg/L	20	6/27/2022 8:33:08 PM
Sulfate	2800	50	*	mg/L	100	6/30/2022 5:06:12 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	7/5/2022 3:18:28 PM
EPA METHOD 200.7: METALS						Analyst: **JLF**
Calcium	470	10		mg/L	10	6/29/2022 9:34:20 PM
Magnesium	22	1.0		mg/L	1	6/29/2022 9:32:16 PM
Potassium	5.7	1.0		mg/L	1	6/29/2022 9:32:16 PM
Sodium	650	10		mg/L	10	6/29/2022 9:34:20 PM
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Benzene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Toluene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Ethylbenzene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Naphthalene	ND	2.0		µg/L	1	7/5/2022 1:56:47 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	7/5/2022 1:56:47 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	7/5/2022 1:56:47 PM
Acetone	ND	10		µg/L	1	7/5/2022 1:56:47 PM
Bromobenzene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Bromodichloromethane	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Bromoform	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Bromomethane	ND	3.0		µg/L	1	7/5/2022 1:56:47 PM
2-Butanone	ND	10		µg/L	1	7/5/2022 1:56:47 PM
Carbon disulfide	ND	10		µg/L	1	7/5/2022 1:56:47 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Chlorobenzene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Chloroethane	ND	2.0		µg/L	1	7/5/2022 1:56:47 PM
Chloroform	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Chloromethane	ND	3.0		µg/L	1	7/5/2022 1:56:47 PM
2-Chlorotoluene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
4-Chlorotoluene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
cis-1,2-DCE	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2206E17**
Date Reported: **7/12/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW05
Project: Mansfield H11 **Collection Date:** 6/24/2022 2:42:00 PM
Lab ID: 2206E17-005 **Matrix:** GROUNDWA **Received Date:** 6/25/2022 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	7/5/2022 1:56:47 PM
Dibromochloromethane	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Dibromomethane	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	7/5/2022 1:56:47 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
2-Hexanone	ND	10		µg/L	1	7/5/2022 1:56:47 PM
Isopropylbenzene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	7/5/2022 1:56:47 PM
Methylene Chloride	ND	3.0		µg/L	1	7/5/2022 1:56:47 PM
n-Butylbenzene	ND	3.0		µg/L	1	7/5/2022 1:56:47 PM
n-Propylbenzene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
sec-Butylbenzene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Styrene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
tert-Butylbenzene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	7/5/2022 1:56:47 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
trans-1,2-DCE	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	7/5/2022 1:56:47 PM
Vinyl chloride	ND	1.0		µg/L	1	7/5/2022 1:56:47 PM
Xylenes, Total	ND	1.5		µg/L	1	7/5/2022 1:56:47 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Estimated value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference

Analytical Report
Lab Order **2206E17**
Date Reported: **7/12/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW05
Project: Mansfield H11 **Collection Date:** 6/24/2022 2:42:00 PM
Lab ID: 2206E17-005 **Matrix:** GROUNDWA **Received Date:** 6/25/2022 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	1	7/5/2022 1:56:47 PM
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	7/5/2022 1:56:47 PM
Surr: Dibromofluoromethane	120	70-130		%Rec	1	7/5/2022 1:56:47 PM
Surr: Toluene-d8	102	70-130		%Rec	1	7/5/2022 1:56:47 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **LRN**
Conductivity	4600	10		µmhos/c	1	6/29/2022 2:04:48 PM
SM4500-H+B / 9040C: PH						Analyst: **CAS**
pH	7.64		H	pH units	1	6/27/2022 10:13:40 PM
SM2320B: ALKALINITY						Analyst: **CAS**
Bicarbonate (As CaCO3)	140.1	20.00		mg/L Ca	1	6/27/2022 10:13:40 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	6/27/2022 10:13:40 PM
Total Alkalinity (as CaCO3)	140.1	20.00		mg/L Ca	1	6/27/2022 10:13:40 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	3980	100	*D	mg/L	1	7/1/2022 6:39:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206E17**

12-Jul-22

Client: HILCORP ENERGY

Project: Mansfield H11

Sample ID: **MB-68406**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Metals**
Client ID: **PBW**	Batch ID: **68406**	RunNo: **89144**
Prep Date: **6/28/2022**	Analysis Date: **6/29/2022**	SeqNo: **3167860** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LCSLL-68406**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Metals**
Client ID: **BatchQC**	Batch ID: **68406**	RunNo: **89144**
Prep Date: **6/28/2022**	Analysis Date: **6/29/2022**	SeqNo: **3167861** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0	0.5000	0	99.4	50	150			
Magnesium	ND	1.0	0.5000	0	100	50	150			
Potassium	ND	1.0	0.5000	0	102	50	150			
Sodium	ND	1.0	0.5000	0	102	50	150			

Sample ID: **LCS-68406**	SampType: **LCS**	TestCode: **EPA Method 200.7: Metals**
Client ID: **LCSW**	Batch ID: **68406**	RunNo: **89144**
Prep Date: **6/28/2022**	Analysis Date: **6/29/2022**	SeqNo: **3167862** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	50	1.0	50.00	0	99.3	85	115			
Magnesium	50	1.0	50.00	0	100	85	115			
Potassium	50	1.0	50.00	0	99.4	85	115			
Sodium	50	1.0	50.00	0	101	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206E17**

12-Jul-22

Client: HILCORP ENERGY

Project: Mansfield H11

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R89065**	RunNo: **89065**
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3163601** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P)	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R89065**	RunNo: **89065**
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3163602** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	102	90	110			
Chloride	4.7	0.50	5.000	0	94.9	90	110			
Bromide	2.5	0.10	2.500	0	99.6	90	110			
Phosphorus, Orthophosphate (As P)	4.7	0.50	5.000	0	93.1	90	110			

Sample ID: **2206E17-004BMS**	SampType: **ms**	TestCode: **EPA Method 300.0: Anions**
Client ID: **MW04**	Batch ID: **R89065**	RunNo: **89065**
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3163639** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	2.8	0.50	2.500	0.3910	95.8	79.7	110			
Chloride	46	2.5	25.00	20.85	99.9	86.3	114			
Bromide	13	0.50	12.50	0	101	91.2	106			

Sample ID: **2206E17-004BMSD**	SampType: **msd**	TestCode: **EPA Method 300.0: Anions**
Client ID: **MW04**	Batch ID: **R89065**	RunNo: **89065**
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3163640** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	2.8	0.50	2.500	0.3910	96.5	79.7	110	0.626	20	
Chloride	45	2.5	25.00	20.85	98.2	86.3	114	0.934	20	
Bromide	13	0.50	12.50	0	100	91.2	106	0.131	20	

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R89175**	RunNo: **89175**
Prep Date:	Analysis Date: **6/30/2022**	SeqNo: **3169519** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206E17**

12-Jul-22

Client: HILCORP ENERGY

Project: Mansfield H11

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R89249**	RunNo: **89249**
Prep Date:	Analysis Date: **7/5/2022**	SeqNo: **3173045** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as N	ND	0.20								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R89249**	RunNo: **89249**
Prep Date:	Analysis Date: **7/5/2022**	SeqNo: **3173046** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as N	3.6	0.20	3.500	0	102	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206E17**
12-Jul-22

Client: HILCORP ENERGY
Project: Mansfield H11

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R89226**	RunNo: **89226**
Prep Date:	Analysis Date: **7/5/2022**	SeqNo: **3171976** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	108	70	130			
Toluene	20	1.0	20.00	0	99.0	70	130			
Chlorobenzene	21	1.0	20.00	0	103	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	107	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	11		10.00		114	70	130			
Surr: Toluene-d8	9.8		10.00		98.1	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R89226**	RunNo: **89226**
Prep Date:	Analysis Date: **7/5/2022**	SeqNo: **3171983** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206E17**
12-Jul-22

Client: HILCORP ENERGY
Project: Mansfield H11

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R89226**	RunNo: **89226**
Prep Date:	Analysis Date: **7/5/2022**	SeqNo: **3171983** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206E17**

12-Jul-22

Client: HILCORP ENERGY

Project: Mansfield H11

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R89226**	RunNo: **89226**
Prep Date:	Analysis Date: **7/5/2022**	SeqNo: **3171983** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		109	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		105	70	130			
Surr: Dibromofluoromethane	11		10.00		112	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: **2206e17-001a ms**	SampType: **MS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **MW01**	Batch ID: **R89226**	RunNo: **89226**
Prep Date:	Analysis Date: **7/5/2022**	SeqNo: **3172954** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	24	1.0	20.00	0	120	70	130			
Toluene	21	1.0	20.00	0	104	70	130			
Chlorobenzene	21	1.0	20.00	0	103	70	130			
1,1-Dichloroethene	23	1.0	20.00	0	116	70	130			
Trichloroethene (TCE)	22	1.0	20.00	0	110	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		112	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Dibromofluoromethane	13		10.00		127	70	130			
Surr: Toluene-d8	9.9		10.00		99.0	70	130			

Sample ID: **2206e17-001a msd**	SampType: **MSD**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **MW01**	Batch ID: **R89226**	RunNo: **89226**
Prep Date:	Analysis Date: **7/5/2022**	SeqNo: **3172955** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	23	1.0	20.00	0	117	70	130	2.50	20	
Toluene	20	1.0	20.00	0	100	70	130	3.62	20	
Chlorobenzene	20	1.0	20.00	0	101	70	130	1.93	20	
1,1-Dichloroethene	22	1.0	20.00	0	108	70	130	7.36	20	
Trichloroethene (TCE)	22	1.0	20.00	0	109	70	130	0.673	20	
Surr: 1,2-Dichloroethane-d4	11		10.00		115	70	130	0	0	
Surr: 4-Bromofluorobenzene	11		10.00		108	70	130	0	0	
Surr: Dibromofluoromethane	13		10.00		126	70	130	0	0	
Surr: Toluene-d8	9.9		10.00		99.2	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206E17**

12-Jul-22

Client: HILCORP ENERGY

Project: Mansfield H11

Sample ID: **lcs-1 99.6uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R89141**	RunNo: **89141**
Prep Date:	Analysis Date: **6/29/2022**	SeqNo: **3167818** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	99.60	0	102	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206E17**

12-Jul-22

Client: HILCORP ENERGY

Project: Mansfield H11

Sample ID: **2206E17-005B dup**	SampType: **DUP**	TestCode: **SM4500-H+B / 9040C: pH**							
Client ID: **MW05**	Batch ID: **R89067**	RunNo: **89067**							
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3163845**	Units: **pH units**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.67									H

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206E17**

12-Jul-22

Client: HILCORP ENERGY

Project: Mansfield H11

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **A89067**	RunNo: **89067**							
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3163739**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **A89067**	RunNo: **89067**							
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3163741**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	74.84	20.00	80.00	0	93.5	90	110			

Sample ID: **2206E17-005B dup**	SampType: **dup**	TestCode: **SM2320B: Alkalinity**							
Client ID: **MW05**	Batch ID: **A89067**	RunNo: **89067**							
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3163756**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	139.8	20.00						0.200	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206E17**

12-Jul-22

Client: HILCORP ENERGY

Project: Mansfield H11

Sample ID: **MB-68467**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **68467**	RunNo: **89199**
Prep Date: **6/30/2022**	Analysis Date: **7/1/2022**	SeqNo: **3170769** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-68467**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **68467**	RunNo: **89199**
Prep Date: **6/30/2022**	Analysis Date: **7/1/2022**	SeqNo: **3170770** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2206E17 RcptNo: 1

Received By: **Sean Livingston** 6/25/2022 9:30:00 AM Sean Livingston

Completed By: **Sean Livingston** 6/25/2022 11:59:45 AM Sean Livingston

Reviewed By: JM 6/27/22

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☑ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: 10 (<2 or >12 unless noted)
Adjusted? NO
Checked by: KPA 6.27.22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.9	Good				
2	1.3	Good				

Chain-of-Custody Record

Client: Hilcorp
Attn: Mitch Killough
Mailing Address:

Phone #:
email or Fax#: mkillough@hilcorp.com
QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time: 5 day
☒ Standard ☐ Rush
Project Name: Mansfield #11
Project #:
Project Manager: Stuart Hyde
shyde@ensolum.com
Sampler: Reece Hanson
On Ice: ☒ Yes ☐ No
# of Coolers: 2
Cooler Temp (including CF): 0.9 ±0=0.9 (°C)
1.3±0=1.3°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2206E17	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	VOC's by 8260	TDS	Cations	Anions	pH
6/24/22	1330	GW	MW01	Multiple	Cool	001											X	X	X	X	X
↓	1247	↓	MW02	↓	↓	002											↓	↓	↓	↓	↓
↓	1407	↓	MW03	↓	↓	003											↓	↓	↓	↓	↓
↓	1200	↓	MW04	↓	↓	004											↓	↓	↓	↓	↓
↓	1442	↓	MW05	↓	↓	005											↓	↓	↓	↓	↓

Date	Time	Relinquished by	Received by	Via	Date	Time
6/24/22	1552	[signature]	[signature]		6/24/22	1552
6/24/22	1802	[signature]	See	courier	6/25/22	9:30

Remarks: cc: rhanson@ensolum.com

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 04, 2022

Mitch Killough
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX:

RE: Mansfield 11 OrderNo.: 2209884

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 5 sample(s) on 9/17/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2209884**
Date Reported: **10/4/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-1
Project: Mansfield 11
Collection Date: 9/16/2022 10:35:00 AM
Lab ID: 2209884-001 **Matrix:** AQUEOUS **Received Date:** 9/17/2022 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Fluoride	0.69	0.50		mg/L	5	9/21/2022 12:31:51 PM
Chloride	21	2.5		mg/L	5	9/19/2022 8:36:12 PM
Bromide	ND	0.50		mg/L	5	9/19/2022 8:36:12 PM
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	9/19/2022 8:36:12 PM
Sulfate	1900	25	*	mg/L	50	9/21/2022 12:44:44 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	9/19/2022 11:41:14 PM
EPA METHOD 200.7: METALS						Analyst: **VP**
Calcium	560	10		mg/L	10	9/23/2022 11:22:17 AM
Magnesium	130	5.0		mg/L	5	9/21/2022 12:28:00 PM
Potassium	5.4	1.0		mg/L	1	9/21/2022 12:26:34 PM
Sodium	220	5.0		mg/L	5	9/21/2022 12:28:00 PM
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Benzene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Toluene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Ethylbenzene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Naphthalene	ND	2.0		µg/L	1	9/20/2022 7:19:00 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	9/20/2022 7:19:00 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	9/20/2022 7:19:00 PM
Acetone	ND	10		µg/L	1	9/20/2022 7:19:00 PM
Bromobenzene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Bromodichloromethane	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Bromoform	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Bromomethane	ND	3.0		µg/L	1	9/20/2022 7:19:00 PM
2-Butanone	ND	10		µg/L	1	9/20/2022 7:19:00 PM
Carbon disulfide	ND	10		µg/L	1	9/20/2022 7:19:00 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Chlorobenzene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Chloroethane	ND	2.0		µg/L	1	9/20/2022 7:19:00 PM
Chloroform	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Chloromethane	ND	3.0		µg/L	1	9/20/2022 7:19:00 PM
2-Chlorotoluene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
4-Chlorotoluene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
cis-1,2-DCE	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2209884**
Date Reported: **10/4/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-1
Project: Mansfield 11
Collection Date: 9/16/2022 10:35:00 AM
Lab ID: 2209884-001 **Matrix:** AQUEOUS **Received Date:** 9/17/2022 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	9/20/2022 7:19:00 PM
Dibromochloromethane	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Dibromomethane	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	9/20/2022 7:19:00 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
2-Hexanone	ND	10		µg/L	1	9/20/2022 7:19:00 PM
Isopropylbenzene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	9/20/2022 7:19:00 PM
Methylene Chloride	ND	3.0		µg/L	1	9/20/2022 7:19:00 PM
n-Butylbenzene	ND	3.0		µg/L	1	9/20/2022 7:19:00 PM
n-Propylbenzene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
sec-Butylbenzene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Styrene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
tert-Butylbenzene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	9/20/2022 7:19:00 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
trans-1,2-DCE	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	9/20/2022 7:19:00 PM
Vinyl chloride	ND	1.0		µg/L	1	9/20/2022 7:19:00 PM
Xylenes, Total	ND	1.5		µg/L	1	9/20/2022 7:19:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2209884**
Date Reported: **10/4/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-1
Project: Mansfield 11 **Collection Date:** 9/16/2022 10:35:00 AM
Lab ID: 2209884-001 **Matrix:** AQUEOUS **Received Date:** 9/17/2022 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	9/20/2022 7:19:00 PM
Surr: 4-Bromofluorobenzene	90.4	70-130		%Rec	1	9/20/2022 7:19:00 PM
Surr: Dibromofluoromethane	102	70-130		%Rec	1	9/20/2022 7:19:00 PM
Surr: Toluene-d8	88.2	70-130		%Rec	1	9/20/2022 7:19:00 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JTT**
Conductivity	3300	10		µmhos/c	1	9/19/2022 2:35:03 PM
SM2320B: ALKALINITY						Analyst: **JTT**
Bicarbonate (As CaCO3)	286.7	20.00		mg/L Ca	1	9/19/2022 2:35:03 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	9/19/2022 2:35:03 PM
Total Alkalinity (as CaCO3)	286.7	20.00		mg/L Ca	1	9/19/2022 2:35:03 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **SNS**
Total Dissolved Solids	3260	40.0	*D	mg/L	1	9/21/2022 4:34:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2209884**
Date Reported: **10/4/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-2
Project: Mansfield 11
Collection Date: 9/16/2022 11:15:00 AM
Lab ID: 2209884-002 **Matrix:** AQUEOUS **Received Date:** 9/17/2022 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Fluoride	0.87	0.50		mg/L	5	9/21/2022 12:57:35 PM
Chloride	20	2.5		mg/L	5	9/19/2022 9:06:56 PM
Bromide	ND	0.50		mg/L	5	9/19/2022 9:06:56 PM
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	9/19/2022 9:06:56 PM
Sulfate	1900	25	*	mg/L	50	9/21/2022 1:49:05 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	9/19/2022 11:56:39 PM
EPA METHOD 200.7: METALS						Analyst: **VP**
Calcium	530	10		mg/L	10	9/23/2022 11:23:55 AM
Magnesium	150	5.0		mg/L	5	9/21/2022 12:30:52 PM
Potassium	5.4	1.0		mg/L	1	9/21/2022 12:29:29 PM
Sodium	200	5.0		mg/L	5	9/21/2022 12:30:52 PM
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Benzene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Toluene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Ethylbenzene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Naphthalene	ND	2.0		µg/L	1	9/20/2022 7:42:00 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	9/20/2022 7:42:00 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	9/20/2022 7:42:00 PM
Acetone	ND	10		µg/L	1	9/20/2022 7:42:00 PM
Bromobenzene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Bromodichloromethane	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Bromoform	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Bromomethane	ND	3.0		µg/L	1	9/20/2022 7:42:00 PM
2-Butanone	ND	10		µg/L	1	9/20/2022 7:42:00 PM
Carbon disulfide	ND	10		µg/L	1	9/20/2022 7:42:00 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Chlorobenzene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Chloroethane	ND	2.0		µg/L	1	9/20/2022 7:42:00 PM
Chloroform	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Chloromethane	ND	3.0		µg/L	1	9/20/2022 7:42:00 PM
2-Chlorotoluene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
4-Chlorotoluene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
cis-1,2-DCE	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2209884**
Date Reported: **10/4/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-2
Project: Mansfield 11
Collection Date: 9/16/2022 11:15:00 AM
Lab ID: 2209884-002 **Matrix:** AQUEOUS **Received Date:** 9/17/2022 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	9/20/2022 7:42:00 PM
Dibromochloromethane	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Dibromomethane	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	9/20/2022 7:42:00 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
2-Hexanone	ND	10		µg/L	1	9/20/2022 7:42:00 PM
Isopropylbenzene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	9/20/2022 7:42:00 PM
Methylene Chloride	ND	3.0		µg/L	1	9/20/2022 7:42:00 PM
n-Butylbenzene	ND	3.0		µg/L	1	9/20/2022 7:42:00 PM
n-Propylbenzene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
sec-Butylbenzene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Styrene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
tert-Butylbenzene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	9/20/2022 7:42:00 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
trans-1,2-DCE	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	9/20/2022 7:42:00 PM
Vinyl chloride	ND	1.0		µg/L	1	9/20/2022 7:42:00 PM
Xylenes, Total	ND	1.5		µg/L	1	9/20/2022 7:42:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2209884**
Date Reported: **10/4/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-2
Project: Mansfield 11 **Collection Date:** 9/16/2022 11:15:00 AM
Lab ID: 2209884-002 **Matrix:** AQUEOUS **Received Date:** 9/17/2022 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	1	9/20/2022 7:42:00 PM
Surr: 4-Bromofluorobenzene	90.3	70-130		%Rec	1	9/20/2022 7:42:00 PM
Surr: Dibromofluoromethane	101	70-130		%Rec	1	9/20/2022 7:42:00 PM
Surr: Toluene-d8	87.8	70-130		%Rec	1	9/20/2022 7:42:00 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JTT**
Conductivity	3400	10		µmhos/c	1	9/19/2022 2:49:26 PM
SM2320B: ALKALINITY						Analyst: **JTT**
Bicarbonate (As CaCO3)	289.0	20.00		mg/L Ca	1	9/19/2022 2:49:26 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	9/19/2022 2:49:26 PM
Total Alkalinity (as CaCO3)	289.0	20.00		mg/L Ca	1	9/19/2022 2:49:26 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **SNS**
Total Dissolved Solids	3300	40.0	*D	mg/L	1	9/21/2022 4:34:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2209884**
Date Reported: **10/4/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-3
Project: Mansfield 11
Collection Date: 9/16/2022 11:55:00 AM
Lab ID: 2209884-003 **Matrix:** AQUEOUS **Received Date:** 9/17/2022 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Fluoride	ND	0.50		mg/L	5	9/19/2022 9:38:28 PM
Chloride	20	2.5		mg/L	5	9/19/2022 9:38:28 PM
Bromide	ND	0.50		mg/L	5	9/19/2022 9:38:28 PM
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	9/19/2022 9:38:28 PM
Sulfate	1600	25	*	mg/L	50	9/21/2022 2:01:56 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	9/20/2022 12:12:04 AM
EPA METHOD 200.7: METALS						Analyst: **VP**
Calcium	600	10		mg/L	10	9/23/2022 11:25:38 AM
Magnesium	36	1.0		mg/L	1	9/21/2022 12:32:07 PM
Potassium	3.4	1.0		mg/L	1	9/21/2022 12:32:07 PM
Sodium	210	5.0		mg/L	5	9/21/2022 12:38:37 PM
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Benzene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Toluene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Ethylbenzene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Naphthalene	ND	2.0		µg/L	1	9/20/2022 8:05:00 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	9/20/2022 8:05:00 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	9/20/2022 8:05:00 PM
Acetone	ND	10		µg/L	1	9/20/2022 8:05:00 PM
Bromobenzene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Bromodichloromethane	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Bromoform	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Bromomethane	ND	3.0		µg/L	1	9/20/2022 8:05:00 PM
2-Butanone	ND	10		µg/L	1	9/20/2022 8:05:00 PM
Carbon disulfide	ND	10		µg/L	1	9/20/2022 8:05:00 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Chlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Chloroethane	ND	2.0		µg/L	1	9/20/2022 8:05:00 PM
Chloroform	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Chloromethane	ND	3.0		µg/L	1	9/20/2022 8:05:00 PM
2-Chlorotoluene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
4-Chlorotoluene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
cis-1,2-DCE	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2209884**
Date Reported: **10/4/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-3
Project: Mansfield 11
Collection Date: 9/16/2022 11:55:00 AM
Lab ID: 2209884-003 **Matrix:** AQUEOUS **Received Date:** 9/17/2022 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	9/20/2022 8:05:00 PM
Dibromochloromethane	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Dibromomethane	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	9/20/2022 8:05:00 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
2-Hexanone	ND	10		µg/L	1	9/20/2022 8:05:00 PM
Isopropylbenzene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	9/20/2022 8:05:00 PM
Methylene Chloride	ND	3.0		µg/L	1	9/20/2022 8:05:00 PM
n-Butylbenzene	ND	3.0		µg/L	1	9/20/2022 8:05:00 PM
n-Propylbenzene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
sec-Butylbenzene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Styrene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
tert-Butylbenzene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	9/20/2022 8:05:00 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
trans-1,2-DCE	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	9/20/2022 8:05:00 PM
Vinyl chloride	ND	1.0		µg/L	1	9/20/2022 8:05:00 PM
Xylenes, Total	ND	1.5		µg/L	1	9/20/2022 8:05:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2209884**
Date Reported: **10/4/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-3
Project: Mansfield 11 **Collection Date:** 9/16/2022 11:55:00 AM
Lab ID: 2209884-003 **Matrix:** AQUEOUS **Received Date:** 9/17/2022 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	9/20/2022 8:05:00 PM
Surr: 4-Bromofluorobenzene	89.4	70-130		%Rec	1	9/20/2022 8:05:00 PM
Surr: Dibromofluoromethane	103	70-130		%Rec	1	9/20/2022 8:05:00 PM
Surr: Toluene-d8	88.0	70-130		%Rec	1	9/20/2022 8:05:00 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JTT**
Conductivity	3000	10		µmhos/c	1	9/19/2022 3:03:54 PM
SM2320B: ALKALINITY						Analyst: **JTT**
Bicarbonate (As CaCO3)	273.7	20.00		mg/L Ca	1	9/19/2022 3:03:54 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	9/19/2022 3:03:54 PM
Total Alkalinity (as CaCO3)	273.7	20.00		mg/L Ca	1	9/19/2022 3:03:54 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **SNS**
Total Dissolved Solids	2850	40.0	*D	mg/L	1	9/21/2022 4:34:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2209884**
Date Reported: **10/4/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-4
Project: Mansfield 11
Collection Date: 9/16/2022 12:30:00 PM
Lab ID: 2209884-004 **Matrix:** AQUEOUS **Received Date:** 9/17/2022 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Fluoride	0.74	0.50		mg/L	5	9/21/2022 2:27:40 PM
Chloride	23	2.5		mg/L	5	9/19/2022 10:10:10 PM
Bromide	ND	0.50		mg/L	5	9/19/2022 10:10:10 PM
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	9/19/2022 10:10:10 PM
Sulfate	1800	50	*	mg/L	100	9/21/2022 2:14:48 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	9/20/2022 12:27:28 AM
EPA METHOD 200.7: METALS						Analyst: **VP**
Calcium	560	10		mg/L	10	9/23/2022 11:27:13 AM
Magnesium	190	5.0		mg/L	5	9/21/2022 12:44:16 PM
Potassium	4.5	1.0		mg/L	1	9/21/2022 12:40:08 PM
Sodium	220	5.0		mg/L	5	9/21/2022 12:44:16 PM
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Benzene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Toluene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Ethylbenzene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Naphthalene	ND	2.0		µg/L	1	9/20/2022 8:28:00 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	9/20/2022 8:28:00 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	9/20/2022 8:28:00 PM
Acetone	ND	10		µg/L	1	9/20/2022 8:28:00 PM
Bromobenzene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Bromodichloromethane	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Bromoform	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Bromomethane	ND	3.0		µg/L	1	9/20/2022 8:28:00 PM
2-Butanone	ND	10		µg/L	1	9/20/2022 8:28:00 PM
Carbon disulfide	ND	10		µg/L	1	9/20/2022 8:28:00 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Chlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Chloroethane	ND	2.0		µg/L	1	9/20/2022 8:28:00 PM
Chloroform	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Chloromethane	ND	3.0		µg/L	1	9/20/2022 8:28:00 PM
2-Chlorotoluene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
4-Chlorotoluene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
cis-1,2-DCE	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2209884**
Date Reported: **10/4/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-4
Project: Mansfield 11
Collection Date: 9/16/2022 12:30:00 PM
Lab ID: 2209884-004 **Matrix:** AQUEOUS **Received Date:** 9/17/2022 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	9/20/2022 8:28:00 PM
Dibromochloromethane	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Dibromomethane	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	9/20/2022 8:28:00 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
2-Hexanone	ND	10		µg/L	1	9/20/2022 8:28:00 PM
Isopropylbenzene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	9/20/2022 8:28:00 PM
Methylene Chloride	ND	3.0		µg/L	1	9/20/2022 8:28:00 PM
n-Butylbenzene	ND	3.0		µg/L	1	9/20/2022 8:28:00 PM
n-Propylbenzene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
sec-Butylbenzene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Styrene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
tert-Butylbenzene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	9/20/2022 8:28:00 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
trans-1,2-DCE	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	9/20/2022 8:28:00 PM
Vinyl chloride	ND	1.0		µg/L	1	9/20/2022 8:28:00 PM
Xylenes, Total	ND	1.5		µg/L	1	9/20/2022 8:28:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2209884**
Date Reported: **10/4/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-4
Project: Mansfield 11 **Collection Date:** 9/16/2022 12:30:00 PM
Lab ID: 2209884-004 **Matrix:** AQUEOUS **Received Date:** 9/17/2022 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	9/20/2022 8:28:00 PM
Surr: 4-Bromofluorobenzene	91.5	70-130		%Rec	1	9/20/2022 8:28:00 PM
Surr: Dibromofluoromethane	105	70-130		%Rec	1	9/20/2022 8:28:00 PM
Surr: Toluene-d8	87.8	70-130		%Rec	1	9/20/2022 8:28:00 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JTT**
Conductivity	3500	10		µmhos/c	1	9/19/2022 3:17:57 PM
SM2320B: ALKALINITY						Analyst: **JTT**
Bicarbonate (As CaCO3)	281.5	20.00		mg/L Ca	1	9/19/2022 3:17:57 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	9/19/2022 3:17:57 PM
Total Alkalinity (as CaCO3)	281.5	20.00		mg/L Ca	1	9/19/2022 3:17:57 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **SNS**
Total Dissolved Solids	3490	40.0	*D	mg/L	1	9/21/2022 4:34:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2209884**
Date Reported: **10/4/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-5
Project: Mansfield 11
Collection Date: 9/16/2022 1:00:00 PM
Lab ID: 2209884-005 **Matrix:** AQUEOUS **Received Date:** 9/17/2022 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Fluoride	ND	0.50		mg/L	5	9/19/2022 10:41:07 PM
Chloride	16	2.5		mg/L	5	9/19/2022 10:41:07 PM
Bromide	ND	0.50		mg/L	5	9/19/2022 10:41:07 PM
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	9/19/2022 10:41:07 PM
Sulfate	2400	50	*	mg/L	100	9/21/2022 2:40:32 PM
Nitrate+Nitrite as N	ND	1.0		mg/L	5	9/20/2022 12:42:53 AM
EPA METHOD 200.7: METALS						Analyst: **VP**
Calcium	490	5.0		mg/L	5	9/23/2022 11:30:33 AM
Magnesium	23	1.0		mg/L	1	9/21/2022 12:48:40 PM
Potassium	4.9	1.0		mg/L	1	9/21/2022 12:48:40 PM
Sodium	700	10		mg/L	10	9/23/2022 11:28:53 AM
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Benzene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Toluene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Ethylbenzene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Naphthalene	ND	2.0		µg/L	1	9/20/2022 8:51:00 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	9/20/2022 8:51:00 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	9/20/2022 8:51:00 PM
Acetone	ND	10		µg/L	1	9/20/2022 8:51:00 PM
Bromobenzene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Bromodichloromethane	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Bromoform	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Bromomethane	ND	3.0		µg/L	1	9/20/2022 8:51:00 PM
2-Butanone	ND	10		µg/L	1	9/20/2022 8:51:00 PM
Carbon disulfide	ND	10		µg/L	1	9/20/2022 8:51:00 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Chlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Chloroethane	ND	2.0		µg/L	1	9/20/2022 8:51:00 PM
Chloroform	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Chloromethane	ND	3.0		µg/L	1	9/20/2022 8:51:00 PM
2-Chlorotoluene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
4-Chlorotoluene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
cis-1,2-DCE	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2209884**
Date Reported: **10/4/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-5
Project: Mansfield 11
Collection Date: 9/16/2022 1:00:00 PM
Lab ID: 2209884-005 **Matrix:** AQUEOUS **Received Date:** 9/17/2022 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	9/20/2022 8:51:00 PM
Dibromochloromethane	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Dibromomethane	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	9/20/2022 8:51:00 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
2-Hexanone	ND	10		µg/L	1	9/20/2022 8:51:00 PM
Isopropylbenzene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	9/20/2022 8:51:00 PM
Methylene Chloride	ND	3.0		µg/L	1	9/20/2022 8:51:00 PM
n-Butylbenzene	ND	3.0		µg/L	1	9/20/2022 8:51:00 PM
n-Propylbenzene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
sec-Butylbenzene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Styrene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
tert-Butylbenzene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	9/20/2022 8:51:00 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
trans-1,2-DCE	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	9/20/2022 8:51:00 PM
Vinyl chloride	ND	1.0		µg/L	1	9/20/2022 8:51:00 PM
Xylenes, Total	ND	1.5		µg/L	1	9/20/2022 8:51:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2209884**
Date Reported: **10/4/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-5
Project: Mansfield 11
Collection Date: 9/16/2022 1:00:00 PM
Lab ID: 2209884-005 **Matrix:** AQUEOUS **Received Date:** 9/17/2022 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Surr: 1,2-Dichloroethane-d4	106	70-130		%Rec	1	9/20/2022 8:51:00 PM
Surr: 4-Bromofluorobenzene	90.2	70-130		%Rec	1	9/20/2022 8:51:00 PM
Surr: Dibromofluoromethane	104	70-130		%Rec	1	9/20/2022 8:51:00 PM
Surr: Toluene-d8	87.4	70-130		%Rec	1	9/20/2022 8:51:00 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JTT**
Conductivity	4500	10		µmhos/c	1	9/19/2022 3:32:30 PM
SM2320B: ALKALINITY						Analyst: **JTT**
Bicarbonate (As CaCO3)	141.6	20.00		mg/L Ca	1	9/19/2022 3:32:30 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	9/19/2022 3:32:30 PM
Total Alkalinity (as CaCO3)	141.6	20.00		mg/L Ca	1	9/19/2022 3:32:30 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **SNS**
Total Dissolved Solids	4000	20.0	*	mg/L	1	9/21/2022 4:34:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209884**

05-Oct-22

Client: HILCORP ENERGY

Project: Mansfield 11

Sample ID: **MB-70299**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Metals**
Client ID: **PBW**	Batch ID: **70299**	RunNo: **91216**
Prep Date: **9/20/2022**	Analysis Date: **9/21/2022**	SeqNo: **3263482** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LCSLL-70299**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Metals**
Client ID: **BatchQC**	Batch ID: **70299**	RunNo: **91216**
Prep Date: **9/20/2022**	Analysis Date: **9/21/2022**	SeqNo: **3263483** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0	0.5000	0	104	50	150			
Magnesium	ND	1.0	0.5000	0	106	50	150			
Potassium	ND	1.0	0.5000	0	106	50	150			
Sodium	ND	1.0	0.5000	0	107	50	150			

Sample ID: **LCS-70299**	SampType: **LCS**	TestCode: **EPA Method 200.7: Metals**
Client ID: **LCSW**	Batch ID: **70299**	RunNo: **91216**
Prep Date: **9/20/2022**	Analysis Date: **9/21/2022**	SeqNo: **3263484** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	51	1.0	50.00	0	102	85	115			
Magnesium	52	1.0	50.00	0	105	85	115			
Potassium	51	1.0	50.00	0	101	85	115			
Sodium	52	1.0	50.00	0	103	85	115			

Sample ID: **2209884-004CMS**	SampType: **MS**	TestCode: **EPA Method 200.7: Metals**
Client ID: **MW-4**	Batch ID: **70299**	RunNo: **91216**
Prep Date: **9/20/2022**	Analysis Date: **9/21/2022**	SeqNo: **3263530** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	57	1.0	50.00	4.525	106	70	130			

Sample ID: **2209884-004CMSD**	SampType: **MSD**	TestCode: **EPA Method 200.7: Metals**
Client ID: **MW-4**	Batch ID: **70299**	RunNo: **91216**
Prep Date: **9/20/2022**	Analysis Date: **9/21/2022**	SeqNo: **3263531** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	57	1.0	50.00	4.525	104	70	130	1.60	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209884**

05-Oct-22

Client: HILCORP ENERGY

Project: Mansfield 11

Sample ID: **2209884-004CMS**	SampType: **MS**	TestCode: **EPA Method 200.7: Metals**
Client ID: **MW-4**	Batch ID: **70299**	RunNo: **91216**
Prep Date: **9/20/2022**	Analysis Date: **9/21/2022**	SeqNo: **3263535** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	230	5.0	50.00	185.4	98.3	70	130			
Sodium	270	5.0	50.00	221.5	92.6	70	130			

Sample ID: **2209884-004CMSD**	SampType: **MSD**	TestCode: **EPA Method 200.7: Metals**
Client ID: **MW-4**	Batch ID: **70299**	RunNo: **91216**
Prep Date: **9/20/2022**	Analysis Date: **9/21/2022**	SeqNo: **3263537** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	230	5.0	50.00	185.4	93.5	70	130	1.02	20	
Sodium	270	5.0	50.00	221.5	92.6	70	130	0.00108	20	

Sample ID: **2209884-005CMS**	SampType: **MS**	TestCode: **EPA Method 200.7: Metals**
Client ID: **MW-5**	Batch ID: **70299**	RunNo: **91216**
Prep Date: **9/20/2022**	Analysis Date: **9/21/2022**	SeqNo: **3263541** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	74	1.0	50.00	22.79	103	70	130			
Potassium	57	1.0	50.00	4.886	104	70	130			

Sample ID: **2209884-005CMSD**	SampType: **MSD**	TestCode: **EPA Method 200.7: Metals**
Client ID: **MW-5**	Batch ID: **70299**	RunNo: **91216**
Prep Date: **9/20/2022**	Analysis Date: **9/21/2022**	SeqNo: **3263542** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	76	1.0	50.00	22.79	106	70	130	2.15	20	
Potassium	58	1.0	50.00	4.886	107	70	130	1.86	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209884**

05-Oct-22

Client: HILCORP ENERGY

Project: Mansfield 11

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R91145**	RunNo: **91145**
Prep Date:	Analysis Date: **9/19/2022**	SeqNo: **3260946** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P)	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R91145**	RunNo: **91145**
Prep Date:	Analysis Date: **9/19/2022**	SeqNo: **3260947** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.54	0.10	0.5000	0	109	90	110			
Chloride	4.8	0.50	5.000	0	95.0	90	110			
Bromide	2.5	0.10	2.500	0	98.9	90	110			
Phosphorus, Orthophosphate (As P)	4.5	0.50	5.000	0	90.7	90	110			
Nitrate+Nitrite as N	3.6	0.20	3.500	0	102	90	110			

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R91145**	RunNo: **91145**
Prep Date:	Analysis Date: **9/19/2022**	SeqNo: **3260983** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P)	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R91145**	RunNo: **91145**
Prep Date:	Analysis Date: **9/19/2022**	SeqNo: **3260984** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.55	0.10	0.5000	0	111	90	110			S
Chloride	4.8	0.50	5.000	0	96.7	90	110			
Bromide	2.5	0.10	2.500	0	100	90	110			
Phosphorus, Orthophosphate (As P)	4.7	0.50	5.000	0	94.2	90	110			
Nitrate+Nitrite as N	3.6	0.20	3.500	0	103	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209884**

05-Oct-22

Client: HILCORP ENERGY

Project: Mansfield 11

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R91222**	RunNo: **91222**
Prep Date:	Analysis Date: **9/21/2022**	SeqNo: **3264319** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R91222**	RunNo: **91222**
Prep Date:	Analysis Date: **9/21/2022**	SeqNo: **3264320** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.53	0.10	0.5000	0	105	90	110			
Sulfate	9.8	0.50	10.00	0	97.7	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2209884**
05-Oct-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R91153** RunNo: **91153**
Prep Date: Analysis Date: **9/20/2022** SeqNo: **3261708** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	106	70	130			
Toluene	20	1.0	20.00	0	98.9	70	130			
Chlorobenzene	20	1.0	20.00	0	101	70	130			
1,1-Dichloroethene	19	1.0	20.00	0	95.1	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	9.0		10.00		90.1	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	9.0		10.00		90.0	70	130			

Sample ID: **MB** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R91153** RunNo: **91153**
Prep Date: Analysis Date: **9/20/2022** SeqNo: **3261716** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2209884**
05-Oct-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R91153**	RunNo: **91153**
Prep Date:	Analysis Date: **9/20/2022**	SeqNo: **3261716** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209884**

05-Oct-22

Client: HILCORP ENERGY

Project: Mansfield 11

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R91153**	RunNo: **91153**
Prep Date:	Analysis Date: **9/20/2022**	SeqNo: **3261716** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	9.3		10.00		92.7	70	130			
Surr: Dibromofluoromethane	11		10.00		105	70	130			
Surr: Toluene-d8	9.0		10.00		89.8	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209884**

05-Oct-22

Client: HILCORP ENERGY

Project: Mansfield 11

Sample ID:	**lcs-1 98.9uS eC**	SampType:	**LCS**	TestCode:	**SM2510B: Specific Conductance**					
Client ID:	**LCSW**	Batch ID:	**R91160**	RunNo:	**91160**					
Prep Date:		Analysis Date:	**9/19/2022**	SeqNo:	**3261531**	Units:	**µmhos/cm**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	99	10	98.90	0	99.8	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209884**

05-Oct-22

Client: HILCORP ENERGY

Project: Mansfield 11

Sample ID: **mb-1 alk**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R91160**	RunNo: **91160**							
Prep Date:	Analysis Date: **9/19/2022**	SeqNo: **3261497**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R91160**	RunNo: **91160**							
Prep Date:	Analysis Date: **9/19/2022**	SeqNo: **3261498**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78.00	20.00	80.00	0	97.5	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209884**

05-Oct-22

Client: HILCORP ENERGY

Project: Mansfield 11

Sample ID: **MB-70287**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **70287**	RunNo: **91214**
Prep Date: **9/20/2022**	Analysis Date: **9/21/2022**	SeqNo: **3263359** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-70287**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **70287**	RunNo: **91214**
Prep Date: **9/20/2022**	Analysis Date: **9/21/2022**	SeqNo: **3263360** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **HILCORP ENERGY** Work Order Number: **2209884** RcptNo: **1**

Received By: **Juan Rojas** **9/17/2022 7:45:00 AM**

Completed By: **Cheyenne Cason** **9/19/2022 8:15:23 AM**

Reviewed By: 9.19.22

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 10 (<2 or >12 unless noted)

Adjusted? NO

Checked by: ma 9/19/22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.9	Good	Yes			

Chain-of-Custody Record

Client: Hilcorp Farmington NM

Mailing Address: 382 Road 3100 Aztec, NM 87410

Billing Address: PO Box 61529 Houston, TX 77208

Phone #: 505-486-9543

email or Fax#: Brandon.Sinclair@hilcorp.com

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other_____

☐ EDD (Type) _____

Turn-Around Time:
X Standard ☐ Rush_____

Project Name:
Mansfield #11

Project #:

Project Manager:
Mitch Killough

Sampler: Brandon Sinclair

On Ice: ☑ Yes ☐ No

# of Coolers: 2

Cooler Temp(including CF): 1.7+0.2=1.9

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2209884	Cations/Anions/TDS 500ml, 250ml HNO3, 125ml H2SO4	Volatiles 8260 40ml VOA HCl
9-16	1035	Water	MW-1	Various	Various	001	X	X
	1115	Water	MW-2	Various	Various	002	X	X
	1155	Water	MW-3	Various	Various	003	X	X
	1230	Water	MW-4	Various	Various	004	X	X
	1300	Water	MW-5	Various	Various	005	X	X

Date	Time	Relinquished by	Received by	Via	Date	Time
9-16	1554				9/16/22	1554
9/16/22	1846			courier	9/17/22	7:45

Remarks: Special Pricing See Andy

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 12, 2023

Mitch Killough
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX:

RE: Mansfield 11 OrderNo.: 2212E08

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 5 sample(s) on 12/28/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2212E08**
Date Reported: **1/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-1
Project: Mansfield 11
Collection Date: 12/27/2022 1:15:00 PM
Lab ID: 2212E08-001 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 6:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Fluoride	ND	0.50		mg/L	5	12/28/2022 3:21:40 PM
Chloride	21	2.5		mg/L	5	12/28/2022 3:21:40 PM
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	12/28/2022 3:21:40 PM
Bromide	ND	0.50		mg/L	5	12/28/2022 3:21:40 PM
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	12/28/2022 3:21:40 PM
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	12/28/2022 3:21:40 PM
Sulfate	2000	25	*	mg/L	50	1/5/2023 3:31:11 AM
EPA METHOD 200.7: METALS						Analyst: **VP**
Calcium	550	5.0	E	mg/L	5	1/11/2023 8:59:41 AM
Magnesium	120	5.0		mg/L	5	1/11/2023 8:59:41 AM
Potassium	3.4	1.0		mg/L	1	1/3/2023 2:35:09 PM
Sodium	210	5.0		mg/L	5	1/11/2023 8:59:41 AM
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Benzene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Toluene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Ethylbenzene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Naphthalene	ND	2.0		µg/L	1	1/3/2023 9:12:54 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	1/3/2023 9:12:54 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	1/3/2023 9:12:54 PM
Acetone	ND	10		µg/L	1	1/3/2023 9:12:54 PM
Bromobenzene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Bromodichloromethane	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Bromoform	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Bromomethane	ND	3.0		µg/L	1	1/3/2023 9:12:54 PM
2-Butanone	ND	10		µg/L	1	1/3/2023 9:12:54 PM
Carbon disulfide	ND	10		µg/L	1	1/3/2023 9:12:54 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Chlorobenzene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Chloroethane	ND	2.0		µg/L	1	1/3/2023 9:12:54 PM
Chloroform	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Chloromethane	ND	3.0		µg/L	1	1/3/2023 9:12:54 PM
2-Chlorotoluene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
4-Chlorotoluene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E08**
Date Reported: **1/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-1
Project: Mansfield 11
Collection Date: 12/27/2022 1:15:00 PM
Lab ID: 2212E08-001 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 6:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
cis-1,2-DCE	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/3/2023 9:12:54 PM
Dibromochloromethane	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Dibromomethane	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	1/3/2023 9:12:54 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
2-Hexanone	ND	10		µg/L	1	1/3/2023 9:12:54 PM
Isopropylbenzene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	1/3/2023 9:12:54 PM
Methylene Chloride	ND	3.0		µg/L	1	1/3/2023 9:12:54 PM
n-Butylbenzene	ND	3.0		µg/L	1	1/3/2023 9:12:54 PM
n-Propylbenzene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
sec-Butylbenzene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Styrene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
tert-Butylbenzene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/3/2023 9:12:54 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
trans-1,2-DCE	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/3/2023 9:12:54 PM
Vinyl chloride	ND	1.0		µg/L	1	1/3/2023 9:12:54 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E08**
Date Reported: **1/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-1
Project: Mansfield 11 **Collection Date:** 12/27/2022 1:15:00 PM
Lab ID: 2212E08-001 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 6:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Xylenes, Total	ND	1.5		µg/L	1	1/3/2023 9:12:54 PM
Surr: 1,2-Dichloroethane-d4	99.3	70-130		%Rec	1	1/3/2023 9:12:54 PM
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	1/3/2023 9:12:54 PM
Surr: Dibromofluoromethane	100	70-130		%Rec	1	1/3/2023 9:12:54 PM
Surr: Toluene-d8	102	70-130		%Rec	1	1/3/2023 9:12:54 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JTT**
Conductivity	3400	10		µmhos/c	1	1/4/2023 11:43:37 AM
SM2320B: ALKALINITY						Analyst: **SNS**
Bicarbonate (As CaCO3)	287.6	20.00		mg/L Ca	1	12/28/2022 6:07:39 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	12/28/2022 6:07:39 PM
Total Alkalinity (as CaCO3)	287.6	20.00		mg/L Ca	1	12/28/2022 6:07:39 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **SNS**
Total Dissolved Solids	3160	100	*D	mg/L	1	12/30/2022 4:07:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E08**
Date Reported: **1/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-2
Project: Mansfield 11
Collection Date: 12/27/2022 1:40:00 PM
Lab ID: 2212E08-002 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 6:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Fluoride	1.3	0.50		mg/L	5	12/28/2022 3:47:23 PM
Chloride	20	2.5		mg/L	5	12/28/2022 3:47:23 PM
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	12/28/2022 3:47:23 PM
Bromide	ND	0.50		mg/L	5	12/28/2022 3:47:23 PM
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	12/28/2022 3:47:23 PM
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	12/28/2022 3:47:23 PM
Sulfate	1800	25	*	mg/L	50	1/5/2023 3:44:02 AM
EPA METHOD 200.7: METALS						Analyst: **VP**
Calcium	550	10		mg/L	10	1/11/2023 9:06:10 AM
Magnesium	140	5.0		mg/L	5	1/9/2023 5:44:06 PM
Potassium	3.6	1.0		mg/L	1	1/3/2023 2:39:47 PM
Sodium	200	5.0		mg/L	5	1/9/2023 5:44:06 PM
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Benzene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Toluene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Ethylbenzene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Naphthalene	ND	2.0		µg/L	1	1/3/2023 9:39:58 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	1/3/2023 9:39:58 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	1/3/2023 9:39:58 PM
Acetone	ND	10		µg/L	1	1/3/2023 9:39:58 PM
Bromobenzene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Bromodichloromethane	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Bromoform	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Bromomethane	ND	3.0		µg/L	1	1/3/2023 9:39:58 PM
2-Butanone	ND	10		µg/L	1	1/3/2023 9:39:58 PM
Carbon disulfide	ND	10		µg/L	1	1/3/2023 9:39:58 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Chlorobenzene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Chloroethane	ND	2.0		µg/L	1	1/3/2023 9:39:58 PM
Chloroform	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Chloromethane	ND	3.0		µg/L	1	1/3/2023 9:39:58 PM
2-Chlorotoluene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
4-Chlorotoluene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E08**
Date Reported: **1/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-2
Project: Mansfield 11
Collection Date: 12/27/2022 1:40:00 PM
Lab ID: 2212E08-002 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 6:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
cis-1,2-DCE	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/3/2023 9:39:58 PM
Dibromochloromethane	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Dibromomethane	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	1/3/2023 9:39:58 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
2-Hexanone	ND	10		µg/L	1	1/3/2023 9:39:58 PM
Isopropylbenzene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	1/3/2023 9:39:58 PM
Methylene Chloride	ND	3.0		µg/L	1	1/3/2023 9:39:58 PM
n-Butylbenzene	ND	3.0		µg/L	1	1/3/2023 9:39:58 PM
n-Propylbenzene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
sec-Butylbenzene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Styrene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
tert-Butylbenzene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/3/2023 9:39:58 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
trans-1,2-DCE	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/3/2023 9:39:58 PM
Vinyl chloride	ND	1.0		µg/L	1	1/3/2023 9:39:58 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E08**
Date Reported: **1/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-2
Project: Mansfield 11 **Collection Date:** 12/27/2022 1:40:00 PM
Lab ID: 2212E08-002 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 6:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Xylenes, Total	ND	1.5		µg/L	1	1/3/2023 9:39:58 PM
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	1/3/2023 9:39:58 PM
Surr: 4-Bromofluorobenzene	107	70-130		%Rec	1	1/3/2023 9:39:58 PM
Surr: Dibromofluoromethane	98.4	70-130		%Rec	1	1/3/2023 9:39:58 PM
Surr: Toluene-d8	89.3	70-130		%Rec	1	1/3/2023 9:39:58 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JTT**
Conductivity	3500	10		µmhos/c	1	1/4/2023 11:46:34 AM
SM2320B: ALKALINITY						Analyst: **SNS**
Bicarbonate (As CaCO3)	288.3	20.00		mg/L Ca	1	12/28/2022 6:21:58 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	12/28/2022 6:21:58 PM
Total Alkalinity (as CaCO3)	288.3	20.00		mg/L Ca	1	12/28/2022 6:21:58 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **SNS**
Total Dissolved Solids	3070	100	*D	mg/L	1	12/30/2022 4:07:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E08**
Date Reported: **1/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-3
Project: Mansfield 11
Collection Date: 12/27/2022 12:40:00 PM
Lab ID: 2212E08-003 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 6:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Fluoride	ND	0.50		mg/L	5	12/28/2022 4:13:06 PM
Chloride	20	2.5		mg/L	5	12/28/2022 4:13:06 PM
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	12/28/2022 4:13:06 PM
Bromide	ND	0.50		mg/L	5	12/28/2022 4:13:06 PM
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	12/28/2022 4:13:06 PM
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	12/28/2022 4:13:06 PM
Sulfate	1600	25	*	mg/L	50	1/5/2023 3:56:54 AM
EPA METHOD 200.7: METALS						Analyst: **VP**
Calcium	610	10		mg/L	10	1/9/2023 6:03:46 PM
Magnesium	35	1.0		mg/L	1	1/3/2023 2:44:56 PM
Potassium	2.6	1.0		mg/L	1	1/3/2023 2:44:56 PM
Sodium	200	5.0		mg/L	5	1/9/2023 5:53:10 PM
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Benzene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Toluene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Ethylbenzene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Naphthalene	ND	2.0		µg/L	1	1/3/2023 10:07:00 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	1/3/2023 10:07:00 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	1/3/2023 10:07:00 PM
Acetone	ND	10		µg/L	1	1/3/2023 10:07:00 PM
Bromobenzene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Bromodichloromethane	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Bromoform	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Bromomethane	ND	3.0		µg/L	1	1/3/2023 10:07:00 PM
2-Butanone	ND	10		µg/L	1	1/3/2023 10:07:00 PM
Carbon disulfide	ND	10		µg/L	1	1/3/2023 10:07:00 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Chlorobenzene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Chloroethane	ND	2.0		µg/L	1	1/3/2023 10:07:00 PM
Chloroform	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Chloromethane	ND	3.0		µg/L	1	1/3/2023 10:07:00 PM
2-Chlorotoluene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
4-Chlorotoluene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E08**
Date Reported: **1/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-3
Project: Mansfield 11
Collection Date: 12/27/2022 12:40:00 PM
Lab ID: 2212E08-003 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 6:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
cis-1,2-DCE	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/3/2023 10:07:00 PM
Dibromochloromethane	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Dibromomethane	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	1/3/2023 10:07:00 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
2-Hexanone	ND	10		µg/L	1	1/3/2023 10:07:00 PM
Isopropylbenzene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	1/3/2023 10:07:00 PM
Methylene Chloride	ND	3.0		µg/L	1	1/3/2023 10:07:00 PM
n-Butylbenzene	ND	3.0		µg/L	1	1/3/2023 10:07:00 PM
n-Propylbenzene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
sec-Butylbenzene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Styrene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
tert-Butylbenzene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/3/2023 10:07:00 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
trans-1,2-DCE	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/3/2023 10:07:00 PM
Vinyl chloride	ND	1.0		µg/L	1	1/3/2023 10:07:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E08**
Date Reported: **1/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-3
Project: Mansfield 11 **Collection Date:** 12/27/2022 12:40:00 PM
Lab ID: 2212E08-003 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 6:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Xylenes, Total	ND	1.5		µg/L	1	1/3/2023 10:07:00 PM
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	1	1/3/2023 10:07:00 PM
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	1/3/2023 10:07:00 PM
Surr: Dibromofluoromethane	97.5	70-130		%Rec	1	1/3/2023 10:07:00 PM
Surr: Toluene-d8	90.8	70-130		%Rec	1	1/3/2023 10:07:00 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JTT**
Conductivity	3100	10		µmhos/c	1	1/4/2023 11:49:34 AM
SM2320B: ALKALINITY						Analyst: **SNS**
Bicarbonate (As CaCO3)	274.0	20.00		mg/L Ca	1	12/28/2022 6:36:21 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	12/28/2022 6:36:21 PM
Total Alkalinity (as CaCO3)	274.0	20.00		mg/L Ca	1	12/28/2022 6:36:21 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **SNS**
Total Dissolved Solids	2850	40.0	*D	mg/L	1	12/30/2022 4:07:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E08**
Date Reported: **1/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-4
Project: Mansfield 11
Collection Date: 12/27/2022 2:15:00 PM
Lab ID: 2212E08-004 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 6:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Fluoride	1.0	0.50		mg/L	5	12/28/2022 5:04:30 PM
Chloride	22	2.5		mg/L	5	12/28/2022 5:04:30 PM
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	12/28/2022 5:04:30 PM
Bromide	ND	0.50		mg/L	5	12/28/2022 5:04:30 PM
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	12/28/2022 5:04:30 PM
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	12/28/2022 5:04:30 PM
Sulfate	2000	25	*	mg/L	50	1/5/2023 4:09:46 AM
EPA METHOD 200.7: METALS						Analyst: **VP**
Calcium	580	10		mg/L	10	1/9/2023 6:09:37 PM
Magnesium	150	5.0		mg/L	5	1/9/2023 6:06:38 PM
Potassium	3.6	1.0		mg/L	1	1/3/2023 2:46:39 PM
Sodium	210	5.0		mg/L	5	1/9/2023 6:06:38 PM
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Benzene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Toluene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Ethylbenzene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Naphthalene	ND	2.0		µg/L	1	1/3/2023 10:34:03 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	1/3/2023 10:34:03 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	1/3/2023 10:34:03 PM
Acetone	ND	10		µg/L	1	1/3/2023 10:34:03 PM
Bromobenzene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Bromodichloromethane	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Bromoform	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Bromomethane	ND	3.0		µg/L	1	1/3/2023 10:34:03 PM
2-Butanone	ND	10		µg/L	1	1/3/2023 10:34:03 PM
Carbon disulfide	ND	10		µg/L	1	1/3/2023 10:34:03 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Chlorobenzene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Chloroethane	ND	2.0		µg/L	1	1/3/2023 10:34:03 PM
Chloroform	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Chloromethane	ND	3.0		µg/L	1	1/3/2023 10:34:03 PM
2-Chlorotoluene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
4-Chlorotoluene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E08**
Date Reported: **1/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-4
Project: Mansfield 11
Collection Date: 12/27/2022 2:15:00 PM
Lab ID: 2212E08-004 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 6:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
cis-1,2-DCE	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/3/2023 10:34:03 PM
Dibromochloromethane	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Dibromomethane	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	1/3/2023 10:34:03 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
2-Hexanone	ND	10		µg/L	1	1/3/2023 10:34:03 PM
Isopropylbenzene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	1/3/2023 10:34:03 PM
Methylene Chloride	ND	3.0		µg/L	1	1/3/2023 10:34:03 PM
n-Butylbenzene	ND	3.0		µg/L	1	1/3/2023 10:34:03 PM
n-Propylbenzene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
sec-Butylbenzene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Styrene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
tert-Butylbenzene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/3/2023 10:34:03 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
trans-1,2-DCE	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/3/2023 10:34:03 PM
Vinyl chloride	ND	1.0		µg/L	1	1/3/2023 10:34:03 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E08**
Date Reported: **1/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-4
Project: Mansfield 11 **Collection Date:** 12/27/2022 2:15:00 PM
Lab ID: 2212E08-004 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 6:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Xylenes, Total	ND	1.5		µg/L	1	1/3/2023 10:34:03 PM
Surr: 1,2-Dichloroethane-d4	96.9	70-130		%Rec	1	1/3/2023 10:34:03 PM
Surr: 4-Bromofluorobenzene	108	70-130		%Rec	1	1/3/2023 10:34:03 PM
Surr: Dibromofluoromethane	103	70-130		%Rec	1	1/3/2023 10:34:03 PM
Surr: Toluene-d8	94.8	70-130		%Rec	1	1/3/2023 10:34:03 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JTT**
Conductivity	3600	10		µmhos/c	1	1/4/2023 11:52:38 AM
SM2320B: ALKALINITY						Analyst: **SNS**
Bicarbonate (As CaCO3)	278.1	20.00		mg/L Ca	1	12/28/2022 6:50:08 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	12/28/2022 6:50:08 PM
Total Alkalinity (as CaCO3)	278.1	20.00		mg/L Ca	1	12/28/2022 6:50:08 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **SNS**
Total Dissolved Solids	3370	100	*D	mg/L	1	12/30/2022 4:07:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E08**
Date Reported: **1/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-5
Project: Mansfield 11
Collection Date: 12/27/2022 3:00:00 PM
Lab ID: 2212E08-005 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 6:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Fluoride	ND	0.50		mg/L	5	12/28/2022 5:55:57 PM
Chloride	15	2.5		mg/L	5	12/28/2022 5:55:57 PM
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	12/28/2022 5:55:57 PM
Bromide	ND	0.50		mg/L	5	12/28/2022 5:55:57 PM
Nitrogen, Nitrate (As N)	0.54	0.50		mg/L	5	12/28/2022 5:55:57 PM
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	12/28/2022 5:55:57 PM
Sulfate	2500	50	*	mg/L	100	1/5/2023 4:22:38 AM
EPA METHOD 200.7: METALS						Analyst: **VP**
Calcium	500	10		mg/L	10	1/9/2023 6:15:29 PM
Magnesium	26	1.0		mg/L	1	1/3/2023 2:48:06 PM
Potassium	5.9	1.0		mg/L	1	1/3/2023 2:48:06 PM
Sodium	720	10		mg/L	10	1/9/2023 6:15:29 PM
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Benzene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Toluene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Ethylbenzene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Naphthalene	ND	2.0		µg/L	1	1/3/2023 11:01:04 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	1/3/2023 11:01:04 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	1/3/2023 11:01:04 PM
Acetone	ND	10		µg/L	1	1/3/2023 11:01:04 PM
Bromobenzene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Bromodichloromethane	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Bromoform	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Bromomethane	ND	3.0		µg/L	1	1/3/2023 11:01:04 PM
2-Butanone	ND	10		µg/L	1	1/3/2023 11:01:04 PM
Carbon disulfide	ND	10		µg/L	1	1/3/2023 11:01:04 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Chlorobenzene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Chloroethane	ND	2.0		µg/L	1	1/3/2023 11:01:04 PM
Chloroform	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Chloromethane	ND	3.0		µg/L	1	1/3/2023 11:01:04 PM
2-Chlorotoluene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
4-Chlorotoluene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E08**
Date Reported: **1/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-5
Project: Mansfield 11
Collection Date: 12/27/2022 3:00:00 PM
Lab ID: 2212E08-005 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 6:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
cis-1,2-DCE	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/3/2023 11:01:04 PM
Dibromochloromethane	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Dibromomethane	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	1/3/2023 11:01:04 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
2-Hexanone	ND	10		µg/L	1	1/3/2023 11:01:04 PM
Isopropylbenzene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	1/3/2023 11:01:04 PM
Methylene Chloride	ND	3.0		µg/L	1	1/3/2023 11:01:04 PM
n-Butylbenzene	ND	3.0		µg/L	1	1/3/2023 11:01:04 PM
n-Propylbenzene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
sec-Butylbenzene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Styrene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
tert-Butylbenzene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/3/2023 11:01:04 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
trans-1,2-DCE	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/3/2023 11:01:04 PM
Vinyl chloride	ND	1.0		µg/L	1	1/3/2023 11:01:04 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E08**
Date Reported: **1/12/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-5
Project: Mansfield 11 **Collection Date:** 12/27/2022 3:00:00 PM
Lab ID: 2212E08-005 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 6:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**
Xylenes, Total	ND	1.5		µg/L	1	1/3/2023 11:01:04 PM
Surr: 1,2-Dichloroethane-d4	93.0	70-130		%Rec	1	1/3/2023 11:01:04 PM
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	1/3/2023 11:01:04 PM
Surr: Dibromofluoromethane	96.2	70-130		%Rec	1	1/3/2023 11:01:04 PM
Surr: Toluene-d8	96.7	70-130		%Rec	1	1/3/2023 11:01:04 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JTT**
Conductivity	4600	10		µmhos/c	1	1/4/2023 11:55:38 AM
SM2320B: ALKALINITY						Analyst: **SNS**
Bicarbonate (As CaCO3)	137.3	20.00		mg/L Ca	1	12/28/2022 7:04:08 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	12/28/2022 7:04:08 PM
Total Alkalinity (as CaCO3)	137.3	20.00		mg/L Ca	1	12/28/2022 7:04:08 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **SNS**
Total Dissolved Solids	4000	20.0	*	mg/L	1	12/30/2022 4:07:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E08**
12-Jan-23

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **MB-72387** SampType: **MBLK** TestCode: **EPA Method 200.7: Metals**
Client ID: **PBW** Batch ID: **72387** RunNo: **93679**
Prep Date: **12/30/2022** Analysis Date: **1/3/2023** SeqNo: **3381193** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LCSLL-72387** SampType: **LCSLL** TestCode: **EPA Method 200.7: Metals**
Client ID: **BatchQC** Batch ID: **72387** RunNo: **93679**
Prep Date: **12/30/2022** Analysis Date: **1/3/2023** SeqNo: **3381194** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0	0.5000	0	103	50	150			
Magnesium	ND	1.0	0.5000	0	107	50	150			
Potassium	ND	1.0	0.5000	0	103	50	150			
Sodium	ND	1.0	0.5000	0	106	50	150			

Sample ID: **LCS-72387** SampType: **LCS** TestCode: **EPA Method 200.7: Metals**
Client ID: **LCSW** Batch ID: **72387** RunNo: **93679**
Prep Date: **12/30/2022** Analysis Date: **1/3/2023** SeqNo: **3381195** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	51	1.0	50.00	0	101	85	115			
Magnesium	52	1.0	50.00	0	103	85	115			
Potassium	50	1.0	50.00	0	100	85	115			
Sodium	50	1.0	50.00	0	100	85	115			

Sample ID: **2212E08-001CMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**
Client ID: **MW-1** Batch ID: **72387** RunNo: **93679**
Prep Date: **12/30/2022** Analysis Date: **1/3/2023** SeqNo: **3381307** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	58	1.0	50.00	3.367	110	70	130			

Sample ID: **2212E08-001CMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **MW-1** Batch ID: **72387** RunNo: **93679**
Prep Date: **12/30/2022** Analysis Date: **1/3/2023** SeqNo: **3381308** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	58	1.0	50.00	3.367	110	70	130	0.414	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E08**
12-Jan-23

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **2212E08-002CMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**
Client ID: **MW-2** Batch ID: **72387** RunNo: **93679**
Prep Date: **12/30/2022** Analysis Date: **1/3/2023** SeqNo: **3381310** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	59	1.0	50.00	3.567	110	70	130			

Sample ID: **2212E08-002CMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **MW-2** Batch ID: **72387** RunNo: **93679**
Prep Date: **12/30/2022** Analysis Date: **1/3/2023** SeqNo: **3381311** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	59	1.0	50.00	3.567	111	70	130	0.868	20	

Sample ID: **2212E08-002CMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**
Client ID: **MW-2** Batch ID: **72387** RunNo: **93812**
Prep Date: **12/30/2022** Analysis Date: **1/9/2023** SeqNo: **3386638** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	200	5.0	50.00	144.2	102	70	130			
Sodium	250	5.0	50.00	198.3	95.4	70	130			

Sample ID: **2212E08-002CMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **MW-2** Batch ID: **72387** RunNo: **93812**
Prep Date: **12/30/2022** Analysis Date: **1/9/2023** SeqNo: **3386639** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	190	5.0	50.00	144.2	102	70	130	0	20	
Sodium	250	5.0	50.00	198.3	94.1	70	130	0	20	

Sample ID: **2212E08-001CMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**
Client ID: **MW-1** Batch ID: **72387** RunNo: **93866**
Prep Date: **12/30/2022** Analysis Date: **1/11/2023** SeqNo: **3388671** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	590	5.0	50.00	552.0	69.0	70	130			ES
Magnesium	160	5.0	50.00	117.4	91.5	70	130			
Sodium	250	5.0	50.00	206.6	77.4	70	130			

Sample ID: **2212E08-001CMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **MW-1** Batch ID: **72387** RunNo: **93866**
Prep Date: **12/30/2022** Analysis Date: **1/11/2023** SeqNo: **3388672** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	620	5.0	50.00	552.0	137	70	130	5.65	20	ES

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E08**
12-Jan-23

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **2212E08-001CMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **MW-1** Batch ID: **72387** RunNo: **93866**
Prep Date: **12/30/2022** Analysis Date: **1/11/2023** SeqNo: **3388672** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	170	5.0	50.00	117.4	108	70	130	5.04	20	
Sodium	260	5.0	50.00	206.6	107	70	130	5.80	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E08**
12-Jan-23

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R93611** RunNo: **93611**
Prep Date: Analysis Date: **12/28/2022** SeqNo: **3377947** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID: **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R93611** RunNo: **93611**
Prep Date: Analysis Date: **12/28/2022** SeqNo: **3377948** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	103	90	110			
Chloride	4.6	0.50	5.000	0	91.0	90	110			
Nitrogen, Nitrite (As N)	0.95	0.10	1.000	0	94.6	90	110			
Bromide	2.3	0.10	2.500	0	93.2	90	110			
Nitrogen, Nitrate (As N)	2.4	0.10	2.500	0	97.1	90	110			
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	91.7	90	110			

Sample ID: **2212E08-004BMS** SampType: **MS** TestCode: **EPA Method 300.0: Anions**
Client ID: **MW-4** Batch ID: **R93611** RunNo: **93611**
Prep Date: Analysis Date: **12/28/2022** SeqNo: **3377970** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.2	0.50	2.500	1.006	89.3	78.6	114			
Chloride	45	2.5	25.00	22.43	88.3	82.8	107			
Nitrogen, Nitrite (As N)	4.5	0.50	5.000	0	89.1	82.5	104			
Bromide	11	0.50	12.50	0	89.9	89.4	110			
Nitrogen, Nitrate (As N)	12	0.50	12.50	0	93.2	89.5	113			
Phosphorus, Orthophosphate (As P	20	2.5	25.00	0	81.2	80.9	104			

Sample ID: **2212E08-004BMSD** SampType: **MSD** TestCode: **EPA Method 300.0: Anions**
Client ID: **MW-4** Batch ID: **R93611** RunNo: **93611**
Prep Date: Analysis Date: **12/28/2022** SeqNo: **3377971** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.2	0.50	2.500	1.006	89.6	78.6	114	0.231	20	
Chloride	45	2.5	25.00	22.43	88.6	82.8	107	0.149	20	
Nitrogen, Nitrite (As N)	4.5	0.50	5.000	0	90.2	82.5	104	1.22	20	
Bromide	11	0.50	12.50	0	91.6	89.4	110	1.84	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E08**

12-Jan-23

Client: HILCORP ENERGY

Project: Mansfield 11

Sample ID: **2212E08-004BMSD**	SampType: **MSD**	TestCode: **EPA Method 300.0: Anions**
Client ID: **MW-4**	Batch ID: **R93611**	RunNo: **93611**
Prep Date:	Analysis Date: **12/28/2022**	SeqNo: **3377971** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrate (As N)	12	0.50	12.50	0	94.4	89.5	113	1.37	20	
Phosphorus, Orthophosphate (As P	21	2.5	25.00	0	82.4	80.9	104	1.47	20	

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **A93721**	RunNo: **93721**
Prep Date:	Analysis Date: **1/5/2023**	SeqNo: **3383045** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **A93721**	RunNo: **93721**
Prep Date:	Analysis Date: **1/5/2023**	SeqNo: **3383046** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.9	0.50	10.00	0	99.5	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E08**
12-Jan-23

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R93684** RunNo: **93684**
Prep Date: Analysis Date: **1/3/2023** SeqNo: **3381603** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	92.3	70	130			
Toluene	19	1.0	20.00	0	92.5	70	130			
Chlorobenzene	20	1.0	20.00	0	98.7	70	130			
1,1-Dichloroethene	17	1.0	20.00	0	84.2	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	85.8	70	130			
Surr: 1,2-Dichloroethane-d4	8.8		10.00		88.5	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		96.9	70	130			
Surr: Dibromofluoromethane	8.7		10.00		87.2	70	130			
Surr: Toluene-d8	9.0		10.00		90.2	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R93684** RunNo: **93684**
Prep Date: Analysis Date: **1/3/2023** SeqNo: **3381621** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E08**
12-Jan-23

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R93684**	RunNo: **93684**
Prep Date:	Analysis Date: **1/3/2023**	SeqNo: **3381621** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E08**
12-Jan-23

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R93684** RunNo: **93684**
Prep Date: Analysis Date: **1/3/2023** SeqNo: **3381621** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		100	70	130			
Surr: Dibromofluoromethane	9.5		10.00		94.7	70	130			
Surr: Toluene-d8	9.8		10.00		97.9	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E08**
12-Jan-23

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **lcs-1 99.4uS eC** SampType: **LCS** TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW** Batch ID: **R93716** RunNo: **93716**
Prep Date: Analysis Date: **1/4/2023** SeqNo: **3382829** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	99.40	0	101	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E08**
12-Jan-23

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **mb-2 alk** SampType: **mblk** TestCode: **SM2320B: Alkalinity**
Client ID: **PBW** Batch ID: **A93608** RunNo: **93608**
Prep Date: Analysis Date: **12/28/2022** SeqNo: **3377798** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk** SampType: **lcs** TestCode: **SM2320B: Alkalinity**
Client ID: **LCSW** Batch ID: **A93608** RunNo: **93608**
Prep Date: Analysis Date: **12/28/2022** SeqNo: **3377799** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78.88	20.00	80.00	0	98.6	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E08**

12-Jan-23

Client: HILCORP ENERGY

Project: Mansfield 11

Sample ID: **MB-72374** SampType: **MBLK** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **PBW** Batch ID: **72374** RunNo: **93734**

Prep Date: **12/29/2022** Analysis Date: **12/30/2022** SeqNo: **3383491** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-72374** SampType: **LCS** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **LCSW** Batch ID: **72374** RunNo: **93734**

Prep Date: **12/29/2022** Analysis Date: **12/30/2022** SeqNo: **3383492** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	992	20.0	1000	0	99.2	80	120			

Sample ID: **2212E08-005BDUP** SampType: **DUP** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **MW-5** Batch ID: **72374** RunNo: **93734**

Prep Date: **12/29/2022** Analysis Date: **12/30/2022** SeqNo: **3383512** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	4020	20.0						0.623	10	*

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2212E08 RcptNo: 1

Received By: Isaiah Ortiz 12/28/2022 6:45:00 AM I_Ox

Completed By: Isaiah Ortiz 12/28/2022 8:45:06 AM I_Ox

Reviewed By: JA 12-28-22

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐ see related
8. Was preservative added to bottles? Yes ☑ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☑ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: 5 (<2 or >12 unless noted)
Adjusted? yes
Checked by: see 12/28/22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks: added ~0.5mL HNO3 to samples 001-005C for metals analysis checked for proper pH <2 see 12/28/22 #7051

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Yes			

Chain-of-Custody Record

Client: Hilcorp Farmington NM

Mailing Address: 382 Road 3100 Aztec, NM 87410

Billing Address: PO Box 61529 Houston, TX 77208

Phone #: 505-486-9543

email or Fax#: Brandon.Sinclair@hilcorp.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other_____

☐ EDD (Type) _____

Turn-Around Time:

X Standard ☐ Rush_____

Project Name:

Mansfield #11

Project #:

Project Manager:

Mitch Killough

Sampler: Brandon Sinclair

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(Including CF): 1.4°C +0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 22122608	Analysis Request: Cations/Anions/TDS 500ml, 250ml, HNO3, 125ml H2SO4 or Plastic	Analysis Request: Volatiles 8260 40ml VOA HCl
12-27	1315	Water	MW-1	Various	Various	001	X	X
	1340	Water	MW-2	Various	Various	002	X	X
	1240	Water	MW-3	Various	Various	003	X	X
	1415	Water	MW-4	Various	Various	004	X	X
	1500	Water	MW-5	Various	Various	005	X	X

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
12-27	1637		Christ Hall		12/27/22	1637
12/29/22	1806			courier	12/28/22	0645

Remarks: Preserve cation/Anion in Lab

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
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Website: www.hallenvironmental.com

November 28, 2022

Stuart Hyde
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX:

RE: Mansfield 11 OrderNo.: 2211B13

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 2 sample(s) on 11/18/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2211B13**
Date Reported: **11/28/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** LFC
Project: Mansfield 11 **Collection Date:** 11/17/2022 11:55:00 AM
Lab ID: 2211B13-001 **Matrix:** MEOH (SOIL) **Received Date:** 11/18/2022 6:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	11/18/2022 10:01:32 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/18/2022 10:01:32 AM
Surr: DNOP	105	21-129		%Rec	1	11/18/2022 10:01:32 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.0		mg/Kg	1	11/18/2022 2:26:55 PM
Surr: BFB	91.7	37.7-212		%Rec	1	11/18/2022 2:26:55 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.020		mg/Kg	1	11/18/2022 2:26:55 PM
Toluene	ND	0.040		mg/Kg	1	11/18/2022 2:26:55 PM
Ethylbenzene	ND	0.040		mg/Kg	1	11/18/2022 2:26:55 PM
Xylenes, Total	ND	0.079		mg/Kg	1	11/18/2022 2:26:55 PM
Surr: 4-Bromofluorobenzene	93.0	70-130		%Rec	1	11/18/2022 2:26:55 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	ND	60		mg/Kg	20	11/18/2022 12:17:57 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2211B13**
Date Reported: **11/28/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** LWC-04B
Project: Mansfield 11 **Collection Date:** 11/17/2022 12:05:00 PM
Lab ID: 2211B13-002 **Matrix:** MEOH (SOIL) **Received Date:** 11/18/2022 6:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	13		mg/Kg	1	11/18/2022 10:11:56 AM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	11/18/2022 10:11:56 AM
Surr: DNOP	103	21-129		%Rec	1	11/18/2022 10:11:56 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.0		mg/Kg	1	11/18/2022 2:50:45 PM
Surr: BFB	92.2	37.7-212		%Rec	1	11/18/2022 2:50:45 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.020		mg/Kg	1	11/18/2022 2:50:45 PM
Toluene	ND	0.040		mg/Kg	1	11/18/2022 2:50:45 PM
Ethylbenzene	ND	0.040		mg/Kg	1	11/18/2022 2:50:45 PM
Xylenes, Total	ND	0.080		mg/Kg	1	11/18/2022 2:50:45 PM
Surr: 4-Bromofluorobenzene	94.0	70-130		%Rec	1	11/18/2022 2:50:45 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	ND	60		mg/Kg	20	11/18/2022 12:30:22 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2211B13**

28-Nov-22

Client: HILCORP ENERGY

Project: Mansfield 11

Sample ID: **MB-71590**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **71590**	RunNo: **92690**
Prep Date: **11/18/2022**	Analysis Date: **11/18/2022**	SeqNo: **3336788** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-71590**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **71590**	RunNo: **92690**
Prep Date: **11/18/2022**	Analysis Date: **11/18/2022**	SeqNo: **3336789** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.5	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2211B13**

28-Nov-22

Client: HILCORP ENERGY

Project: Mansfield 11

Sample ID: **LCS-71589**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **71589**	RunNo: **92689**
Prep Date: **11/18/2022**	Analysis Date: **11/18/2022**	SeqNo: **3335128** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	15	50.00	0	93.8	64.4	127			
Surr: DNOP	5.3		5.000		106	21	129			

Sample ID: **MB-71589**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **71589**	RunNo: **92689**
Prep Date: **11/18/2022**	Analysis Date: **11/18/2022**	SeqNo: **3335129** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	15								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.5		10.00		94.7	21	129			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2211B13**

28-Nov-22

Client: HILCORP ENERGY

Project: Mansfield 11

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **B92694**	RunNo: **92694**
Prep Date:	Analysis Date: **11/18/2022**	SeqNo: **3335416** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	970		1000		97.1	37.7	212			

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **B92694**	RunNo: **92694**
Prep Date:	Analysis Date: **11/18/2022**	SeqNo: **3335417** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	85.8	72.3	137			
Surr: BFB	1800		1000		180	37.7	212			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2211B13**

28-Nov-22

Client: HILCORP ENERGY

Project: Mansfield 11

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **D92694**	RunNo: **92694**
Prep Date:	Analysis Date: **11/18/2022**	SeqNo: **3335494** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		101	70	130			

Sample ID: **100ng btex lcs**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **D92694**	RunNo: **92694**
Prep Date:	Analysis Date: **11/18/2022**	SeqNo: **3335495** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.97	0.025	1.000	0	96.8	80	120			
Toluene	0.97	0.050	1.000	0	97.4	80	120			
Ethylbenzene	0.97	0.050	1.000	0	96.8	80	120			
Xylenes, Total	2.9	0.10	3.000	0	97.7	80	120			
Surr: 4-Bromofluorobenzene	0.99		1.000		99.3	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Hilcorp Energy | Work Order Number: 2211B13 | RcptNo: 1

Received By: Tracy Casarrubias 11/18/2022 6:20:00 AM
Completed By: Tracy Casarrubias 11/18/2022 7:02:54 AM
Reviewed By: TMC 11/18/22

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: JM 11/18/22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.2	Good	Yes			

Chain-of-Custody Record

Client: Hilcorp

Attn: Mitch Killough

Mailing Address:

Phone #:

email or Fax#: mKillough@hilcorp.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

~~5-days~~

~~☒ Standard~~ or ☒ Rush Next Day

Project Name: Mansfield #11

Project #:

Project Manager: Stuart Hyde

shyde@ensolum.com

Sampler:

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 1.4-0.2=1.2 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / ~~MTBE / TMB's~~ (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	Chloride (300.0)
11/14/22	1155	Soil	LFC	1, 4 oz	Cool	2211B13 001	X	X									X
↓	1205	↓	LWC-04B	↓	↓	002	X	X									X

Date:	Time:	Relinquished by:	Received by:	Via	Date	Time
11/14/22	1358					
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
11/17/22	1804			Courier	11/16/22	6:20

Remarks:

cc: rhanson@ensolum.com

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 03, 2023

Stuart Hyde
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX:

RE: Mansfield OrderNo.: 2212A16

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 1 sample(s) on 12/16/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2212A16**
Date Reported: **1/3/2023**

CLIENT: HILCORP ENERGY
Client Sample ID: EX WS
Project: Mansfield
Collection Date: 12/15/2022 11:15:00 AM
Lab ID: 2212A16-001 **Matrix:** AQUEOUS **Received Date:** 12/16/2022 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Fluoride	1.6	1.0		mg/L	10	12/16/2022 2:57:45 PM
Chloride	490	50	*	mg/L	100	12/16/2022 3:10:06 PM
Nitrogen, Nitrite (As N)	2.8	1.0	*	mg/L	10	12/16/2022 2:57:45 PM
Bromide	2.1	1.0		mg/L	10	12/16/2022 2:57:45 PM
Nitrogen, Nitrate (As N)	14	1.0	*	mg/L	10	12/16/2022 2:57:45 PM
Phosphorus, Orthophosphate (As P)	ND	50		mg/L	100	12/16/2022 3:10:06 PM
Sulfate	8500	250	*	mg/L	500	12/29/2022 9:08:14 PM
EPA METHOD 200.7: METALS						Analyst: **VP**
Calcium	660	10		mg/L	10	12/20/2022 3:51:39 PM
Magnesium	1600	100		mg/L	100	12/20/2022 3:55:41 PM
Potassium	23	1.0		mg/L	1	12/20/2022 3:50:21 PM
Sodium	1400	100		mg/L	100	12/20/2022 3:55:41 PM
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Benzene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Toluene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Ethylbenzene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,2,4-Trimethylbenzene	67	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,3,5-Trimethylbenzene	140	10		µg/L	10	12/21/2022 9:53:00 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Naphthalene	2.4	2.0		µg/L	1	12/20/2022 2:00:00 PM
1-Methylnaphthalene	5.2	4.0		µg/L	1	12/20/2022 2:00:00 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	12/20/2022 2:00:00 PM
Acetone	22	10		µg/L	1	12/20/2022 2:00:00 PM
Bromobenzene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Bromodichloromethane	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Bromoform	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Bromomethane	ND	3.0		µg/L	1	12/20/2022 2:00:00 PM
2-Butanone	ND	10		µg/L	1	12/20/2022 2:00:00 PM
Carbon disulfide	ND	10		µg/L	1	12/20/2022 2:00:00 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Chlorobenzene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Chloroethane	ND	2.0		µg/L	1	12/20/2022 2:00:00 PM
Chloroform	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Chloromethane	ND	3.0		µg/L	1	12/20/2022 2:00:00 PM
2-Chlorotoluene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
4-Chlorotoluene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212A16**
Date Reported: **1/3/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: EX WS
Project: Mansfield
Collection Date: 12/15/2022 11:15:00 AM
Lab ID: 2212A16-001 **Matrix:** AQUEOUS **Received Date:** 12/16/2022 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
cis-1,2-DCE	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	12/20/2022 2:00:00 PM
Dibromochloromethane	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Dibromomethane	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	12/20/2022 2:00:00 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
2-Hexanone	ND	10		µg/L	1	12/20/2022 2:00:00 PM
Isopropylbenzene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
4-Isopropyltoluene	4.6	1.0		µg/L	1	12/20/2022 2:00:00 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	12/20/2022 2:00:00 PM
Methylene Chloride	ND	3.0		µg/L	1	12/20/2022 2:00:00 PM
n-Butylbenzene	ND	3.0		µg/L	1	12/20/2022 2:00:00 PM
n-Propylbenzene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
sec-Butylbenzene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Styrene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
tert-Butylbenzene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	12/20/2022 2:00:00 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
trans-1,2-DCE	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	12/20/2022 2:00:00 PM
Vinyl chloride	ND	1.0		µg/L	1	12/20/2022 2:00:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212A16**
Date Reported: **1/3/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: EX WS
Project: Mansfield
Collection Date: 12/15/2022 11:15:00 AM
Lab ID: 2212A16-001 **Matrix:** AQUEOUS **Received Date:** 12/16/2022 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Xylenes, Total	71	1.5		µg/L	1	12/20/2022 2:00:00 PM
Surr: 1,2-Dichloroethane-d4	92.7	70-130		%Rec	1	12/20/2022 2:00:00 PM
Surr: 4-Bromofluorobenzene	96.6	70-130		%Rec	1	12/20/2022 2:00:00 PM
Surr: Dibromofluoromethane	95.1	70-130		%Rec	1	12/20/2022 2:00:00 PM
Surr: Toluene-d8	108	70-130		%Rec	1	12/20/2022 2:00:00 PM
SM2320B: ALKALINITY						Analyst: **CAS**
Bicarbonate (As CaCO3)	495.8	20.00		mg/L Ca	1	12/22/2022 7:51:29 PM
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	12/22/2022 7:51:29 PM
Total Alkalinity (as CaCO3)	495.8	20.00		mg/L Ca	1	12/22/2022 7:51:29 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **SNS**
Total Dissolved Solids	15100	200	*D	mg/L	1	12/27/2022 8:45:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212A16**

03-Jan-23

Client: HILCORP ENERGY

Project: Mansfield

Sample ID: **MB-72192**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Metals**
Client ID: **PBW**	Batch ID: **72192**	RunNo: **93444**
Prep Date: **12/19/2022**	Analysis Date: **12/20/2022**	SeqNo: **3370213** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LCSLL-72192**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Metals**
Client ID: **BatchQC**	Batch ID: **72192**	RunNo: **93444**
Prep Date: **12/19/2022**	Analysis Date: **12/20/2022**	SeqNo: **3370214** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0	0.5000	0	106	50	150			
Magnesium	ND	1.0	0.5000	0	109	50	150			
Potassium	ND	1.0	0.5000	0	108	50	150			
Sodium	ND	1.0	0.5000	0	111	50	150			

Sample ID: **LCS-72192**	SampType: **LCS**	TestCode: **EPA Method 200.7: Metals**
Client ID: **LCSW**	Batch ID: **72192**	RunNo: **93444**
Prep Date: **12/19/2022**	Analysis Date: **12/20/2022**	SeqNo: **3370218** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	53	1.0	50.00	0	106	85	115			
Magnesium	53	1.0	50.00	0	107	85	115			
Potassium	51	1.0	50.00	0	103	85	115			
Sodium	53	1.0	50.00	0	105	85	115			

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212A16**

03-Jan-23

Client: HILCORP ENERGY

Project: Mansfield

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R93381**	RunNo: **93381**
Prep Date:	Analysis Date: **12/16/2022**	SeqNo: **3367319** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P)	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R93381**	RunNo: **93381**
Prep Date:	Analysis Date: **12/16/2022**	SeqNo: **3367320** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.52	0.10	0.5000	0	104	90	110			
Chloride	4.6	0.50	5.000	0	92.4	90	110			
Nitrogen, Nitrite (As N)	0.96	0.10	1.000	0	95.6	90	110			
Bromide	2.4	0.10	2.500	0	96.0	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	99.6	90	110			
Phosphorus, Orthophosphate (As P)	4.6	0.50	5.000	0	91.2	90	110			

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R93618**	RunNo: **93618**
Prep Date:	Analysis Date: **12/29/2022**	SeqNo: **3379434** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.5	0.50	10.00	0	94.9	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R93618**	RunNo: **93618**
Prep Date:	Analysis Date: **12/29/2022**	SeqNo: **3379435** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Qualifiers:

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H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212A16**

03-Jan-23

Client: HILCORP ENERGY

Project: Mansfield

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R93457**	RunNo: **93457**
Prep Date:	Analysis Date: **12/21/2022**	SeqNo: **3370848** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	8.6		10.00		86.5	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	9.3		10.00		92.5	70	130			
Surr: Toluene-d8	9.9		10.00		99.4	70	130			

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R93456**	RunNo: **93456**
Prep Date:	Analysis Date: **12/20/2022**	SeqNo: **3370926** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.3	70	130			
Toluene	22	1.0	20.00	0	109	70	130			
Chlorobenzene	23	1.0	20.00	0	114	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	102	70	130			
Trichloroethene (TCE)	19	1.0	20.00	0	95.6	70	130			
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.3	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	9.6		10.00		95.9	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R93456**	RunNo: **93456**
Prep Date:	Analysis Date: **12/20/2022**	SeqNo: **3370927** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								

Qualifiers:

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212A16**

03-Jan-23

Client: HILCORP ENERGY

Project: Mansfield

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R93456**	RunNo: **93456**
Prep Date:	Analysis Date: **12/20/2022**	SeqNo: **3370927** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212A16**

03-Jan-23

Client: HILCORP ENERGY

Project: Mansfield

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R93456**	RunNo: **93456**
Prep Date:	Analysis Date: **12/20/2022**	SeqNo: **3370927** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.9		10.00		99.0	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R93457**	RunNo: **93457**
Prep Date:	Analysis Date: **12/21/2022**	SeqNo: **3377540** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,3,5-Trimethylbenzene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	8.9		10.00		89.4	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		97.0	70	130			
Surr: Dibromofluoromethane	9.3		10.00		93.2	70	130			
Surr: Toluene-d8	9.7		10.00		96.7	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212A16**

03-Jan-23

Client: HILCORP ENERGY

Project: Mansfield

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**
Client ID: **PBW**	Batch ID: **R93524**	RunNo: **93524**
Prep Date:	Analysis Date: **12/22/2022**	SeqNo: **3373801** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**
Client ID: **LCSW**	Batch ID: **R93524**	RunNo: **93524**
Prep Date:	Analysis Date: **12/22/2022**	SeqNo: **3373802** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78.40	20.00	80.00	0	98.0	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212A16**

03-Jan-23

Client: HILCORP ENERGY

Project: Mansfield

Sample ID: **MB-72259**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **72259**	RunNo: **93559**
Prep Date: **12/21/2022**	Analysis Date: **12/27/2022**	SeqNo: **3375513** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-72259**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **72259**	RunNo: **93559**
Prep Date: **12/21/2022**	Analysis Date: **12/27/2022**	SeqNo: **3375514** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2212A16 RcptNo: 1

Received By: Tracy Casarrubias 12/16/2022 7:40:00 AM

Completed By: Tracy Casarrubias 12/16/2022 8:47:35 AM

Reviewed By: Sca 12/16/22

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 2 (✓ or >12 unless noted)

Adjusted? NO

Checked by: JA 12.16.22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.5	Good	Yes			

Chain-of-Custody Record

Client: Hilcorp Energy company

Attn:

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

5-Day

☑ Standard ☐ Rush

Project Name: Mansfield

Project #:

Project Manager: Stuart Hyde - Ensolum

Sampler: E. Carroll

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 1.6 -0.1= 1.5 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2212A16
12-15	11:15	AQ	EX WS	6 various	various	001

Analysis Request

BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	TDS	Ca, Mg, K, Na	Alkalinity			
						X	X			X	X	X			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
12-15	1221	Eric Carroll			12/15/22	1221
12/15/22	1816				12/16/22	7:40

Remarks:

cc: ecarroll@ensolum.com

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

July 01, 2022

Stuart Hyde
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX:

RE: Mansfield 11 OrderNo.: 2206B72

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 15 sample(s) on 6/22/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2206B72**
Date Reported: **7/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: FC-01
Project: Mansfield 11
Collection Date: 6/21/2022 1:50:00 PM
Lab ID: 2206B72-001 **Matrix:** SOIL **Received Date:** 6/22/2022 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **ED**
Diesel Range Organics (DRO)	36	14		mg/Kg	1	6/24/2022 9:16:24 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	6/24/2022 9:16:24 PM
Surr: DNOP	82.5	51.1-141		%Rec	1	6/24/2022 9:16:24 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **BRM**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	6/25/2022 12:50:00 AM
Surr: BFB	91.9	37.7-212		%Rec	1	6/25/2022 12:50:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **BRM**
Benzene	ND	0.025		mg/Kg	1	6/25/2022 12:50:00 AM
Toluene	ND	0.050		mg/Kg	1	6/25/2022 12:50:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	6/25/2022 12:50:00 AM
Xylenes, Total	ND	0.10		mg/Kg	1	6/25/2022 12:50:00 AM
Surr: 4-Bromofluorobenzene	89.9	70-130		%Rec	1	6/25/2022 12:50:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Estimated value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference

Analytical Report
Lab Order **2206B72**
Date Reported: **7/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: FC-02
Project: Mansfield 11
Collection Date: 6/21/2022 1:55:00 PM
Lab ID: 2206B72-002 **Matrix:** SOIL **Received Date:** 6/22/2022 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **ED**
Diesel Range Organics (DRO)	44	15		mg/Kg	1	6/24/2022 9:27:17 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	6/24/2022 9:27:17 PM
Surr: DNOP	83.9	51.1-141		%Rec	1	6/24/2022 9:27:17 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **BRM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/25/2022 1:10:00 AM
Surr: BFB	91.6	37.7-212		%Rec	1	6/25/2022 1:10:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **BRM**
Benzene	ND	0.024		mg/Kg	1	6/25/2022 1:10:00 AM
Toluene	ND	0.049		mg/Kg	1	6/25/2022 1:10:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	6/25/2022 1:10:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	6/25/2022 1:10:00 AM
Surr: 4-Bromofluorobenzene	84.8	70-130		%Rec	1	6/25/2022 1:10:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206B72**
Date Reported: **7/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: FC-03
Project: Mansfield 11
Collection Date: 6/21/2022 2:02:00 PM
Lab ID: 2206B72-003 **Matrix:** SOIL **Received Date:** 6/22/2022 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **ED**
Diesel Range Organics (DRO)	ND	14		mg/Kg	1	6/24/2022 9:38:10 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	6/24/2022 9:38:10 PM
Surr: DNOP	86.8	51.1-141		%Rec	1	6/24/2022 9:38:10 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **BRM**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	6/25/2022 1:30:00 AM
Surr: BFB	87.6	37.7-212		%Rec	1	6/25/2022 1:30:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **BRM**
Benzene	ND	0.025		mg/Kg	1	6/25/2022 1:30:00 AM
Toluene	ND	0.050		mg/Kg	1	6/25/2022 1:30:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	6/25/2022 1:30:00 AM
Xylenes, Total	ND	0.10		mg/Kg	1	6/25/2022 1:30:00 AM
Surr: 4-Bromofluorobenzene	85.5	70-130		%Rec	1	6/25/2022 1:30:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206B72**
Date Reported: **7/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: FC-04
Project: Mansfield 11
Collection Date: 6/21/2022 1:59:00 PM
Lab ID: 2206B72-004 **Matrix:** SOIL **Received Date:** 6/22/2022 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **ED**
Diesel Range Organics (DRO)	ND	13		mg/Kg	1	6/24/2022 9:49:05 PM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	6/24/2022 9:49:05 PM
Surr: DNOP	85.5	51.1-141		%Rec	1	6/24/2022 9:49:05 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **BRM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/25/2022 1:49:00 AM
Surr: BFB	90.2	37.7-212		%Rec	1	6/25/2022 1:49:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **BRM**
Benzene	ND	0.024		mg/Kg	1	6/25/2022 1:49:00 AM
Toluene	ND	0.049		mg/Kg	1	6/25/2022 1:49:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	6/25/2022 1:49:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	6/25/2022 1:49:00 AM
Surr: 4-Bromofluorobenzene	86.2	70-130		%Rec	1	6/25/2022 1:49:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206B72**
Date Reported: **7/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: UWC-01
Project: Mansfield 11
Collection Date: 6/21/2022 2:07:00 PM
Lab ID: 2206B72-005 **Matrix:** SOIL **Received Date:** 6/22/2022 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **ED**
Diesel Range Organics (DRO)	ND	14		mg/Kg	1	6/24/2022 10:00:00 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	6/24/2022 10:00:00 PM
Surr: DNOP	88.7	51.1-141		%Rec	1	6/24/2022 10:00:00 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **BRM**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	6/25/2022 2:09:00 AM
Surr: BFB	86.1	37.7-212		%Rec	1	6/25/2022 2:09:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **BRM**
Benzene	ND	0.023		mg/Kg	1	6/25/2022 2:09:00 AM
Toluene	ND	0.046		mg/Kg	1	6/25/2022 2:09:00 AM
Ethylbenzene	ND	0.046		mg/Kg	1	6/25/2022 2:09:00 AM
Xylenes, Total	ND	0.092		mg/Kg	1	6/25/2022 2:09:00 AM
Surr: 4-Bromofluorobenzene	85.7	70-130		%Rec	1	6/25/2022 2:09:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Estimated value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference

Analytical Report
Lab Order **2206B72**
Date Reported: **7/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: LWC-01
Project: Mansfield 11
Collection Date: 6/21/2022 2:10:00 PM
Lab ID: 2206B72-006 **Matrix:** SOIL **Received Date:** 6/22/2022 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **ED**
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	6/24/2022 10:10:56 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	6/24/2022 10:10:56 PM
Surr: DNOP	80.7	51.1-141		%Rec	1	6/24/2022 10:10:56 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **BRM**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	6/25/2022 2:29:00 AM
Surr: BFB	86.4	37.7-212		%Rec	1	6/25/2022 2:29:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **BRM**
Benzene	ND	0.023		mg/Kg	1	6/25/2022 2:29:00 AM
Toluene	ND	0.046		mg/Kg	1	6/25/2022 2:29:00 AM
Ethylbenzene	ND	0.046		mg/Kg	1	6/25/2022 2:29:00 AM
Xylenes, Total	ND	0.093		mg/Kg	1	6/25/2022 2:29:00 AM
Surr: 4-Bromofluorobenzene	84.7	70-130		%Rec	1	6/25/2022 2:29:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206B72**
Date Reported: **7/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: UWC-02
Project: Mansfield 11
Collection Date: 6/21/2022 2:14:00 PM
Lab ID: 2206B72-007 **Matrix:** SOIL **Received Date:** 6/22/2022 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **ED**
Diesel Range Organics (DRO)	ND	13		mg/Kg	1	6/24/2022 6:09:51 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	6/24/2022 6:09:51 PM
Surr: DNOP	92.9	51.1-141		%Rec	1	6/24/2022 6:09:51 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **BRM**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	6/25/2022 2:49:00 AM
Surr: BFB	87.1	37.7-212		%Rec	1	6/25/2022 2:49:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **BRM**
Benzene	ND	0.025		mg/Kg	1	6/25/2022 2:49:00 AM
Toluene	ND	0.050		mg/Kg	1	6/25/2022 2:49:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	6/25/2022 2:49:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	6/25/2022 2:49:00 AM
Surr: 4-Bromofluorobenzene	86.0	70-130		%Rec	1	6/25/2022 2:49:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206B72**
Date Reported: **7/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: LWC-02
Project: Mansfield 11
Collection Date: 6/21/2022 2:18:00 PM
Lab ID: 2206B72-008 **Matrix:** SOIL **Received Date:** 6/22/2022 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **ED**
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	6/27/2022 12:55:45 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	6/27/2022 12:55:45 PM
Surr: DNOP	119	51.1-141		%Rec	1	6/27/2022 12:55:45 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **BRM**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	6/25/2022 3:09:00 AM
Surr: BFB	86.9	37.7-212		%Rec	1	6/25/2022 3:09:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **BRM**
Benzene	ND	0.023		mg/Kg	1	6/25/2022 3:09:00 AM
Toluene	ND	0.046		mg/Kg	1	6/25/2022 3:09:00 AM
Ethylbenzene	ND	0.046		mg/Kg	1	6/25/2022 3:09:00 AM
Xylenes, Total	ND	0.092		mg/Kg	1	6/25/2022 3:09:00 AM
Surr: 4-Bromofluorobenzene	84.8	70-130		%Rec	1	6/25/2022 3:09:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206B72**
Date Reported: **7/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: UWC-03
Project: Mansfield 11
Collection Date: 6/21/2022 2:46:00 PM
Lab ID: 2206B72-009 **Matrix:** SOIL **Received Date:** 6/22/2022 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **ED**
Diesel Range Organics (DRO)	ND	13		mg/Kg	1	6/27/2022 2:44:06 PM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	6/27/2022 2:44:06 PM
Surr: DNOP	96.1	51.1-141		%Rec	1	6/27/2022 2:44:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **BRM**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	6/25/2022 3:28:00 AM
Surr: BFB	86.7	37.7-212		%Rec	1	6/25/2022 3:28:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **BRM**
Benzene	ND	0.023		mg/Kg	1	6/25/2022 3:28:00 AM
Toluene	ND	0.046		mg/Kg	1	6/25/2022 3:28:00 AM
Ethylbenzene	ND	0.046		mg/Kg	1	6/25/2022 3:28:00 AM
Xylenes, Total	ND	0.091		mg/Kg	1	6/25/2022 3:28:00 AM
Surr: 4-Bromofluorobenzene	83.1	70-130		%Rec	1	6/25/2022 3:28:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206B72**
Date Reported: **7/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: LWC-03
Project: Mansfield 11
Collection Date: 6/21/2022 2:49:00 PM
Lab ID: 2206B72-010 **Matrix:** SOIL **Received Date:** 6/22/2022 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **ED**
Diesel Range Organics (DRO)	ND	13		mg/Kg	1	6/27/2022 2:54:45 PM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	6/27/2022 2:54:45 PM
Surr: DNOP	120	51.1-141		%Rec	1	6/27/2022 2:54:45 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **BRM**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/25/2022 3:48:00 AM
Surr: BFB	85.9	37.7-212		%Rec	1	6/25/2022 3:48:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **BRM**
Benzene	ND	0.024		mg/Kg	1	6/25/2022 3:48:00 AM
Toluene	ND	0.047		mg/Kg	1	6/25/2022 3:48:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	6/25/2022 3:48:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	6/25/2022 3:48:00 AM
Surr: 4-Bromofluorobenzene	85.8	70-130		%Rec	1	6/25/2022 3:48:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Estimated value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference

Analytical Report
Lab Order **2206B72**
Date Reported: **7/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: UWC-04
Project: Mansfield 11
Collection Date: 6/21/2022 2:38:00 PM
Lab ID: 2206B72-011 **Matrix:** SOIL **Received Date:** 6/22/2022 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **ED**
Diesel Range Organics (DRO)	ND	14		mg/Kg	1	6/27/2022 3:05:27 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	6/27/2022 3:05:27 PM
Surr: DNOP	96.0	51.1-141		%Rec	1	6/27/2022 3:05:27 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **BRM**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	6/25/2022 5:47:00 AM
Surr: BFB	86.1	37.7-212		%Rec	1	6/25/2022 5:47:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **BRM**
Benzene	ND	0.025		mg/Kg	1	6/25/2022 5:47:00 AM
Toluene	ND	0.050		mg/Kg	1	6/25/2022 5:47:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	6/25/2022 5:47:00 AM
Xylenes, Total	ND	0.10		mg/Kg	1	6/25/2022 5:47:00 AM
Surr: 4-Bromofluorobenzene	85.0	70-130		%Rec	1	6/25/2022 5:47:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206B72**
Date Reported: **7/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: LWC-04
Project: Mansfield 11
Collection Date: 6/21/2022 2:42:00 PM
Lab ID: 2206B72-012 **Matrix:** SOIL **Received Date:** 6/22/2022 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **ED**
Diesel Range Organics (DRO)	ND	14		mg/Kg	1	6/27/2022 3:16:09 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	6/27/2022 3:16:09 PM
Surr: DNOP	97.4	51.1-141		%Rec	1	6/27/2022 3:16:09 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **BRM**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	6/25/2022 6:46:00 AM
Surr: BFB	93.8	37.7-212		%Rec	1	6/25/2022 6:46:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **BRM**
Benzene	ND	0.025		mg/Kg	1	6/25/2022 6:46:00 AM
Toluene	ND	0.050		mg/Kg	1	6/25/2022 6:46:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	6/25/2022 6:46:00 AM
Xylenes, Total	ND	0.10		mg/Kg	1	6/25/2022 6:46:00 AM
Surr: 4-Bromofluorobenzene	90.2	70-130		%Rec	1	6/25/2022 6:46:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206B72**
Date Reported: **7/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: LWC-05
Project: Mansfield 11
Collection Date: 6/21/2022 2:32:00 PM
Lab ID: 2206B72-013 **Matrix:** SOIL **Received Date:** 6/22/2022 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **ED**
Diesel Range Organics (DRO)	17	13		mg/Kg	1	6/27/2022 3:26:53 PM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	6/27/2022 3:26:53 PM
Surr: DNOP	95.9	51.1-141		%Rec	1	6/27/2022 3:26:53 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **BRM**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/25/2022 7:46:00 AM
Surr: BFB	87.5	37.7-212		%Rec	1	6/25/2022 7:46:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **BRM**
Benzene	ND	0.023		mg/Kg	1	6/25/2022 7:46:00 AM
Toluene	ND	0.047		mg/Kg	1	6/25/2022 7:46:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	6/25/2022 7:46:00 AM
Xylenes, Total	ND	0.094		mg/Kg	1	6/25/2022 7:46:00 AM
Surr: 4-Bromofluorobenzene	84.8	70-130		%Rec	1	6/25/2022 7:46:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2206B72**
Date Reported: **7/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: UWC-05
Project: Mansfield 11
Collection Date: 6/21/2022 2:34:00 PM
Lab ID: 2206B72-014 **Matrix:** SOIL **Received Date:** 6/22/2022 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **ED**
Diesel Range Organics (DRO)	ND	14		mg/Kg	1	6/27/2022 3:37:36 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	6/27/2022 3:37:36 PM
Surr: DNOP	95.5	51.1-141		%Rec	1	6/27/2022 3:37:36 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **BRM**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/25/2022 8:06:00 AM
Surr: BFB	88.9	37.7-212		%Rec	1	6/25/2022 8:06:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **BRM**
Benzene	ND	0.024		mg/Kg	1	6/25/2022 8:06:00 AM
Toluene	ND	0.047		mg/Kg	1	6/25/2022 8:06:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	6/25/2022 8:06:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	6/25/2022 8:06:00 AM
Surr: 4-Bromofluorobenzene	85.6	70-130		%Rec	1	6/25/2022 8:06:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2206B72**
Date Reported: **7/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: LWC-06
Project: Mansfield 11
Collection Date: 6/21/2022 2:28:00 PM
Lab ID: 2206B72-015 **Matrix:** SOIL **Received Date:** 6/22/2022 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **ED**
Diesel Range Organics (DRO)	21	13		mg/Kg	1	6/27/2022 3:48:18 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	6/27/2022 3:48:18 PM
Surr: DNOP	101	51.1-141		%Rec	1	6/27/2022 3:48:18 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **BRM**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/25/2022 8:25:00 AM
Surr: BFB	87.6	37.7-212		%Rec	1	6/25/2022 8:25:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **BRM**
Benzene	ND	0.023		mg/Kg	1	6/25/2022 8:25:00 AM
Toluene	ND	0.047		mg/Kg	1	6/25/2022 8:25:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	6/25/2022 8:25:00 AM
Xylenes, Total	ND	0.093		mg/Kg	1	6/25/2022 8:25:00 AM
Surr: 4-Bromofluorobenzene	84.7	70-130		%Rec	1	6/25/2022 8:25:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Estimated value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206B72**
01-Jul-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **LCS-68331**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **68331**	RunNo: **89016**
Prep Date: **6/23/2022**	Analysis Date: **6/24/2022**	SeqNo: **3161315** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	60	15	50.00	0	121	64.4	127			
Surr: DNOP	5.8		5.000		116	51.1	141			

Sample ID: **MB-68331**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **68331**	RunNo: **89016**
Prep Date: **6/23/2022**	Analysis Date: **6/24/2022**	SeqNo: **3161317** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	15								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.7		10.00		97.3	51.1	141			

Sample ID: **LCS-68328**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **68328**	RunNo: **89016**
Prep Date: **6/23/2022**	Analysis Date: **6/24/2022**	SeqNo: **3162504** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	54	15	50.00	0	108	64.4	127			
Surr: DNOP	5.0		5.000		99.8	51.1	141			

Sample ID: **MB-68328**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **68328**	RunNo: **89016**
Prep Date: **6/23/2022**	Analysis Date: **6/24/2022**	SeqNo: **3162505** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	15								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.4		10.00		94.1	51.1	141			

Sample ID: **2206B72-008AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LWC-02**	Batch ID: **68344**	RunNo: **89051**
Prep Date: **6/24/2022**	Analysis Date: **6/27/2022**	SeqNo: **3162984** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	13	44.21	0	102	36.1	154			
Surr: DNOP	4.1		4.421		92.7	51.1	141			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206B72**
01-Jul-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **2206B72-008AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LWC-02** Batch ID: **68344** RunNo: **89051**
Prep Date: **6/24/2022** Analysis Date: **6/27/2022** SeqNo: **3162985** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	14	45.25	0	103	36.1	154	2.95	33.9	
Surr: DNOP	4.0		4.525		89.0	51.1	141	0	0	

Sample ID: **LCS-68344** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **68344** RunNo: **89051**
Prep Date: **6/24/2022** Analysis Date: **6/27/2022** SeqNo: **3162989** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	15	50.00	0	98.5	64.4	127			
Surr: DNOP	4.4		5.000		87.0	51.1	141			

Sample ID: **MB-68344** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **68344** RunNo: **89051**
Prep Date: **6/24/2022** Analysis Date: **6/27/2022** SeqNo: **3162990** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	15								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.7		10.00		97.3	51.1	141			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206B72**
01-Jul-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **lcs-68296**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**						
Client ID: **LCSS**	Batch ID: **68296**	RunNo: **89028**						
Prep Date: **6/22/2022**	Analysis Date: **6/24/2022**	SeqNo: **3161636**	Units: **%Rec**					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1900		1000		191	37.7	212			

Sample ID: **mb-68296**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**						
Client ID: **PBS**	Batch ID: **68296**	RunNo: **89028**						
Prep Date: **6/22/2022**	Analysis Date: **6/24/2022**	SeqNo: **3161637**	Units: **%Rec**					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	870		1000		86.6	37.7	212			

Sample ID: **lcs-68315**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**						
Client ID: **LCSS**	Batch ID: **68315**	RunNo: **89028**						
Prep Date: **6/23/2022**	Analysis Date: **6/24/2022**	SeqNo: **3161660**	Units: **mg/Kg**					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	93.9	72.3	137			
Surr: BFB	1900		1000		188	37.7	212			

Sample ID: **mb-68315**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**						
Client ID: **PBS**	Batch ID: **68315**	RunNo: **89028**						
Prep Date: **6/23/2022**	Analysis Date: **6/24/2022**	SeqNo: **3161661**	Units: **mg/Kg**					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	870		1000		87.5	37.7	212			

Sample ID: **lcs-68325**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**						
Client ID: **LCSS**	Batch ID: **68325**	RunNo: **89028**						
Prep Date: **6/23/2022**	Analysis Date: **6/25/2022**	SeqNo: **3161684**	Units: **mg/Kg**					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	100	72.3	137			
Surr: BFB	1900		1000		193	37.7	212			

Sample ID: **mb-68325**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**						
Client ID: **PBS**	Batch ID: **68325**	RunNo: **89028**						
Prep Date: **6/23/2022**	Analysis Date: **6/25/2022**	SeqNo: **3161685**	Units: **mg/Kg**					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	860		1000		86.2	37.7	212			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206B72**
01-Jul-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **2206b72-011ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **UWC-04** Batch ID: **68325** RunNo: **89028**
Prep Date: **6/23/2022** Analysis Date: **6/25/2022** SeqNo: **3161687** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	5.0	24.93	0	111	70	130			
Surr: BFB	2100		997.0		208	37.7	212			

Sample ID: **2206b72-011amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **UWC-04** Batch ID: **68325** RunNo: **89028**
Prep Date: **6/23/2022** Analysis Date: **6/25/2022** SeqNo: **3161688** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	24.90	0	101	70	130	9.75	20	
Surr: BFB	2000		996.0		201	37.7	212	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206B72**
01-Jul-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **lcs-68296** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **68296** RunNo: **89028**
Prep Date: **6/22/2022** Analysis Date: **6/24/2022** SeqNo: **3161708** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.88		1.000		88.3	70	130			

Sample ID: **mb-68296** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **68296** RunNo: **89028**
Prep Date: **6/22/2022** Analysis Date: **6/24/2022** SeqNo: **3161709** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.86		1.000		86.0	70	130			

Sample ID: **lcs-68315** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **68315** RunNo: **89028**
Prep Date: **6/23/2022** Analysis Date: **6/24/2022** SeqNo: **3161732** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.025	1.000	0	92.8	80	120			
Toluene	0.94	0.050	1.000	0	93.7	80	120			
Ethylbenzene	0.92	0.050	1.000	0	92.1	80	120			
Xylenes, Total	2.7	0.10	3.000	0	91.1	80	120			
Surr: 4-Bromofluorobenzene	0.85		1.000		85.1	70	130			

Sample ID: **mb-68315** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **68315** RunNo: **89028**
Prep Date: **6/23/2022** Analysis Date: **6/24/2022** SeqNo: **3161733** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.83		1.000		83.0	70	130			

Sample ID: **lcs-68325** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **68325** RunNo: **89028**
Prep Date: **6/23/2022** Analysis Date: **6/25/2022** SeqNo: **3161756** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.025	1.000	0	91.4	80	120			
Toluene	0.92	0.050	1.000	0	91.7	80	120			
Ethylbenzene	0.91	0.050	1.000	0	90.8	80	120			
Xylenes, Total	2.7	0.10	3.000	0	90.2	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206B72**
01-Jul-22

Client: HILCORP ENERGY
Project: Mansfield 11

Sample ID: **lcs-68325** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **68325** RunNo: **89028**
Prep Date: **6/23/2022** Analysis Date: **6/25/2022** SeqNo: **3161756** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.85		1.000		84.5	70	130			

Sample ID: **mb-68325** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **68325** RunNo: **89028**
Prep Date: **6/23/2022** Analysis Date: **6/25/2022** SeqNo: **3161757** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.85		1.000		84.8	70	130			

Sample ID: **2206b72-012ams** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LWC-04** Batch ID: **68325** RunNo: **89028**
Prep Date: **6/23/2022** Analysis Date: **6/25/2022** SeqNo: **3161760** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	0.9950	0	104	68.8	120			
Toluene	1.1	0.050	0.9950	0	106	73.6	124			
Ethylbenzene	1.1	0.050	0.9950	0	107	72.7	129			
Xylenes, Total	3.2	0.10	2.985	0	106	75.7	126			
Surr: 4-Bromofluorobenzene	0.90		0.9950		90.5	70	130			

Sample ID: **2206b72-012amsd** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LWC-04** Batch ID: **68325** RunNo: **89028**
Prep Date: **6/23/2022** Analysis Date: **6/25/2022** SeqNo: **3161761** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	0.9990	0	103	68.8	120	0.765	20	
Toluene	1.0	0.050	0.9990	0	105	73.6	124	0.940	20	
Ethylbenzene	1.1	0.050	0.9990	0	105	72.7	129	1.44	20	
Xylenes, Total	3.1	0.10	2.997	0	104	75.7	126	1.08	20	
Surr: 4-Bromofluorobenzene	0.87		0.9990		87.6	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2206B72 RcptNo: 1

Received By: **Cheyenne Cason** 6/22/2022 7:00:00 AM

Completed By: **Sean Livingston** 6/22/2022 12:12:29 PM

Reviewed By: JM 6/22/22

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: JM 6-22-22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.5	Good				

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Hilcorp

Attn: Mitch Killough

Mailing Address:

Phone #:

email or Fax#: mkillough@hilcorp.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 day

☒ Standard ☐ Rush

Project Name: Mansfield #11

Project #:

Project Manager: Stuart Hyde shyde@ensolum.com

Sampler: Reece Hanson

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 5.4+0.1=5.5 (°C) CMC

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 220877	(BTEX) -MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
6/21/22	1350	Soil	FC-01	1,4oz	cool	001	X	X								
	1355		FC-02			002										
	1402		FC-03			003										
	1359		FC-04			004										
	1407		UWC-01			005										
	1416		LWC-01			006										
	1414		UWC-02			007										
	1418		LWC-02			008										
	1446		UWC-03			009										
	1449		LWC-03			010										
	1438		UWC-04			011										
	1442		LWC-04			012										

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
6/21/22	1623				6/21/22	1623
6/21/22	1826		CMC	carter Glazier	0700	

Remarks: cc: rhanson@ensolum.com

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Hilcorp

Attn: Mitch Killough

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 day

☑ Standard ☐ Rush

Project Name: Mansfield #11

Project #:

Project Manager: Stuart Hyde

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 5.4+0.1=5.5 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
6/21/22	1432	Soil	LWC-05	1, 4oz	Cool	013	X	X								
↓	1434	↓	LWC-05	↓	↓	014	↓	↓								
↓	1428	↓	LWC-06	↓	↓	015	↓	↓								

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
6/21/22	1623				6/21/22	1623
6/21/22	1824					

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

ENSOLUM

APPENDIX E

Photographic Log

PHOTOGRAPHIC LOG
Mansfield #11
San Juan County, New Mexico
Hilcorp Energy Company

Photograph 1 Excavation extent in January 2022 prior to the additional soil removal. View looking south.	
Photograph 2 Total excavation extent in June 2022, looking northwest.	

PHOTOGRAPHIC LOG
Mansfield #11
San Juan County, New Mexico
Hilcorp Energy Company

Photograph 3 Photograph of groundwater accumulated in the bottom of the open excavation. A grab-groundwater sample was collected from this area on December 15, 2022.	

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 175906

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 175906
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
nvelez	None	3/20/2023