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	NAPP2300554747
District RP	
Facility ID	
Application ID	

I Release Notification

Remediation Plan Approved with Conditions - see Page 5 of C-141.

Responsible Party

Responsible Party: Hilcorp Energy	OGRID: 372171
Contact Name: Samantha Grabert	Contact Telephone: 713-757-7116
Contact email: Samantha.grabert@hilcorp.com	Incident # *(assigned by OCD)*
Contact mailing address: 1111 Travis St. Houston, TX 77471	

Location of Release Source

Latitude: 36.60034 Longitude: -107.33217
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: San Juan 27-5 Unit 111	Site Type: Well Site
Date Release Discovered: 12/21/2022	API# *(if applicable)*: 30-039-20218

Unit Letter	Section	Township	Range	County
L	02	027N	005W	Rio Arriba

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) 9.0	Volume Recovered (bbls) 0
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☒ No
☒ Condensate	Volume Released (bbls) 90.5	Volume Recovered (bbls) 0
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

Hilcorp operator discovered release due to corrosion at the bottom of the condensate tank. The tank was emptied and will undergo an integrity inspection and coating before being put back into service.

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2300554747
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? Release volume was greater than 25 bbls.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?

Immediate notification was made by Samantha Grabert via email at 9:13 AM MST on Thursday, 12/22/2022 to Nelson Velez at NMOCD.

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

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

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

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

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

Printed Name: Samantha Grabert Title: Environmental Specialist

Signature: Samantha Grabert Date: 1/5/2023

email: samantha.grabert@hilcorp.com Telephone: 713-757-7116

OCD Only

Received by: Jocelyn Harimon Date: 01/06/2023

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 173184
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jharimon	When submitting future reports regarding this release, please submit the calculations used or specific justification for the volumes reported on the initial C-141	1/6/2023

Incident ID	NAPP2300554747
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?	>100 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☒ Yes ☐ No

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

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

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

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

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2300554747
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: Samantha Grabert Title: Environmental Specialist

Signature: Samantha Grabert Date: 6/20/2023

email: samantha.grabert@hilcorp.com Telephone: 713-757-7116

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2300554747
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: Samantha Grabert Title: Environmental Specialist

Signature: Samantha Grabert Date: 6/20/2023

email: samantha.grabert@hilcorp.com Telephone: 713-757-7116

OCD Only

Received by: _____ Date: _____

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

see text box below - 06/21/2023

Signature: Nelson Velez NV Date: 06/21/2023

1. Complete horizontal delineation west of the point of release.
2. Complete Soil Vapor Extraction (SVE) pilot test as written in report within 90-days (09/19/2023) of this approval with conditions.
3. Acquire surface access approval from New Mexico State Land Office prior to any off pad remedial activities.
4. Prepare and submit SVE pilot test report within 60-days (11/20/2023) after field activities have been completed.

ENSOLUM

June 20, 2023

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

Re: Site Investigation Report and Remediation Work Plan
San Juan 27-5 Unit 111
Rio Arriba County, New Mexico
Hilcorp Energy Company
NMOCD Incident Number: NAPP2300554747

To Whom it May Concern:

Ensolum, LLC (Ensolum), on behalf of Hilcorp Energy Company (Hilcorp), presents this *Site Investigation Report and Remediation Work Plan* associated with the release discovered at the San Juan 27-5 Unit 111 natural gas production well pad (Site). The Site is located on New Mexico State Trust Land (STL) in Unit L, Section 2, Township 27 North, Range 5 West in Rio Arriba County, New Mexico.

SITE BACKGROUND

On December 21, 2022, Hilcorp discovered a release of 9.0 barrels (bbls) of produced water and 90.5 bbls of condensate due to corrosion at the bottom of the on-Site condensate aboveground storage tank (AST). Fluids stayed within the secondary containment berm but none were recovered. Upon discovery, the tank was immediately emptied. The release volume was determined based on the operator's monthly tank gauging data. Hilcorp reported the release via email to the New Mexico Oil Conservation Division (NMOCD) on December 22, 2022, and subsequently submitted a Form C-141, *Release Notification* to the NMOCD on January 5, 2023. The release was assigned NMOCD Incident Number NAPP2300554747.

SITE CHARACTERIZATION

The Site is located approximately 20 miles southeast of Navajo Dam, New Mexico, on land managed by the New Mexico State Land Office (NMSLO). As part of the Site characterization, local geology/hydrogeology and nearby sensitive receptors were assessed in accordance with Title 19, Chapter 15, Part 17, Sections 12 and 13 of the New Mexico Administrative Code (NMAC). This information is further discussed below.

GEOLOGY AND HYDROGEOLOGY

The Site is located in the Tertiary San Jose Formation. In the report titled "Hydrogeology and Water Resources of San Juan Basin, New Mexico" (Stone, et. al., 1983), the San Jose Formation is characterized by various lithologies including course-grained arkose, mudstones, and lenses of claystone, siltstone, and poorly consolidated sandstone. This formation ranges in thickness

from 200 feet to 2,700 feet. Stone and others state the aquifers in the San Jose Formation are largely untested and display variable hydrologic properties dependent on location. Where sufficient yield is present, the primary use of water from this formation is for domestic and/or livestock supply. The San Jose Formation is underlain by the Nacimiento Formation.

POTENTIAL SENSITIVE RECEPTORS

Potential nearby receptors were assessed through desktop reviews of United States Geological Survey (USGS) topographic maps, Federal Emergency Management Administration (FEMA) Geographic Information System (GIS) maps, New Mexico Office of the State Engineer (NMOSE) database, aerial photographs, and Site-specific observations.

The nearest significant watercourse to the Site is Munoz Canyon wash, located approximately 4,525 feet northwest of the Site. The nearest fresh water well is USGS well 363625107202801, located approximately 3,500 feet northwest of the Site with a recorded depth to water of 456.99 feet below ground surface (bgs). Additionally, a cathodic well advanced on the San Juan 27-5 Unit #99E well pad (Appendix A), located approximately 2,160 feet south of the Site, indicates the shallowest groundwater below the Site is approximately 130 feet bgs.

The Site is greater than 200 feet from any lakebed, sinkhole, or playa lake, and greater than 300 feet from any wetland (Figure 1). No wellhead protection areas, springs, or domestic/stock wells are located within a ½-mile from the Site (Figure 1). The Site is not within a 100-year floodplain, overlying a subsurface mine, or located within an area underlain by unstable geology (area designated as low potential karst by the Bureau of Land Management). Schools, hospitals, institutions, churches, and/or other occupied permanent residence or structures are not located within 300 feet of the Site.

SITE CLOSURE CRITERIA

Based on the information presented above and in accordance with the *Table I, Closure Criteria for Soils Impacted by a Release* (19.15.29.12 NMAC), the following Closure Criteria for constituents of concern (COCs) should be applied to the Site:

- Chloride: 20,000 milligrams per kilogram (mg/kg)
- Total Petroleum Hydrocarbons (TPH) as a combination of gasoline range organics (GRO), diesel range organics (DRO), and motor oil range organics (MRO): 2,500 mg/kg
- TPH-GRO + TPH-DRO: 1,000 mg/kg
- A combination of benzene, toluene, ethylbenzene, and xylenes (BTEX): 50 mg/kg
- Benzene: 10 mg/kg

INITIAL SITE ACTIVITIES

To address heavily impacted soils at the Site, Hilcorp conducted initial sampling activities within the secondary containment in December 2022. Soil was removed from the area indicated on Figure 2 using a track hoe, up to a depth of approximately 14 feet bgs. Four sidewall soil samples and a floor soil sample were collected by Hilcorp personnel from the area and submitted to Hall Environmental Analysis Laboratory (Hall) for analysis of BTEX following United States Environmental Protection Agency (EPA) Method 8021B, TPH-GRO, TPH-DRO, TPH-MRO following EPA Method 8015M/D, and chloride following EPA Method 300.0. Concentrations of benzene, BTEX, and TPH exceeded the NMOCD Table I Closure Criteria in all soil samples collected during these activities. Chloride was not detected above the laboratory reporting limits

in any of the analyzed samples. Soil samples results are summarized on Table 1, with complete laboratory analytical reports attached as Appendix B.
Based on the data collected during the initial sampling event, Hilcorp retained Ensolum to perform delineation activities at the Site. On January 12, 2023, initial investigation efforts were conducted using an excavator to advance potholes at the Site shown on Figure 2. Potholes FS-01 and FS-02 were advanced to depths up to 17 feet bgs. During the investigation, an Ensolum geologist logged soil lithology and inspected the soil for petroleum hydrocarbon staining and odors. Soil descriptions were noted in field books/boring logs and generally followed the Unified Soil Classification System (USCS), as specified in American Society for Testing and Materials (ASTM) method D2488.

Soil samples were also field screened for the presence of volatile organic compounds (VOCs) using a calibrated photoionization detector (PID), with results noted in the field books. Several soil samples were collected from the potholes to assess the depths of impacts. Soil samples were collected directly into laboratory-provided jars and immediately placed on ice. Samples were submitted to Hall for analysis of BTEX, TPH, and chloride. Soil samples results are summarized on Table 1, with complete laboratory analytical reports also included in Appendix B.

DRILLING AND ADDITIONAL DELINEATION ACTIVITIES

Based on the initial field screening and sampling results, further delineation activities were warranted using a drill rig. Specifically, soil borings BH01 through BH07 were advanced at the locations indicated on Figure 2, using a hollow-stem auger drill rig in order to delineate the lateral and vertical extent of soil impacts. During delineation activities, a geologist logged soil lithology and field screened for the presence of VOCs using the methods described above. Soil descriptions were noted in the field soil boring logs attached as Appendix C. The NMOCD was notified at least 48 hours in advance of any field activities performed at the Site. Notifications and correspondence with the NMOCD are attached in Appendix D.

SOIL BORING RESULTS AND CONCLUSIONS

In general, very fine-grained to fine-grained sand, silty sand, and sandy silt soils were encountered at the Site from the ground surface up to depths of approximately 26 feet bgs. Unconsolidated soil was underlain in all borings by sandstone or siltstone bedrock. Depth to bedrock varied significantly across the site, ranging from 2 feet bgs at boring BH07 to 26 feet bgs in borings BH01 and BH05. All borings drilled during the delineation activities were advanced until refusal was met within or at the bedrock surface. In general, bedrock is sloping sharply to the west-northwest across the Site. Field indications of petroleum hydrocarbons, including staining, odors, and/or elevated PID readings, were noted in borings BH01, BH05, and BH06. Groundwater was not encountered in any of the borings during drilling activities.

Concentrations of total BTEX, TPH-GRO+TPH-DRO, and Total TPH exceeding the NMOCD Table I Closure Criteria were detected in samples collected from borings BH01, BH05, and BH06. COC concentrations were compliant with the NMOCD Table I Closure Criteria in all other analyzed samples. A summary of analytical results is presented on Table 1 and depicted on Figure 2. Complete laboratory reports are attached in Appendix B. Photographs collected during Site work are included in Appendix E.

Based on the depths at which COC concentrations exceeded the applicable Closure Criteria (near the terminus of each boring and directly above the bedrock units), it appears that the released fluids predominantly migrated vertically below the center of the secondary containment and then travelled along the bedding plane of the bedrock unit to the west and northwest. Although the terminal soil sample, collected from boring BH05 at 22 feet to 24 feet bgs, contained COC concentrations exceeding the Closure Criteria, it is unlikely that soil impacts have migrated into the underlying bedrock. As such, it is assumed that impacts in this area are likely contained above

the bedrock unit and are present to a maximum depth of approximately 26 feet bgs. This assumption is also evidenced by the analytical results and similar lithology present in borings BH01 and BH06.

Based on the activities and analytical results described above, impacted soil resulting from the Site release have not yet been fully delineated in the western portion of the Site. Based on the locations of borings BH05 and BH06, impacted soil is likely present in off-pad locations. To date, petroleum hydrocarbons are present at the Site between the ground surface to a depth of approximately 26 feet bgs; however, the total volume of impacted soil is unknown at this time.

REMEDIATION WORK PLAN

Based on the extent of soil impacts, favorable soil lithology, the proximity of impacted soil to active equipment, and the likelihood of off-pad impacts, Ensolum recommends the use of soil vapor extraction (SVE) techniques to remediate soil at the Site. As described by the EPA, SVE is an in-situ technique for the removal of VOCs and some semi-volatile organic compounds (SVOCs) from vadose zone soil through the application of vacuum to the subsurface. When air is removed from the soil, contaminants are volatilized and removed. Depending on contaminant concentrations in the removed air, the SVE system may emit exhaust directly to the atmosphere.

Based on field screening observations during drilling, borings BH01, BH02, BH05, and BH06 were completed as SVE wells to potentially be used for future remediation. Screened casing was installed across the subsurface interval with the highest petroleum hydrocarbon impacts based on PID readings in order to direct the applied vacuum to these depth intervals. Well construction details are included on the boring logs attached as Appendix C. SVE wells were constructed with 2-inch diameter Schedule 40 polyvinyl chloride (PVC) casing and 2-inch Schedule 40 PVC 0.010-inch slotted screen. Wells were completed with 10-20 silica sand pack to 2 feet above the screened interval, then hydrated bentonite seal 2 feet above the sand pack and grouted to the surface with cement grout. SVE well locations are indicated on Figure 3.

SVE PILOT TEST

Ensolum recommends performing a SVE pilot test to evaluate the effectiveness of SVE for the Site and, if applicable, assess the Site-specific flow and vacuum rates required to volatilize and remove contaminants from the impacted subsurface. Data collected during the SVE pilot test will be used to estimate the system's radius-of-influence (ROI) and radius-of-effect (ROE) to determine well spacing and the need for additional SVE wells at the Site.

A vacuum truck will be used to remove air at one SVE well at a time (used as the "extraction" well). Flow and vacuum rates will be measured at the extraction well using an adjustable manifold and vacuum responses will be measured in the other SVE wells at the Site (used as "observation" wells). The pilot-test manifold will be used to control and incrementally increase vacuum being applied to the extraction well to assess the relationship between flow and vacuum. Vacuum measurements collected at the observation wells will be used to assess the ROI and ROE achievable at the Site. The following general procedures will be used to perform the SVE pilot test:

1. Collect initial VOC measurements using a PID from all SVE wells.
2. Attach a flexible hose from the vacuum truck to the SVE pilot test manifold. Connect the manifold to the first extraction well, start the vacuum truck, and slowly open the valve to increase flow and vacuum at the well.
3. During each test, apply a vacuum of approximately 10 inches of water column (IWC) and allow flow/vacuum measurements to stabilize for up to 15 minutes. Collect vacuum measurements and PID readings at each observation well once flow and vacuum have stabilized.

4. Increase the extraction well vacuum by 10 to 20 IWC, allow the vacuum/flow to stabilize, and collect observation well measurements as described below. Continue Steps 3 and 4 until 100 IWC is being applied at the extraction well or the vacuum truck capabilities are reached.
5. Close the manifold valve, allow the vacuum to dissipate, and collect PID readings from each observation well.
6. Collect air samples from the extraction wells in 1-liter Tedlar® bags and submit to Hall for analysis of BTEX and total volatile petroleum hydrocarbons (TVPH).

After completion of the SVE pilot test, Ensolum will summarize the results of the test and recommendations for the design and construction of the full-scale SVE system in an *Updated Site Investigation Report and Remediation Work Plan*. The report will include the calculations for ROI and ROE, system specifications required to remediate subsurface impacts, and, if determined feasible, an operation and maintenance (O&M) plan for the system and the proposed remediation schedule and timeline.

ADDITIONAL DELINEATION WORK PLAN

Based on the Site investigation results described above, additional drilling and sampling work is required to fully delineate the extent of impacts at the Site. Due to the location of the proposed borings, Hilcorp will likely need to obtain permission from the New Mexico State Land Office (NMSLO) prior to conducting any off-pad work.

SCHEDULE

Hilcorp and Ensolum will perform the SVE pilot test within 90 days of NMOCD approval of this *Site Characterization Report and Remediation Work Plan*. In order to complete the SVE pilot test and determine appropriate SVE well spacing (if applicable), additional drilling and investigation work will commence after the SVE pilot test has been completed. It is anticipated that drilling activities can begin within 90 days of NMSLO approval of off-pad locations, pending driller availability. An *Updated Site Investigation Report and Remediation Work Plan* will then be prepared summarizing the results of the additional delineation work and SVE pilot test results. within 60 days of completion of drilling activities.

REFERENCES

Stone, W., Lyford, F., Frenzel, P., Mizell, N., & Padgett, E. (1983). Hydrogeology and Water Resources of San Juan Basin, New Mexico. New Mexico Bureau of Mines & Mineral Resources.

We appreciate the opportunity to provide this work plan to the NMOCD. If you should have any questions or comments regarding this document, please contact the undersigned.

Sincerely,
Ensolum, LLC

Stuart Hyde, LG
Senior Geologist
(970) 903-1607
shyde@ensolum.com

Daniel R. Moir, PG
Senior Managing Geologist
(303) 887-2946
dmoir@ensolum.com

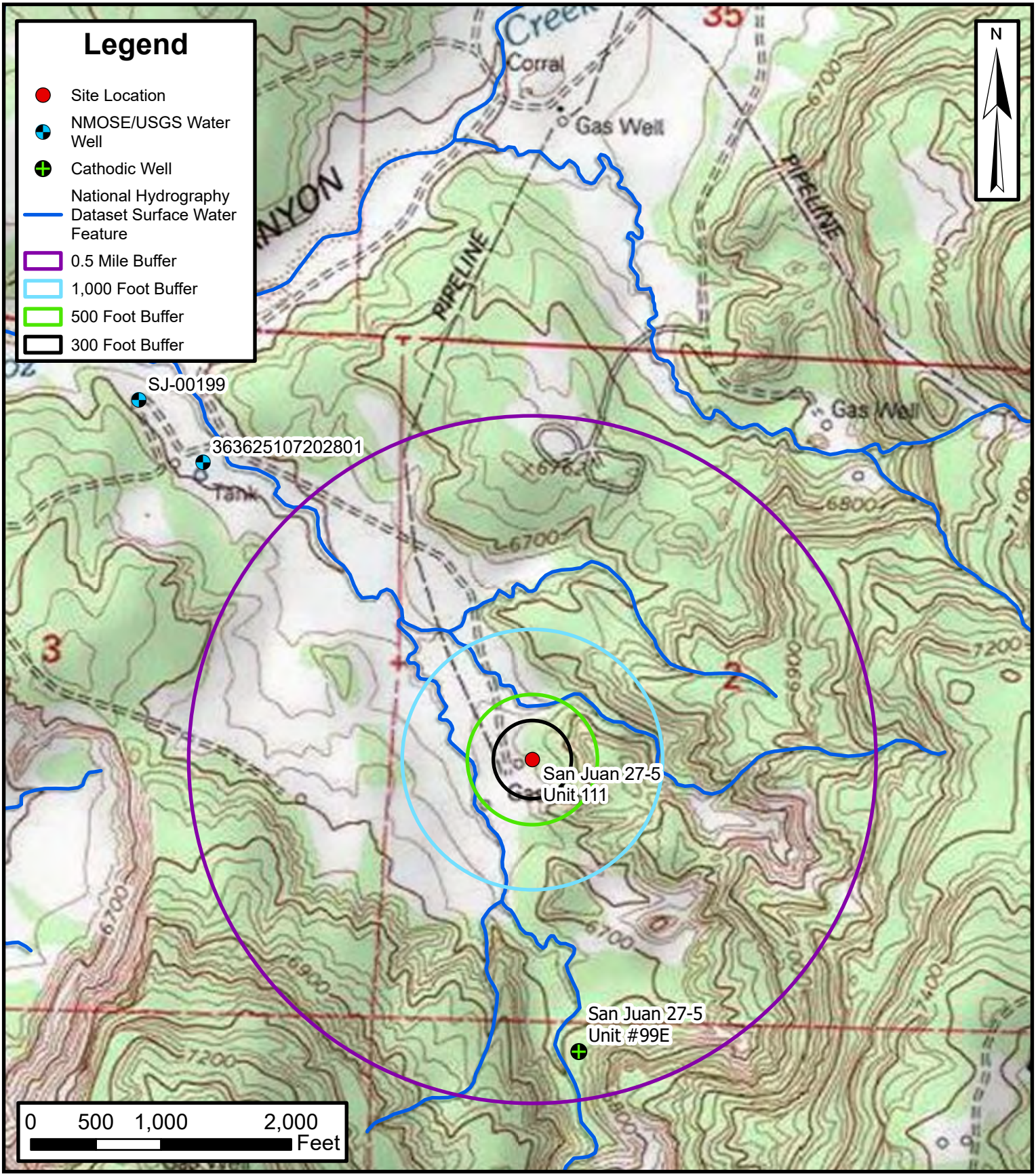
Attachments:

Figure 1: Site Receptor Map
Figure 2: Delineation Soil Analytical Results
Figure 3: SVE Wells Locations
F
Table 1: Soil Sample Analytical Results

Appendix A: Cathodic Well Log Data Sheet
Appendix B: Laboratory Analytical Reports
Appendix C: Boring Logs
Appendix D: Agency Sampling Notifications
Appendix E: Photographic Log

ENSOLUM

FIGURES



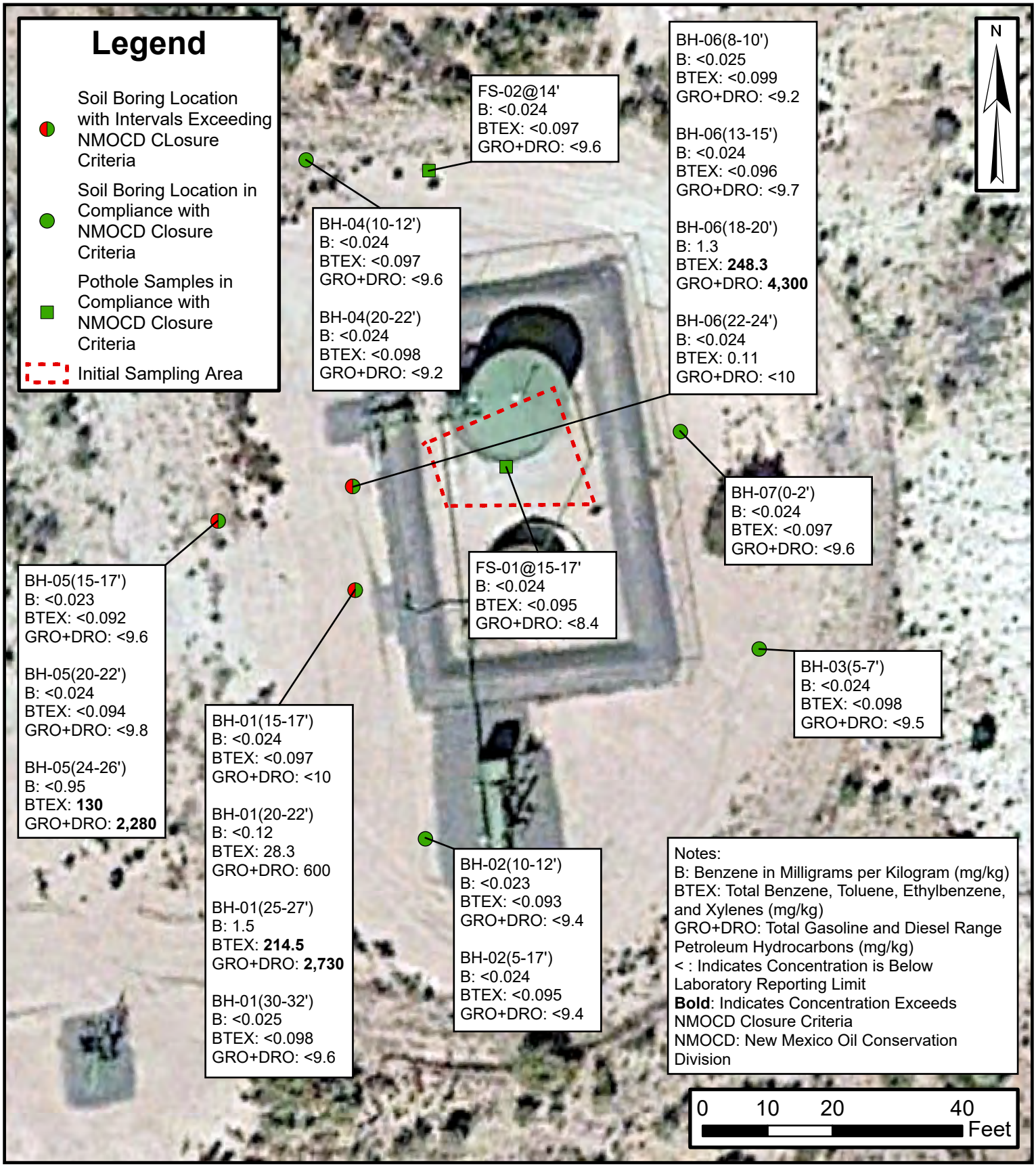
ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

Site Receptor Map

San Juan 27-5 Unit 111
Hilcorp Energy Company
Unit L, Sec 2, T27N, R5W
36.60065, -107.332672
Rio Arriba County, New Mexico

FIGURE
1

Sources: Environmental Systems Research Institute (ESRI), United States Geologic Survey (USGS), United States Fish and Wildlife Service (USFWS), New Mexico Office of the State Engineer (NMOSE), National Geographic Society, i-cubed



ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

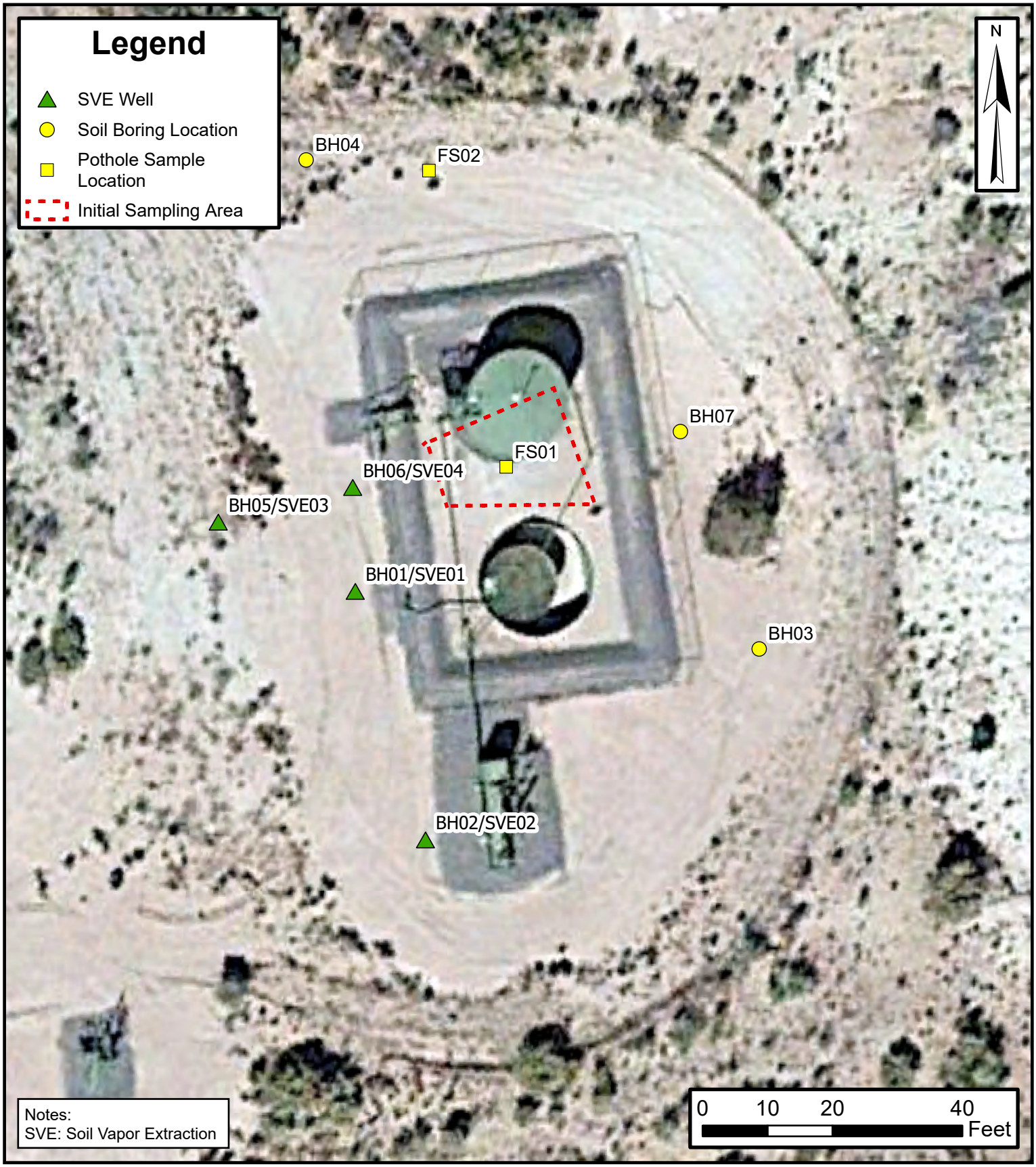
Delineation Soil Analytical Results

San Juan 27-5 Unit 111
Hilcorp Energy Company
Unit L, Sec 2, T27N, R5W
36.60065, -107.332672
Rio Arriba County, New Mexico

FIGURE

2

Sources: Google Earth



ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

SVE Well Locations

San Juan 27-5 Unit 111
Hilcorp Energy Company
Unit L, Sec 2, T27N, R5W
36.60065, -107.332672
Rio Arriba County, New Mexico

FIGURE
3

Sources: Google Earth

ENSOLUM

TABLES

ENSOLUM

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
San Juan 27-5 Unit 111
Hilcorp Energy Company
Rio Arriba County, New Mexico

Sample ID	Date	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)	TPH-GRO+DRO (mg/kg)	Total TPH (mg/kg)	Chloride (mg/kg)
NMOCD Closure Criteria for Soils Impacted by a Release (Groundwater >100 feet)			**10**	NE	NE	NE	**50**	NE	NE	NE	**1,000**	**2,500**	**20,000**
Initial Soil Sample Results													
Bottom 14'	12/22/2022	14	**16**	320	52	890	**1,278**	10,000	2,300	<250	**12,300**	**12,300**	<60
North SW 6-7'	12/22/2022	6 - 7	**33**	490	64	1,100	**1,687**	12,000	2,400	<450	**14,400**	**14,400**	<60
South SW 6-7'	12/22/2022	6 - 7	**26**	420	62	1,000	**1,508**	11,000	2,700	<250	**13,700**	**13,700**	<60
East SW 6-7'	12/22/2022	6 - 7	**34**	460	65	1,000	**1,559**	12,000	2,500	<240	**14,500**	**14,500**	<60
West SW 6-7'	12/22/2022	6 - 7	**29**	380	51	800	**1,260**	10,000	2,100	<240	**12,100**	**12,100**	<60
Delineation Soil Sample Results													
FS-01	1/12/2023	15 - 17	<0.024	<0.048	<0.048	<0.095	<0.095	<4.8	<8.4	<42	<8.4	<42	<60
FS-02	1/12/2023	14	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	<9.6	<48	<9.6	<48	<60
BH-01(15-17')	5/16/2023	15 - 17	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	<10	<50	<10	<50	<60
BH-01(20-22')	5/16/2023	20 - 22	<0.12	2.7	1.6	24	28.3	350	250	<50	600	600	<60
BH-01(25-27')	5/16/2023	25 - 27	1.5	42	11	160	**214.5**	2,300	430	<47	**2,730**	**2,730**	<60
BH-01(30-32')	5/16/2023	30 - 32	<0.025	<0.049	<0.049	<0.098	<0.098	<4.9	<9.6	<48	<9.6	<48	<60
BH-02(10-12')	5/16/2023	10 - 12	<0.023	<0.046	<0.046	<0.093	<0.093	<4.6	<9.4	<47	<9.4	<47	<61
BH-02(15-17')	5/16/2023	15 -17	<0.024	<0.047	<0.047	<0.095	<0.095	<4.7	<9.4	<47	<9.4	<47	70
BH-03(5-7')	5/16/2023	5 - 7	<0.024	<0.049	<0.049	<0.098	<0.098	<4.9	<9.5	<48	<9.5	<48	<60
BH-04(10-12')	5/16/2023	10 - 12	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	<9.6	<48	<9.6	<48	230
BH-04(20-22')	5/16/2023	20 - 22	<0.024	<0.049	<0.049	<0.098	<0.098	<4.9	<9.2	<46	<9.2	<46	<59
BH-05(15-17')	5/16/2023	15 - 17	<0.023	<0.046	<0.046	<0.092	<0.092	<4.6	<9.6	<48	<9.6	<48	<60
BH-05(20-22')	5/16/2023	20 - 22	<0.024	<0.047	<0.047	<0.094	<0.094	<4.7	<9.8	<49	<9.8	<49	<60
BH-05(24-26')	5/16/2023	24 - 26	<0.95	26	9.0	95	**130**	1,400	880	<480	**2,280**	2,280	<60
BH-06(8-10')	5/17/2023	8 - 10	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<9.2	<46	<9.2	<46	<60
BH-06(13-15')	5/17/2023	13 - 15	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	<9.7	<48	<9.7	<48	81
BH-06(18-20')	5/17/2023	18 - 20	1.3	48	19	180	**248.3**	2,900	1,400	<480	**4,300**	**4,300**	<60
BH-06(22-24')	5/17/2023	22 - 24	<0.024	<0.048	<0.048	0.11	0.11	<4.8	<10	<50	<10	<50	<60
BH-07(0-2')	5/17/2023	0 - 2	<0.024	<0.048	<0.048	<0.097	<0.097	<4.8	<9.6	<48	<9.6	<48	<60

Notes:

bgs: below ground surface
BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes
mg/kg: milligrams per kilogram
NA: Not Analyzed
NE: Not Established
NMOCD: New Mexico Oil Conservation Division
' : feet

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

ENSOLUM

APPENDIX A

Cathodic Well Log Data Sheet

1047

99E- 30-039-22639

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL Location: Unit NW Sec. 11 Twp 27 Rng 5

Name of Well/Wells or Pipeline Serviced SAN JUAN 27-5 UNIT #99E

cps 1717w

Elevation 6706' Completion Date 9/13/83 Total Depth 340' Land Type* N/A

Casing, Sizes, Types & Depths N/A

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 130' SAMPLE TAKEN

Depths gas encountered: N/A

Type & amount of coke breeze used: 3200 lbs.

Depths anodes placed: 300', 290', 280', 270', 260', 250', 240', 215', 205', 190'

Depths vent pipes placed: 320'

Vent pipe perforations: 200'

Remarks: gb #1

RECEIVED
MAY 31 1991
OIL CON. DIV.
DIST. 3

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

FM-07-0238 (Rev. 10-82)

WELL CASING

CATHODIC PROTECTION CONSTRUCTION REPORT

DAILY LOG

Drilling Log (Attach Hereto) ☐ — Completion Date 9/13/83

CPS #	Well Name, Line or Plant:	Work Order #	Static:	Ins. Union Check
1717W	SJ 27-5 #99E	59124-21-50-20-64	600' SE: 1.07V	☒ Good ☐ Bad

Location:	Anode Size:	Anode Type:	Size Bit:
NW 11-27-5	2" x 60"	Durion	6 3/4"

Depth Drilled	Depth Logged	Drilling Rig Time	Total Lbs. Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used
340'	321'		3200'		

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth	300'	290'	280'	270'	260'	250'	240'	215'	205'	190'
Anode Output (Amps)	3.53	3.76	3.96	4.42	4.07	4.35	4.01	3.41	3.3	3.66

	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Depth										
Anode Output (Amps)										

Total Circuit Resistance			No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts 12.08	Amps 16.92	Ohms .71		

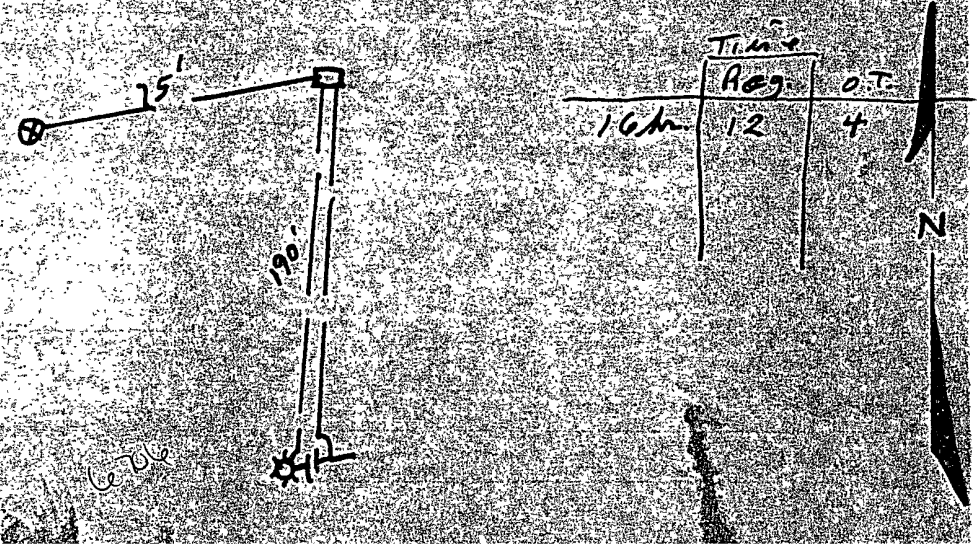
Remarks: Driller said water at 130'. Approx 2gal./min. Drilled 160' water standing in hole next AM. at 130'. Took water sample. Drilled to 340, Logged 321'. Installed 321' of 1" P.V.C. vent pipe, perforated 100

Rectifier Size: 40 V 16 A
Addn'l Depth —
Depth Credit: 179' ✓
Extra Cable: 220'
Ditch & 1 Cable: 265' ✓
25' Meter Pole: 1 ✓
20' Meter Pole: —
10' Stub Pole: —

All Construction Completed

J E Sotto
(Signature)

GROUND BED LAYOUT SKETCH



EL PASO NATURAL GAS COMPANY

Form 7-354 (Rev. 11-77)

Sheet

Date:

By

NW 11-27-5

CPS 1717 W — S.J. 27-5 #99E — N.O. # 59124-21-30-20-64

MW		gals/mol
16.04	C_1	6.4
30.07	C_2	10 12
44.10	C_3	10 42
58.12	iC_4	12.38
58.12	nC_4	11 93
72.15	iC_5	13.85
72.15	nC_5	13 71
86.18	iC_6	15 50
86 18	C_6	15 57
100.21	iC_7	17 2
100.21	C_7	17 46
114 23	C_8	19.39
28.05	C_2	9 64
42.08	C_3	9 67

MW	MISC.	gals/mol
32.00	O_2	3.37
28.01	CO	4 19
44 01	CO_2	6.38
64 06	SO_2	5.50
34 08	H_2S	5 17
28.01	N_2	4 16
2.02	H_2	3 38

130	—		310 — 1,45	
			2.1 —	
40	—		20 —	
			321 — T.D.	
50	—	.3	30 —	
		.8		
60	—	.6	40 —	
		.6		
70	—	.7		
		.8		
80	—	.8		
		1.1		
90	—	2.2	— (10)	
		2.0		
200	—	1.5		
		1.8	— (9)	
10	—	2.1		
		1.7	— (8)	
20	—	1.4		
		1.4		
30	—	1.2		
		1.0		
40	—	1.5	— (7)	
		2.2		
50	—	2.4	— (6)	
		2.3		
60	—	2.1	— (5)	
		2.1		
70	—	2.2	— (4)	
		2.0		
80	—	2.2	— (3)	
		1.3		
90	—	2.1	— (2)	
		1.62		
300	—	2.06	— (1)	
		1.88		

Drilled said water at 130' Approx 2 gal/min. Drilled 1760' water started leaking in hole next A.M. At 130' took water sample. Drilled To 340', Logged 321' Installed 321' of 1" P.V.C. vent Pipe Perforated 200'.

12.08 V, 16.92 A, = .71 Ω

1 —	300'	— 2.11	— 3.53
2 —	290'	— 2.18	— 3.76
3 —	280'	— 2.19	— 3.96
4 —	270'	— 2.1	— 4.42
5 —	260'	— 2.14	— 4.67
6 —	250'	— 2.23	— 4.35
7 —	240'	— 2.14	— 4.01
8 —	215'	— 1.75	— 3.41
9 —	205'	— 1.88	— 3.30
10 —	190'	— 2.47	— 3.66

EL PASO NATURAL GAS COMPANY
SAN JUAN DIVISION
FARMINGTON, NEW MEXICO
PRODUCTION DEPARTMENT WATER ANALYSIS

Analysis No. 1-10887 Date October 18, 1983

Operator El Paso Natural Gas Well Name San Juan 27-5 #99E CPS EFLAW

Location NW 11-27-5 County Rio Arriba State New Mexico

Field Blanco Formation

Sampled From 130 feet approximately 2 gallons per minute

Date Sampled September 13, 1983 By Joe Scotts

Tbg. Press. Csg. Surface Csg. Press.

	ppm	epm		ppm	epm
Sodium	273	11.9	Chloride	56	1.6
Calcium	TRACE	0	Bicarbonate	298	4.9
Magnesium	0	0	Sulfate	215	4.5
Iron			Carbonate	29	1.0
H_2S			Hydroxide	0	0

Total Solids Dissolved 860

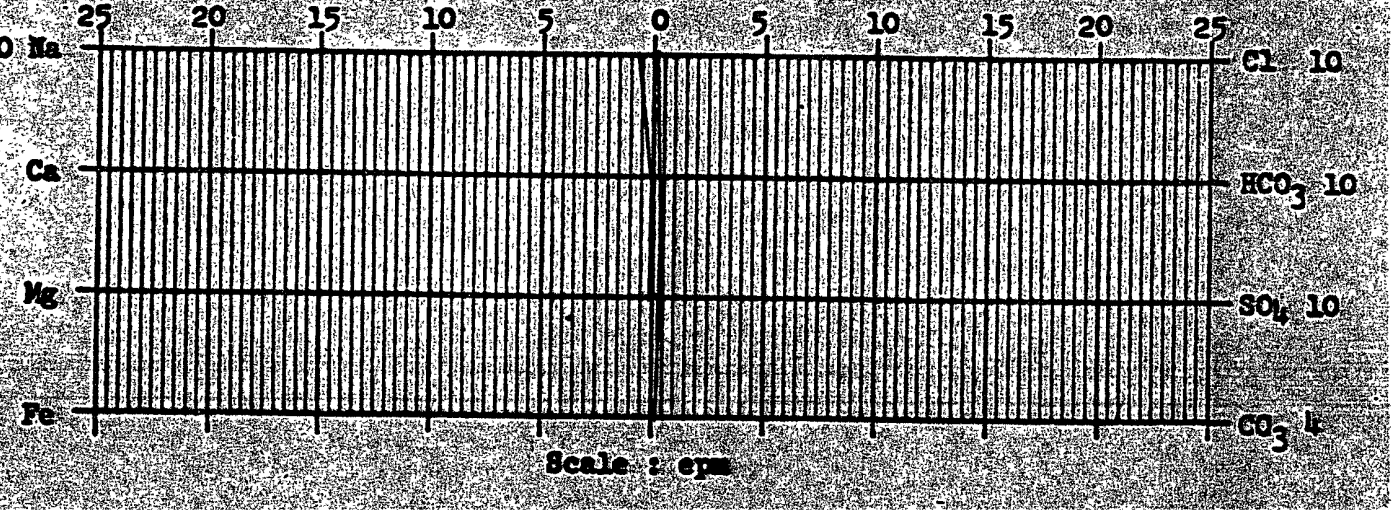
pH 8.6

Sp. Gr. 0.9975 At 60°F

Resistivity 694 ohm-cm at 75°F

Dennis P. Bird
Chemist

cc: R. A. Ullrich
E. R. Paulek
J. W. McCarthy
J. D. Evans
W. B. Shropshire
D. C. Adams
File



EL PASO NATURAL GAS COMPANY

DRILLING DEPARTMENT

#CPS 1717a

DAILY DRILLING REPORT

LEASE WELL NO. SJ 27 5 99C CONTRACTOR SK Drilling RIG NO. 3 REPORT NO. DATE 9-12 1985

MORNING

Driller Total Men In Crew

FROM	TO	FORMATION	WT-BIT	R.P.M.

BIT NO. NO. DC SIZE LENG.

S L NO. NO. DC SIZE LENG.

SIZE STANDS

TYPE SINGLES

MAKE DOWN ON KELLY

TOTAL DEPTH

MUD RECORD			MUD, ADDITIVES USED AND RECEIVED
Time	Wt.	Vis.	

FROM	TO	TIME BREAKDOWN

REMARKS –

DAYLIGHT

Driller Billy Saunders Total Men In Crew

FROM	TO	FORMATION	WT-BIT	R.P.M.
0	160	Shaldy Shale	6 3/4	
160	340	Shale		

BIT NO. NO. DC SIZE LENG.

SERIAL NO. NO. DC SIZE LENG.

SIZE STANDS

TYPE SINGLES

MAKE DOWN ON KELLY

TOTAL DEPTH

MUD RECORD			MUD, ADDITIVES USED AND RECEIVED
Time	Wt.	Vis.	

FROM	TO	TIME BREAKDOWN

REMARKS –

Making water 130 to 160 Shale

EVENING

Driller Total Men In Crew

FROM	TO	FORMATION	WT-BIT	R.P.M.

BIT NO. NO. DC SIZE LENG.

SERIAL NO. NO. DC SIZE LENG.

SIZE STANDS

TYPE SINGLES

MAKE DOWN ON KELLY

TOTAL DEPTH

MUD RECORD			MUD, ADDITIVES USED AND RECEIVED
Time	Wt.	Vis.	

FROM	TO	TIME BREAKDOWN

REMARKS –

SIGNED: Toolpusher Billy Saunders Company Supervisor JE Stalter

ENSOLUM

APPENDIX B

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: www.hallenvironmental.com

December 30, 2022

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

RE: SJ 27 5 Unit 111 OrderNo.: 2212D42

Dear Samantha Grabert:

Hall Environmental Analysis Laboratory received 5 sample(s) on 12/23/2022 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 **2212D42**
Date Reported: **12/30/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** Bottom 14'
Project: SJ 27 5 Unit 111 **Collection Date:** 12/22/2022 1:00:00 PM
Lab ID: 2212D42-001 **Matrix:** MEOH (SOIL) **Received Date:** 12/23/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	2300	74		mg/Kg	5	12/27/2022 4:53:27 PM
Motor Oil Range Organics (MRO)	ND	250	D	mg/Kg	5	12/27/2022 4:53:27 PM
Surr: DNOP	63.8	21-129		%Rec	5	12/27/2022 4:53:27 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	10000	1700		mg/Kg	500	12/27/2022 9:22:27 AM
Surr: BFB	149	37.7-212		%Rec	500	12/27/2022 9:22:27 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	16	0.35		mg/Kg	20	12/23/2022 6:46:53 PM
Toluene	320	17		mg/Kg	500	12/27/2022 9:22:27 AM
Ethylbenzene	52	0.70		mg/Kg	20	12/23/2022 6:46:53 PM
Xylenes, Total	890	35		mg/Kg	500	12/27/2022 9:22:27 AM
Surr: 4-Bromofluorobenzene	149	70-130	S	%Rec	20	12/23/2022 6:46:53 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	ND	60		mg/Kg	20	12/27/2022 10:02:08 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	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 **2212D42**
Date Reported: **12/30/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** North SW 6-7'
Project: SJ 27 5 Unit 111 **Collection Date:** 12/22/2022 1:15:00 PM
Lab ID: 2212D42-002 **Matrix:** MEOH (SOIL) **Received Date:** 12/23/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	2400	140		mg/Kg	10	12/27/2022 5:17:04 PM
Motor Oil Range Organics (MRO)	ND	450	D	mg/Kg	10	12/27/2022 5:17:04 PM
Surr: DNOP	0	21-129	S	%Rec	10	12/27/2022 5:17:04 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	12000	1600		mg/Kg	500	12/27/2022 9:45:58 AM
Surr: BFB	147	37.7-212		%Rec	500	12/27/2022 9:45:58 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	33	0.32		mg/Kg	20	12/23/2022 7:33:40 PM
Toluene	490	16		mg/Kg	500	12/27/2022 9:45:58 AM
Ethylbenzene	64	0.65		mg/Kg	20	12/23/2022 7:33:40 PM
Xylenes, Total	1100	32		mg/Kg	500	12/27/2022 9:45:58 AM
Surr: 4-Bromofluorobenzene	164	70-130	S	%Rec	20	12/23/2022 7:33:40 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	ND	60		mg/Kg	20	12/27/2022 10:14:29 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 **2212D42**
Date Reported: **12/30/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** South SW 6-7
Project: SJ 27 5 Unit 111 **Collection Date:** 12/22/2022 1:30:00 PM
Lab ID: 2212D42-003 **Matrix:** MEOH (SOIL) **Received Date:** 12/23/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	2700	74		mg/Kg	5	12/27/2022 5:40:50 PM
Motor Oil Range Organics (MRO)	ND	250	D	mg/Kg	5	12/27/2022 5:40:50 PM
Surr: DNOP	62.6	21-129		%Rec	5	12/27/2022 5:40:50 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	11000	1600		mg/Kg	500	12/27/2022 10:09:40 AM
Surr: BFB	140	37.7-212		%Rec	500	12/27/2022 10:09:40 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	26	0.16		mg/Kg	10	12/23/2022 8:20:29 PM
Toluene	420	16		mg/Kg	500	12/27/2022 10:09:40 AM
Ethylbenzene	62	16		mg/Kg	500	12/27/2022 10:09:40 AM
Xylenes, Total	1000	32		mg/Kg	500	12/27/2022 10:09:40 AM
Surr: 4-Bromofluorobenzene	218	70-130	S	%Rec	10	12/23/2022 8:20:29 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	ND	60		mg/Kg	20	12/27/2022 10:26:50 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	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 **2212D42**
Date Reported: **12/30/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** East SW 6-7'
Project: SJ 27 5 Unit 111 **Collection Date:** 12/22/2022 1:45:00 PM
Lab ID: 2212D42-004 **Matrix:** MEOH (SOIL) **Received Date:** 12/23/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	2500	71		mg/Kg	5	12/27/2022 6:04:33 PM
Motor Oil Range Organics (MRO)	ND	240	D	mg/Kg	5	12/27/2022 6:04:33 PM
Surr: DNOP	62.1	21-129		%Rec	5	12/27/2022 6:04:33 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	12000	1700		mg/Kg	500	12/27/2022 10:33:17 AM
Surr: BFB	146	37.7-212		%Rec	500	12/27/2022 10:33:17 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	34	8.7		mg/Kg	500	12/27/2022 10:33:17 AM
Toluene	460	17		mg/Kg	500	12/27/2022 10:33:17 AM
Ethylbenzene	65	17		mg/Kg	500	12/27/2022 10:33:17 AM
Xylenes, Total	1000	35		mg/Kg	500	12/27/2022 10:33:17 AM
Surr: 4-Bromofluorobenzene	93.5	70-130		%Rec	500	12/27/2022 10:33:17 AM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	ND	60		mg/Kg	20	12/27/2022 10:39:11 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 **2212D42**
Date Reported: **12/30/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** West SW 6-7'
Project: SJ 27 5 Unit 111 **Collection Date:** 12/22/2022 2:00:00 PM
Lab ID: 2212D42-005 **Matrix:** MEOH (SOIL) **Received Date:** 12/23/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	2100	71		mg/Kg	5	12/27/2022 6:28:18 PM
Motor Oil Range Organics (MRO)	ND	240	D	mg/Kg	5	12/27/2022 6:28:18 PM
Surr: DNOP	52.9	21-129		%Rec	5	12/27/2022 6:28:18 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	10000	1500		mg/Kg	500	12/27/2022 10:56:43 AM
Surr: BFB	143	37.7-212		%Rec	500	12/27/2022 10:56:43 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	29	0.15		mg/Kg	10	12/23/2022 9:53:33 PM
Toluene	380	15		mg/Kg	500	12/27/2022 10:56:43 AM
Ethylbenzene	51	15		mg/Kg	500	12/27/2022 10:56:43 AM
Xylenes, Total	800	31		mg/Kg	500	12/27/2022 10:56:43 AM
Surr: 4-Bromofluorobenzene	196	70-130	S	%Rec	10	12/23/2022 9:53:33 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	ND	60		mg/Kg	20	12/27/2022 10:51:32 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#: **2212D42**

30-Dec-22

Client: HILCORP ENERGY

Project: SJ 27 5 Unit 111

Sample ID: **LCS-72329**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **72329**	RunNo: **93573**							
Prep Date: **12/27/2022**	Analysis Date: **12/27/2022**	SeqNo: **3376237**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.3	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#: **2212D42**

30-Dec-22

Client: HILCORP ENERGY

Project: SJ 27 5 Unit 111

Sample ID: **MB-72321**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **72321**	RunNo: **93548**
Prep Date: **12/27/2022**	Analysis Date: **12/27/2022**	SeqNo: **3375072** 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	9.9		10.00		99.3	21	129			

Sample ID: **LCS-72321**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **72321**	RunNo: **93548**
Prep Date: **12/27/2022**	Analysis Date: **12/27/2022**	SeqNo: **3375073** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	15	50.00	0	88.2	64.4	127			
Surr: DNOP	4.8		5.000		95.2	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#: **2212D42**

30-Dec-22

Client: HILCORP ENERGY

Project: SJ 27 5 Unit 111

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **R93539**	RunNo: **93539**							
Prep Date:	Analysis Date: **12/23/2022**	SeqNo: **3374535**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	860		1000		86.2	37.7	212			

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **R93539**	RunNo: **93539**							
Prep Date:	Analysis Date: **12/23/2022**	SeqNo: **3374536**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1800		1000		181	37.7	212			

Sample ID: **mb-72270**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **72270**	RunNo: **93539**							
Prep Date: **12/22/2022**	Analysis Date: **12/24/2022**	SeqNo: **3374558**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	820		1000		81.8	37.7	212			

Sample ID: **LCS-72270**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **72270**	RunNo: **93539**							
Prep Date: **12/22/2022**	Analysis Date: **12/24/2022**	SeqNo: **3374559**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1800		1000		175	37.7	212			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **A93549**	RunNo: **93549**							
Prep Date:	Analysis Date: **12/27/2022**	SeqNo: **3375195**	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	910		1000		91.1	37.7	212			

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **A93549**	RunNo: **93549**							
Prep Date:	Analysis Date: **12/27/2022**	SeqNo: **3375196**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	102	72.3	137			
Surr: BFB	1900		1000		189	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#: **2212D42**

30-Dec-22

Client: HILCORP ENERGY

Project: SJ 27 5 Unit 111

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **R93539**	RunNo: **93539**
Prep Date:	Analysis Date: **12/23/2022**	SeqNo: **3374633** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Ethylbenzene	ND	0.050								
Surr: 4-Bromofluorobenzene	0.88		1.000		87.5	70	130			

Sample ID: **100ng btex lcs**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **R93539**	RunNo: **93539**
Prep Date:	Analysis Date: **12/23/2022**	SeqNo: **3374634** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.025	1.000	0	91.6	80	120			
Ethylbenzene	0.93	0.050	1.000	0	93.1	80	120			
Surr: 4-Bromofluorobenzene	0.87		1.000		87.3	70	130			

Sample ID: **mb-72270**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **72270**	RunNo: **93539**
Prep Date: **12/22/2022**	Analysis Date: **12/24/2022**	SeqNo: **3374658** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.82		1.000		82.3	70	130			

Sample ID: **lcs-72270**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **72270**	RunNo: **93539**
Prep Date: **12/22/2022**	Analysis Date: **12/24/2022**	SeqNo: **3374659** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.85		1.000		85.3	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **C93549**	RunNo: **93549**
Prep Date:	Analysis Date: **12/27/2022**	SeqNo: **3375238** 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	0.87		1.000		87.5	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#: **2212D42**

30-Dec-22

Client: HILCORP ENERGY

Project: SJ 27 5 Unit 111

Sample ID: **100ng btex lcs**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **C93549**	RunNo: **93549**
Prep Date:	Analysis Date: **12/27/2022**	SeqNo: **3375239** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.84	0.025	1.000	0	84.2	80	120			
Toluene	0.87	0.050	1.000	0	87.4	80	120			
Ethylbenzene	0.87	0.050	1.000	0	87.3	80	120			
Xylenes, Total	2.6	0.10	3.000	0	88.1	80	120			
Surr: 4-Bromofluorobenzene	0.87		1.000		86.9	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: 2212D42 RcptNo: 1

Received By: Cheyenne Cason 12/23/2022 8:00:00 AM

Completed By: Cheyenne Cason 12/23/2022 8:27:46 AM

Reviewed By: TME 12/23/22

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: KPG 12-23-22

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	0.6	Good	Yes			

Chain-of-Custody Record

Client: Hilcorp

Mailing Address:

Phone #:

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: 12.27.22
☐ Standard ☑ Rush ~~12-26-22~~ AV

Project Name: SJ 27-5 Unit 111

Project #:

Project Manager: Samantha Grabert

Sampler: Brandon Sinclair

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 0.6-0=0.6 (°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. 2212042	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)
12-22	1300	Soil	Bottom 14'	4oz jar	cool	001	✓	✓					✓			
	1315		North SW 6-7'			002										
	1330		South SW 6-7'			003										
	1345		East SW 6-7'			004										
	1400		West SW 6-7'			005										

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
12-22	1617					
12/22/22	1810				12/23/22	0800

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.

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 20, 2023

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

RE: SJ 27 5 Unit 111 OrderNo.: 2301550

Dear Devin Hencmann:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/14/2023 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 **2301550**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: FS-01
Project: SJ 27 5 Unit 111
Collection Date: 1/12/2023 11:16:00 AM
Lab ID: 2301550-001 **Matrix:** SOIL **Received Date:** 1/14/2023 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	8.4		mg/Kg	1	1/18/2023 3:06:30 PM
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	1/18/2023 3:06:30 PM
Surr: DNOP	122	69-147		%Rec	1	1/18/2023 3:06:30 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/18/2023 4:13:00 PM
Surr: BFB	89.4	37.7-212		%Rec	1	1/18/2023 4:13:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	1/18/2023 4:13:00 PM
Toluene	ND	0.048		mg/Kg	1	1/18/2023 4:13:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/18/2023 4:13:00 PM
Xylenes, Total	ND	0.095		mg/Kg	1	1/18/2023 4:13:00 PM
Surr: 4-Bromofluorobenzene	91.0	70-130		%Rec	1	1/18/2023 4:13:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	1/17/2023 6:57:47 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	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 **2301550**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: FS-02
Project: SJ 27 5 Unit 111
Collection Date: 1/12/2023 2:15:00 PM
Lab ID: 2301550-002 **Matrix:** SOIL **Received Date:** 1/14/2023 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/18/2023 3:49:37 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/18/2023 3:49:37 PM
Surr: DNOP	125	69-147		%Rec	1	1/18/2023 3:49:37 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/18/2023 4:33:00 PM
Surr: BFB	97.5	37.7-212		%Rec	1	1/18/2023 4:33:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	1/18/2023 4:33:00 PM
Toluene	ND	0.049		mg/Kg	1	1/18/2023 4:33:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/18/2023 4:33:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/18/2023 4:33:00 PM
Surr: 4-Bromofluorobenzene	91.7	70-130		%Rec	1	1/18/2023 4:33:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	1/17/2023 7:10:08 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	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#: **2301550**

20-Jan-23

Client: HILCORP ENERGY

Project: SJ 27 5 Unit 111

Sample ID: **MB-72659**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **72659**	RunNo: **94007**
Prep Date: **1/17/2023**	Analysis Date: **1/17/2023**	SeqNo: **3393988** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-72659**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **72659**	RunNo: **94007**
Prep Date: **1/17/2023**	Analysis Date: **1/17/2023**	SeqNo: **3393989** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.7	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 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#: **2301550**

20-Jan-23

Client: HILCORP ENERGY

Project: SJ 27 5 Unit 111

Sample ID: **LCS-72651** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **LCSS** Batch ID: **72651** RunNo: **94027**

Prep Date: **1/17/2023** Analysis Date: **1/18/2023** SeqNo: **3394468** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	88.9	61.9	130			
Surr: DNOP	5.6		5.000		112	69	147			

Sample ID: **MB-72651** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **PBS** Batch ID: **72651** RunNo: **94027**

Prep Date: **1/17/2023** Analysis Date: **1/18/2023** SeqNo: **3394470** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		108	69	147			

Sample ID: **2301550-001AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **FS-01** Batch ID: **72651** RunNo: **94027**

Prep Date: **1/17/2023** Analysis Date: **1/18/2023** SeqNo: **3395191** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	66	9.6	47.85	0	138	54.2	135			S
Surr: DNOP	7.3		4.785		153	69	147			S

Sample ID: **2301550-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **FS-01** Batch ID: **72651** RunNo: **94027**

Prep Date: **1/17/2023** Analysis Date: **1/18/2023** SeqNo: **3395192** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	69	10	49.95	0	139	54.2	135	5.05	29.2	S
Surr: DNOP	6.6		4.995		131	69	147	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 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#: **2301550**

20-Jan-23

Client: HILCORP ENERGY

Project: SJ 27 5 Unit 111

Sample ID: **lcs-72649**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **72649**	RunNo: **94040**
Prep Date: **1/17/2023**	Analysis Date: **1/18/2023**	SeqNo: **3394797** 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	83.7	72.3	137			
Surr: BFB	2000		1000		200	37.7	212			

Sample ID: **mb-72649**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **72649**	RunNo: **94040**
Prep Date: **1/17/2023**	Analysis Date: **1/18/2023**	SeqNo: **3394799** 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	960		1000		96.0	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#: **2301550**

20-Jan-23

Client: HILCORP ENERGY

Project: SJ 27 5 Unit 111

Sample ID: **lcs-72649**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **72649**	RunNo: **94040**
Prep Date: **1/17/2023**	Analysis Date: **1/18/2023**	SeqNo: **3395112** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.025	1.000	0	96.0	80	120			
Toluene	0.96	0.050	1.000	0	96.1	80	120			
Ethylbenzene	0.95	0.050	1.000	0	94.9	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.5	80	120			
Surr: 4-Bromofluorobenzene	0.95		1.000		94.5	70	130			

Sample ID: **mb-72649**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **72649**	RunNo: **94040**
Prep Date: **1/17/2023**	Analysis Date: **1/18/2023**	SeqNo: **3395113** 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	0.93		1.000		93.3	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.		

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: 2301550 RcptNo: 1

Received By: **Sean Livingston** 1/14/2023 9:20:00 AM Sean Livingston

Completed By: **Sean Livingston** 1/14/2023 9:33:42 AM Sean Livingston

Reviewed By: Sean 1/14/23

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: Sean 1/14/23

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	1.6	Good	Yes	YOGI		

Chain-of-Custody Record

Client: Hilcorp

Attn: Samantha Grabert

Mailing Address:

Phone #:

email or Fax#: Samantha.Grabert@hilcorp.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☒ Standard 5-Day ☐ Rush

Project Name: SJ 27-5 Unit 111

Project #: 07A1988061

Project Manager: Devin Hencmann dhencmann@ensolum.com

Sampler: Reece Hanson/Cale Adams

On Ice: ☑ Yes ☐ No

# of Coolers: 1 (R:1/Out)

Cooler Temp(including CF): 1.5+0.1=1.6 (°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. 2301550	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)
1/12/23	1116	Soil	FS-01	1, 4 oz	Cool	001	X	X					X			
↓	1415	↓	FS-02	↓	↓	002	X	X					X			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
1/13/23	1507				1/13/23	1507
1/13/23	1830				1/14/23	9:20

Remarks: cc: rahanson@ensolum.com cadams@ "

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

June 02, 2023

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

RE: San Juan 27 5 111 OrderNo.: 2305B02

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 17 sample(s) on 5/20/2023 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 **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-01(15-17ft)
Project: San Juan 27 5 111
Collection Date: 5/16/2023 9:50:00 AM
Lab ID: 2305B02-001 **Matrix:** SOIL
Received Date: 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	5/25/2023 3:29:41 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/25/2023 3:29:41 PM
Surr: DNOP	90.4	69-147		%Rec	1	5/25/2023 3:29:41 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/26/2023 11:30:44 AM
Surr: BFB	67.5	15-244		%Rec	1	5/26/2023 11:30:44 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	5/26/2023 11:30:44 AM
Toluene	ND	0.049		mg/Kg	1	5/26/2023 11:30:44 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/26/2023 11:30:44 AM
Xylenes, Total	ND	0.097		mg/Kg	1	5/26/2023 11:30:44 AM
Surr: 4-Bromofluorobenzene	88.6	39.1-146		%Rec	1	5/26/2023 11:30:44 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	60		mg/Kg	20	5/25/2023 7:06:38 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 **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-01(20-22ft)
Project: San Juan 27 5 111
Collection Date: 5/16/2023 9:55:00 AM
Lab ID: 2305B02-002 **Matrix:** SOIL
Received Date: 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	250	9.9		mg/Kg	1	5/25/2023 4:01:55 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/25/2023 4:01:55 PM
Surr: DNOP	92.4	69-147		%Rec	1	5/25/2023 4:01:55 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	350	24		mg/Kg	5	5/26/2023 11:54:08 AM
Surr: BFB	1330	15-244	S	%Rec	5	5/26/2023 11:54:08 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.12		mg/Kg	5	5/26/2023 11:54:08 AM
Toluene	2.7	0.24		mg/Kg	5	5/26/2023 11:54:08 AM
Ethylbenzene	1.6	0.24		mg/Kg	5	5/26/2023 11:54:08 AM
Xylenes, Total	24	0.48		mg/Kg	5	5/26/2023 11:54:08 AM
Surr: 4-Bromofluorobenzene	107	39.1-146		%Rec	5	5/26/2023 11:54:08 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	60		mg/Kg	20	5/25/2023 8:08:41 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 **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-01(25-27ft)
Project: San Juan 27 5 111
Collection Date: 5/16/2023 10:00:00 AM
Lab ID: 2305B02-003 **Matrix:** SOIL
Received Date: 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	430	9.5		mg/Kg	1	5/25/2023 4:14:53 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	5/25/2023 4:14:53 PM
Surr: DNOP	106	69-147		%Rec	1	5/25/2023 4:14:53 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	2300	97		mg/Kg	20	5/26/2023 5:23:29 PM
Surr: BFB	1540	15-244	S	%Rec	20	5/26/2023 5:23:29 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	1.5	0.48		mg/Kg	20	5/26/2023 5:23:29 PM
Toluene	42	0.97		mg/Kg	20	5/26/2023 5:23:29 PM
Ethylbenzene	11	0.97		mg/Kg	20	5/26/2023 5:23:29 PM
Xylenes, Total	160	1.9		mg/Kg	20	5/26/2023 5:23:29 PM
Surr: 4-Bromofluorobenzene	111	39.1-146		%Rec	20	5/26/2023 5:23:29 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	60		mg/Kg	20	5/25/2023 8:21:05 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 **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-01(30-32ft)
Project: San Juan 27 5 111
Collection Date: 5/16/2023 10:05:00 AM
Lab ID: 2305B02-004 **Matrix:** SOIL
Received Date: 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	5/25/2023 4:25:34 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/25/2023 4:25:34 PM
Surr: DNOP	96.0	69-147		%Rec	1	5/25/2023 4:25:34 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/26/2023 5:47:06 PM
Surr: BFB	108	15-244		%Rec	1	5/26/2023 5:47:06 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	5/26/2023 5:47:06 PM
Toluene	ND	0.049		mg/Kg	1	5/26/2023 5:47:06 PM
Ethylbenzene	ND	0.049		mg/Kg	1	5/26/2023 5:47:06 PM
Xylenes, Total	ND	0.098		mg/Kg	1	5/26/2023 5:47:06 PM
Surr: 4-Bromofluorobenzene	91.8	39.1-146		%Rec	1	5/26/2023 5:47:06 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	60		mg/Kg	20	5/25/2023 8:33:30 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	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 **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-02(15-17ft)
Project: San Juan 27 5 111
Collection Date: 5/16/2023 11:45:00 AM
Lab ID: 2305B02-005 **Matrix:** SOIL
Received Date: 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	5/25/2023 4:36:16 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	5/25/2023 4:36:16 PM
Surr: DNOP	94.0	69-147		%Rec	1	5/25/2023 4:36:16 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	5/26/2023 1:04:26 PM
Surr: BFB	89.8	15-244		%Rec	1	5/26/2023 1:04:26 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	5/26/2023 1:04:26 PM
Toluene	ND	0.047		mg/Kg	1	5/26/2023 1:04:26 PM
Ethylbenzene	ND	0.047		mg/Kg	1	5/26/2023 1:04:26 PM
Xylenes, Total	ND	0.095		mg/Kg	1	5/26/2023 1:04:26 PM
Surr: 4-Bromofluorobenzene	90.8	39.1-146		%Rec	1	5/26/2023 1:04:26 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	70	60		mg/Kg	20	5/25/2023 9:10:43 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 **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-02(10-12ft)
Project: San Juan 27 5 111
Collection Date: 5/16/2023 11:50:00 AM
Lab ID: 2305B02-006 **Matrix:** SOIL
Received Date: 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	5/25/2023 4:46:59 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	5/25/2023 4:46:59 PM
Surr: DNOP	99.2	69-147		%Rec	1	5/25/2023 4:46:59 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	5/26/2023 1:27:52 PM
Surr: BFB	99.8	15-244		%Rec	1	5/26/2023 1:27:52 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.023		mg/Kg	1	5/26/2023 1:27:52 PM
Toluene	ND	0.046		mg/Kg	1	5/26/2023 1:27:52 PM
Ethylbenzene	ND	0.046		mg/Kg	1	5/26/2023 1:27:52 PM
Xylenes, Total	ND	0.093		mg/Kg	1	5/26/2023 1:27:52 PM
Surr: 4-Bromofluorobenzene	90.4	39.1-146		%Rec	1	5/26/2023 1:27:52 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	61		mg/Kg	20	5/25/2023 9:23:08 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	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 **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-03(5-7ft)
Project: San Juan 27 5 111
Collection Date: 5/16/2023 1:00:00 PM
Lab ID: 2305B02-007 **Matrix:** SOIL **Received Date:** 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	5/25/2023 4:57:43 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/25/2023 4:57:43 PM
Surr: DNOP	93.1	69-147		%Rec	1	5/25/2023 4:57:43 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/26/2023 1:51:24 PM
Surr: BFB	70.0	15-244		%Rec	1	5/26/2023 1:51:24 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	5/26/2023 1:51:24 PM
Toluene	ND	0.049		mg/Kg	1	5/26/2023 1:51:24 PM
Ethylbenzene	ND	0.049		mg/Kg	1	5/26/2023 1:51:24 PM
Xylenes, Total	ND	0.098		mg/Kg	1	5/26/2023 1:51:24 PM
Surr: 4-Bromofluorobenzene	88.7	39.1-146		%Rec	1	5/26/2023 1:51:24 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	60		mg/Kg	20	5/25/2023 9:35:32 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 **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-04(10-12ft)
Project: San Juan 27 5 111
Collection Date: 5/16/2023 2:00:00 PM
Lab ID: 2305B02-008 **Matrix:** SOIL **Received Date:** 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	5/25/2023 5:08:38 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/25/2023 5:08:38 PM
Surr: DNOP	73.8	69-147		%Rec	1	5/25/2023 5:08:38 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/26/2023 2:14:53 PM
Surr: BFB	82.0	15-244		%Rec	1	5/26/2023 2:14:53 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	5/26/2023 2:14:53 PM
Toluene	ND	0.049		mg/Kg	1	5/26/2023 2:14:53 PM
Ethylbenzene	ND	0.049		mg/Kg	1	5/26/2023 2:14:53 PM
Xylenes, Total	ND	0.097		mg/Kg	1	5/26/2023 2:14:53 PM
Surr: 4-Bromofluorobenzene	91.4	39.1-146		%Rec	1	5/26/2023 2:14:53 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	230	60		mg/Kg	20	5/25/2023 10:12:46 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 **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-04(20-22ft)
Project: San Juan 27 5 111
Collection Date: 5/16/2023 2:05:00 PM
Lab ID: 2305B02-009 **Matrix:** SOIL
Received Date: 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	5/25/2023 5:19:31 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	5/25/2023 5:19:31 PM
Surr: DNOP	83.8	69-147		%Rec	1	5/25/2023 5:19:31 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/26/2023 4:59:55 PM
Surr: BFB	82.4	15-244		%Rec	1	5/26/2023 4:59:55 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	5/26/2023 4:59:55 PM
Toluene	ND	0.049		mg/Kg	1	5/26/2023 4:59:55 PM
Ethylbenzene	ND	0.049		mg/Kg	1	5/26/2023 4:59:55 PM
Xylenes, Total	ND	0.098		mg/Kg	1	5/26/2023 4:59:55 PM
Surr: 4-Bromofluorobenzene	91.0	39.1-146		%Rec	1	5/26/2023 4:59:55 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	59		mg/Kg	20	5/25/2023 10:25:11 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 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

Analytical Report
Lab Order **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-05(24-26ft)
Project: San Juan 27 5 111
Collection Date: 5/16/2023 3:00:00 PM
Lab ID: 2305B02-010 **Matrix:** SOIL
Received Date: 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	880	96		mg/Kg	10	5/27/2023 12:15:01 PM
Motor Oil Range Organics (MRO)	ND	480	D	mg/Kg	10	5/27/2023 12:15:01 PM
Surr: DNOP	0	69-147	S	%Rec	10	5/27/2023 12:15:01 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	1400	240		mg/Kg	50	5/26/2023 10:49:00 AM
Surr: BFB	192	15-244		%Rec	50	5/26/2023 10:49:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.95		mg/Kg	50	5/26/2023 10:49:00 AM
Toluene	26	2.4		mg/Kg	50	5/26/2023 10:49:00 AM
Ethylbenzene	9.0	2.4		mg/Kg	50	5/26/2023 10:49:00 AM
Xylenes, Total	95	4.7		mg/Kg	50	5/26/2023 10:49:00 AM
Surr: 4-Bromofluorobenzene	116	39.1-146		%Rec	50	5/26/2023 10:49:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	60		mg/Kg	20	5/25/2023 10:37:35 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 **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-05(15-17ft)
Project: San Juan 27 5 111
Collection Date: 5/16/2023 3:10:00 PM
Lab ID: 2305B02-011 **Matrix:** SOIL
Received Date: 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	5/26/2023 1:17:30 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/26/2023 1:17:30 PM
Surr: DNOP	90.0	69-147		%Rec	1	5/26/2023 1:17:30 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	5/26/2023 11:11:00 AM
Surr: BFB	91.5	15-244		%Rec	1	5/26/2023 11:11:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.023		mg/Kg	1	5/26/2023 11:11:00 AM
Toluene	ND	0.046		mg/Kg	1	5/26/2023 11:11:00 AM
Ethylbenzene	ND	0.046		mg/Kg	1	5/26/2023 11:11:00 AM
Xylenes, Total	ND	0.092		mg/Kg	1	5/26/2023 11:11:00 AM
Surr: 4-Bromofluorobenzene	87.4	39.1-146		%Rec	1	5/26/2023 11:11:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	5/26/2023 5:28:01 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 **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-05(20-22ft)
Project: San Juan 27 5 111
Collection Date: 5/16/2023 3:05:00 PM
Lab ID: 2305B02-012 **Matrix:** SOIL
Received Date: 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	5/26/2023 1:28:13 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/26/2023 1:28:13 PM
Surr: DNOP	100	69-147		%Rec	1	5/26/2023 1:28:13 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	5/26/2023 12:16:00 PM
Surr: BFB	86.1	15-244		%Rec	1	5/26/2023 12:16:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	5/26/2023 12:16:00 PM
Toluene	ND	0.047		mg/Kg	1	5/26/2023 12:16:00 PM
Ethylbenzene	ND	0.047		mg/Kg	1	5/26/2023 12:16:00 PM
Xylenes, Total	ND	0.094		mg/Kg	1	5/26/2023 12:16:00 PM
Surr: 4-Bromofluorobenzene	85.3	39.1-146		%Rec	1	5/26/2023 12:16:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	5/26/2023 5:40:25 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 **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-06(8-10ft)
Project: San Juan 27 5 111
Collection Date: 5/17/2023 9:50:00 AM
Lab ID: 2305B02-013 **Matrix:** SOIL
Received Date: 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	5/26/2023 1:38:56 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	5/26/2023 1:38:56 PM
Surr: DNOP	90.9	69-147		%Rec	1	5/26/2023 1:38:56 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/26/2023 1:21:00 PM
Surr: BFB	89.6	15-244		%Rec	1	5/26/2023 1:21:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	5/26/2023 1:21:00 PM
Toluene	ND	0.050		mg/Kg	1	5/26/2023 1:21:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	5/26/2023 1:21:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	5/26/2023 1:21:00 PM
Surr: 4-Bromofluorobenzene	85.2	39.1-146		%Rec	1	5/26/2023 1:21:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	5/26/2023 5:52:50 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	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 **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-06(13-15ft)
Project: San Juan 27 5 111
Collection Date: 5/17/2023 9:55:00 AM
Lab ID: 2305B02-014 **Matrix:** SOIL
Received Date: 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	5/26/2023 2:00:16 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/26/2023 2:00:16 PM
Surr: DNOP	94.5	69-147		%Rec	1	5/26/2023 2:00:16 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/26/2023 1:42:00 PM
Surr: BFB	92.9	15-244		%Rec	1	5/26/2023 1:42:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	5/26/2023 1:42:00 PM
Toluene	ND	0.048		mg/Kg	1	5/26/2023 1:42:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	5/26/2023 1:42:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	5/26/2023 1:42:00 PM
Surr: 4-Bromofluorobenzene	87.5	39.1-146		%Rec	1	5/26/2023 1:42:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	81	60		mg/Kg	20	5/26/2023 6:05:14 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	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 **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-06(18-20ft)
Project: San Juan 27 5 111
Collection Date: 5/17/2023 10:00:00 AM
Lab ID: 2305B02-015 **Matrix:** SOIL
Received Date: 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	1400	97		mg/Kg	10	5/27/2023 12:39:05 PM
Motor Oil Range Organics (MRO)	ND	480	D	mg/Kg	10	5/27/2023 12:39:05 PM
Surr: DNOP	0	69-147	S	%Rec	10	5/27/2023 12:39:05 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	2900	240		mg/Kg	50	5/26/2023 2:04:00 PM
Surr: BFB	335	15-244	S	%Rec	50	5/26/2023 2:04:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	1.3	1.2		mg/Kg	50	5/26/2023 2:04:00 PM
Toluene	48	2.4		mg/Kg	50	5/26/2023 2:04:00 PM
Ethylbenzene	19	2.4		mg/Kg	50	5/26/2023 2:04:00 PM
Xylenes, Total	180	4.8		mg/Kg	50	5/26/2023 2:04:00 PM
Surr: 4-Bromofluorobenzene	139	39.1-146		%Rec	50	5/26/2023 2:04:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	5/26/2023 6:17:39 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 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

Analytical Report
Lab Order **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-06(22-24ft)
Project: San Juan 27 5 111
Collection Date: 5/17/2023 10:05:00 AM
Lab ID: 2305B02-016 **Matrix:** SOIL
Received Date: 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	5/26/2023 2:21:51 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/26/2023 2:21:51 PM
Surr: DNOP	84.4	69-147		%Rec	1	5/26/2023 2:21:51 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/26/2023 2:26:00 PM
Surr: BFB	106	15-244		%Rec	1	5/26/2023 2:26:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	5/26/2023 2:26:00 PM
Toluene	ND	0.048		mg/Kg	1	5/26/2023 2:26:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	5/26/2023 2:26:00 PM
Xylenes, Total	0.11	0.096		mg/Kg	1	5/26/2023 2:26:00 PM
Surr: 4-Bromofluorobenzene	89.4	39.1-146		%Rec	1	5/26/2023 2:26:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	5/26/2023 6:54:51 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 **2305B02**
Date Reported: **6/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH-07(0-2ft)
Project: San Juan 27 5 111
Collection Date: 5/17/2023 11:00:00 AM
Lab ID: 2305B02-017 **Matrix:** SOIL **Received Date:** 5/20/2023 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	5/26/2023 2:32:38 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/26/2023 2:32:38 PM
Surr: DNOP	92.3	69-147		%Rec	1	5/26/2023 2:32:38 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/26/2023 2:47:00 PM
Surr: BFB	93.4	15-244		%Rec	1	5/26/2023 2:47:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	5/26/2023 2:47:00 PM
Toluene	ND	0.048		mg/Kg	1	5/26/2023 2:47:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	5/26/2023 2:47:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	5/26/2023 2:47:00 PM
Surr: 4-Bromofluorobenzene	88.5	39.1-146		%Rec	1	5/26/2023 2:47:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	5/26/2023 7:07:15 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#: **2305B02**

02-Jun-23

Client: HILCORP ENERGY

Project: San Juan 27 5 111

Sample ID: **MB-75198**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **75198**	RunNo: **97041**
Prep Date: **5/25/2023**	Analysis Date: **5/25/2023**	SeqNo: **3521710** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-75198**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **75198**	RunNo: **97041**
Prep Date: **5/25/2023**	Analysis Date: **5/25/2023**	SeqNo: **3521711** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.6	90	110			

Sample ID: **MB-75219**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **75219**	RunNo: **97066**
Prep Date: **5/26/2023**	Analysis Date: **5/26/2023**	SeqNo: **3522890** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-75219**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **75219**	RunNo: **97066**
Prep Date: **5/26/2023**	Analysis Date: **5/26/2023**	SeqNo: **3522891** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	91.5	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#: **2305B02**

02-Jun-23

Client: HILCORP ENERGY

Project: San Juan 27 5 111

Sample ID: **2305B02-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH-01(15-17ft)**	Batch ID: **75177**	RunNo: **97035**
Prep Date: **5/25/2023**	Analysis Date: **5/25/2023**	SeqNo: **3521089** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	9.4	47.08	0	91.4	54.2	135			
Surr: DNOP	4.4		4.708		92.5	69	147			

Sample ID: **2305B02-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH-01(15-17ft)**	Batch ID: **75177**	RunNo: **97035**
Prep Date: **5/25/2023**	Analysis Date: **5/25/2023**	SeqNo: **3521090** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	40	8.9	44.56	0	90.4	54.2	135	6.59	29.2	
Surr: DNOP	4.3		4.456		95.6	69	147	0	0	

Sample ID: **LCS-75177**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **75177**	RunNo: **97035**
Prep Date: **5/25/2023**	Analysis Date: **5/25/2023**	SeqNo: **3521100** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	92.0	61.9	130			
Surr: DNOP	4.4		5.000		87.2	69	147			

Sample ID: **MB-75177**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **75177**	RunNo: **97035**
Prep Date: **5/25/2023**	Analysis Date: **5/25/2023**	SeqNo: **3521102** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.4		10.00		94.1	69	147			

Sample ID: **LCS-75186**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **75186**	RunNo: **97073**
Prep Date: **5/25/2023**	Analysis Date: **5/26/2023**	SeqNo: **3523198** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	92.0	61.9	130			
Surr: DNOP	4.3		5.000		85.4	69	147			

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#: **2305B02**

02-Jun-23

Client: HILCORP ENERGY

Project: San Juan 27 5 111

Sample ID: **LCS-75197**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **75197**	RunNo: **97073**
Prep Date: **5/25/2023**	Analysis Date: **5/26/2023**	SeqNo: **3523201** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.5		5.000		89.5	69	147			

Sample ID: **MB-75186**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **75186**	RunNo: **97073**
Prep Date: **5/25/2023**	Analysis Date: **5/26/2023**	SeqNo: **3523202** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.0		10.00		89.5	69	147			

Sample ID: **MB-75197**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **75197**	RunNo: **97073**
Prep Date: **5/25/2023**	Analysis Date: **5/26/2023**	SeqNo: **3523205** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		112	69	147			

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#: **2305B02**

02-Jun-23

Client: HILCORP ENERGY

Project: San Juan 27 5 111

Sample ID: **lcs-75150**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **75150**	RunNo: **97018**							
Prep Date: **5/24/2023**	Analysis Date: **5/25/2023**	SeqNo: **3521588**	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	85.6	70	130			
Surr: BFB	4700		1000		472	15	244			S

Sample ID: **mb-75150**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **75150**	RunNo: **97018**							
Prep Date: **5/24/2023**	Analysis Date: **5/25/2023**	SeqNo: **3521589**	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	640		1000		64.4	15	244			

Sample ID: **lcs-75154**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **75154**	RunNo: **97050**							
Prep Date: **5/24/2023**	Analysis Date: **5/26/2023**	SeqNo: **3522418**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	89.9	70	130			
Surr: BFB	2000		1000		196	15	244			

Sample ID: **mb-75154**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **75154**	RunNo: **97050**							
Prep Date: **5/24/2023**	Analysis Date: **5/26/2023**	SeqNo: **3522419**	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	880		1000		88.1	15	244			

Sample ID: **2305B02-012ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **BH-05(20-22ft)**	Batch ID: **75154**	RunNo: **97050**							
Prep Date: **5/24/2023**	Analysis Date: **5/26/2023**	SeqNo: **3522451**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	20	4.7	23.54	0	85.0	70	130			
Surr: BFB	1900		941.6		202	15	244			

Sample ID: **2305B02-012amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **BH-05(20-22ft)**	Batch ID: **75154**	RunNo: **97050**							
Prep Date: **5/24/2023**	Analysis Date: **5/26/2023**	SeqNo: **3522452**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

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#: **2305B02**
02-Jun-23

Client: HILCORP ENERGY
Project: San Juan 27 5 111

Sample ID: **2305B02-012amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **BH-05(20-22ft)**	Batch ID: **75154**	RunNo: **97050**							
Prep Date: **5/24/2023**	Analysis Date: **5/26/2023**	SeqNo: **3522452**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	4.7	23.39	0	88.1	70	130	2.86	20	
Surr: BFB	1900		935.5		201	15	244	0	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#: **2305B02**

02-Jun-23

Client: HILCORP ENERGY

Project: San Juan 27 5 111

Sample ID: **LCS-75150**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **75150**	RunNo: **97018**
Prep Date: **5/24/2023**	Analysis Date: **5/25/2023**	SeqNo: **3521629** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.81	0.025	1.000	0	80.6	70	130			
Toluene	0.83	0.050	1.000	0	83.4	70	130			
Ethylbenzene	0.85	0.050	1.000	0	84.7	70	130			
Xylenes, Total	2.5	0.10	3.000	0	84.6	70	130			
Surr: 4-Bromofluorobenzene	0.93		1.000		92.6	39.1	146			

Sample ID: **mb-75150**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **75150**	RunNo: **97018**
Prep Date: **5/24/2023**	Analysis Date: **5/25/2023**	SeqNo: **3521630** 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	0.88		1.000		88.0	39.1	146			

Sample ID: **lcs-75154**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **75154**	RunNo: **97050**
Prep Date: **5/24/2023**	Analysis Date: **5/26/2023**	SeqNo: **3522430** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.84	0.025	1.000	0	84.5	70	130			
Toluene	0.85	0.050	1.000	0	84.7	70	130			
Ethylbenzene	0.83	0.050	1.000	0	83.4	70	130			
Xylenes, Total	2.5	0.10	3.000	0	82.5	70	130			
Surr: 4-Bromofluorobenzene	0.89		1.000		88.7	39.1	146			

Sample ID: **mb-75154**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **75154**	RunNo: **97050**
Prep Date: **5/24/2023**	Analysis Date: **5/26/2023**	SeqNo: **3522431** 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	0.87		1.000		86.7	39.1	146			

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#: **2305B02**

02-Jun-23

Client: HILCORP ENERGY

Project: San Juan 27 5 111

Sample ID: **2305B02-011ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **BH-05(15-17ft)**	Batch ID: **75154**	RunNo: **97050**							
Prep Date: **5/24/2023**	Analysis Date: **5/26/2023**	SeqNo: **3522453**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.78	0.023	0.9234	0	84.0	70	130			
Toluene	0.78	0.046	0.9234	0	85.0	70	130			
Ethylbenzene	0.78	0.046	0.9234	0	84.3	70	130			
Xylenes, Total	2.3	0.092	2.770	0	83.3	70	130			
Surr: 4-Bromofluorobenzene	0.82		0.9234		89.3	39.1	146			

Sample ID: **2305B02-011amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **BH-05(15-17ft)**	Batch ID: **75154**	RunNo: **97050**							
Prep Date: **5/24/2023**	Analysis Date: **5/26/2023**	SeqNo: **3522454**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.77	0.023	0.9166	0	83.9	70	130	0.838	20	
Toluene	0.78	0.046	0.9166	0	85.1	70	130	0.645	20	
Ethylbenzene	0.78	0.046	0.9166	0	85.0	70	130	0.0876	20	
Xylenes, Total	2.3	0.092	2.750	0	84.6	70	130	0.866	20	
Surr: 4-Bromofluorobenzene	0.81		0.9166		88.1	39.1	146	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 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: 2305B02 | RcptNo: 1

Received By: Tracy Casarrubias 5/20/2023 9:30:00 AM

Completed By: Tracy Casarrubias 5/20/2023 1:22:58 PM

Reviewed By: MP 5/22/23

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: MP 5/22/23

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: Email is mising on COC -TMC 5/20/23

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.3	Good	Yes	Yogi		

Chain-of-Custody Record

Client: Hilcorp / Ensolum

Attn: Samantha Grabert

Mailing Address: 776 E. 2nd Ave

Durango, CO 81301

Phone #: 970-903-1607

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☒ Standard 5-day ☐ Rush

Project Name: San Juan 27-5 #111

Project #:

Project Manager: Stuart Hyde

shyde@ensolum.com

Sampler: W. Weichert

On Ice: ☒ Yes ☐ No 4oz

# of Coolers: 1

Cooler Temp(Including CF): 3.4 -0.1 = 3.3 (°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. 2305B02	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)
5-16-23	9:50	S	BH-01 (15-17 ft)	4oz Glass / 1	None	001	X	X					X			
	9:55		BH-01 (20-22 ft)			002										
	10:00		BH-01 (25-27 ft)			003										
	10:05		BH-01 (30-32 ft)			004										
	11:45		BH-02 (15-17 ft)			005										
	11:50		BH-02 (10-12 ft)			006										
	13:00		BH-03 (5-7 ft)			007										
	14:00		BH-04 (10-12 ft)			008										
	14:05		BH-04 (20-22 ft)			009										
	15:00		BH-05 (24-26 ft)			010										
	15:10		BH-05 (15-17 ft)			011										
	15:05		BH-05 (20-22 ft)			012										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
5/19/23	1435				5/19/23	1435
5/19/23	1820			Courier	5/20/23	9:30

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.

Chain-of-Custody Record

Client: Hilcorp / Ensolum

Attn: Samantha Grabert

Mailing Address: 776 E. 2nd Ave

Durango, CO 81301

Phone #: 970-903-1607

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☒ Standard (5-Day) ☐ Rush

Project Name: San Juan 27-5 #111

Project #:

Project Manager: Stuart Hyde shyde@ensolum.com

Sampler:

On Ice: ☒ Yes ☐ No Yogi

# of Coolers: 1

Cooler Temp(Including CF): 2.4-0.1=2.3 (°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. 2305BCL	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)
5-17-23	9:50	S	BH-06 (8-10ft)	4oz glass/1	None	~~0015~~ 013	X	X					X			
	9:55		BH-06 (13-15ft)			~~0014~~ 014										
	10:00		BH-06 (18-20ft)			~~0015~~ 015										
	10:05		BH-06 (22-24ft)			~~004~~ 016										
↓	11:00	↓	BH-07 (0-2ft)	↓	↓	~~005~~ 017	↓	↓					↓			

WW 5-17

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
5/19/23	1435				5/19/23	1435
5/19/23	1820			Courier	5/20/23	9:30

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 C

Boring Logs

ENSOLUM

Client: Hilcorps
Project Name: SJ 27-5 #111
Project Location:
Project Manager: Stuart Hyde

BORING LOG NUMBER BH-01
Project No.:

Date Sampled: 5-16-23
Drilled By: Enviro-Drill
Driller: Juan
Logged By: W. Weichert

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter: 8"
Casing Diameter: 2"
Well Materials: SCH 40 PVC
Surface Completion: SVE
Boring Method: HSA

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
0–5					SW	SAND w/ GRAVEL on Surface	
6–10	X	50%	14.9 PPM		SP	SAND - Brown, Very fine to fine, Well sorted, Subangular, trace gravel, little, Slightly moist, No visual Impacts, no odor.	
11–15	X	90%	23.2 PPM		SP	SAND - As above, lighter brown, thin Clay Seam, FeO_2 Stain, No odor	Seal = 14 ft
16–18	X Sample	80%	413.7 PPM		SP	SAND - As Above, medium brown, fine grained, well sorted, Clay stringer, trace silt, Slight Petro odor.	Filter pack = 16.5 ft
19–20							TOS = 18 ft
21–22	X Sample	90%	4224 PPM		SC	SAND w/ SILT & CLAY - light brown to tan, Very fine to fine, little Silt & Clay, Moderate to well sorted, Firm & Compact, 30+ spt blows, Moderate Petro odor	
23–25							

ENSOLUM

Client: Hilcorp
Project Name: SJ 27-5 #111
Project Location:
Project Manager: Stuart Hyde

BORING LOG NUMBER: BH-01
Project No.:

Date Sampled: 5-16-23
Drilled By:
Driller:
Logged By:

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter:
Casing Diameter:
Well Materials:
Surface Completion:
Boring Method:

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
25		70%	3451 PPM			SAND w/ SILT & CLAY As Above. *Sharp Contact	
26							
27	Sample					SILTSTONE - Darker brown, little Sand, Orange Staining, Possible bedrock?. Dry, Moderate to Strong Odor	
28							
29							
30							
31			126.1 PPM			SILTSTONE - As Above	Refusal
32	Sample					TD @ 30 ft.	
33						No Water Encountered.	
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							

BOS = 28 ft

ENSOLUM

Client: Hilcorp
Project Name: SJ 27-5 #111
Project Location: NM
Project Manager: Stuart Hyde

BORING LOG NUMBER BH-02
Project No.:

Date Sampled: 5-10-23
Drilled By: Enviro-Drill
Driller: Juan
Logged By: Al Thomson

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter: 8"
Casing Diameter: 2"
Well Materials: SCH 40 PVC
Surface Completion: SVE
Boring Method: HSA

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
0–5							
6–10	X	60%	5.6 ppm		SP	SAND - Brown, very fine to fine, little silt and clay well sorted. More clay towards 7 ft. No odor.	
11–14	X Sample	80%	13.6		SP	SILTY SAND - Brown, lighter towards bottom. Some clay. well sorted. Firm to hard in places. No odor.	
15–16	X Sample	60%	4.2		CL	*hard drilling @ 13ft. SANDY CLAY - Brown, Firm to hard. No Odor	Refusal
17–25						SANDSTONE - Tan, silty, hard, but unconsolidated. NO odor. *Refusal @ 16ft. No Water Encountered.	

Seal = 5ft
Filter = 7 ft
TOS = 9 ft
BOS = 14 ft

ENSOLUM

Client: Hilcorp
Project Name: SJ 27-5 # 111
Project Location: NM
Project Manager: Stuart Hyde

BORING LOG NUMBER BH-03
Project No.:

Date Sampled: 5-16-23
Drilled By: Enviro-Drill
Driller: Juan
Logged By: W. Weichert

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter: 8"
Casing Diameter: 2"
Well Materials: SCH40 PVC
Surface Completion: SVE
Boring Method: HSA

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
0–5						SILTY SAND - Brown, Very fine to fine, Some Silt, Well sorted, Slightly moist, no odor	No Well Install
6	X	70%	4.0		SD		
7	Sample					* Sharp contact	
8						SANDSTONE - tan, Fine to medium, Well sorted, hard but friable, (50+ Spt blows) moist, no odor, no visual impacts.	
9							Refusal
10–25						*Refusal @ 8 ft. * No Water.	

ENSOLUM

Client: Hilcorp
Project Name: SJ 27-5 #111
Project Location: NM
Project Manager: Stuart Hyde

BORING LOG NUMBER: BH-04
Project No.:

Date Sampled: 5-16-23
Drilled By: Enviro-Drill
Driller: Juan
Logged By: W. Weichert

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter: 8"
Casing Diameter: 2"
Well Materials: SCH 40 PVC
Surface Completion: SVE
Boring Method: HSA

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
0–5						SANDY SILT	Borehole left open Pending Lab Results
6–10	X	80%	4.9 PPM		ML	SANDY SILT - Brown, Very fine, Well sorted, trace Caliche, Unconsolidated + loose, no visual Impacts no odor. Dry.	
11–15	X	90%	8.0 PPM		ML	SANDY SILT - As above, becoming Firm - hard + Consolidated. Dry	
16–20	X	90%	3.0 PPM		SM	SILTY SAND - Brown Very fine to fine, Well Sorted, Firm but friable, Semi-consolidated, homogenous, no Visual Impacts, no odor. Dry.	
21–22	X	90%	1.7 PPM			*Drilling ROP slow SILTY SAND - As above increase in Clay fraction	
23–25						SANDSTONE - Bedrock @ Bottom of SPT. Refusal @ 22 ft No Water Encountered.	

ENSOLUM

Client: HilCorp
Project Name: SJ 27-5 #111
Project Location: NM
Project Manager: Stuart Hyde

BORING LOG NUMBER BH-05
Project No.:

Date Sampled: 5-16-23
Drilled By: Enviro-Drill
Driller: Juan
Logged By: M. Weichert

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter: 8"
Casing Diameter: 2"
Well Materials: SCH 40 PVC
Surface Completion: SVE
Boring Method: HSA

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
0–5							
6	X	70%	10.0 PPM		ML	SANDY SILT w/ CLAY Brown, Very fine, well Sorted & homogenous, trace gravel, trace Organics/rootlets. Unconsolidated & friable no odor, Dry.	
11	X	70%	11.1 PPM		SM	SILTY SAND - Brown, Very fine, well Sorted, homogenous, little white caliche, Unconsolidated & Friable, Dry, no odor	Seal = 12 ft Filter Pack = 14 ft
16	X	80%	7.2 PPM		ML	SANDY SILT - Light brown, Very fine, homogenous, Unconsolidated, friable, Dry, no odor. hard in places.	TOS = 16 ft
21	X	90%	16.1 PPM		ML	SANDY SILT - As above, Slight Petro odor. *hard drilling	
25							

ENSOLUM

Client: Hilcorp
Project Name: SJ 27-5 # 111
Project Location:
Project Manager: Stuart Hyde

BORING LOG NUMBER: BH-05
Project No.:

Date Sampled: 5-16-23
Drilled By:
Driller:
Logged By:

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter:
Casing Diameter:
Well Materials:
Surface Completion:
Boring Method:

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
25							
26	X		1541 ppm		SM	SILTY SAND - light brown/tan. Very fine, well sorted, Unconsolidated & friable, Dry, moderate Petro odor *hand drilling & Rig chatter Refusal @ 26 ft No Water Encountered.	Refusal
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							

BOS = 26 ft

ENSOLUM

Client: Hilcorps
Project Name: SJ 27-5 #111
Project Location: NM
Project Manager: Stuart Hyde

BORING LOG NUMBER BH-06
Project No.:

Date Sampled: 5-17-23
Drilled By: Enviro-drill
Driller: Juan
Logged By: W. Weichert

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter: 8"
Casing Diameter: 2"
Well Materials: SCH 40 PVC
Surface Completion: SVE
Boring Method: HSA

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
0–5		60%	24.8 ppm		SM	SILTY SAND - Brown w/ tan, Fine, argillaceous, Well Sorted, Homogenous, Unconsolidated & loose, dry, no visual Impacts & no Odor.	
6–10	Sample	100%	57.0 ppm		SM	SILTY SAND - As Above, No odor	
11–15	Sample	100%	122.3 ppm		SM	SILTY SAND - light brown to tan, Fine w/ some clay & Silt, Well Sorted & Homogenous Unconsolidated. Dry, no odor.	
16–20	sample	60%	3604 ppm		SM	SILTY SAND - As above, Hydrocarbon Staining & Strong Petro odor.	
21–24	sample	100	1418			SILTSTONE - Gray, Strong Petro Odor	
25						Refusal @ 24 ft	Refusal

No Water Encountered.

ENSOLUM

Client: Hilcorps
Project Name: SJ 27-5 #111
Project Location: NM
Project Manager: Stuart Hyde

BORING LOG NUMBER BH-07
Project No.:

Date Sampled: 5-17-23
Drilled By: Enviro-drill
Driller: Juan
Logged By: WWeichert

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter: 8"
Casing Diameter: 2"
Well Materials: SCH40 PVC
Surface Completion: SVE
Boring Method: HSA

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
0	X	95%			SM	SILTY Sand - light brown, Fine, well sorted, loose, no odor	No Well Install
1	X				SST	SANDSTONE - gray-brown, F-M, Firm, No Odor.	
2	X					Refusal @ 2 ft	
3						No Water	
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

ENSOLUM

APPENDIX D

Agency Sampling Notifications

From: Stuart Hyde
To: Velez, Nelson, EMNRD
Cc: Samantha Grabert; Devin Hencmann; Reece Hanson
Subject: napp2300554747 - Hilcorp Energy Company San Juan 27-5 Unit #111 Sampling Notification
Date: Sunday, May 7, 2023 9:20:00 PM
Attachments: napp2300554747_01_06_2023_08_25_39.pdf
image001.png
image002.png
image003.png
image004.png

On behalf of Hilcorp Energy Company, Ensolum is submitting this delineation sampling notification for the San Juan 27-5 Unit #111 site located in Rio Arriba County at coordinates 36.60034, -107.33217. Drilling will commence at 9 AM on Friday May 12, 2023. Please reach out with any questions. Thanks.

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

ENSOLUM

APPENDIX E

Photographic Log

ENSOLUM

Photographic Log
Hilcorp Energy Company
San Juan 27-5 Unit 111
Rio Arriba County, New Mexico

Photograph: 1 Date: 12/21/2022
Description: Staining around condensate tank
View: East

Photograph: 2 Date: 12/21/2022
Description: Soil staining in release area
View: North

Photograph: 3 Date: 1/12/2023
Description: Pothole FS-01
View: East

Photograph: 4 Date: 5/17/2023
Description: SVE wells in borings BH01 and BH06
View: South

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 230590

CONDITIONS

Operator:	OGRID:
HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	372171
	Action Number: 230590
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
nvelez	1. Complete horizontal delineation west of the point of release. 2. Complete Soil Vapor Extraction (SVE) pilot test as written in report within 90-days (09/19/2023) of this approval with conditions. 3. Acquire surface access approval from New Mexico State Land Office prior to any off pad remedial activities. 4. Prepare and submit SVE pilot test report within 60-days (11/20/2023) after field activities have been completed.	6/21/2023