ENSOLUM

March 11, 2024

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

Re: Updated 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 *Updated 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.

Pothole and drilling activities were performed in December 2022, January 2023, and May 2023 in attempts to delineate the lateral and vertical extents of soil impacts at the Site. Based on the results gathered during these activities, a *Site Investigation Report and Remediation Work Plan,* dated June 20, 2023, was prepared summarizing activities performed to date and recommending pilot testing soil vapor extraction (SVE) techniques to remediate subsurface impacts at the Site. Ensolum performed the SVE pilot test on July 14, 2023. Based on the pilot test results, SVE was determined to be infeasible at the Site due to insufficient subsurface airflow and vacuum response between the extraction and observation wells. As such, Hilcorp moved forward with additional delineation activities at the Site that are further discussed below.

Details regarding all previous sampling/delineation efforts and presentation of the Site characterization information, including sensitive receptor review, geology/hydrogeology, and closure criteria, are summarized in the June 2023 *Site Investigation Report and Remediation Work Plan.*

DRILLING AND ADDITIONAL DELINEATION ACTIVITIES

Based on the initial delineation results, further delineation activities were warranted to delineate impacts west of the well pad. Specifically, soil borings BH08 through BH12 were advanced at the locations indicated on Figure 2 using a hollow-stem auger drill rig in November 2023. Prior to work, Hilcorp retained Adkins Consulting, Inc. to perform a Cultural Resource Inventory of off-pad areas that were to be disturbed during delineation efforts. No cultural resources were found during the inventory and survey.

During delineation activities, 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 on the boring logs attached as Appendix A. 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 B.

Several soil samples were collected from each boring to assess subsurface impacts. Soil samples were collected directly into laboratory-provided jars and immediately placed on ice. Samples were submitted to Eurofins Environment Testing (Eurofins) for analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX) following United States Environmental Protection Agency (EPA) Method 8021B, total petroleum hydrocarbons (TPH) as gasoline range organics (GRO), diesel range organics (DRO), and motor oil range organics (MRO) following EPA Method 8015M/D, and chloride following EPA Method 300.0.

SOIL BORING RESULTS AND CONCLUSIONS

In general, very fine-grained to fine-grained sand, silty/clayey sand, and sandy silt soils were encountered at the Site from the ground surface up to depths of approximately 34 feet below ground surface (bgs). Unconsolidated soil was underlain in all borings by siltstone bedrock. Field indications of petroleum hydrocarbons, including staining, odors, and/or elevated PID readings, were noted in borings BH08 and BH09. Groundwater was not encountered in any of the borings during drilling activities.

Concentrations of TPH as a combination of GRO+DRO exceeding the NMOCD Table I Closure Criteria were detected in samples collected from borings BH08 (at depths of 25 to 27 feet bgs) and BH09 (at depths of 33 to 35 feet bgs). Additionally, total BTEX concentrations exceeded the NMOCD Table I Closure Criteria in sample BH09(33-35). TPH as a combination of GRO+DRO and BTEX concentrations were compliant with NMOCD Table I Closure Criteria in samples collected above and below these impacted intervals in borings BH08 and BH09. In addition, concentrations of constituents of concern (COC) were compliant with the NMOCD Table I Closure Criteria in all other analyzed samples collected during the November 2023 delineation effort. A summary of the November 2023 analytical results is presented on Table 1 (including previously collected data) and depicted on Figure 2. Complete laboratory reports are attached in Appendix C. Photographs collected during Site work are included in Appendix D.

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 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. Although the terminal soil sample previously collected from boring BH05 at 24 feet to 26 feet bgs contained COC concentrations exceeding the Closure Criteria, it is unlikely soil impacts have migrated into the underlying bedrock. As such, it is assumed impacts in this area are likely contained above the bedrock unit, as indicated by the data collected from borings BH01, BH06, BH08, and BH09.

Petroleum hydrocarbons are present at the Site between the ground surface up to a depth of approximately 36 feet bgs. A cross section of the Site (Figure 3) and a conceptual three-dimensional plume model (Figure 4) have been developed to show the vertical and lateral extent of impacts at the Site. Based on the soil analytical data, it is estimated 1,600 cubic yards of soil have been impacted by the Site release.

UPDATED REMEDIATION WORK PLAN

Because of the areal extent of impacts, volume of impacted soil, and remote location of the Site, soil shredding has been chosen as the remediation technique to address impacted soil at the Site. Soil shredding is an ex-situ and on-site treatment of impacted soil through which impacted material is chemically treated using a chemical oxidant (generally hydrogen peroxide) applied to the soil. Impacted material is excavated from the ground using standard construction techniques and placed onto a soil screening unit using a special shredding bucket. The impacted soil is conveyed by the screening unit and chemical treatment is applied simultaneously. The treated soil is then placed in 100 cubic yard stockpiles and allowed to process for 24 to 48 hours in order for the oxidant to degrade the petroleum hydrocarbon contaminants in the soil.

Once treated, 5-point composite samples will be collected for analysis from each 100 cubic yard stockpile. The 5-point composite samples will be collected by placing five equivalent aliquots of soil into a 1-gallon, resealable plastic bag and homogenizing the samples by thoroughly mixing. Samples will be submitted to Eurofins using the handling procedures described above and will be analyzed for TPH and BTEX constituents. Based on historical Site results, chloride will not be analyzed during confirmation soil sampling. Assuming soil is compliant with the NMOCD Table I Closure Criteria, the soil will be ultimately used to backfill the open excavation. Any stockpiles exceeding the applicable Closure Criteria will be allowed to process for a longer period of time and/or be retreated until Closure Criteria are met.

In addition, as soil is removed from the excavation, the excavation sidewalls and floors will be field screened using a PID. Once field screening indicates impacted soil has been removed, 5-point composite samples will be collected from the sidewalls and floor of the excavation at a frequency of one sample per 400 square feet, which Hilcorp is requesting this variance to the confirmation sampling requirements set forth in 19.15.29.D(1)(c) of the New Mexico Administrative Code (NMAC). The 5-point composite samples will be collected in the same manner described above. Samples will be collected and submitted to Eurofins using the techniques described above and will again be analyzed for TPH and BTEX constituents.

RECLAMATION PLAN

During the excavation, clean topsoil and overburden material will be removed, segregated, and stockpiled in order to reuse for backfill and reclamation once the excavation is complete. Once confirmation soil samples from both the excavation and treated soil meet NMOCD Table I Closure Criteria, the excavation will be backfilled using the treated soil up to a depth of 4 feet bgs. Clean overburden and topsoil meeting the reclamation requirement will be placed from 4 feet bgs to the ground surface for reclamation purposes and the ground will be recontoured to match pre-existing Site conditions. Facilities on the well pad will also be placed back in their previous locations. Hilcorp/Ensolum will include a Site-specific reclamation plan with the final closure report for the Site once remediation activities are completed.

SCHEDULE

Due to the depth of impacts at the Site, an Engineered Excavation Design will be required prior to commencement of work. Within 90 days of NMOCD and New Mexico State Land Office Environmental Compliance Office approval of this *Updated Remediation Work Plan,* the engineered design will be completed and Hilcorp will contract with the soil shredding contractor.

It is assumed the excavation and remediation of impacted soil will be completed within 180 days of work plan approval, pending contractor availability.

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

Sincerely,
Ensolum, LLC

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Attachments:

Figure 1: Site Receptor Map
Figure 2: Delineation Soil Sample Analytical Results
Figure 3: Geologic Cross Section
Figure 4: 3D Plume Model

Table 1: Soil Sample Analytical Results

Appendix A: Boring Logs
Appendix B: Agency Notifications
Appendix C: Laboratory Analytical Reports
Appendix D: Photographic Log

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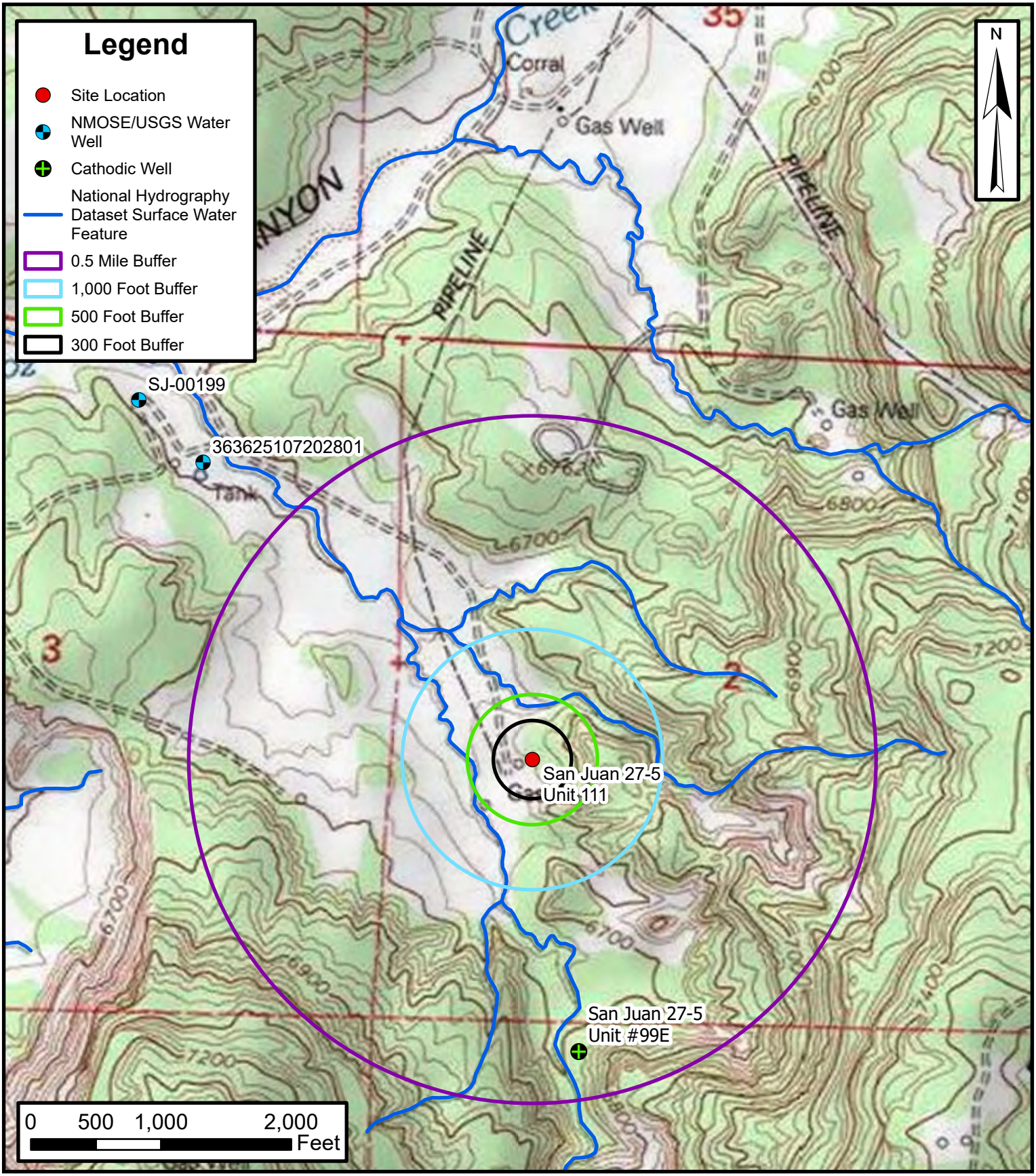
FIGURES



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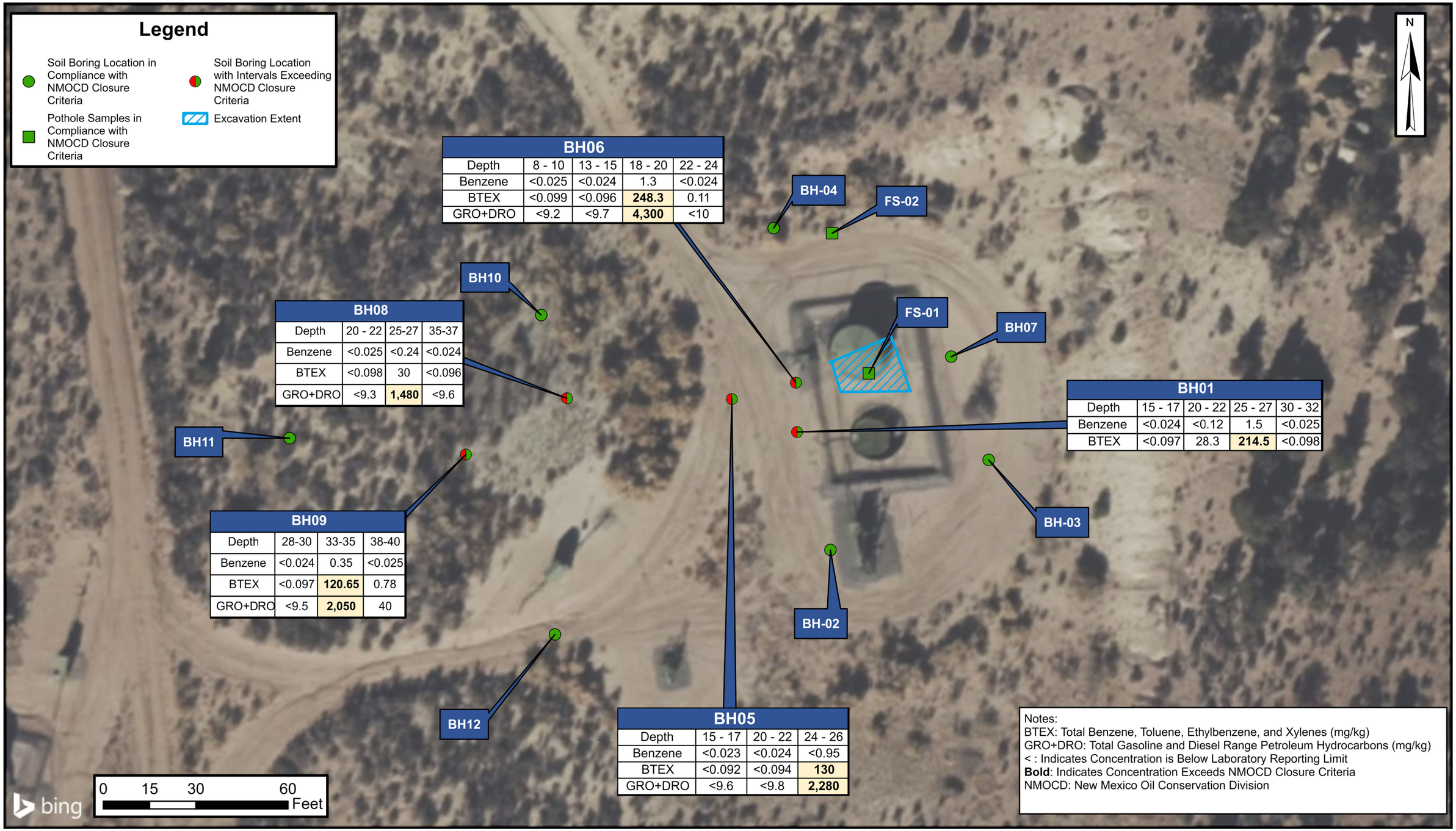
Site Receptor Map

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



Notes:
BTEX: Total Benzene, Toluene, Ethylbenzene, and Xylenes (mg/kg)
GRO+DRO: Total Gasoline and Diesel Range Petroleum Hydrocarbons (mg/kg)
< : Indicates Concentration is Below Laboratory Reporting Limit
Bold: Indicates Concentration Exceeds NMOCD Closure Criteria
NMOCD: New Mexico Oil Conservation Division

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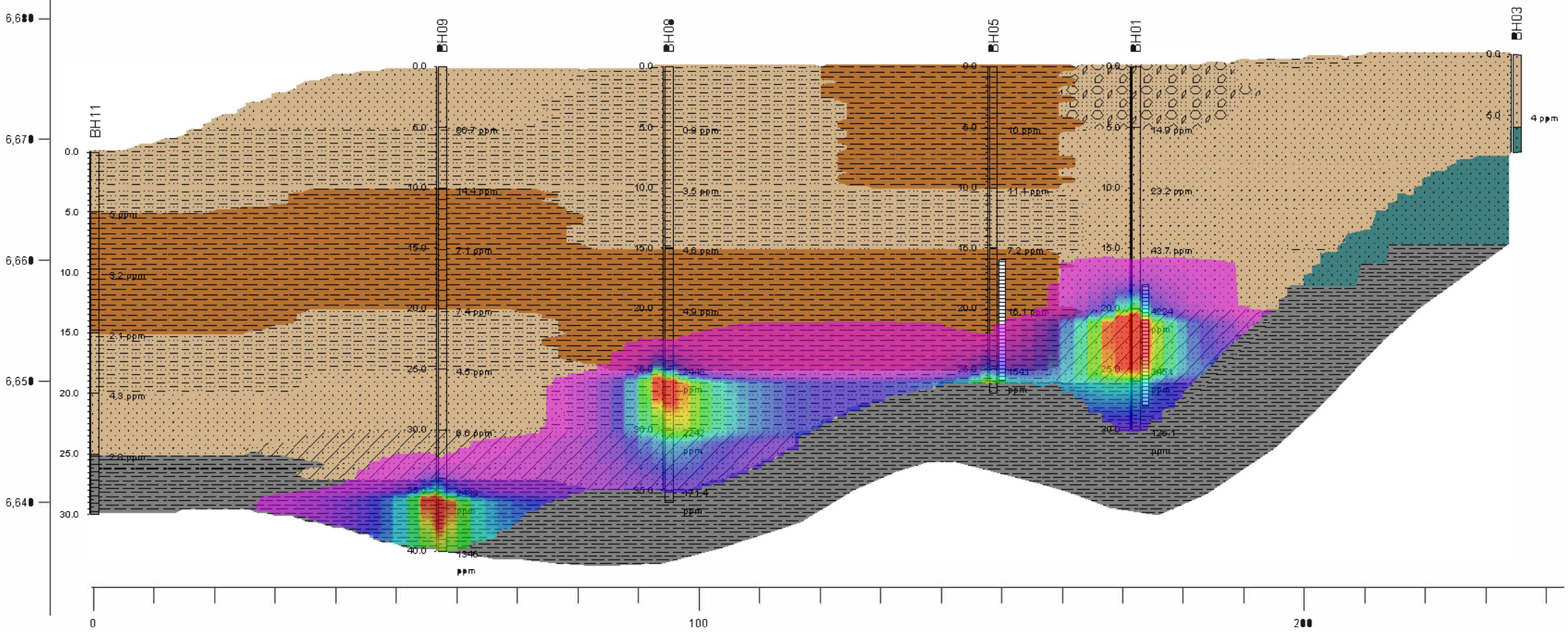
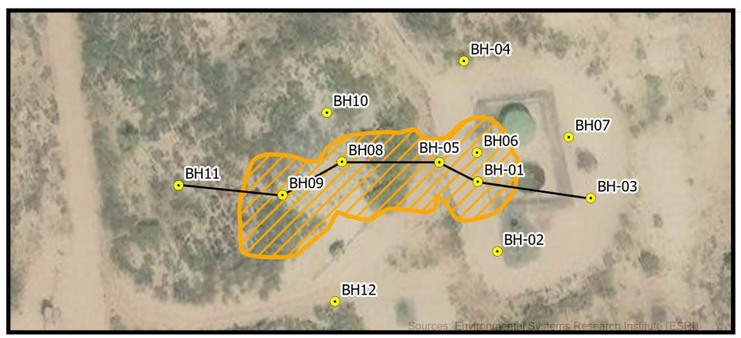
Delineation Soil Sample Analytical Results

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





Legend

- Borehole Location
- Cross Section A-A'
- Approximate Release Extent
- Well Screen

- Silt
- Clayey Sand
- Silty Sand
- Poorly Graded Sand
- Well Graded Sand
- Siltstone
- Sandstone

PID (ppm)

- 4,000
- 3,000
- 2,000
- 1,000
- 0

Note:
Vertical and horizontal distances not to same scale.
2x vertical exaggeration.

PID values modeled with Kriging.

2 ft
1 ft

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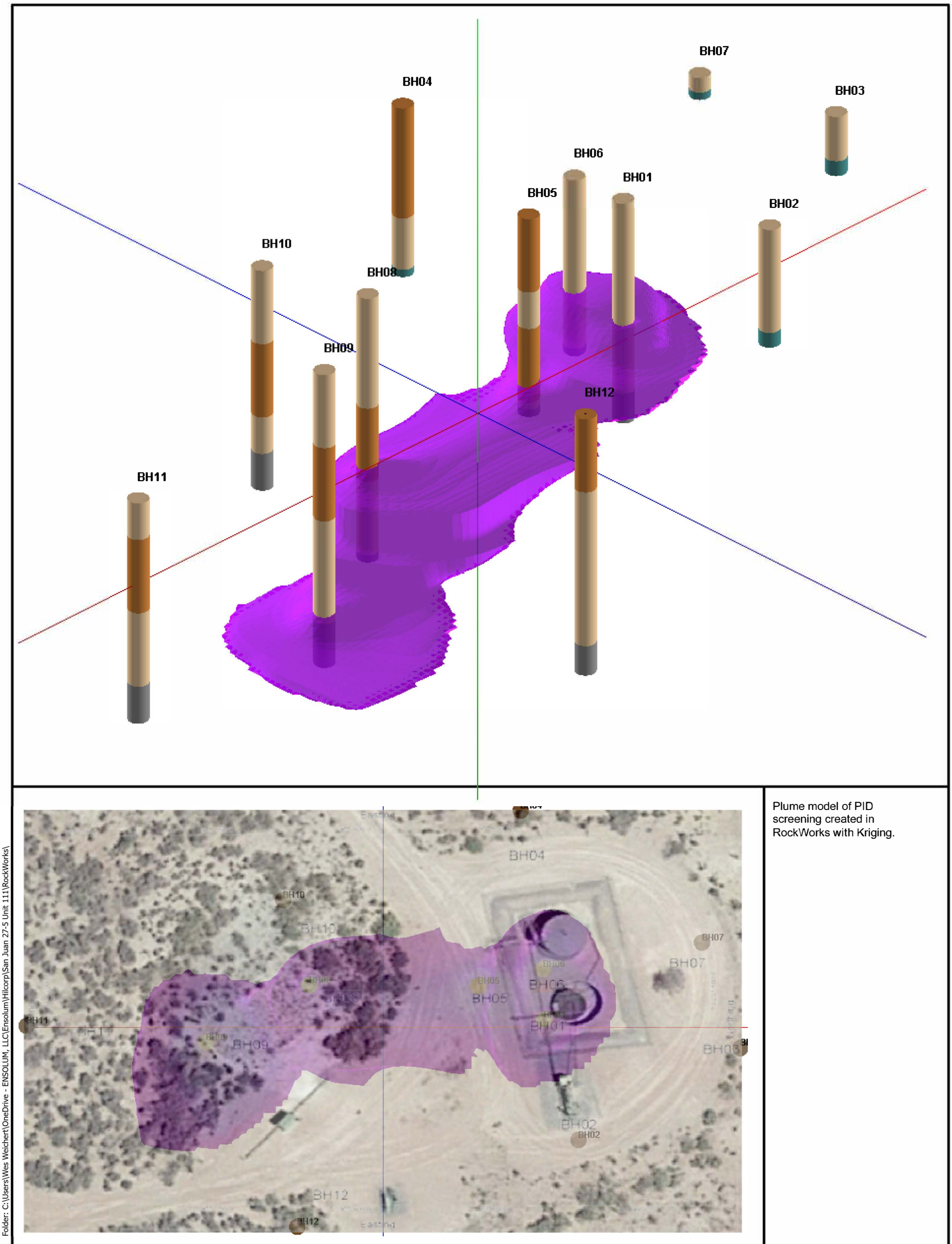
GEOLOGIC CROSS SECTION

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

Folder: C:\Users\Wes Weichert\OneDrive - ENSOLUM, LLC\Ensolum\Hilcorp\San Juan 27-5 Unit 111\Rock\Works\



Plume model of PID screening created in RockWorks with Kriging.

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3D PLUME MODEL

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 4

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TABLES

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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
BH08(20-22)	11/16/2023	20 - 22	<0.025	<0.049	<0.049	<0.098	<0.098	<4.9	<9.3	<47	<9.3	<47	<60
BH08(25-27)	11/16/2023	25-27	<0.24	<0.48	3.0	27	30.0	720	760	<49	**1,480**	1,480	<60
BH08(35-37)	11/16/2023	35-37	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	<9.6	<48	<9.6	<48	<60
BH09(28-30)	11/16/2023	28-30	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	<9.5	<48	<9.5	<48	<60
BH09(33-35)	11/16/2023	33-35	0.35	18	8.3	94	**120.65**	1,500	550	<47	**2,050**	2,050	<60
BH09(38-40)	11/16/2023	38-40	<0.025	<0.050	0.10	0.68	0.78	22	18	<46	40	40	<60
BH10(18-20)	11/16/2023	18-20	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	<9.3	<47	<9.3	<47	<60
BH10(23-25)	11/16/2023	23-25	<0.025	<0.049	<0.049	<0.098	<0.098	<4.9	<9.7	<48	<9.7	<48	<60
BH10(28-30)	11/16/2023	28-30	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	<9.3	<46	<9.3	<46	<60
BH11(18-20)	11/17/2023	18-20	<0.024	<0.047	<0.047	<0.095	<0.095	<4.7	<9.2	<46	<9.2	<46	<60
BH11(23-25)	11/17/2023	23-25	<0.024	<0.049	<0.049	<0.098	<0.098	<4.9	<9.4	<47	<9.4	<47	<60
BH11(28-30)	11/17/2023	28-30	<0.024	<0.048	<0.048	<0.097	<0.097	<4.8	<9.4	<47	<9.4	<47	<60

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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**
BH12 (23-25)	11/17/2023	23-25	<0.024	<0.048	<0.048	<0.095	<0.095	<4.8	<9.1	<46	<9.1	<46	<60
BH12 (28-30)	11/17/2023	28-30	<0.024	<0.049	<0.049	<0.098	<0.098	<4.9	<9.9	<50	<9.9	<50	<60
BH12 (33-35)	11/17/2023	33-35	<0.024	0.092	0.24	2.6	2.932	38	44	<48	82	82	<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*

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APPENDIX A

Boring Logs

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	Client: Hilcrop Energy Company		BOREHOLE ID
	Project Name: San Juan 27-5 Unit 111		BH08
	Project Location: Rio Arriba, NM		
	Project Manager: Stuart Hyde		Date: 11-16-2023
Project No.: 07A1988061	Borehole Diameter: 8"		Ground Surface Elevation:
Drilling Company: Enviro-Drill, Inc.	Casing Diameter: NA		Top of Casing Elevation:
Driller: Juan	Well Materials: NA		Latitude: 36.600 6686
Drilling Equip: CME 7500	Surface Completion: Abandon		Longitude: -107.3329820
Logged By: W.Welchert	Drilling Method: HSA w/ SPT		Total Depth: 35 ft

DEPTH (FEET)	SAMPLE INTERVAL	SPT BLOW COUNT	RECOVERY (%)	PID (PPM)	MOISTURE	USCS	GEOLOGIC DESCRIPTION	WELL COMPLETION
0–5						SM	Surface Soil - SILTY SAND - light brown - tan, Very fine to fine Well Sorted / Poorly graded, Subangular loose & Unconsolidated, Dry. No odor	No Well Instal
5–10	X	4-3-3	1/2 50%	0.9 PPM	Dry	SM	SILTY SAND - light brown, Very fine to fine, Well Sorted / Poorly graded, Subangular, loose but firm in places, Dry. No odor	
10–15	X	5-8-40	1.3/2 65%	3.5 PPM	Dry	SM	SILTY SAND - As above. * Very hard drilling, Possible Rock? ROP increase @ 13 ft.	
15–20	X	13-14-11	1.8/2 90%	4.6 PPM	Dry	ML	SANDY SILT - light brown to gray, Firm to hard in places, Dry, non-plastic, Some fine Sand, trace angular gravel. No odor	
20–25	Sample	6-9-7	1.7/2	4.9 PPM	slightly moist	ML	SANDY SILT - Brown, hard / Well Consolidated, Increasing moisture Bottom half Slightly moist non-plastic, Some fine Sand, no odor.	

3-4-2

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	Client: Hilcrop Energy Company	BOREHOLE ID
	Project Name: San Juan 27-5 Unit 111	BH08
	Project Location: Rio Arriba, NM	
	Project Manager: Stuart Hyde	Date: 11-16-2023
Project No.: 07A1988061	Borehole Diameter:	Ground Surface Elevation:
Drilling Company: Enviro-Drill, Inc.	Casing Diameter:	Top of Casing Elevation:
Driller: Juan	Well Materials:	Latitude:
Drilling Equip: CME 7500	Surface Completion:	Longitude:
Logged By: W.Weichert	Drilling Method:	Total Depth:

DEPTH (FEET)	SAMPLE INTERVAL	SPT BLOW COUNT	RECOVERY (%)	PID (PPM)	MOISTURE	USCS	GEOLOGIC DESCRIPTION	WELL COMPLETION
25–30	Sample	4-3-2	90%	2448 PPM	Slightly moist	SP-SM	POORLY GRADED SAND- Brown-gray, Fine to medium, Well Sorted / Poorly graded. Subangular, Soft, loose & Friable, Slightly moist, moderate to Strong HC odor	
30–35		4-3-6	100%	2242 PPM	Slightly moist	SP-SC	POORLY GRADED CLAYEY SAND Brown to gray, fine to med. Soft, loose & friable, Slightly moist, more clay than above, Visable HC Smear & Strong odor. * Slower drilling & chatter @ 34ft	
35–40	Sample	15-23-30		171.4 PPM	Dry to Slightly moist		SANDY CLAYEY SILT / SILTSTONE - Brown-gray w/ orange FeO_2 Stain, Firm to hard, non-plastic, little Sand & Clay, FeO_2 Stain, no HC odor. * Bed rock Contact @ 34ft BGS	
40–50							TD = 35 ft	

ENSOLUM

	Client: Hilcrop Energy Company	BOREHOLE ID	BH09
	Project Name: San Juan 27-5 Unit 111		
	Project Location: Rio Arriba, NM		
	Project Manager: Stuart Hyde	Date:	11-16-2023
Project No.: 07A1988061	Borehole Diameter: 8"	Ground Surface Elevation:	
Drilling Company: Enviro-Drill, Inc.	Casing Diameter: NA	Top of Casing Elevation:	
Driller: Juan	Well Materials: NA	Latitude:	36.6006163
Drilling Equip: CME 7500	Surface Completion: Abandon	Longitude:	-107.3330920
Logged By: W.Weichert	Drilling Method: HSA	Total Depth:	40 ft

DEPTH (FEET)	SAMPLE INTERVAL	SPT BLOW COUNT	RECOVERY (%)	PID (PPM)	MOISTURE	USCS	GEOLOGIC DESCRIPTION	WELL COMPLETION
0–5		3-8-5	1.1/2 70%	86.7 PPM	Dry	SP	POORLY GRADED SAND - tan - light brown, Very fine - fine Well sorted / Poorly graded, Subangular, loose + friable but Firm to hard inplaces. Dry Some mica, No tlc odor.	No well install
6–10		5-7-10	1.2/2 60%	14.4 PPM	Dry	SM	SILTY SAND - Brown, Very fine - Fine, Wellsorted, Subangular, loose to friable, Firm to hard in places, Dry, No odor.	
11–15		8-9-8	100%	7.1 PPM	Dry	ML	SANDY SILT - light brown, Firm, Dry, non-plastic, Some Sand, little Clay, White Caliche Present, No odor	
16–20		5-7-7	75%	7.4 PPM	Dry	ML	SANDY SILT - As above	
21–25		4-6-6	80%	4.5 PPM	Dry	SM/ML	SANDY SILT to SILTY SAND Light Brown, Dry, non-plastic Some fine Sand. little clay. No odor	

5-7-6

ENSOLUM

	Client: Hilcrop Energy Company	BOREHOLE ID: BH-09
	Project Name: San Juan 27-5 Unit 111	
	Project Location: Rio Arriba, NM	
	Project Manager: Stuart Hyde	Date: 11-16-2023
Project No.: 07A1988061	Borehole Diameter:	Ground Surface Elevation:
Drilling Company: Enviro-Drill, Inc.	Casing Diameter:	Top of Casing Elevation:
Driller:	Well Materials:	Latitude:
Drilling Equip:	Surface Completion:	Longitude:
Logged By: W.Weichert	Drilling Method:	Total Depth:

DEPTH (FEET)	SAMPLE INTERVAL	SPT BLOW COUNT	RECOVERY (%)	PID (PPM)	MOISTURE	USCS	GEOLOGIC DESCRIPTION	WELL COMPLETION
25							POORLY GRADED SAND- Brown, Fine-Medium, Well sorted / Poorly graded, Firm but loose + unconsolidated in places, Dry, no odor.	
26								
27								
28								
29	Sample		1.7/2					
30		5-7-6	85%	6.6 ppm	Dry	SP		
31								
32							* grades to Clayey Sand	
33							CLAYEY SAND- Brown to gray Fine, Well Sorted, Firm to hard at bottom, Slightly moist, moderate HC odor, Darker than above, * harder slower drilling @ 34ft.	
34	Sample							
35		5-7-27	100%	2489 ppm	Slight moist	SC		
36								
37								
38							SILTSTONE- gray brown, hard, Dry, non-plastic, little Sand, Some FeO2 Staining Faint HC Odor.	
39	Sample							
40		18-30-31	100%	1346 ppm	Dry	ML		
41							TD = 40 ft	
42								
43								
44								
45								
46								
47								
48								
49								
50								

ENSOLUM

Client: Hilcrop Energy Company
Project Name: San Juan 27-5 Unit 111
Project Location: Rio Arriba, NM
Project Manager: Stuart Hyde

BOREHOLE ID: BH10

Project No.: 07A1988061
Drilling Company: Enviro-Drill, Inc.
Driller: Juan
Drilling Equip: CME 7500
Logged By: W.Weichert

Borehole Diameter: 8"
Casing Diameter: NA
Well Materials: NA
Surface Completion: Abandon
Drilling Method: HSA w/ SPT

Date: 11-16-2023
Ground Surface Elevation:
Top of Casing Elevation:
Latitude: 36.6007428
Longitude: -107.3330128
Total Depth: 30 ft

DEPTH (FEET)	SAMPLE INTERVAL	SPT BLOW COUNT	RECOVERY (%)	PID (PPM)	MOISTURE	USCS	GEOLOGIC DESCRIPTION	WELL COMPLETION
0–5	X	4-6-6	75%	1.4 PPM	Dry	SW	GRAVELLY + SILTY SAND - light brown - tan, Fine to Coarse w/ gravel, moderate to poorly Sorted, loose + Friable but hard in places, Dry, No odor.	No Well Install
6–10	X	7-9-11	80%	0.8 PPM	Dry	ML / SM	SILTY SAND / SANDY SILT - light brown, Very-fine to fine Sand, Firm, Dry, no odor.	
11–15	X	4-6-6	80%	0.6 PPM	Dry	ML	SANDY SILT - Brown, Firm to hard but soft + Friable in places, Dry, non-plastic, no odor. Very homogenous.	
16–20	Sample	5-6-9	90%	2.5 PPM	Dry	ML	SANDY SILT - As above. trace gravel. No odor	
21–25	Sample	7-11-12	95%	2.1 PPM	Dry	SC	SILTY SAND - light brown, Fine to Very Fine, Well Sorted, Soft to firm, Friable to loose, Dry, no odor.	

ENSOLUM

Client: Hilcrop Energy Company	BOREHOLE ID: BH10
Project Name: San Juan 27-5 Unit 111	
Project Location: Rio Arriba, NM	
Project Manager: Stuart Hyde	Date: 11-16-2023
Project No.: 07A1988061	Borehole Diameter:
Drilling Company: Enviro-Drill, Inc.	Casing Diameter:
Driller:	Well Materials:
Drilling Equip:	Surface Completion:
Logged By: W.Weichert	Drilling Method:
	Ground Surface Elevation:
	Top of Casing Elevation:
	Latitude:
	Longitude:
	Total Depth:

DEPTH (FEET)	SAMPLE INTERVAL	SPT BLOW COUNT	RECOVERY (%)	PID (PPM)	MOISTURE	USCS	GEOLOGIC DESCRIPTION	WELL COMPLETION
25							SILTSTONE - gray-brown, very hard + well consolidated, Dry, non-plastic, no odor	
26								
27								
28								
29	Sample							
30		28-50-*	60%	3.1 ppm	Dry	ML		
31							* 50+ blows for 4"	
32							TD = 30 ft	
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								

ENSOLUM

Client: Hilcrop Energy Company
Project Name: San Juan 27-5 Unit 111
Project Location: Rio Arriba, NM
Project Manager: Stuart Hyde

BOREHOLE ID: BH11
Date: 11-17-2023

Project No.: 07A1988061
Drilling Company: Enviro-Drill, Inc.
Driller: Juan
Drilling Equip: CME 7500
Logged By: W.Weichert

Borehole Diameter: 8"
Casing Diameter: NA
Well Materials: NA
Surface Completion: Abandon
Drilling Method: HSA

Ground Surface Elevation:
Top of Casing Elevation:
Latitude: 36.6006276
Longitude: -107.3332868
Total Depth: 30 ft

DEPTH (FEET)	SAMPLE INTERVAL	SPT BLOW COUNT	RECOVERY (%)	PID (PPM)	MOISTURE	USCS	GEOLOGIC DESCRIPTION	WELL COMPLETION
0–5	X	2-3-7	75%	5.0 PPM	Dry	SM	SILTY SAND - Brown, Very Fine - Fine, Well sorted, loose + Unconsolidated, Dry, no visual Staining, no odor.	No Well Install
6–10	X	5-8-8	60%	3.2 PPM	Dry	ML	SANDY SILT - light brown, Firm but loose + Unconsolidated in places, Dry, no visual Impacts, no odor, little fine Sand, Some Caliche	
11–15	X	5.6-5	75%	2.1 PPM	Dry	ML	SANDY SILT - As above, less Sand, trace mica.	
16–20	Sample	3-2-2	90%	4.3 PPM	Slight Moist	SM/SC	SILTY-CLAYEY SAND, Brown Very Fine - Fine, Well Sorted / Poorly graded, Soft to Firm, Friable, Some Caliche, Slightly moist, No odor,	
21–22							* TOP half of Core as above.	
23–25	Sample	5-8-10	90%	2.8	Slight Moist	SP/SW	POORLY GRADED SAND - Dark brown Fine - Coarse, moderate sorting, Friable, Slightly moist, no odor. trace gravel. Possible siltstone @ Bottom,	

17-38-50

ENSOLUM

	Client: Hilcrop Energy Company	BOREHOLE ID
	Project Name: San Juan 27-5 Unit 111	BH 11
	Project Location: Rio Arriba, NM	
	Project Manager: Stuart Hyde	Date: 11-17-2023
Project No.: 07A1988061	Borehole Diameter:	Ground Surface Elevation:
Drilling Company: Enviro-Drill, Inc.	Casing Diameter:	Top of Casing Elevation:
Driller:	Well Materials:	Latitude:
Drilling Equip:	Surface Completion:	Longitude:
Logged By: W.Weichert	Drilling Method:	Total Depth:

DEPTH (FEET)	SAMPLE INTERVAL	SPT BLOW COUNT	RECOVERY (%)	PID (PPM)	MOISTURE	USCS	GEOLOGIC DESCRIPTION	WELL COMPLETION
25							SILTSTONE - Gray - red-orange, Very hard & Well Consolidated Dry, non-plastic, FeO2 Staining, no visual Impacts, No Odor.	
26								
27								
28								
29	SAMPLE							
30		17-38-50	100%		Dry	ML	TD @ 30 ft	
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								

ENSOLUM

	Client: Hilcrop Energy Company	BOREHOLE ID: BH12
	Project Name: San Juan 27-5 Unit 111	
	Project Location: Rio Arriba, NM	
	Project Manager: Stuart Hyde	Date: 11-17-2023
Project No.: 07A1988061	Borehole Diameter: 8"	Ground Surface Elevation:
Drilling Company: Enviro-Drill, Inc.	Casing Diameter: NA	Top of Casing Elevation:
Driller: Juan	Well Materials: NA	Latitude: 36.6004583
Drilling Equip: CME	Surface Completion: ABANDON	Longitude: -107.3329890
Logged By: W.Weichert	Drilling Method: HSA w/ SPT	Total Depth: 35 ft

DEPTH (FEET)	SAMPLE INTERVAL	SPT BLOW COUNT	RECOVERY (%)	PID (PPM)	MOISTURE	USCS	GEOLOGIC DESCRIPTION	WELL COMPLETION
0–5	X	2-3-6	95%	3.1 PPM	Dry	ML	SANDY SILT - Brown, Firm, Some Sand + Caliche, Dry, no Visual Impacts, no Odor.	No Well Install
6–10	X	6-5-6	70%	0.5 PPM	Dry	ML	SANDY SILT - Medium brown, Firm to hard, Some Fine Sand + Caliche present, Dry, non-plastic, No Odor.	
11–15	X	5-10-9	90%	0.6 PPM	Dry	SM	SILTY SAND - Medium brown-tan, Very fine to fine, little medium, Well Sorted / Poorly graded, Soft to firm, Friable, Dry, no odor,	
16–20	X	10-15-16	90%	1.8 PPM	slight Moist	SP/SM	POORLY GRADED SILTY SAND - Medium brown - red orange, Fine to medium, some coarse, moderately - well Sorted / Poorly graded, Firm to hard, Friable, Fe Oz + Caliche, Slightly moist no odor.	
21–25	X	8-10-10	75%	0.7 PPM	slight moist	SM	SILTY SAND - As above, less Medium + Coarse sand, no odor.	

ENSOLUM

	Client: Hilcrop Energy Company	BOREHOLE ID: BH12
	Project Name: San Juan 27-5 Unit 111	
	Project Location: Rio Arriba, NM	
	Project Manager: Stuart Hyde	Date: 11-17-2023
Project No.: 07A1988061	Borehole Diameter:	Ground Surface Elevation:
Drilling Company: Enviro-Drill, Inc.	Casing Diameter:	Top of Casing Elevation:
Driller:	Well Materials:	Latitude:
Drilling Equip:	Surface Completion:	Longitude:
Logged By: W.Weichert	Drilling Method:	Total Depth:

DEPTH (FEET)	SAMPLE INTERVAL	SPT BLOW COUNT	RECOVERY (%)	PID (PPM)	MOISTURE	USCS	GEOLOGIC DESCRIPTION	WELL COMPLETION
25–26						SM	SILTY SAND - As Above.	
27–30	X	4-5-6	90%	1.9 ppm	Slight Moist	SP	POORLY GRADED SAND - light brown, Fine - Coarse, moderate to Well Sorted, Soft to firm, Friable, Slightly moist, Fe O2 Stain, No Odor.	
31–35	X	19-43-45	95%	1014 PPM	Dry	ML	SILTSTONE - gray, Very hard, Well Consolidated, Dry, Some FeO2 Stain, Slight HC Odor, TD @ 35 ft	
36–50								

ENSOLUM

APPENDIX B

Agency Notifications

From: Stuart Hyde
To: Velez, Nelson, EMNRD
Cc: eco@slo.state.nm.us; Samantha Grabert; Wes Weichert; Devin Hencmann; Knight, Tami C.
Subject: nAPP2300554747 - San Juan 27-5 Unit 111 Drilling and Sampling Notification
Date: Wednesday, November 15, 2023 12:56:00 PM
Attachments: image001.png
image002.png
image003.png
image004.png

Nelson,

We were able to pick up a last minute cancellation with the drillers and are able to get back out to the 27-5 #111 (coordinates 36.600399, -107.332681) to finish delineating off pad impacts. We plan to be onsite and sampling Thursday through Friday, November 16 and 17, 2023 beginning at 11:30 AM. Please reach out with any questions or comments. Thanks and I apologize for the short notification.

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

From: Velez, Nelson, EMNRD
To: Stuart Hyde
Cc: Samantha Grabert; eco@slo.state.nm.us; Devin Hencmann
Subject: Re: [EXTERNAL] nAPP2300554747 - San Juan 27-5 Unit 111 Extension Request for Updated Remediation Work Plan
Date: Monday, November 20, 2023 7:57:46 AM
Attachments: image001.png
image002.png
image003.png
image004.png
Outlook-icqvtx3q.png

[**EXTERNAL EMAIL**]
Good morning Stuart,

Your 90-day time extension request is approved. Remediation Due date has been updated to February 20, 2024 (19th is a federal holiday).

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

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

Regards,

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

From: Stuart Hyde <shyde@ensolum.com>
Sent: Thursday, November 16, 2023 4:15 PM
To: Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>
Cc: Samantha Grabert <Samantha.Grabert@hilcorp.com>; eco@slo.state.nm.us <eco@slo.state.nm.us>; Devin Hencmann <dhencmann@ensolum.com>

Subject: [EXTERNAL] nAPP2300554747 - San Juan 27-5 Unit 111 Extension Request for Updated Remediation Work Plan

Nelson,

As we previously emailed, the pilot test for the Hilcorp site San Juan 27-5 Unit 111 was completed on July 14, 2023 to test the feasibility of soil vapor extraction (SVE) to remediate impacts at the Site. Unfortunately, the pilot test proved unsuccessful and SVE does not appear to be a viable option at this time.

Based on the recommendations in our *Site Investigation Report and Remediation Work Plan* dated June 20, 2023, we have been moving forward with the additional delineation efforts in off pad areas of the site. Due to the need for a cultural survey of those areas, the additional drilling began today, November 16, 2023 and will continue on November 17. If we are able to successfully delineate the impacts during this round of drilling, we will prepare an updated Remediation Work Plan to include the results of the drilling effort and a proposed plan to remediate the impacts based on our current knowledge of the site.

As such, Ensolum, on behalf of Hilcorp, respectfully requests a 90-day extension to the November 20, 2023 reporting deadline for the Site. If the NMOCD is agreeable to this request, our deadline would be moved to Monday, February 19, 2024. Please reach out with any questions or concerns.

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

From: Velez, Nelson, EMNRD
To: Stuart Hyde
Cc: eco@slo.state.nm.us; Devin Hencmann; Samantha Grabert
Subject: Re: [EXTERNAL] nAPP2300554747 - San Juan 27-5 Unit 111 Extension Request for Updated Remediation Work Plan
Date: Monday, February 19, 2024 10:30:26 AM
Attachments: image001.png
image002.png
image003.png
image004.png
Outlook-tppjhn1a.png

[**EXTERNAL EMAIL**]
Good morning Stuart,

Your 30-day time extension request is approved. Remediation Due date has been updated to March 20, 2024.

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

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

Regards,

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

From: Stuart Hyde <shyde@ensolum.com>
Sent: Monday, February 19, 2024 9:50 AM
To: Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>
Cc: eco@slo.state.nm.us <eco@slo.state.nm.us>; Devin Hencmann <dhencmann@ensolum.com>; Samantha Grabert <Samantha.Grabert@hilcorp.com>

Subject: [EXTERNAL] nAPP2300554747 - San Juan 27-5 Unit 111 Extension Request for Updated Remediation Work Plan

Nelson,

On behalf of Hilcorp Energy Company, we are requesting a 30-day extension to the February 20, 2024 due date for the Updated Remediation Work Plan for the San Juan 27-5 #111 site. At this time, impacts at the site have been successfully delineated and we are finalizing remediation options to address the impacted soil located on and off of the well pad.

If the extension is approved, the new reporting deadline would be Thursday March 21, 2024. Please reach out with any questions or concerns.

Stuart Hyde, PG
(Licensed in WA/TX)
Senior Geologist*
970-903-1607
Ensolum, LLC

"If you want to go fast, go alone. If you want to go far, go together." – African Proverb

ENSOLUM

APPENDIX C

Laboratory Analytical Reports

eurofins | Environment Testing

Eurofins Environment Testing South Central, LLC
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 01, 2023

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

RE: San Juan 27 5 Unit 111 OrderNo.: 2311A01

Dear Mitch Killough:

Eurofins Environment Testing South Central, LLC received 15 sample(s) on 11/18/2023 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 do not hesitate to contact Eurofins Albuquerque 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 **2311A01**
Date Reported: **12/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH08(20-22)
Project: San Juan 27 5 Unit 111
Collection Date: 11/16/2023 12:20:00 PM
Lab ID: 2311A01-001 **Matrix:** SOIL
Received Date: 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	11/28/2023 1:27:05 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/28/2023 1:27:05 PM
Surr: DNOP	93.8	69-147		%Rec	1	11/28/2023 1:27:05 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/28/2023 11:17:00 AM
Surr: BFB	97.5	15-244		%Rec	1	11/28/2023 11:17:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	11/27/2023 11:14:00 PM
Toluene	ND	0.049		mg/Kg	1	11/27/2023 11:14:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	11/27/2023 11:14:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	11/27/2023 11:14:00 PM
Surr: 4-Bromofluorobenzene	88.9	39.1-146		%Rec	1	11/27/2023 11:14:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	11/28/2023 3:07:14 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 **2311A01**
Date Reported: **12/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH08(25-27)
Project: San Juan 27 5 Unit 111
Collection Date: 11/16/2023 12:25:00 PM
Lab ID: 2311A01-002 **Matrix:** SOIL
Received Date: 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	760	9.8		mg/Kg	1	11/28/2023 1:50:45 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/28/2023 1:50:45 PM
Surr: DNOP	92.6	69-147		%Rec	1	11/28/2023 1:50:45 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	720	240		mg/Kg	50	11/28/2023 12:22:00 PM
Surr: BFB	181	15-244		%Rec	50	11/28/2023 12:22:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.24		mg/Kg	10	11/28/2023 12:19:00 AM
Toluene	ND	0.48		mg/Kg	10	11/28/2023 12:19:00 AM
Ethylbenzene	3.0	0.48		mg/Kg	10	11/28/2023 12:19:00 AM
Xylenes, Total	27	0.96		mg/Kg	10	11/28/2023 12:19:00 AM
Surr: 4-Bromofluorobenzene	161	39.1-146	S	%Rec	10	11/28/2023 12:19:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	11/28/2023 3:44:29 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 **2311A01**
Date Reported: **12/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH08(35-37)
Project: San Juan 27 5 Unit 111
Collection Date: 11/16/2023 12:30:00 PM
Lab ID: 2311A01-003 **Matrix:** SOIL **Received Date:** 11/18/2023 7:00:00 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	11/28/2023 2:14:20 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/28/2023 2:14:20 PM
Surr: DNOP	91.0	69-147		%Rec	1	11/28/2023 2:14:20 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/28/2023 12:44:00 PM
Surr: BFB	103	15-244		%Rec	1	11/28/2023 12:44:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	11/28/2023 12:40:00 AM
Toluene	ND	0.048		mg/Kg	1	11/28/2023 12:40:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	11/28/2023 12:40:00 AM
Xylenes, Total	ND	0.096		mg/Kg	1	11/28/2023 12:40:00 AM
Surr: 4-Bromofluorobenzene	89.5	39.1-146		%Rec	1	11/28/2023 12:40:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	11/28/2023 3:56:54 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2311A01**
Date Reported: **12/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH09(28-30)
Project: San Juan 27 5 Unit 111
Collection Date: 11/16/2023 1:45:00 PM
Lab ID: 2311A01-004 **Matrix:** SOIL **Received Date:** 11/18/2023 7:00:00 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	11/28/2023 2:37:56 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/28/2023 2:37:56 PM
Surr: DNOP	91.3	69-147		%Rec	1	11/28/2023 2:37:56 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/28/2023 1:06:00 PM
Surr: BFB	102	15-244		%Rec	1	11/28/2023 1:06:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	11/28/2023 1:45:00 AM
Toluene	ND	0.049		mg/Kg	1	11/28/2023 1:45:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	11/28/2023 1:45:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	11/28/2023 1:45:00 AM
Surr: 4-Bromofluorobenzene	89.9	39.1-146		%Rec	1	11/28/2023 1:45:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	11/28/2023 4:09:18 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 **2311A01**
Date Reported: **12/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH09(33-35)
Project: San Juan 27 5 Unit 111
Collection Date: 11/16/2023 1:50:00 PM
Lab ID: 2311A01-005 **Matrix:** SOIL **Received Date:** 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	550	9.4		mg/Kg	1	11/28/2023 3:01:35 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/28/2023 3:01:35 PM
Surr: DNOP	91.9	69-147		%Rec	1	11/28/2023 3:01:35 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	1500	490		mg/Kg	100	11/28/2023 1:28:00 PM
Surr: BFB	174	15-244		%Rec	100	11/28/2023 1:28:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	0.35	0.12		mg/Kg	5	11/28/2023 2:06:00 AM
Toluene	18	0.25		mg/Kg	5	11/28/2023 2:06:00 AM
Ethylbenzene	8.3	0.25		mg/Kg	5	11/28/2023 2:06:00 AM
Xylenes, Total	94	9.9		mg/Kg	100	11/28/2023 1:28:00 PM
Surr: 4-Bromofluorobenzene	147	39.1-146	S	%Rec	5	11/28/2023 2:06:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	11/28/2023 4:21:43 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 **2311A01**
Date Reported: **12/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH09(38-40)
Project: San Juan 27 5 Unit 111
Collection Date: 11/16/2023 1:55:00 PM
Lab ID: 2311A01-006 **Matrix:** SOIL **Received Date:** 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	18	9.3		mg/Kg	1	11/28/2023 3:48:51 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/28/2023 3:48:51 PM
Surr: DNOP	96.7	69-147		%Rec	1	11/28/2023 3:48:51 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	22	5.0		mg/Kg	1	11/28/2023 1:49:00 PM
Surr: BFB	250	15-244	S	%Rec	1	11/28/2023 1:49:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	11/28/2023 2:28:00 AM
Toluene	ND	0.050		mg/Kg	1	11/28/2023 2:28:00 AM
Ethylbenzene	0.10	0.050		mg/Kg	1	11/28/2023 2:28:00 AM
Xylenes, Total	0.68	0.099		mg/Kg	1	11/28/2023 2:28:00 AM
Surr: 4-Bromofluorobenzene	121	39.1-146		%Rec	1	11/28/2023 2:28:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	11/28/2023 4:34:07 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 **2311A01**
Date Reported: **12/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH10(23-25)
Project: San Juan 27 5 Unit 111
Collection Date: 11/16/2023 3:00:00 PM
Lab ID: 2311A01-007 **Matrix:** SOIL
Received Date: 11/18/2023 7:00:00 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	11/28/2023 4:12:38 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/28/2023 4:12:38 PM
Surr: DNOP	93.7	69-147		%Rec	1	11/28/2023 4:12:38 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/28/2023 2:11:00 PM
Surr: BFB	104	15-244		%Rec	1	11/28/2023 2:11:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	11/28/2023 2:49:00 AM
Toluene	ND	0.049		mg/Kg	1	11/28/2023 2:49:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	11/28/2023 2:49:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	11/28/2023 2:49:00 AM
Surr: 4-Bromofluorobenzene	90.2	39.1-146		%Rec	1	11/28/2023 2:49:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	11/28/2023 4:46:32 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 **2311A01**
Date Reported: **12/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH10(28-30)
Project: San Juan 27 5 Unit 111
Collection Date: 11/16/2023 3:05:00 PM
Lab ID: 2311A01-008 **Matrix:** SOIL **Received Date:** 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	11/28/2023 4:36:21 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/28/2023 4:36:21 PM
Surr: DNOP	91.1	69-147		%Rec	1	11/28/2023 4:36:21 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/28/2023 2:33:00 PM
Surr: BFB	102	15-244		%Rec	1	11/28/2023 2:33:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	11/28/2023 3:11:00 AM
Toluene	ND	0.048		mg/Kg	1	11/28/2023 3:11:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	11/28/2023 3:11:00 AM
Xylenes, Total	ND	0.096		mg/Kg	1	11/28/2023 3:11:00 AM
Surr: 4-Bromofluorobenzene	89.1	39.1-146		%Rec	1	11/28/2023 3:11:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	11/28/2023 4:58:56 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2311A01**
Date Reported: **12/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH10(18-20)
Project: San Juan 27 5 Unit 111
Collection Date: 11/16/2023 3:10:00 PM
Lab ID: 2311A01-009 **Matrix:** SOIL **Received Date:** 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	11/28/2023 5:00:06 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/28/2023 5:00:06 PM
Surr: DNOP	92.4	69-147		%Rec	1	11/28/2023 5:00:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/28/2023 2:54:00 PM
Surr: BFB	100	15-244		%Rec	1	11/28/2023 2:54:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	11/28/2023 3:32:00 AM
Toluene	ND	0.049		mg/Kg	1	11/28/2023 3:32:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	11/28/2023 3:32:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	11/28/2023 3:32:00 AM
Surr: 4-Bromofluorobenzene	87.6	39.1-146		%Rec	1	11/28/2023 3:32:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	11/28/2023 5:11:21 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2311A01**
Date Reported: **12/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH11(18-20)
Project: San Juan 27 5 Unit 111
Collection Date: 11/17/2023 10:25:00 AM
Lab ID: 2311A01-010 **Matrix:** SOIL
Received Date: 11/18/2023 7:00:00 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	11/28/2023 5:23:58 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/28/2023 5:23:58 PM
Surr: DNOP	81.2	69-147		%Rec	1	11/28/2023 5:23:58 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	11/28/2023 3:16:00 PM
Surr: BFB	97.7	15-244		%Rec	1	11/28/2023 3:16:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	11/28/2023 3:54:00 AM
Toluene	ND	0.047		mg/Kg	1	11/28/2023 3:54:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	11/28/2023 3:54:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	11/28/2023 3:54:00 AM
Surr: 4-Bromofluorobenzene	87.3	39.1-146		%Rec	1	11/28/2023 3:54:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	11/28/2023 5:23:46 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 **2311A01**
Date Reported: **12/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH11(23-25)
Project: San Juan 27 5 Unit 111
Collection Date: 11/17/2023 10:30:00 AM
Lab ID: 2311A01-011 **Matrix:** SOIL
Received Date: 11/18/2023 7:00:00 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	11/28/2023 5:47:41 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/28/2023 5:47:41 PM
Surr: DNOP	84.6	69-147		%Rec	1	11/28/2023 5:47:41 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/28/2023 4:22:00 PM
Surr: BFB	102	15-244		%Rec	1	11/28/2023 4:22:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	11/28/2023 4:37:00 AM
Toluene	ND	0.049		mg/Kg	1	11/28/2023 4:37:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	11/28/2023 4:37:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	11/28/2023 4:37:00 AM
Surr: 4-Bromofluorobenzene	89.3	39.1-146		%Rec	1	11/28/2023 4:37:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	11/28/2023 5:36:11 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 **2311A01**
Date Reported: **12/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH11(28-30)
Project: San Juan 27 5 Unit 111
Collection Date: 11/17/2023 10:35:00 AM
Lab ID: 2311A01-012 **Matrix:** SOIL
Received Date: 11/18/2023 7:00:00 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	11/28/2023 6:11:14 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/28/2023 6:11:14 PM
Surr: DNOP	86.4	69-147		%Rec	1	11/28/2023 6:11:14 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/28/2023 4:43:00 PM
Surr: BFB	97.7	15-244		%Rec	1	11/28/2023 4:43:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	11/28/2023 4:58:00 AM
Toluene	ND	0.048		mg/Kg	1	11/28/2023 4:58:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	11/28/2023 4:58:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	11/28/2023 4:58:00 AM
Surr: 4-Bromofluorobenzene	89.8	39.1-146		%Rec	1	11/28/2023 4:58:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	11/28/2023 6:13:25 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 **2311A01**
Date Reported: **12/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH12(23-25)
Project: San Juan 27 5 Unit 111
Collection Date: 11/17/2023 11:45:00 AM
Lab ID: 2311A01-013 **Matrix:** SOIL
Received Date: 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	11/28/2023 6:34:41 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/28/2023 6:34:41 PM
Surr: DNOP	85.8	69-147		%Rec	1	11/28/2023 6:34:41 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/28/2023 5:05:00 PM
Surr: BFB	99.6	15-244		%Rec	1	11/28/2023 5:05:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	11/28/2023 5:20:00 AM
Toluene	ND	0.048		mg/Kg	1	11/28/2023 5:20:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	11/28/2023 5:20:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	11/28/2023 5:20:00 AM
Surr: 4-Bromofluorobenzene	89.1	39.1-146		%Rec	1	11/28/2023 5:20:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	11/28/2023 6:25:49 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 **2311A01**
Date Reported: **12/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH12(28-30)
Project: San Juan 27 5 Unit 111
Collection Date: 11/17/2023 11:50:00 AM
Lab ID: 2311A01-014 **Matrix:** SOIL
Received Date: 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	11/28/2023 6:58:07 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	11/28/2023 6:58:07 PM
Surr: DNOP	88.2	69-147		%Rec	1	11/28/2023 6:58:07 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/28/2023 5:27:00 PM
Surr: BFB	97.8	15-244		%Rec	1	11/28/2023 5:27:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	11/28/2023 5:41:00 AM
Toluene	ND	0.049		mg/Kg	1	11/28/2023 5:41:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	11/28/2023 5:41:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	11/28/2023 5:41:00 AM
Surr: 4-Bromofluorobenzene	90.0	39.1-146		%Rec	1	11/28/2023 5:41:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	11/28/2023 6:38:14 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 **2311A01**
Date Reported: **12/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH12(33-35)
Project: San Juan 27 5 Unit 111
Collection Date: 11/17/2023 11:55:00 AM
Lab ID: 2311A01-015 **Matrix:** SOIL
Received Date: 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	44	9.7		mg/Kg	1	11/28/2023 7:21:29 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/28/2023 7:21:29 PM
Surr: DNOP	87.8	69-147		%Rec	1	11/28/2023 7:21:29 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	38	24		mg/Kg	5	11/28/2023 5:48:00 PM
Surr: BFB	153	15-244		%Rec	5	11/28/2023 5:48:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	11/28/2023 6:03:00 AM
Toluene	0.092	0.048		mg/Kg	1	11/28/2023 6:03:00 AM
Ethylbenzene	0.24	0.048		mg/Kg	1	11/28/2023 6:03:00 AM
Xylenes, Total	2.6	0.096		mg/Kg	1	11/28/2023 6:03:00 AM
Surr: 4-Bromofluorobenzene	129	39.1-146		%Rec	1	11/28/2023 6:03:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	11/28/2023 6:50:39 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	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#: **2311A01**

01-Dec-23

Client: HILCORP ENERGY

Project: San Juan 27 5 Unit 111

Sample ID: **MB-79015**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **79015**	RunNo: **101444**
Prep Date: **11/28/2023**	Analysis Date: **11/28/2023**	SeqNo: **3733048** Units: **mg/Kg**

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

Sample ID: **LCS-79015**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **79015**	RunNo: **101444**
Prep Date: **11/28/2023**	Analysis Date: **11/28/2023**	SeqNo: **3733049** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	91.9	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#: **2311A01**

01-Dec-23

Client: HILCORP ENERGY

Project: San Juan 27 5 Unit 111

Sample ID: **MB-78966**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **78966**	RunNo: **101453**
Prep Date: **11/22/2023**	Analysis Date: **11/28/2023**	SeqNo: **3732965** 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	8.4		10.00		83.9	69	147			

Sample ID: **LCS-78966**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **78966**	RunNo: **101453**
Prep Date: **11/22/2023**	Analysis Date: **11/28/2023**	SeqNo: **3732966** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	103	61.9	130			
Surr: DNOP	4.2		5.000		84.5	69	147			

Sample ID: **2311A01-015AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH12(33-35)**	Batch ID: **78966**	RunNo: **101453**
Prep Date: **11/22/2023**	Analysis Date: **11/28/2023**	SeqNo: **3732988** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	88	9.5	47.71	43.76	91.9	54.2	135			
Surr: DNOP	4.0		4.771		84.4	69	147			

Sample ID: **2311A01-015AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH12(33-35)**	Batch ID: **78966**	RunNo: **101453**
Prep Date: **11/22/2023**	Analysis Date: **11/28/2023**	SeqNo: **3732989** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	86	9.6	48.03	43.76	88.3	54.2	135	1.65	29.2	
Surr: DNOP	4.0		4.803		83.0	69	147	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#: **2311A01**

01-Dec-23

Client: HILCORP ENERGY

Project: San Juan 27 5 Unit 111

Sample ID: **lcs-78911**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **78911**	RunNo: **101421**
Prep Date: **11/20/2023**	Analysis Date: **11/27/2023**	SeqNo: **3731552** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	2100		1000		210	15	244			

Sample ID: **mb-78911**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **78911**	RunNo: **101421**
Prep Date: **11/20/2023**	Analysis Date: **11/27/2023**	SeqNo: **3731554** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	990		1000		99.5	15	244			

Sample ID: **lcs-78939**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **78939**	RunNo: **101455**
Prep Date: **11/21/2023**	Analysis Date: **11/28/2023**	SeqNo: **3733227** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	91.0	70	130			
Surr: BFB	2100		1000		211	15	244			

Sample ID: **mb-78939**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **78939**	RunNo: **101455**
Prep Date: **11/21/2023**	Analysis Date: **11/28/2023**	SeqNo: **3733228** 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	950		1000		95.0	15	244			

Sample ID: **2311a01-001ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH08(20-22)**	Batch ID: **78939**	RunNo: **101455**
Prep Date: **11/21/2023**	Analysis Date: **11/28/2023**	SeqNo: **3733230** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.9	24.39	0	90.9	70	130			
Surr: BFB	2100		975.6		216	15	244			

Sample ID: **2311a01-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH08(20-22)**	Batch ID: **78939**	RunNo: **101455**
Prep Date: **11/21/2023**	Analysis Date: **11/28/2023**	SeqNo: **3733231** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.9	24.53	0	91.9	70	130	1.68	20	
Surr: BFB	2100		981.4		213	15	244	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#: **2311A01**

01-Dec-23

Client: HILCORP ENERGY

Project: San Juan 27 5 Unit 111

Sample ID: **lcs-78911**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **78911**	RunNo: **101421**
Prep Date: **11/20/2023**	Analysis Date: **11/27/2023**	SeqNo: **3731974** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.92		1.000		92.1	39.1	146			

Sample ID: **mb-78911**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **78911**	RunNo: **101421**
Prep Date: **11/20/2023**	Analysis Date: **11/27/2023**	SeqNo: **3731975** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.92		1.000		92.1	39.1	146			

Sample ID: **lcs-78939**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **78939**	RunNo: **101421**
Prep Date: **11/21/2023**	Analysis Date: **11/27/2023**	SeqNo: **3731998** 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	96.4	70	130			
Toluene	0.97	0.050	1.000	0	96.8	70	130			
Ethylbenzene	0.98	0.050	1.000	0	97.6	70	130			
Xylenes, Total	2.9	0.10	3.000	0	97.5	70	130			
Surr: 4-Bromofluorobenzene	0.88		1.000		88.2	39.1	146			

Sample ID: **mb-78939**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **78939**	RunNo: **101421**
Prep Date: **11/21/2023**	Analysis Date: **11/27/2023**	SeqNo: **3731999** 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	0.90		1.000		90.3	39.1	146			

Sample ID: **2311a01-003ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH08(35-37)**	Batch ID: **78939**	RunNo: **101421**
Prep Date: **11/21/2023**	Analysis Date: **11/28/2023**	SeqNo: **3732003** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.024	0.9524	0	95.1	70	130			
Toluene	0.93	0.048	0.9524	0	97.9	70	130			
Ethylbenzene	0.94	0.048	0.9524	0	99.0	70	130			
Xylenes, Total	2.8	0.095	2.857	0.01861	98.2	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#: **2311A01**

01-Dec-23

Client: HILCORP ENERGY

Project: San Juan 27 5 Unit 111

Sample ID: **2311a01-003ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH08(35-37)**	Batch ID: **78939**	RunNo: **101421**
Prep Date: **11/21/2023**	Analysis Date: **11/28/2023**	SeqNo: **3732003** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.86		0.9524		90.3	39.1	146			

Sample ID: **2311a01-003amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH08(35-37)**	Batch ID: **78939**	RunNo: **101421**
Prep Date: **11/21/2023**	Analysis Date: **11/28/2023**	SeqNo: **3732004** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.024	0.9606	0	91.2	70	130	3.34	20	
Toluene	0.90	0.048	0.9606	0	94.1	70	130	3.06	20	
Ethylbenzene	0.91	0.048	0.9606	0	95.2	70	130	3.05	20	
Xylenes, Total	2.7	0.096	2.882	0.01861	94.7	70	130	2.79	20	
Surr: 4-Bromofluorobenzene	0.88		0.9606		91.2	39.1	146	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.		

eurofins | Environment Testing

Eurofins Environment Testing South Central, LLC
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: 2311A01 RcptNo: 1

Received By: Tracy Casarrubias 11/18/2023 7:00:00 AM

Completed By: Tracy Casarrubias 11/18/2023 8:18:31 AM

Reviewed By: SCM 11/20/23

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 ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
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 ☐	Checked by: TMC 11/18/23

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	1.8	Good	Yes	Morty		

Chain-of-Custody Record

Client: Hilcorp Energy Company / Ensolum

Mailing Address: 776 E 2nd Ave. Durango, CO 81301

Phone #: 970-903-1607

email or Fax#: Shyde@ensolum.com

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

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 day
☒ Standard ☐ Rush

Project Name: San Juan 27-5 Unit 111

Project #: 07A1988061

Project Manager: Stuart Hyde

Sampler: Wes Weichert

On Ice: ☑ Yes ☐ No marty

# of Coolers: 1

Cooler Temp(including CF): 1.8-0=1.8 °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. 2311A01 (~~2312C001~~)	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)
11-16-23	12:20	Soil	BH08 (20-22)	4oz glass	None	001	X	X					X			
11-16-23	12:25	Soil	BH08 (25-27)	4oz glass	None	002	X	X					X			
11-16-23	12:30	Soil	BH08 (35-37)	4oz glass	None	003	X	X					X			
11-16-23	13:45	Soil	BH09 (28-30')	4oz glass	None	004	X	X					X			
11-16-23	13:50	Soil	BH09 (33-35')	4oz glass	None	005	X	X					X			
11-16-23	13:55	Soil	BH09 (38-40')	4oz glass	None	006	X	X					X			
11-16-23	15:00	Soil	BH10 (23-25')	4oz glass	None	007	X	X					X			
11-16-23	15:05	Soil	BH10 (28-30)	4oz glass	None	008	X	X					X			
11-16-23	15:10	Soil	BH10 (18-20)	4oz glass	None	009	X	X					X			
11-17-23	10:25	Soil	BH11 (18-20)	4oz glass	None	010	X	X					X			
11-17-23	10:30	Soil	BH11 (23-25)	4oz glass	None	011	X	X					X			
11-17-23	10:35	Soil	BH11 (28-30)	4oz glass	None	012	X	X					X			

Date	Time	Relinquished by	Received by	Via	Date	Time
11/17/23	13:45				11/17/23	1345
11/17/23	1800			courier	11/18/23	7:00

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Client: Hilcorp Energy Company / Ensolum

Mailing Address: 776 E 2nd Ave. Durango, CO 81301

Phone #: 970-903-1607

email or Fax#: Shyde@Ensolum.com

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

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 day ☒ Standard ☐ Rush

Project Name: San Juan 27-5 Unit 111

Project #: 07A1988061

Project Manager: Stuart Hyde

Sampler: Wes Weichert

On Ice: ☒ Yes ☐ No morty

\# of Coolers: 1

Cooler Temp (including CF): 1.8-0=1.8 °C

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2311A01 (~~2312000~~)	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, NO3, NO2, PO4, SO4~~	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)						
11-17-23	11:45	Soil	BH12 (23-25)	4oz glass	None	013	X	X					X									
11-17-23	11:50	Soil	BH12 (28-30)	4oz glass	None	014	X	X					X									
11-17-23	11:55	Soil	BH12 (33-35)	4oz glass	None	015	X	X					X									

WW 11/17

Date	Time	Relinquished by	Received by	Via	Date	Time
11/17/23	13:45	Wes Weichert	[signature]		11/17/23	1345
11/17/23	1800	[signature]	[signature]	Courier	11/18/23	7:00

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 D

Photographic Log

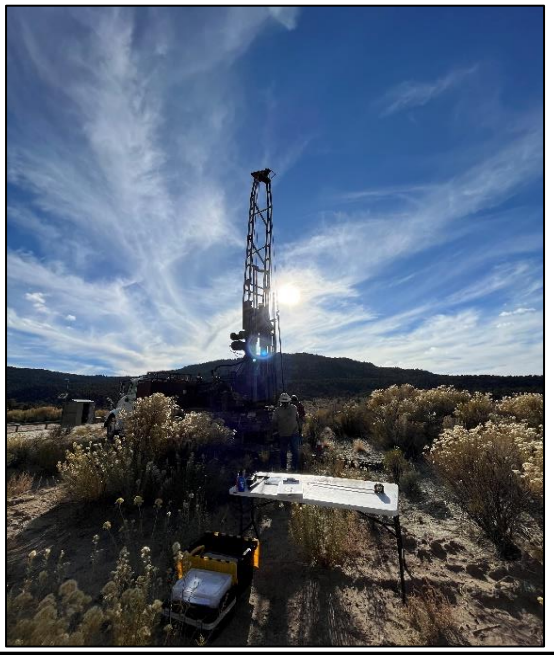
ENSOLUM

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

Photograph: 1 Date: 11/16/2023
Description: Drilling boring BH08
View: North

Photograph: 2 Date: 11/16/2023
Description: Impacted interval at 25 to 27 feet depth
View: Boring BH08

Photograph: 3 Date: 11/16/2023
Description: Siltstone at terminus of boring
View: Boring BH08



Photograph: 4 Date: 11/16/2023
Description: Drilling boring BH10
View: South

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QUESTIONS

Action 322315

QUESTIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 322315
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2300554747**
Incident Name	**NAPP2300554747 SAN JUAN 27-5 UNIT 111 @ 30-039-20218**
Incident Type	**Oil Release**
Incident Status	**Remediation Plan Approved**
Incident Well	**[30-039-20218] SAN JUAN 27 5 UNIT #111**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	SAN JUAN 27-5 UNIT 111
Date Release Discovered	12/21/2022
Surface Owner	State

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

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	*Not answered.*
Produced Water Released (bbls) Details	Cause: Corrosion | Production Tank | Produced Water | Released: 9 BBL | Recovered: 0 BBL | Lost: 9 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	No
Condensate Released (bbls) Details	Cause: Corrosion | Production Tank | Condensate | Released: 91 BBL | Recovered: 0 BBL | Lost: 91 BBL.
Natural Gas Vented (Mcf) Details	*Not answered.*
Natural Gas Flared (Mcf) Details	*Not answered.*
Other Released Details	*Not answered.*
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	*Not answered.*

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QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 322315
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	**No, according to supplied volumes this does not appear to be a "gas only" report.**
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	**Yes**
Reasons why this would be considered a submission for a notification of a major release	**From paragraph A. "Major release" determine using:** **(1) an unauthorized release of a volume, excluding gases, of 25 barrels or more.**
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

Initial Response	
The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.	
The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	True
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why	*Not answered.*
Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.	

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

I hereby agree and sign off to the above statement	Name: Stuart Hyde Title: Senior Geologist Email: shyde@ensolum.com Date: 03/12/2024

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QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 322315
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Site Characterization	
Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs)	Between 100 and 500 (ft.)
What method was used to determine the depth to ground water	OCD Imaging Records Lookup
Did this release impact groundwater or surface water	No
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	Between 300 and 500 (ft.)
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Between ½ and 1 (mi.)
An occupied permanent residence, school, hospital, institution, or church	Greater than 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Greater than 5 (mi.)
Any other fresh water well or spring	Between ½ and 1 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between 300 and 500 (ft.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Greater than 5 (mi.)
Categorize the risk of this well / site being in a karst geology	None
A 100-year floodplain	Between ½ and 1 (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	Yes

Remediation Plan	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
Requesting a remediation plan approval with this submission	Yes
Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.	
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
Soil Contamination Sampling: (Provide the highest observable value for each, in milligrams per kilograms.)	
Chloride (EPA 300.0 or SM4500 Cl B)	230
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	14500
GRO+DRO (EPA SW-846 Method 8015M)	14500
BTEX (EPA SW-846 Method 8021B or 8260B)	1687
Benzene (EPA SW-846 Method 8021B or 8260B)	34
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
On what estimated date will the remediation commence	07/01/2024
On what date will (or did) the final sampling or liner inspection occur	08/01/2024
On what date will (or was) the remediation complete(d)	08/01/2024
What is the estimated surface area (in square feet) that will be reclaimed	4000
What is the estimated volume (in cubic yards) that will be reclaimed	600
What is the estimated surface area (in square feet) that will be remediated	6500
What is the estimated volume (in cubic yards) that will be remediated	1600
These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.	
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 322315
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Remediation Plan (continued)	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:	
(Select all answers below that apply.)	
(Ex Situ) Excavation and **off-site** disposal (i.e. dig and haul, hydrovac, etc.)	*Not answered.*
(Ex Situ) Excavation and **on-site** remediation (i.e. On-Site Land Farms)	*Not answered.*
(In Situ) Soil Vapor Extraction	*Not answered.*
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	Yes
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	*Not answered.*
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	*Not answered.*
Ground Water Abatement pursuant to 19.15.30 NMAC	*Not answered.*
OTHER (Non-listed remedial process)	*Not answered.*
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
I hereby agree and sign off to the above statement	Name: Stuart Hyde Title: Senior Geologist Email: shyde@ensolum.com Date: 03/12/2024
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 322315
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

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

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QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 322315
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	***{Unavailable.}***

Remediation Closure Request	
Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.	
Requesting a remediation closure approval with this submission	No

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CONDITIONS

Operator:	OGRID:
HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	372171
	Action Number: 322315
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Remediation plan is approved under the following conditions; 1. Variance toward the sample frequency of 400 square feet per one (1) 5-point composite sample (5pcs) is approved. 2. Once treated stockpiles have been properly disposed, vadose zone beneath each treated stockpile between surface grade and one (1) foot below grade must be sampled by collecting one (1) 5pcs and must meet the reclamation standards of 100 mg/Kg for TPH per US EPA Method 8015M, 10 mg/Kg for benzene, and 50 mg/Kg for benzene, toluene, ethylbenzene, and total xylenes (BTEX) per US EPA Methods 8021 or 8260B. 3. Any soils used in the top four (4) feet from grade must meet the reclamation standards for TPH and BTEX only. 4. Hilcorp has 90 days (July 11, 2024) to initiate the soil shredding process. 5. Hilcorp has 180 days (October 9, 2024) to submit to OCD its appropriate or final remediation closure report.	4/12/2024