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

State of New Mexico
Energy Minerals and Natural Resources Department

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

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

Incident ID	nAPP2129428378
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party Hilcorp Energy Company	OGRID 372171
Contact Name Mitch Killough	Contact Telephone 713-757-5247
Contact email mkillough@hilcorp.com	Incident # nAPP2129428378
Contact mailing address 1111 Travis Street, Houston, Texas 77002	

Location of Release Source

Latitude 36.842775 Longitude -108.262324

(NAD 83 in decimal degrees to 5 decimal places)

Site Name Salty Dog SWD 4	Site Type Salt Water Disposal
Date Release Discovered 10/6/2021 @ 6:30am MT	API# 30-045-32334

Unit Letter	Section	Township	Range	County
K	01	30N	14W	San Juan

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

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls) 37	Volume Recovered (bbls) 37
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☒ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release:
On 10/6/2021 at approximately 6:30 am (MT), Hilcorp Energy Company (Hilcorp) discovered a 37-bbl release of produced water at the Salty Dog SWD 4. Based on initial assessments conducted by Hilcorp personnel, the up-comer from the water leg tank to the first storage tank plugged off due to rust and metal debris. This caused the water leg tank to fill up and ultimately spill over. Immediately upon discovery, the water leg tank was isolated. Shortly thereafter, Hilcorp operations contacted a water hauler to recover the spilled product from within the bermed area. All released fluids remained within a secondary containment berm and did not flow off the pad. Following the immediate response actions, the up-comer was removed and was re-built. The spill amount was determined by operator's in-field measurements and gauging data. Hilcorp will notify NMOCD 48 hrs prior to confirmation sampling.

State of New Mexico
Oil Conservation Division

Incident ID	nAPP2129428378
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? The spill amount exceeded 25 bbls.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?
Mitch Killough notified the BLM (FFO) and NMOCD via 24-hour email notification on 10/7/2021 at 6:18 am CT.

Initial Response

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

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

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

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

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

Printed Name: __ Mitch Killough _____ Title: _____Environmental Specialist_____

Signature: _____ _____ Date: 10/21/2021_____

email: ___ mkillough@hilcorp.com _____ Telephone: ____713-757-5247_____

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

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

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

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

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

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

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

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

Printed Name: ____Mitch Killough_____ Title: ____Environmental Specialist_____

Signature:_____ _____ Date: ___1/4/2022_____

email: _____mkillough@hilcorp.com_____ Telephone: _____713-757-5247_____

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

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

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

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

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

☒ Extents of contamination must be fully delineated.

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

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

Printed Name: ____Mitch Killough_____ Title: ____Environmental Specialist_____

Signature:_____ _____ Date: ___1/4/2022_____

email: _____mkillough@hilcorp.com_____ Telephone: _____713-757-5247_____

OCD Only

Received by: Nelson Velez [Environ. Specialist - Adv] Date: 01/05/2022

☐ Approved ☐ Approved with Attached Conditions of Approval (**see statements below**) ☐ Denied ☐ Deferral Approved

Signature: Nelson Velez Date: 01/05/2022

1. requests to defer remediation and restoration until the time of final plugging and abandonment and reclamation of the Site.
2. OCD concurs with WSP and Hilcorp and does not believe deferment will result in an imminent risk to human health, the environment, groundwater, and/or surface water.

January 4, 2022

New Mexico Energy, Minerals and Natural Resources Department
New Mexico Oil Conservation Division
1000 Rio Brazos
Aztec, New Mexico 87410

Subject: **Site Characterization Report and Deferral Request**
Salty Dog SWD 4
NMOCD Incident Number: nAPP2129428378
San Juan County, New Mexico

To Whom It May Concern:

On behalf of Hilcorp Energy Company (Hilcorp), WSP USA Inc. (WSP) has prepared this *Site Characterization Report and Deferral Request* for the Salty Dog SWD 4 salt water disposal well (Site) located on Bureau of Land Management (BLM) surface in San Juan County, New Mexico (Figure 1). Hilcorp and WSP conducted soil-delineation activities to investigate a release of produced water resulting from equipment failure of on-Site aboveground storage tanks (ASTs). Specifically, on October 6, 2021 Hilcorp personnel discovered that rust and metal debris had plugged the up-comer connecting the water leg tank to the first AST at the Site. This blockage caused the water leg tank to fill beyond capacity and ultimately spill over. Upon discovery of the release, the water leg tank was isolated and all liquids were recovered from the lined secondary containment by vacuum truck. All released fluids remained within the secondary containment berm surrounding the ASTs and did not flow off-pad. Additionally, the up-comer was removed and rebuilt to prevent future failures.

Hilcorp estimated the release of produced water to be 37 barrels (bbls) as determined by the operator's in-field measurements and gauging data. After discovery of the release, Hilcorp provided 24-hour notification via email on October 7, 2021. Hilcorp submitted a *Release Notification Form C-141* to the New Mexico Oil Conservation Division (NMOCD) on October 21, 2021. NMOCD has assigned Incident Number nAPP2129428378 to the Site.

SITE CHARACTERIZATION

The Site is located on Bureau of Land Management (BLM) surface in Unit K of Section 01, Township 30 North, Range 14 West, San Juan County, New Mexico (Figure 1). The Site is approximately 8 miles north of Farmington New Mexico and approximately 2 miles west of State Route 170. As part of the site investigation, local geology/hydrogeology and nearby sensitive receptors were accessed in accordance with 19.15.29.11 of the New Mexico Administrative Code (NMAC). This information is further discussed below.

GEOLOGY AND HYDROGEOLOGY

Based on United States Geological Survey (USGS) geologic mapping, the Site is located within the Tertiary Nacimiento Formation. In the report titled "Hydrogeology and Water Resources of San Juan Basin, New Mexico" (Stone, et. al., 1983), the Nacimiento Formation as characterized by interbedded black carbonaceous mudstones and white, coarse-grained sandstones. This formation ranges in thickness from 418 to 2,232 feet. The Nacimiento Formation overlies the Ojo Alamo sandstone formation (Stone et. al., 1983).

SITE RECEPTORS

Assessment of potential nearby receptors was conducted through desktop reviews of topographic maps, Federal Emergency Management Administration (FEMA) Geographic Information System (GIS) maps, United States Geological Survey (USGS) GIS maps, New Mexico Office of the State Engineer database, and aerial photographs, as well as site-specific observations.

WSP USA
848 EAST 2ND AVENUE
DURANGO CO 81301

Tel.: 970-385-1096
wsp.com

Coyne Arroyo is located 290 feet south of the Site. Additionally, a first-order tributary to Coyne Arroyo is located 115 feet northeast of the Site and is considered a "significant watercourse" as defined in 19.15.17.7 NMAC. There are no known springs or fresh-water wells located within 500 feet of the Site. The nearest groundwater well (SJ 03326) is located approximately 1.75 miles east of the Site (Figure 2). Depth to water information from this well indicates that groundwater is approximately 30 feet below ground surface (bgs) at the location of the water well. The ground surface elevation at well SJ 03326 is approximately 5,639 feet above mean sea level (amsl). The Site is located at an elevation of approximately 5,726 feet amsl. Based on the elevation difference between the Site and depth to water in well SJ 03326, depth to water at the Site is assumed to be greater than 100 feet bgs.

The Site is greater than 200 feet from any lakebed, sinkhole, or playa lake, and greater than 300 feet from any wetland (Figure 3). Surface land use surrounding the Site consists primarily of oil and gas development and livestock grazing. No occupied permanent residence or structures, including schools, hospitals, institutions, and/or churches, are located within 300 feet of the Site. The Site is not within the area of a subsurface mine or unstable area and is not within the 100-year floodplain.

SITE CLOSURE CRITERIA

WSP has characterized the Site according to Table 1, *Closure Criteria for Soils Impacted by a Release* of 19.15.29.12 NMAC. Due to the Site's proximity to a significant watercourse, the following NMOCD Table 1 closure criteria apply: 10 milligrams per kilogram (mg/kg) benzene; 50 mg/kg total benzene, toluene, ethylbenzene, and total xylenes (BTEX); 100 mg/kg total petroleum hydrocarbons (TPH); and 600 mg/kg chloride.

SITE INVESTIGATION ACTIVITIES AND RESULTS

After the discovery of the release and removal of fluids from the secondary containment, Hilcorp and WSP personnel conducted subsurface investigations using a hand auger to assess the magnitude and vertical/lateral extent of impacts to Site soils. Although the secondary containment at the Site is lined, there are several tears in the liner that allowed sampling of soil underneath the liner and near the ASTs. Hand auger borings were advanced at the Site at the locations shown on Figure 4. Borings were advanced up to depths of 4 feet bgs and generally encountered coarse sand lithology from the ground surface to approximately 1 to 2 feet bgs. The coarse sand graded to coarse sand and gravel to depth up to 4 feet bgs and then to sandy clay at 4 feet bgs.

During delineation sampling, the soil was inspected for odors and/or staining. Additionally, soil was field screened using a photoionization detector (PID) to monitor for the presence of organic vapors and/or Hach® chloride QuanTab® test strips to field screen for chloride concentrations. Field screening results collected during sampling are summarized in Table 1.

SOIL ASSESSMENT

In total, 12 borings were advanced at the Site. Photographs taken during the delineation sampling are included in the attached Photographic Log. In general, two samples were collected from each boring, one sample from the interval with the highest PID and/or chloride concentration and one sample from the terminus of each boring. In general, samples were submitted to Hall Environmental Analysis Laboratory (Hall) for analysis of the following analytes: BTEX by United States Environmental Protection Agency (EPA) Method 8021, TPH by EPA Method 8015, and chloride by EPA method 300.0. Samples collected on November 4, 2021 were used as screening samples and were only analyzed for chloride. A summary of soil analytical results is presented in Table 1, with laboratory analytical reports attached as Enclosure A.

Based on analytical results, samples collected from six borings contained chloride concentrations exceeding the NMOCD Table 1 Closure Criteria of 600 mg/kg. All chloride exceedances were in soils collected between the ground surface and 6 inches bgs. Based on field screening and analytical results, chloride concentrations quickly decrease at depth to below Table 1 Closure Criteria. Based on these results, chloride exceedances are likely limited to soil within 12 inches of the ground surface in the area indicated on Figure 4. TPH and BTEX concentrations were either not detected or were detected at concentrations below Table 1 Closure Criteria in all analyzed samples.

CONCLUSIONS AND SITE DEFERRAL REQUEST

Based on the delineation activities performed to date, chloride-impacted soil appears to be present on the well pad within the footprint of the secondary containment and predominantly at depths between ground surface and 6 inches bgs. Based on these results, it is estimated that approximately 140 cubic yards of soil were impacted by chloride from the produced water release; although, that is a conservative estimate considering most of the liner is intact. Chloride and/or petroleum impacted soil was not encountered during delineation activities outside of the secondary containment.

Because of the presence of active production equipment and pipelines associated with the tank battery, excavation of chloride impacted soil at this time would cause major facility deconstruction. As such, Hilcorp requests to defer remediation and restoration until the time of final plugging and abandonment and reclamation of the Site. The BLM has requested that Hilcorp replace the secondary containment liner at the Site due to the deteriorating condition of the liner material and presence of multiple tears. The BLM has given Hilcorp until March 31, 2022 to replace the liner. Given the limited volume of chloride-impacted soil and the forthcoming installation of a new liner over the impacted area, WSP and Hilcorp do not believe deferment will result in an imminent risk to human health, the environment, groundwater, and/or surface water.

If you have any questions or comments, please do not hesitate to contact Mr. Stuart Hyde at stuart.hyde@wsp.com, or at (970) 385-1096 or Mitch Killough at (713) 757-5247 or at mkillough@hilcorp.com.

Kind regards,

Stuart Hyde, L.G.
Senior Geologist

Ashley Ager, M.S., P.G.
Senior Geologist, Managing Director

cc: Mitch Killough, Hilcorp Energy Company

Enclosures:

Figure 1	Site Location Map
Figure 2	Site Receptor Map
Figure 3	Proximity to Watercourse, Lakebed, Sinkhole, or Playa Lake
Figure 4	Delineation Soil Boring Locations
Table 1	Soil Analytical Results
Photographic Log	
Enclosure A	Laboratory Analytical Reports

FIGURES

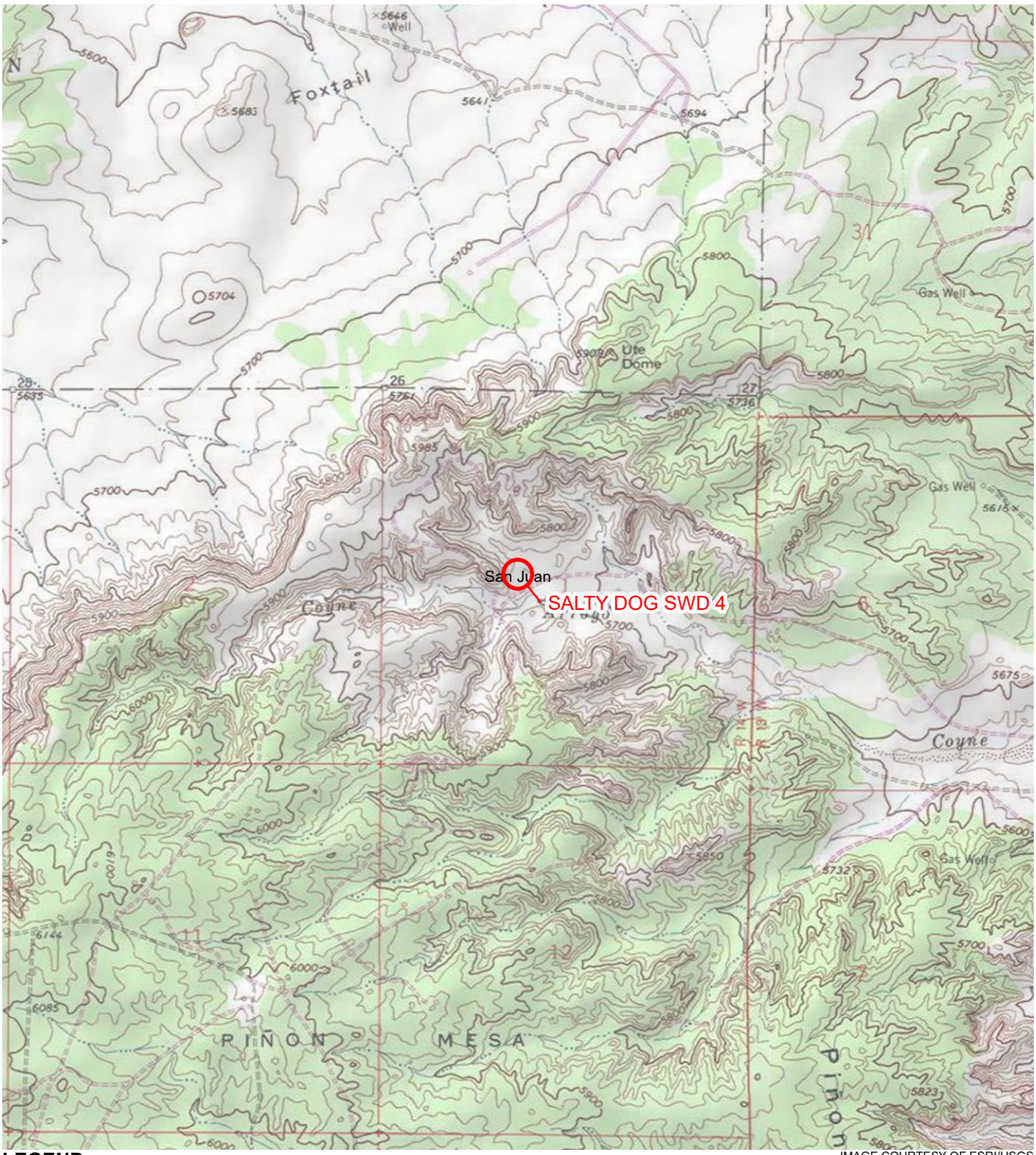

IMAGE COURTESY OF ESRI/USGS

LEGEND

SITE LOCATION

0 2,000 4,000

Feet

N

NEW MEXICO

FIGURE 1
SITE LOCATION MAP
SALTY DOG SWD 4
NESW SEC 1-T30N-R14W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

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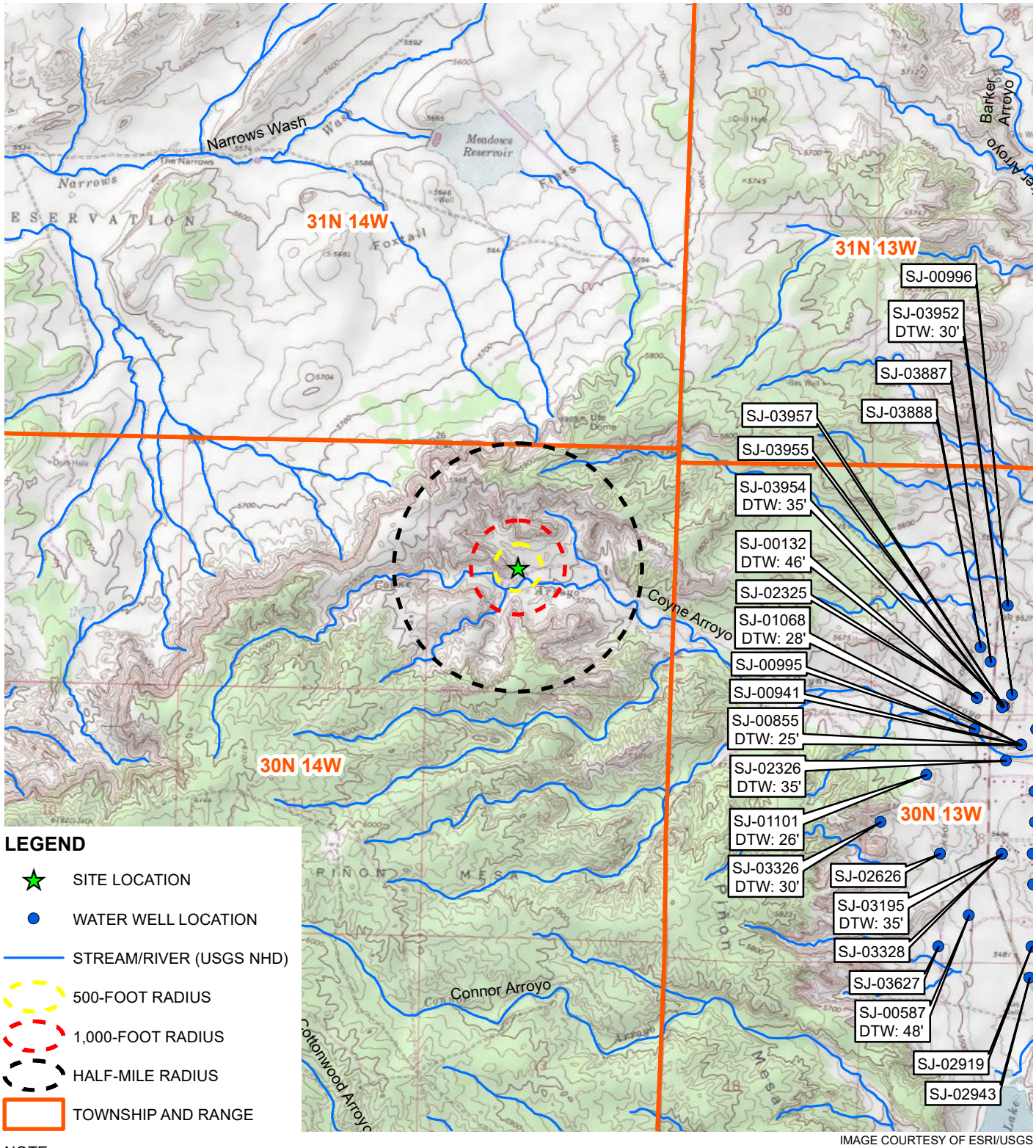

LEGEND

- SITE LOCATION
- WATER WELL LOCATION
- STREAM/RIVER (USGS NHD)
- 500-FOOT RADIUS
- 1,000-FOOT RADIUS
- HALF-MILE RADIUS
- TOWNSHIP AND RANGE

IMAGE COURTESY OF ESRI/USGS

NOTE:
ACCORDING TO 19.15.2 NMAC, A WELLHEAD PROTECTION AREA CONSISTS OF THE AREA WITHIN 200 HORIZONTAL FEET OF A PRIVATE, DOMESTIC FRESH WATER WELL OR SPRING USED BY <5 HOUSEHOLDS FOR DOMESTIC OR STOCK WATERING PURPOSE, OR WITHIN 1,000 HORIZONTAL FEET OF ANY OTHER FRESH WATER WELL OR SPRING. NO USGS WELLS IN AREA PER NWIS.

DTW: DEPTH TO WATER
ELEV: APPROXIMATE ELEVATION IN FEET ABOVE MEAN SEA LEVEL
NM OSE: NEW MEXICO OFFICE OF THE STATE ENGINEER
': FEET

0 3,000 6,000
Feet

N

FIGURE 2
SITE RECEPTOR MAP
SALTY DOG SWD 4
NESW SEC 1-T30N-R14W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

C:\Users\USTJ689650\OneDrive - WSP O365\HILCORP\TE017821042_SALTY DOG SWD 4\MXD\TE017821042_FIG02_HYDRO_REC.mxd

LEGEND

- WATERCOURSE (USGS NHD)
- 200-FOOT RADIUS
- 300-FOOT RADIUS

IMAGE COURTESY OF ESRI (MAXAR 4/7/2019)

NOTE:
ACCORDING TO 19.15.2 NMAC A WATERCOURSE MEANS A RIVER, CREEK, ARROYO, CANYON, DRAW, OR WASH OR OTHER CHANNEL HAVING DEFINITE BANKS AND BED WITH VISIBLE EVIDENCE OF OCCASIONAL FLOW OF WATER.

THERE ARE NO SINKHOLES, LAKEBEDS OR PLAYA LAKES WITHIN THE BOUNDARIES OF THIS MAP USING MAPPED DATA FROM THE USFS NWI AND USGS.

NHD: NATIONAL HYDROGRAPHY DATASET
NMAC: NEW MEXICO ADMINISTRATIVE CODE
NM OSE: NEW MEXICO OFFICE OF THE STATE ENGINEER
USGS: UNITED STATES GEOLOGICAL SURVEY

0 400 800
Feet

N

FIGURE 3
PROXIMITY TO WATERCOURSE, LAKEBED, SINKHOLE, OR PLAYA LAKE
SALTY DOG SWD 4
NESW SEC 1-T30N-R14W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

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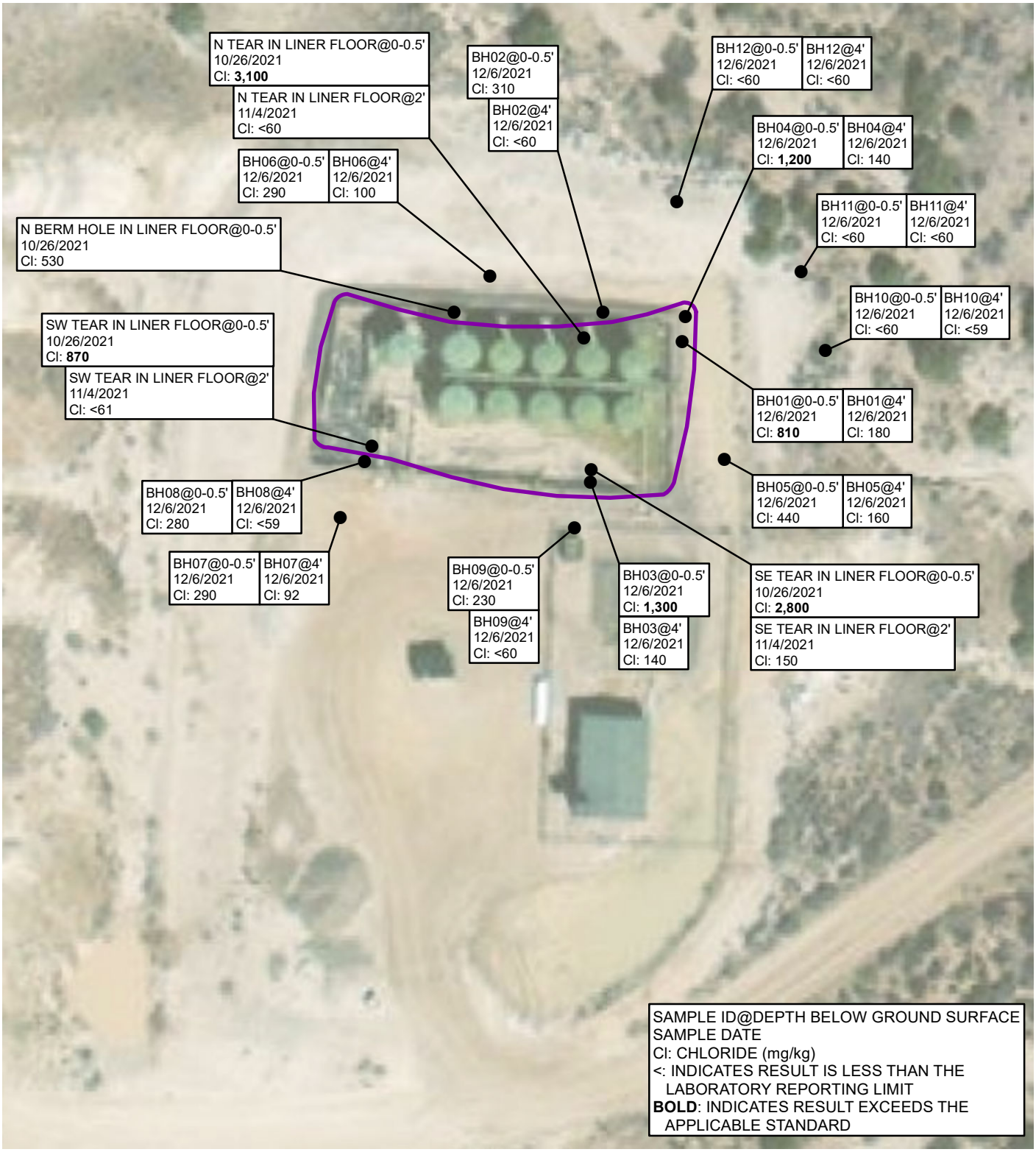

IMAGE COURTESY OF ESRI (MAXAR 4/7/2019)

LEGEND

- SOIL BORING
- CHLORIDE IMPACTED AREA

0 50 100

Feet

N

FIGURE 4
DELINEATION SOIL BORING LOCATIONS
SALTY DOG SWD 4
NESW SEC 1-T30N-R14W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

C:\Users\USTJ689650\OneDrive - WSP O365\HILCORP\TE017821042_SALTY DOG SWD 4\MXD\TE017821042_FIG04_SB_LOC_2021.mxd

TABLES

TABLE 1
SOIL ANALYTICAL RESULTS

SALTY DOG SWD 4
HILCORP ENERGY COMPANY
SAN JUAN COUNTY, NEW MEXICO

Soil Sample Identification	Sample Date	Sample depth	Field Headspace (ppm)	Field Chloride Test Strip (ppm)	Chlorides (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	MRO (mg/kg)	TPH (mg/kg)
NMOCD Table 1 Closure Criteria					**600**	**10**	NE	NE	NE	**50**	NE	NE	NE	**100**
Background	11/4/2021	0-0.5'	NM	NM	<59	NA	NA	NA	NA	NA	NA	NA	NA	NA
N Berm Hole in Liner Floor	10/26/2021	0-0.5'	NM	NM	530	<0.024	<0.049	<0.049	<0.098	<0.22	<4.9	<8.9	<45	<45
SW Tear in Liner Floor	10/26/2021	0-0.5'	NM	NM	**870**	<0.024	<0.047	<0.047	<0.094	<0.212	<4.7	<9.8	<49	<49
SW Floor Liner 2'	11/4/2021	2'	NM	NM	<61	NA	NA	NA	NA	NA	NA	NA	NA	NA
N Tear in Liner Floor	10/26/2021	0-0.5'	NM	NM	**3,100**	<0.025	<0.049	<0.049	<0.099	<0.222	<4.9	<9.8	<49	<49
N Liner Floor 2'	11/4/2021	2'	NM	NM	<60	NA	NA	NA	NA	NA	NA	NA	NA	NA
SE Tear in Liner Floor	10/26/2021	0-0.5'	NM	NM	**2,800**	<0.024	<0.049	<0.049	<0.098	<0.22	<4.9	<9.9	<50	<50
SE Liner Floor 22"	11/4/2021	2'	NM	NM	150	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH01 @ 0-0.5'	12/6/2021	0-0.5'	0.5	364	**810**	<0.025	<0.049	<0.049	<0.099	<0.099	<4.9	<9.4	<47	<47
BH01 @ 2'	12/6/2021	2'	0.8	180	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH01 @ 4'	12/6/2021	4'	0.5	< 128	180	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<9.8	<49	<49
BH02 @ 0-0.5'	12/6/2021	0-0.5'	0.2	152	370	<0.024	<0.048	<0.048	<0.097	<0.097	<4.8	<9.0	<45	<45
BH02 @ 2'	12/6/2021	2'	0.1	< 128	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH02 @ 04'	12/6/2021	4'	0.1	< 128	<60	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<9.5	<47	<47
BH03 @ 0-0.5'	12/6/2021	0-0.5'	0.1	240	**1,300**	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<10	<50	<50
BH03 @ 2'	12/6/2021	2'	0.1	< 128	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH03 @ 4'	12/6/2021	4'	0.1	< 128	140	<0.024	<0.049	<0.049	<0.097	<0.097	<4.9	<10	<50	<50
BH04 @ 0-0.5'	12/6/2021	0-0.5'	0.2	352	**1,200**	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<9.6	<48	<48
BH04 @ 2'	12/6/2021	2'	0.1	152	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH04 @ 4'	12/6/2021	4'	0.1	< 128	140	<0.025	<0.049	<0.049	<0.099	<0.099	<4.9	<9.9	<49	<49
BH05 @ 0-0.5'	12/6/2021	0-0.5'	0.4	352	440	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<8.8	<44	<44
BH05 @ 2'	12/6/2021	2'	0.2	152	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH05 @ 4'	12/6/2021	4'	0.2	< 128	160	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<9.7	<48	<48
BH06 @ 0-0.5'	12/6/2021	0-0.5'	0.1	< 128	290	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<9.4	<47	<47
BH06 @ 2'	12/6/2021	2'	0.0	< 128	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH06 @ 4'	12/6/2021	4'	0.0	< 128	100	<0.025	<0.049	<0.049	<0.099	<0.099	<4.9	<9.5	<47	<47
BH07 @ 0-0.5'	12/6/2021	0-0.5'	0.2	< 128	290	<0.025	<0.049	<0.049	<0.098	<0.098	<4.9	<9.3	<47	<47
BH07 @ 2'	12/6/2021	2'	0.1	< 128	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH07 @ 4'	12/6/2021	4'	0.1	< 128	92	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<9.5	<48	<48
BH08 @ 0-0.5'	12/6/2021	0-0.5'	0.0	152	280	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<10	<50	<50
BH08 @ 2'	12/6/2021	2'	0.0	< 128	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH08 @ 4'	12/6/2021	4'	0.0	< 128	<59	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<9.4	<47	<47
BH09 @ 0-0.5'	12/13/2021	0-0.5'	NM	152	230	<0.025	<0.050	<0.050	<0.099	<0.099	<5.0	<9.9	<49	<49
BH09 @ 2'	12/13/2021	2'	NM	< 125	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH09 @ 4'	12/13/2021	4'	NM	< 125	<60	<0.024	<0.048	<0.048	<0.095	<0.095	<4.8	<9.7	<49	<49
BH10 @ 0-0.5'	12/13/2021	0-0.5'	NM	< 125	<60	<0.023	<0.047	<0.047	<0.094	<0.094	<4.7	<9.6	<48	<48
BH10 @ 2'	12/13/2021	2'	NM	< 125	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH10 @ 4'	12/13/2021	4'	NM	< 125	<59	<0.023	<0.047	<0.047	<0.094	<0.094	<4.7	<9.7	<48	<48
BH11 @ 0-0.5'	12/13/2021	0-0.5'	NM	< 125	<60	<0.024	<0.047	<0.047	<0.095	<0.095	<4.7	<9.8	<49	<49
BH11 @ 2'	12/13/2021	2'	NM	< 125	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH11 @ 4'	12/13/2021	4'	NM	< 125	<60	<0.024	<0.048	<0.048	<0.095	<0.095	<4.8	12	<48	12
BH12 @ 0-0.5'	12/13/2021	0-0.5'	NM	< 125	<60	<0.025	<0.049	<0.049	<0.098	<0.098	<4.9	<9.4	<47	<47
BH12 @ 2'	12/13/2021	2'	NM	< 125	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH12 @ 4'	12/13/2021	4'	NM	< 125	<60	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	10	<49	10

Notes:

< - indicates result is less than the stated laboratory reporting limit

Bold - indicates value exceeds stated NMOCD closure criteria

BTEX - benzene, toluene, ethylbenzene, and total xylenes analyzed by US EPA Method 8021B

DRO - diesel range organics analyzed by US EPA Method 8015D

GRO - gasoline range organics analyzed by US EPA Method 8015D

mg/kg - milligrams per kilogram

MRO - motor oil range organics analyzed by US EPA Method 8015D

NE - not established

NM - not measured

NMOCD - New Mexico Oil Conservation Division

ppm - parts per million

TPH - total petroleum hydrocarbon (sum of GRO, DRO, and MRO)

NA - not analyzed

PHOTOGRAPHIC LOG

PHOTOGRAPHIC LOG		
HILCORP ENERGY COMPANY	SALTY DOG SWD 4 SAN JUAN COUNTY, NEW MEXICO	TE017821042

Photo No.	Date
1	10/26/2021

Facility Identification Sign at the Site

Photo No.	Date
2	12/6/2021

View looking east. Photo of the south side of the ASTs looking east.

PHOTOGRAPHIC LOG		
HILCORP ENERGY COMPANY	SALTY DOG SWD 4 SAN JUAN COUNTY, NEW MEXICO	TE017821042

Photo No.	Date
3	10/26/2021

View looking south. Photo of the tear in the liner where boring "SW Tear in Liner Floor" was collected.

Photo No.	Date
4	6/30/2021

View looking north. Photo of the sampling location for "N Berm Hole in Liner Floor".

ENCLOSURE A – LABORATORY ANALYTICAL REPORTS

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

November 04, 2021

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

RE: Salty Dog SWD #4 OrderNo.: 2110C41

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 4 sample(s) on 10/27/2021 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2110C41**
Date Reported: **11/4/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: SW Tear in Liner Floor
Project: Salty Dog SWD #4
Collection Date: 10/26/2021 12:00:00 PM
Lab ID: 2110C41-001 **Matrix:** SOIL **Received Date:** 10/27/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	11/1/2021 12:06:48 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/1/2021 12:06:48 PM
Surr: DNOP	89.4	70-130		%Rec	1	11/1/2021 12:06:48 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	10/29/2021 1:44:00 PM
Surr: BFB	98.6	70-130		%Rec	1	10/29/2021 1:44:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	10/29/2021 1:44:00 PM
Toluene	ND	0.047		mg/Kg	1	10/29/2021 1:44:00 PM
Ethylbenzene	ND	0.047		mg/Kg	1	10/29/2021 1:44:00 PM
Xylenes, Total	ND	0.094		mg/Kg	1	10/29/2021 1:44:00 PM
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	10/29/2021 1:44:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	870	60		mg/Kg	20	10/29/2021 10:02:26 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix

Analytical Report
Lab Order **2110C41**
Date Reported: **11/4/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: N. Berm Hole in Liner Floor
Project: Salty Dog SWD #4
Collection Date: 10/26/2021 12:05:00 PM
Lab ID: 2110C41-002 **Matrix:** SOIL
Received Date: 10/27/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	11/1/2021 12:17:28 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	11/1/2021 12:17:28 PM
Surr: DNOP	97.6	70-130		%Rec	1	11/1/2021 12:17:28 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/29/2021 2:04:00 PM
Surr: BFB	102	70-130		%Rec	1	10/29/2021 2:04:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	10/29/2021 2:04:00 PM
Toluene	ND	0.049		mg/Kg	1	10/29/2021 2:04:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	10/29/2021 2:04:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	10/29/2021 2:04:00 PM
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	10/29/2021 2:04:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	530	59		mg/Kg	20	10/29/2021 10:14:50 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2110C41**
Date Reported: **11/4/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: N Tear in Liner Floor
Project: Salty Dog SWD #4
Collection Date: 10/26/2021 12:10:00 PM
Lab ID: 2110C41-003 **Matrix:** SOIL **Received Date:** 10/27/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	11/1/2021 12:38:54 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/1/2021 12:38:54 PM
Surr: DNOP	97.9	70-130		%Rec	1	11/1/2021 12:38:54 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/29/2021 2:23:00 PM
Surr: BFB	98.7	70-130		%Rec	1	10/29/2021 2:23:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.025		mg/Kg	1	10/29/2021 2:23:00 PM
Toluene	ND	0.049		mg/Kg	1	10/29/2021 2:23:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	10/29/2021 2:23:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	10/29/2021 2:23:00 PM
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	10/29/2021 2:23:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	3100	150		mg/Kg	50	11/1/2021 1:53:29 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2110C41**
Date Reported: **11/4/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: SE Tear in Liner Floor
Project: Salty Dog SWD #4
Collection Date: 10/26/2021 12:15:00 PM
Lab ID: 2110C41-004 **Matrix:** SOIL **Received Date:** 10/27/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	11/1/2021 12:28:11 PM
Motor Oil Range Organics (MRO)	67	50		mg/Kg	1	11/1/2021 12:28:11 PM
Surr: DNOP	112	70-130		%Rec	1	11/1/2021 12:28:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/29/2021 2:43:00 PM
Surr: BFB	93.0	70-130		%Rec	1	10/29/2021 2:43:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	10/29/2021 2:43:00 PM
Toluene	ND	0.049		mg/Kg	1	10/29/2021 2:43:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	10/29/2021 2:43:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	10/29/2021 2:43:00 PM
Surr: 4-Bromofluorobenzene	97.9	70-130		%Rec	1	10/29/2021 2:43:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	2800	150		mg/Kg	50	11/1/2021 2:05:53 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2110C41**
04-Nov-21

Client: HILCORP ENERGY
Project: Salty Dog SWD #4

Sample ID: **MB-63658** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **63658** RunNo: **82473**
Prep Date: **10/29/2021** Analysis Date: **10/29/2021** SeqNo: **2926286** Units: **mg/Kg**

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

Sample ID: **LCS-63658** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **63658** RunNo: **82473**
Prep Date: **10/29/2021** Analysis Date: **10/29/2021** SeqNo: **2926287** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.4	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2110C41**

04-Nov-21

Client: HILCORP ENERGY

Project: Salty Dog SWD #4

Sample ID: **LCS-63654** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **LCSS** Batch ID: **63654** RunNo: **82477**

Prep Date: **10/29/2021** Analysis Date: **11/1/2021** SeqNo: **2926672** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.8	68.9	135			
Surr: DNOP	4.4		5.000		88.8	70	130			

Sample ID: **MB-63654** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **PBS** Batch ID: **63654** RunNo: **82477**

Prep Date: **10/29/2021** Analysis Date: **11/1/2021** SeqNo: **2926675** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.1		10.00		90.9	70	130			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2110C41**
04-Nov-21

Client: HILCORP ENERGY
Project: Salty Dog SWD #4

Sample ID: **lcs-63603** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **63603** RunNo: **82466**
Prep Date: **10/27/2021** Analysis Date: **10/29/2021** SeqNo: **2926053** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	5.0	25.00	0	109	78.6	131			
Surr: BFB	1100		1000		108	70	130			

Sample ID: **mb-63603** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **63603** RunNo: **82466**
Prep Date: **10/27/2021** Analysis Date: **10/29/2021** SeqNo: **2926054** 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	70	130			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2110C41**
04-Nov-21

Client: HILCORP ENERGY
Project: Salty Dog SWD #4

Sample ID: **lcs-63603** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **63603** RunNo: **82466**
Prep Date: **10/27/2021** Analysis Date: **10/29/2021** SeqNo: **2926074** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	1.000	0	97.8	80	120			
Toluene	0.96	0.050	1.000	0	96.5	80	120			
Ethylbenzene	0.97	0.050	1.000	0	97.3	80	120			
Xylenes, Total	3.0	0.10	3.000	0	98.7	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		104	70	130			

Sample ID: **mb-63603** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **63603** RunNo: **82466**
Prep Date: **10/27/2021** Analysis Date: **10/29/2021** SeqNo: **2926075** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		101	70	130			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2110C41 RcptNo: 1

Received By: Desiree Dominguez 10/27/2021 8:00:00 AM DD

Completed By: Desiree Dominguez 10/27/2021 8:13:30 AM DD

Reviewed By: KPA 10/27/21

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

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	1.4	Good	Yes			

Chain-of-Custody Record

Client: Hilcorp Energy

Mailing Address:

Phone #: 505-486-9543

email or Fax#: mkillough@hilcorp.com

QA/QC Package: khoeks-fruehilcorp.com

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☐ Standard ☒ Rush 3-5 DAY

Project Name: Salty Dog SWD #4

Project #:

Project Manager: Mitch Killough

Sampler: Kurt

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 1.4-0.0=1.4 (°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. 2110C41	BTEX / ~~MTBE~~ / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	Chloride 300.0
10-26	12:00	SS	SW Tear in Liner Floor	(1) 4oz Jar	ON ICE	-001	X	X									X
	12:05		N. Berm Hole in Liner			-002	X	X									X
	12:10		N. Tear in Liner Floor			-003	X	X									X
	12:15		S.E. Tear in Liner Floor			-004	X	X									X

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
10-26	1525	Kurt Hoeksema	[illegible]		10/26/21	1528
10/26/21	1756	[illegible]	DDB	Courier	10/27/21	9:00

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.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

November 08, 2021

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

RE: Salty Dog SWD 4 OrderNo.: 2111311

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 5 sample(s) on 11/5/2021 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2111311**
Date Reported: **11/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: Background
Project: Salty Dog SWD 4
Collection Date: 11/4/2021 8:45:00 AM
Lab ID: 2111311-001 **Matrix:** SOIL **Received Date:** 11/5/2021 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	59		mg/Kg	20	11/6/2021 10:27:47 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2111311**
Date Reported: **11/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: S.W. Floor Liner 2'
Project: Salty Dog SWD 4
Collection Date: 11/4/2021 9:00:00 AM
Lab ID: 2111311-002 **Matrix:** SOIL **Received Date:** 11/5/2021 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	61		mg/Kg	20	11/6/2021 11:04:50 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2111311**
Date Reported: **11/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: N. Liner Floor 2'
Project: Salty Dog SWD 4
Collection Date: 11/4/2021 9:10:00 AM
Lab ID: 2111311-003 **Matrix:** SOIL **Received Date:** 11/5/2021 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	60		mg/Kg	20	11/6/2021 11:41:53 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2111311**
Date Reported: **11/8/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: S.E. Liner Floor 22"
Project: Salty Dog SWD 4
Collection Date: 11/4/2021 9:40:00 AM
Lab ID: 2111311-004 **Matrix:** SOIL **Received Date:** 11/5/2021 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	150	60		mg/Kg	20	11/6/2021 11:54:13 AM

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2111311**

08-Nov-21

Client: HILCORP ENERGY

Project: Salty Dog SWD 4

Sample ID: **MB-63796**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **63796**	RunNo: **82658**							
Prep Date: **11/5/2021**	Analysis Date: **11/6/2021**	SeqNo: **2934243**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-63796**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **63796**	RunNo: **82658**							
Prep Date: **11/5/2021**	Analysis Date: **11/6/2021**	SeqNo: **2934244**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.0	90	110			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2111311 RcptNo: 1

Received By: **Cheyenne Cason** 11/5/2021 7:00:00 AM

Completed By: **Isaiah Ortiz** 11/5/2021 7:56:29 AM

Reviewed By: 11/05/21 KPA

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: JL 11/5/21

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.2	Good	Not Present			

Chain-of-Custody Record

Client: Hilcorp

Mailing Address:

Phone #: 505-486-9543

email or Fax#: mkillough@hilcorp.com

QA/QC Package: khoekstra@hilcorp.com

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☐ Standard ☒ Rush 2-3 DAY

Project Name: SALTY DOG SWD #4

Project #:

Project Manager: Mitch Killough

Sampler: Kurt

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 1.2-0=1.2 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2111311	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	CHLORIDE 300.0	
11-4	8:45	SS	BACKGROUND	(1) 4oz JAR	ON ICE	001												
	9:00		S.W. FLOOR LINER 2'			002											X	
	9:10		N. LINER FLOOR 2'			003											X	
	9:40		S.E. LINER FLOOR 2'	"		004											X	
↓	9:50	↓	N. LINER FLOOR 4'	↓	↓	005											X	HOLD THIS SAMPLE

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
11-4	1417	Kurt Hoekstra	CHA Lab		11/4/21	1417
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
		Mustafa Wells	CMC courier		11/5/21	0700

Remarks: Hold N. Liner Floor 4'

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

December 15, 2021

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

RE: SD SWD 4 OrderNo.: 2112376

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 16 sample(s) on 12/7/2021 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH01 @ 0-0.5
Project: SD SWD 4
Collection Date: 12/6/2021 10:50:00 AM
Lab ID: 2112376-001 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	12/10/2021 12:28:47 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/10/2021 12:28:47 PM
Surr: DNOP	90.0	70-130		%Rec	1	12/10/2021 12:28:47 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/8/2021 7:06:00 PM
Surr: BFB	89.7	70-130		%Rec	1	12/8/2021 7:06:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/8/2021 7:06:00 PM
Toluene	ND	0.049		mg/Kg	1	12/8/2021 7:06:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/8/2021 7:06:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/8/2021 7:06:00 PM
Surr: 4-Bromofluorobenzene	78.7	70-130		%Rec	1	12/8/2021 7:06:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	810	60		mg/Kg	20	12/7/2021 2:19:15 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH01 @ 4'
Project: SD SWD 4
Collection Date: 12/6/2021 10:55:00 AM
Lab ID: 2112376-002 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	12/10/2021 1:10:59 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/10/2021 1:10:59 PM
Surr: DNOP	86.3	70-130		%Rec	1	12/10/2021 1:10:59 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/8/2021 8:05:00 PM
Surr: BFB	90.1	70-130		%Rec	1	12/8/2021 8:05:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/8/2021 8:05:00 PM
Toluene	ND	0.050		mg/Kg	1	12/8/2021 8:05:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/8/2021 8:05:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	12/8/2021 8:05:00 PM
Surr: 4-Bromofluorobenzene	81.1	70-130		%Rec	1	12/8/2021 8:05:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	180	61		mg/Kg	20	12/8/2021 10:56:48 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH02 @ 0-0.5'
Project: SD SWD 4
Collection Date: 12/6/2021 11:20:00 AM
Lab ID: 2112376-003 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	12/10/2021 1:21:33 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	12/10/2021 1:21:33 PM
Surr: DNOP	85.8	70-130		%Rec	1	12/10/2021 1:21:33 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/8/2021 9:04:00 PM
Surr: BFB	90.5	70-130		%Rec	1	12/8/2021 9:04:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	12/8/2021 9:04:00 PM
Toluene	ND	0.048		mg/Kg	1	12/8/2021 9:04:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	12/8/2021 9:04:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	12/8/2021 9:04:00 PM
Surr: 4-Bromofluorobenzene	79.0	70-130		%Rec	1	12/8/2021 9:04:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	370	60		mg/Kg	20	12/7/2021 2:31:40 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH02 @ 4'
Project: SD SWD 4
Collection Date: 12/6/2021 11:25:00 AM
Lab ID: 2112376-004 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	12/10/2021 1:32:08 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/10/2021 1:32:08 PM
Surr: DNOP	107	70-130		%Rec	1	12/10/2021 1:32:08 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/8/2021 9:24:00 PM
Surr: BFB	88.0	70-130		%Rec	1	12/8/2021 9:24:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/8/2021 9:24:00 PM
Toluene	ND	0.050		mg/Kg	1	12/8/2021 9:24:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/8/2021 9:24:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/8/2021 9:24:00 PM
Surr: 4-Bromofluorobenzene	77.2	70-130		%Rec	1	12/8/2021 9:24:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	ND	60		mg/Kg	20	12/8/2021 11:09:13 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH03 @ 0-0.5'
Project: SD SWD 4
Collection Date: 12/6/2021 11:50:00 AM
Lab ID: 2112376-005 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	12/10/2021 1:59:43 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	12/10/2021 1:59:43 PM
Surr: DNOP	85.4	70-130		%Rec	1	12/10/2021 1:59:43 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/8/2021 9:44:00 PM
Surr: BFB	91.1	70-130		%Rec	1	12/8/2021 9:44:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/8/2021 9:44:00 PM
Toluene	ND	0.050		mg/Kg	1	12/8/2021 9:44:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/8/2021 9:44:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	12/8/2021 9:44:00 PM
Surr: 4-Bromofluorobenzene	81.6	70-130		%Rec	1	12/8/2021 9:44:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	1300	61		mg/Kg	20	12/7/2021 2:44:05 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH03 @ 4'
Project: SD SWD 4
Collection Date: 12/6/2021 11:55:00 AM
Lab ID: 2112376-006 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	12/10/2021 2:10:17 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	12/10/2021 2:10:17 PM
Surr: DNOP	85.7	70-130		%Rec	1	12/10/2021 2:10:17 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/8/2021 10:03:00 PM
Surr: BFB	90.3	70-130		%Rec	1	12/8/2021 10:03:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	12/8/2021 10:03:00 PM
Toluene	ND	0.049		mg/Kg	1	12/8/2021 10:03:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/8/2021 10:03:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	12/8/2021 10:03:00 PM
Surr: 4-Bromofluorobenzene	82.1	70-130		%Rec	1	12/8/2021 10:03:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	140	60		mg/Kg	20	12/8/2021 11:21:37 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH04 @ 0-0.5'
Project: SD SWD 4
Collection Date: 12/6/2021 12:20:00 PM
Lab ID: 2112376-007 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	12/10/2021 2:20:53 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/10/2021 2:20:53 PM
Surr: DNOP	91.5	70-130		%Rec	1	12/10/2021 2:20:53 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/8/2021 10:23:00 PM
Surr: BFB	99.0	70-130		%Rec	1	12/8/2021 10:23:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/8/2021 10:23:00 PM
Toluene	ND	0.050		mg/Kg	1	12/8/2021 10:23:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/8/2021 10:23:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/8/2021 10:23:00 PM
Surr: 4-Bromofluorobenzene	87.7	70-130		%Rec	1	12/8/2021 10:23:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	1200	60		mg/Kg	20	12/7/2021 2:56:29 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH04 @ 4'
Project: SD SWD 4
Collection Date: 12/6/2021 12:25:00 PM
Lab ID: 2112376-008 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	12/10/2021 2:42:01 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/10/2021 2:42:01 PM
Surr: DNOP	86.3	70-130		%Rec	1	12/10/2021 2:42:01 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/8/2021 10:43:00 PM
Surr: BFB	98.0	70-130		%Rec	1	12/8/2021 10:43:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/8/2021 10:43:00 PM
Toluene	ND	0.049		mg/Kg	1	12/8/2021 10:43:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/8/2021 10:43:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/8/2021 10:43:00 PM
Surr: 4-Bromofluorobenzene	87.2	70-130		%Rec	1	12/8/2021 10:43:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	140	60		mg/Kg	20	12/8/2021 11:34:02 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH05 @ 0-0.5'
Project: SD SWD 4
Collection Date: 12/6/2021 12:55:00 PM
Lab ID: 2112376-009 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	8.8		mg/Kg	1	12/10/2021 3:03:11 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	12/10/2021 3:03:11 PM
Surr: DNOP	86.5	70-130		%Rec	1	12/10/2021 3:03:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/8/2021 11:03:00 PM
Surr: BFB	97.6	70-130		%Rec	1	12/8/2021 11:03:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/8/2021 11:03:00 PM
Toluene	ND	0.050		mg/Kg	1	12/8/2021 11:03:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/8/2021 11:03:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/8/2021 11:03:00 PM
Surr: 4-Bromofluorobenzene	85.0	70-130		%Rec	1	12/8/2021 11:03:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	440	60		mg/Kg	20	12/7/2021 3:08:53 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH05@ 4'
Project: SD SWD 4
Collection Date: 12/6/2021 1:00:00 PM
Lab ID: 2112376-010 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	12/10/2021 3:13:49 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/10/2021 3:13:49 PM
Surr: DNOP	85.8	70-130		%Rec	1	12/10/2021 3:13:49 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/8/2021 11:22:00 PM
Surr: BFB	99.9	70-130		%Rec	1	12/8/2021 11:22:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/8/2021 11:22:00 PM
Toluene	ND	0.050		mg/Kg	1	12/8/2021 11:22:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/8/2021 11:22:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/8/2021 11:22:00 PM
Surr: 4-Bromofluorobenzene	84.5	70-130		%Rec	1	12/8/2021 11:22:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	160	61		mg/Kg	20	12/8/2021 11:46:26 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH06 @ 0-0.5'
Project: SD SWD 4
Collection Date: 12/6/2021 1:20:00 PM
Lab ID: 2112376-011 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	12/10/2021 3:24:29 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/10/2021 3:24:29 PM
Surr: DNOP	81.8	70-130		%Rec	1	12/10/2021 3:24:29 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/9/2021 12:21:00 AM
Surr: BFB	94.0	70-130		%Rec	1	12/9/2021 12:21:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/9/2021 12:21:00 AM
Toluene	ND	0.050		mg/Kg	1	12/9/2021 12:21:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	12/9/2021 12:21:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	12/9/2021 12:21:00 AM
Surr: 4-Bromofluorobenzene	81.7	70-130		%Rec	1	12/9/2021 12:21:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	290	60		mg/Kg	20	12/7/2021 3:21:18 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH06 @ 4'
Project: SD SWD 4
Collection Date: 12/6/2021 1:25:00 PM
Lab ID: 2112376-012 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	12/10/2021 3:35:08 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/10/2021 3:35:08 PM
Surr: DNOP	98.9	70-130		%Rec	1	12/10/2021 3:35:08 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/9/2021 12:41:00 AM
Surr: BFB	95.8	70-130		%Rec	1	12/9/2021 12:41:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/9/2021 12:41:00 AM
Toluene	ND	0.049		mg/Kg	1	12/9/2021 12:41:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	12/9/2021 12:41:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	12/9/2021 12:41:00 AM
Surr: 4-Bromofluorobenzene	84.5	70-130		%Rec	1	12/9/2021 12:41:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	100	60		mg/Kg	20	12/8/2021 11:58:51 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH07 @ 0-.05'
Project: SD SWD 4
Collection Date: 12/6/2021 1:46:00 PM
Lab ID: 2112376-013 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	12/10/2021 3:45:58 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/10/2021 3:45:58 PM
Surr: DNOP	103	70-130		%Rec	1	12/10/2021 3:45:58 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/9/2021 1:01:00 AM
Surr: BFB	90.5	70-130		%Rec	1	12/9/2021 1:01:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/9/2021 1:01:00 AM
Toluene	ND	0.049		mg/Kg	1	12/9/2021 1:01:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	12/9/2021 1:01:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	12/9/2021 1:01:00 AM
Surr: 4-Bromofluorobenzene	80.4	70-130		%Rec	1	12/9/2021 1:01:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	290	60		mg/Kg	20	12/7/2021 3:33:42 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH07 @ 4'
Project: SD SWD 4
Collection Date: 12/6/2021 1:45:00 PM
Lab ID: 2112376-014 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	12/10/2021 3:56:44 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/10/2021 3:56:44 PM
Surr: DNOP	80.2	70-130		%Rec	1	12/10/2021 3:56:44 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/9/2021 1:20:00 AM
Surr: BFB	92.1	70-130		%Rec	1	12/9/2021 1:20:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/9/2021 1:20:00 AM
Toluene	ND	0.050		mg/Kg	1	12/9/2021 1:20:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	12/9/2021 1:20:00 AM
Xylenes, Total	ND	0.10		mg/Kg	1	12/9/2021 1:20:00 AM
Surr: 4-Bromofluorobenzene	83.0	70-130		%Rec	1	12/9/2021 1:20:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	92	60		mg/Kg	20	12/8/2021 12:11:15 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH08 @ 0-0.5'
Project: SD SWD 4
Collection Date: 12/6/2021 2:10:00 PM
Lab ID: 2112376-015 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	12/10/2021 4:07:31 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	12/10/2021 4:07:31 PM
Surr: DNOP	103	70-130		%Rec	1	12/10/2021 4:07:31 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/9/2021 1:40:00 AM
Surr: BFB	90.3	70-130		%Rec	1	12/9/2021 1:40:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/9/2021 1:40:00 AM
Toluene	ND	0.050		mg/Kg	1	12/9/2021 1:40:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	12/9/2021 1:40:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	12/9/2021 1:40:00 AM
Surr: 4-Bromofluorobenzene	83.0	70-130		%Rec	1	12/9/2021 1:40:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	280	60		mg/Kg	20	12/8/2021 12:48:29 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2112376**
Date Reported: **12/15/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH08 @ 4'
Project: SD SWD 4
Collection Date: 12/6/2021 2:15:00 PM
Lab ID: 2112376-016 **Matrix:** SOIL **Received Date:** 12/7/2021 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **SB**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	12/10/2021 4:18:15 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/10/2021 4:18:15 PM
Surr: DNOP	81.2	70-130		%Rec	1	12/10/2021 4:18:15 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/9/2021 2:00:00 AM
Surr: BFB	93.6	70-130		%Rec	1	12/9/2021 2:00:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/9/2021 2:00:00 AM
Toluene	ND	0.050		mg/Kg	1	12/9/2021 2:00:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	12/9/2021 2:00:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	12/9/2021 2:00:00 AM
Surr: 4-Bromofluorobenzene	83.5	70-130		%Rec	1	12/9/2021 2:00:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **LRN**
Chloride	ND	59		mg/Kg	20	12/8/2021 1:00:53 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2112376**
15-Dec-21

Client: HILCORP ENERGY
Project: SD SWD 4

Sample ID: **MB-64359** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **64359** RunNo: **84349**
Prep Date: **12/7/2021** Analysis Date: **12/7/2021** SeqNo: **2963779** Units: **mg/Kg**

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

Sample ID: **LCS-64359** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **64359** RunNo: **84349**
Prep Date: **12/7/2021** Analysis Date: **12/7/2021** SeqNo: **2963780** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	96.1	90	110			

Sample ID: **MB-64359** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **64359** RunNo: **84373**
Prep Date: **12/7/2021** Analysis Date: **12/8/2021** SeqNo: **2964344** Units: **mg/Kg**

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

Sample ID: **LCS-64359** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **64359** RunNo: **84373**
Prep Date: **12/7/2021** Analysis Date: **12/8/2021** SeqNo: **2964345** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.2	90	110			

Sample ID: **MB-64360** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **64360** RunNo: **84374**
Prep Date: **12/7/2021** Analysis Date: **12/8/2021** SeqNo: **2964632** Units: **mg/Kg**

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

Sample ID: **LCS-64360** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **64360** RunNo: **84374**
Prep Date: **12/7/2021** Analysis Date: **12/8/2021** SeqNo: **2964633** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	98.1	90	110			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2112376**
15-Dec-21

Client: HILCORP ENERGY
Project: SD SWD 4

Sample ID: **2112376-001AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH01 @ 0-0.5** Batch ID: **64410** RunNo: **84438**
Prep Date: **12/9/2021** Analysis Date: **12/10/2021** SeqNo: **2966601** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	9.2	46.04	6.264	78.3	39.3	155			
Surr: DNOP	3.5		4.604		75.5	70	130			

Sample ID: **2112376-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH01 @ 0-0.5** Batch ID: **64410** RunNo: **84438**
Prep Date: **12/9/2021** Analysis Date: **12/10/2021** SeqNo: **2966602** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	37	8.5	42.55	6.264	73.4	39.3	155	12.1	23.4	
Surr: DNOP	3.2		4.255		75.0	70	130	0	0	

Sample ID: **LCS-64410** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **64410** RunNo: **84438**
Prep Date: **12/9/2021** Analysis Date: **12/10/2021** SeqNo: **2966609** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	87.5	68.9	135			
Surr: DNOP	3.9		5.000		77.6	70	130			

Sample ID: **MB-64410** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **64410** RunNo: **84438**
Prep Date: **12/9/2021** Analysis Date: **12/10/2021** SeqNo: **2966610** 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	8.6		10.00		86.2	70	130			

Sample ID: **LCS-64414** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **64414** RunNo: **84438**
Prep Date: **12/9/2021** Analysis Date: **12/10/2021** SeqNo: **2967457** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	3.8		5.000		76.7	70	130			

Sample ID: **MB-64414** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **64414** RunNo: **84438**
Prep Date: **12/9/2021** Analysis Date: **12/10/2021** SeqNo: **2967458** Units: **%Rec**

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2112376**
15-Dec-21

Client: HILCORP ENERGY
Project: SD SWD 4

Sample ID: **MB-64414** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **64414** RunNo: **84438**
Prep Date: **12/9/2021** Analysis Date: **12/10/2021** SeqNo: **2967458** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.5		10.00		85.0	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2112376**

15-Dec-21

Client: HILCORP ENERGY

Project: SD SWD 4

Sample ID: **lcs-64351** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **LCSS** Batch ID: **64351** RunNo: **84404**

Prep Date: **12/7/2021** Analysis Date: **12/8/2021** SeqNo: **2965100** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	78.6	131			
Surr: BFB	1100		1000		107	70	130			

Sample ID: **mb-64351** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **PBS** Batch ID: **64351** RunNo: **84404**

Prep Date: **12/7/2021** Analysis Date: **12/8/2021** SeqNo: **2965101** 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	890		1000		89.2	70	130			

Sample ID: **2112376-001ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **BH01 @ 0-0.5** Batch ID: **64351** RunNo: **84404**

Prep Date: **12/7/2021** Analysis Date: **12/8/2021** SeqNo: **2965103** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	24.93	0	98.3	61.3	114			
Surr: BFB	1000		997.0		105	70	130			

Sample ID: **2112376-001amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **BH01 @ 0-0.5** Batch ID: **64351** RunNo: **84404**

Prep Date: **12/7/2021** Analysis Date: **12/8/2021** SeqNo: **2965104** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	24.88	0	84.7	61.3	114	15.1	20	
Surr: BFB	960		995.0		96.3	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2112376**

15-Dec-21

Client: HILCORP ENERGY

Project: SD SWD 4

Sample ID: **lcs-64351**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **64351**	RunNo: **84404**
Prep Date: **12/7/2021**	Analysis Date: **12/8/2021**	SeqNo: **2965191** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.025	1.000	0	87.2	80	120			
Toluene	0.87	0.050	1.000	0	86.9	80	120			
Ethylbenzene	0.87	0.050	1.000	0	87.3	80	120			
Xylenes, Total	2.5	0.10	3.000	0	85.0	80	120			
Surr: 4-Bromofluorobenzene	0.78		1.000		78.2	70	130			

Sample ID: **mb-64351**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **64351**	RunNo: **84404**
Prep Date: **12/7/2021**	Analysis Date: **12/8/2021**	SeqNo: **2965192** 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	0.80		1.000		80.1	70	130			

Sample ID: **2112376-002ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH01 @ 4'**	Batch ID: **64351**	RunNo: **84404**
Prep Date: **12/7/2021**	Analysis Date: **12/8/2021**	SeqNo: **2965195** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.80	0.025	0.9804	0	81.6	80	120			
Toluene	0.81	0.049	0.9804	0	82.5	80	120			
Ethylbenzene	0.82	0.049	0.9804	0	83.6	80	120			
Xylenes, Total	2.4	0.098	2.941	0	81.5	80	120			
Surr: 4-Bromofluorobenzene	0.79		0.9804		80.3	70	130			

Sample ID: **2112376-002amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH01 @ 4'**	Batch ID: **64351**	RunNo: **84404**
Prep Date: **12/7/2021**	Analysis Date: **12/8/2021**	SeqNo: **2965196** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.024	0.9718	0	91.6	80	120	10.8	20	
Toluene	0.90	0.049	0.9718	0	92.5	80	120	10.6	20	
Ethylbenzene	0.91	0.049	0.9718	0	93.6	80	120	10.3	20	
Xylenes, Total	2.7	0.097	2.915	0	91.1	80	120	10.3	20	
Surr: 4-Bromofluorobenzene	0.76		0.9718		78.0	70	130	0	0	

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2112376 RcptNo: 1

Received By: **Sean Livingston** 12/7/2021 8:20:00 AM

Completed By: **Kasandra Payan** 12/7/2021 9:26:41 AM

Reviewed By: IO 12/7/21

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: JR 12/7/21

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.5	Good				

Chain-of-Custody Record

Client: Hilcorp

Mitch Killough

Mailing Address:

Phone #:

email or Fax#: MKillough@hilcorp.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☒ Standard ☐ Rush

Project Name: SD SWD #4

Project #:

Project Manager: Stuart Hyde - WSP

Sampler: E. Carroll - WSP

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp (including CF): 2.4 -0.1 = 2.5 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2112376	(BTEX) MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
12-6	10:50	Soil	BH01 @ 0-0.5'	1 4oz	cool	001	X	X					X			
	10:55		BH01 @ 4'			002										
	11:20		BH02 @ 0-0.5'			003										
	11:25		BH02 @ 4'			004										
	11:50		BH03 @ 0-0.5'			005										
	11:55		BH03 @ 4'			006										
	12:20		BH04 @ 0-0.5'			007										
	12:25		BH04 @ 4'			008										
	12:55		BH05 @ 0-0.5'			009										
	13:00		BH05 @ 4'			010										
	13:20		BH06 @ 0-0.5'			011										
	13:25		BH06 @ 4'			012										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
12-6	1450	Eric Carroll			12/6/21	1458
12/6/21	1818	Stuart Walker	See Comments		12/7/21	8:20

Remarks:

CC: eric.carroll@wsp.com

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

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Client: Hilcorp

Mitch Killough

Mailing Address:

Phone #:

email or Fax#: mkillough@hilcorp.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☒ Standard ☐ Rush

Project Name: SD SWD #4

Project #:

Project Manager: Stuart Hyde - WSP

Sampler: E. Carroll

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 2.6-0.1=2.5°c

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	(BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
12-6	13:46	Soil	BH07 @ 0-0.5'	(1) 4oz	Cool	013	X	X					X			
	13:45		BH07 @ 4'			014										
	14:10		BH08 @ 0-0.5'			015										
	14:15		BH08 @ 4'			016										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
12-6	1450	Eric Carroll			12/6/21	1450
12/6	1818			courier	12/7/21	8:20

Remarks:

cc: eric.carroll@wsp.com

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

December 21, 2021

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

RE: SD SWD 4 OrderNo.: 2112846

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 8 sample(s) on 12/14/2021 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2112846**
Date Reported: **12/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH09 @ 0-0.5'
Project: SD SWD 4
Collection Date: 12/13/2021 10:30:00 AM
Lab ID: 2112846-001 **Matrix:** SOIL **Received Date:** 12/14/2021 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	12/16/2021 10:10:30 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/16/2021 10:10:30 AM
Surr: DNOP	92.4	70-130		%Rec	1	12/16/2021 10:10:30 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **mb**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/16/2021 10:47:00 PM
Surr: BFB	89.9	70-130		%Rec	1	12/16/2021 10:47:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **mb**
Benzene	ND	0.025		mg/Kg	1	12/16/2021 10:47:00 PM
Toluene	ND	0.050		mg/Kg	1	12/16/2021 10:47:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/16/2021 10:47:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/16/2021 10:47:00 PM
Surr: 4-Bromofluorobenzene	80.2	70-130		%Rec	1	12/16/2021 10:47:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	230	60		mg/Kg	20	12/20/2021 2:43:37 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2112846**
Date Reported: **12/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH09 @ 4'
Project: SD SWD 4
Collection Date: 12/13/2021 10:40:00 AM
Lab ID: 2112846-002 **Matrix:** SOIL **Received Date:** 12/14/2021 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	12/16/2021 10:20:57 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/16/2021 10:20:57 AM
Surr: DNOP	86.5	70-130		%Rec	1	12/16/2021 10:20:57 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **mb**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/16/2021 11:07:00 PM
Surr: BFB	90.0	70-130		%Rec	1	12/16/2021 11:07:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **mb**
Benzene	ND	0.024		mg/Kg	1	12/16/2021 11:07:00 PM
Toluene	ND	0.048		mg/Kg	1	12/16/2021 11:07:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	12/16/2021 11:07:00 PM
Xylenes, Total	ND	0.095		mg/Kg	1	12/16/2021 11:07:00 PM
Surr: 4-Bromofluorobenzene	79.3	70-130		%Rec	1	12/16/2021 11:07:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	12/20/2021 2:56:01 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2112846**
Date Reported: **12/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH10 @ 0-0.5'
Project: SD SWD 4
Collection Date: 12/13/2021 10:50:00 AM
Lab ID: 2112846-003 **Matrix:** SOIL **Received Date:** 12/14/2021 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	12/16/2021 10:31:31 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/16/2021 10:31:31 AM
Surr: DNOP	98.7	70-130		%Rec	1	12/16/2021 10:31:31 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **mb**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	12/16/2021 11:26:00 PM
Surr: BFB	86.9	70-130		%Rec	1	12/16/2021 11:26:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **mb**
Benzene	ND	0.023		mg/Kg	1	12/16/2021 11:26:00 PM
Toluene	ND	0.047		mg/Kg	1	12/16/2021 11:26:00 PM
Ethylbenzene	ND	0.047		mg/Kg	1	12/16/2021 11:26:00 PM
Xylenes, Total	ND	0.094		mg/Kg	1	12/16/2021 11:26:00 PM
Surr: 4-Bromofluorobenzene	80.1	70-130		%Rec	1	12/16/2021 11:26:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	12/20/2021 3:08:26 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2112846**
Date Reported: **12/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH10 @ 4'
Project: SD SWD 4
Collection Date: 12/13/2021 11:00:00 AM
Lab ID: 2112846-004 **Matrix:** SOIL **Received Date:** 12/14/2021 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	12/16/2021 10:42:06 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/16/2021 10:42:06 AM
Surr: DNOP	97.6	70-130		%Rec	1	12/16/2021 10:42:06 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **mb**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	12/16/2021 11:46:00 PM
Surr: BFB	90.4	70-130		%Rec	1	12/16/2021 11:46:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **mb**
Benzene	ND	0.023		mg/Kg	1	12/16/2021 11:46:00 PM
Toluene	ND	0.047		mg/Kg	1	12/16/2021 11:46:00 PM
Ethylbenzene	ND	0.047		mg/Kg	1	12/16/2021 11:46:00 PM
Xylenes, Total	ND	0.094		mg/Kg	1	12/16/2021 11:46:00 PM
Surr: 4-Bromofluorobenzene	80.0	70-130		%Rec	1	12/16/2021 11:46:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	59		mg/Kg	20	12/20/2021 3:20:51 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2112846**
Date Reported: **12/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH11 @ 0-0.5'
Project: SD SWD 4
Collection Date: 12/13/2021 11:15:00 AM
Lab ID: 2112846-005 **Matrix:** SOIL **Received Date:** 12/14/2021 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	12/16/2021 10:52:41 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/16/2021 10:52:41 AM
Surr: DNOP	102	70-130		%Rec	1	12/16/2021 10:52:41 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **mb**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	12/17/2021 12:06:00 AM
Surr: BFB	90.2	70-130		%Rec	1	12/17/2021 12:06:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **mb**
Benzene	ND	0.024		mg/Kg	1	12/17/2021 12:06:00 AM
Toluene	ND	0.047		mg/Kg	1	12/17/2021 12:06:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	12/17/2021 12:06:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	12/17/2021 12:06:00 AM
Surr: 4-Bromofluorobenzene	80.1	70-130		%Rec	1	12/17/2021 12:06:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	12/20/2021 3:33:16 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference

Analytical Report
Lab Order **2112846**
Date Reported: **12/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH11 @ 4'
Project: SD SWD 4
Collection Date: 12/13/2021 11:20:00 AM
Lab ID: 2112846-006 **Matrix:** SOIL **Received Date:** 12/14/2021 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	12	9.7		mg/Kg	1	12/16/2021 11:03:19 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/16/2021 11:03:19 AM
Surr: DNOP	105	70-130		%Rec	1	12/16/2021 11:03:19 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **mb**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/17/2021 12:25:00 AM
Surr: BFB	84.6	70-130		%Rec	1	12/17/2021 12:25:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **mb**
Benzene	ND	0.024		mg/Kg	1	12/17/2021 12:25:00 AM
Toluene	ND	0.048		mg/Kg	1	12/17/2021 12:25:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	12/17/2021 12:25:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	12/17/2021 12:25:00 AM
Surr: 4-Bromofluorobenzene	79.3	70-130		%Rec	1	12/17/2021 12:25:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	12/20/2021 3:45:41 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2112846**
Date Reported: **12/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH12 @ 0-0.5'
Project: SD SWD 4
Collection Date: 12/13/2021 11:40:00 AM
Lab ID: 2112846-007 **Matrix:** SOIL **Received Date:** 12/14/2021 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	12/16/2021 11:13:57 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/16/2021 11:13:57 AM
Surr: DNOP	93.1	70-130		%Rec	1	12/16/2021 11:13:57 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **mb**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/17/2021 12:45:00 AM
Surr: BFB	82.3	70-130		%Rec	1	12/17/2021 12:45:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **mb**
Benzene	ND	0.025		mg/Kg	1	12/17/2021 12:45:00 AM
Toluene	ND	0.049		mg/Kg	1	12/17/2021 12:45:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	12/17/2021 12:45:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	12/17/2021 12:45:00 AM
Surr: 4-Bromofluorobenzene	76.1	70-130		%Rec	1	12/17/2021 12:45:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	12/20/2021 3:58:05 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2112846**
Date Reported: **12/21/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: BH12 @ 4'
Project: SD SWD 4
Collection Date: 12/13/2021 11:50:00 AM
Lab ID: 2112846-008 **Matrix:** SOIL **Received Date:** 12/14/2021 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	10	9.8		mg/Kg	1	12/16/2021 11:24:35 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/16/2021 11:24:35 AM
Surr: DNOP	75.9	70-130		%Rec	1	12/16/2021 11:24:35 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **mb**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/17/2021 1:04:00 AM
Surr: BFB	91.2	70-130		%Rec	1	12/17/2021 1:04:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **mb**
Benzene	ND	0.024		mg/Kg	1	12/17/2021 1:04:00 AM
Toluene	ND	0.048		mg/Kg	1	12/17/2021 1:04:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	12/17/2021 1:04:00 AM
Xylenes, Total	ND	0.096		mg/Kg	1	12/17/2021 1:04:00 AM
Surr: 4-Bromofluorobenzene	80.0	70-130		%Rec	1	12/17/2021 1:04:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	12/20/2021 5:00:08 PM

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2112846**
21-Dec-21

Client: HILCORP ENERGY
Project: SD SWD 4

Sample ID: **MB-64526**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **64526**	RunNo: **84564**
Prep Date: **12/15/2021**	Analysis Date: **12/16/2021**	SeqNo: **2973590** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.2		10.00		91.6	70	130			

Sample ID: **LCS-64526**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **64526**	RunNo: **84564**
Prep Date: **12/15/2021**	Analysis Date: **12/16/2021**	SeqNo: **2973591** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.7	68.9	135			
Surr: DNOP	4.4		5.000		87.6	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2112846**

21-Dec-21

Client: HILCORP ENERGY

Project: SD SWD 4

Sample ID: **mb-64500**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **64500**	RunNo: **84604**
Prep Date: **12/14/2021**	Analysis Date: **12/16/2021**	SeqNo: **2973977** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	910		1000		90.8	70	130			

Sample ID: **lcs-64500**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **64500**	RunNo: **84604**
Prep Date: **12/14/2021**	Analysis Date: **12/16/2021**	SeqNo: **2973979** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	5.0	25.00	0	112	78.6	131			
Surr: BFB	1100		1000		109	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2112846**

21-Dec-21

Client: HILCORP ENERGY

Project: SD SWD 4

Sample ID: **mb-64500**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **64500**	RunNo: **84604**
Prep Date: **12/14/2021**	Analysis Date: **12/16/2021**	SeqNo: **2974025** 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	0.78		1.000		78.2	70	130			

Sample ID: **lcs-64500**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **64500**	RunNo: **84604**
Prep Date: **12/14/2021**	Analysis Date: **12/16/2021**	SeqNo: **2974027** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.025	1.000	0	89.8	80	120			
Toluene	0.87	0.050	1.000	0	87.3	80	120			
Ethylbenzene	0.87	0.050	1.000	0	86.8	80	120			
Xylenes, Total	2.5	0.10	3.000	0	84.4	80	120			
Surr: 4-Bromofluorobenzene	0.80		1.000		80.2	70	130			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2112846 RcptNo: 1

Received By: **Desiree Dominguez** 12/14/2021 8:10:00 AM DD

Completed By: **Sean Livingston** 12/14/2021 9:27:51 AM Sean Livingston

Reviewed By: KRG 12/14/21

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: JR 12/14/21

Special Handling (if applicable)

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

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

16. Additional remarks:

17. **Cooler Information**

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

Chain-of-Custody Record

Client: Hilcorp

Mitch Killough

Mailing Address:

Phone #:

email or Fax#: mkillough@hilcorp.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: Need Results

☒ Standard ☐ Rush 12-21-21

Project Name: SD SWD #4

Project #:

Project Manager: Stuart Hyde - WSP

Sampler: E. Carroll - WSP

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 1.9+0.0=1.9 (°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. 2112646	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
12-13	10:30	Soil	BH09 @ 0-0.5'	1 4oz	Cool	001	X	X					X			
	10:40		BH09 @ 4'			002	X	X					X			
	10:50		BH10 @ 0-0.5'			003	X	X					X			
	11:00		BH10 @ 4'			004	X	X					X			
	11:15		BH11 @ 0-0.5'			005	X	X					X			
	11:20		BH11 @ 4'			006	X	X					X			
	11:40		BH12 @ 0-0.5'			007	X	X					X			
	11:50		BH12 @ 4'			008	X	X					X			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
12-13	1306	Eric Carroll				
12/13/21	1802				12/13/21	1306
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
				courier	12/14/21	8:10

Remarks:

cc: eric.carroll@wsp.com

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

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

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

CONDITIONS

Action 70519

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 70519
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
nvelez	1. Requests to defer remediation and restoration until the time of final plugging and abandonment and reclamation of the Site. 2. OCD concurs with WSP and Hilcorp and does not believe deferment will result in an imminent risk to human health, the environment, groundwater, and/or surface water.	1/5/2022