

LT Environmental, Inc. Advancing Opportunity

STAGE 1 ABATEMENT PLAN

STANDARD #1 SAN JUAN COUNTY, NEW MEXICO

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DISTRICT III

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STANDARD #1 SAN JUAN COUNTY, NEW MEXICO

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STAGE 1 ABATEMENT PLAN

LT Environmental, Inc. (LTE), on behalf of Hilcorp Energy Company (Hilcorp), presents the following Stage 1 Abatement Plan (AP-126-0) associated with subsurface hydrocarbon impacts encountered at the Standard #1 natural gas production well (Site). This plan details the site description and background, initial response and assessment, and site geologic and hydrologic characteristics. The plan proposes additional monitoring and delineation activities and provides a proposed schedule for completion of those activities with subsequent submittal of a Stage 2 Abatement Plan per New Mexico Administrative Code (NMAC) 19.15.30.





1.0 SITE DESCRIPTION AND BACKGROUND

The Site is located on Crouch Mesa between the Animas and San Juan rivers in Unit J of Section 4 of Township 29 North, Range 12 West, San Juan County, New Mexico, approximately 3 miles southwest of Flora Vista (Figure 1). The Site is an active natural gas production facility consisting of a production wellhead, three-phase separator, a below-grade produced water storage tank, and an aboveground condensate storage tank. On November 28, 2017, the Site was shut in during construction activities when subsurface hydrocarbon impacts were encountered from a suspected historical release from a production dump line. The dump line transported condensate and produced water from the separator to an aboveground storage tank. The duration and volume of the release is unknown. The release was reported to the New Mexico Oil Conservation Division (NMOCD) by Hilcorp on a Form C-141 *Release Notification and Corrective Action Form* dated December 6, 2017.

1.1 Regional Geology and Hydrology

The area is regionally described as Nacimiento Formation at the surface that grades into the Animas Formation to the West. The lower portion of the Nacimiento Formation is composed of interbedded black, carbonaceous mudstones and white coarse-grained sandstones. The upper part is comprised of mudstone and sandstone. It is generally slope-forming, even within the sandstone units. Aquifers within the coarser and continuous sandstone bodies of the Nacimiento Formation are between 0 and 1,000 feet deep in the San Juan Basin. The 1,000-foot depth range for aquifers covers an area over 20 miles wide and depth decreases towards the margins of the San Juan Basin. The Site in question is more centrally located, and depth to the aquifer is expected to be closer to 200 feet to 500 feet below ground surface (bgs) (Stone et al., 1983). It is well known that groundwater close to the Animas River is shallow, as the Quaternary deposits associated with the Animas River form shallow aquifers. However, the Site is greater than a mile and a half southeast of the Animas River and almost 400 feet higher in elevation.

Local stratigraphy at the Site is based on observations from excavation and subsurface drilling. It consists of graded fill over approximately 6 feet of grayish-brown gravely sand. Cobbles are present from 6 feet to approximately 25 feet bgs. The cobbles are tightly situated in an unconsolidated silty to sandy matrix. Moisture was identified within the cobbles at approximately 23 feet bgs. The cobbles rest on a thin, (less than 1 foot thick), friable, dark greenish-gray clay that is wet. Beneath the thin clay at approximately 26 feet bgs is a tan to grayish-brown claystone that is dry. The greenish-gray clay and underlying claystone likely represent the top of the Nacimiento Formation and the cobbles above are a younger terrace deposit associated with the historic Animas River. The less erosive cobble deposit would explain the higher topographic elevation of the Site as related to slope-forming Nacimiento outcrops along the flanks of Crouch Mesa. Limited water is present at the interface between the cobbles and thin clay, but the water does not extend into the shale beneath the clay.

1.2 Land and Water Use

Land use surrounding the Site consists of natural gas development, a gravel pit, unused land, and residential housing. The nearest residence is located approximately 1,107 feet northwest of the Site. The shallow water encountered during excavation and drilling is not associated with existing beneficial use and is not mentioned in publications describing local aquifers. The closest permitted water well is SJ 01031, located approximately 2,988 feet north of the Site with a depth to water of 172 feet and a total





depth of 275 feet bgs. There are six additional water wells within one mile of the Site. Depth to groundwater ranges from 155 feet to 310 feet bgs. The nearest identified significant surface water feature is an unnamed arroyo approximately 2,065 feet to the north of the Site. This surface hydrological feature appears to be a third-order tributary of the Animas River. No impact to surface water has been identified and based on the distance and the geological characteristics of the Site, potential impact to any surface water is unlikely.

1.3 Initial Response

Hilcorp conducted a preliminary hand auger investigation and initiated excavation activities to mitigate subsurface impact. Based on the estimated proximity to potential receptors at the time the release was discovered, Hilcorp ranked the Site a zero, according to the NMOCD 1993 Guidelines for Remediation of Spills, Leaks, and Releases. In accordance with that site ranking, Hilcorp's excavation progress was based on a remediation action level of 5,000 milligrams per kilogram (mg/kg) of total petroleum hydrocarbons (TPH). Soil confirmation samples were collected from the excavation sidewalls as soil was removed, and portions of the excavation were backfilled, with approval from the NMOCD, when sample results indicated the remediation action levels for TPH and benzene, toluene, ethylbenzene, and total xylenes (BTEX) concentrations had been met. Samples collected from the base of the excavation continued to exceed remediation action levels for TPH and the excavation was advanced vertically. Subsequently, Hilcorp encountered saturated sediment at approximately 25 feet bgs, significantly shallower than the estimated depth to groundwater of greater than 100 feet and deeper than the established existing local aquifer from which beneficial use is acquired. The accumulation of fluid, consisting of water and phase separated hydrocarbon (PSH), significantly altered remediation progress and planning. The site ranking increased to 20, thereby decreasing the TPH remediation action level in soil to 100 mg/kg. Hilcorp ultimately excavated approximately 1,400 cubic yards of impacted soil, the extent of which is included on Figure 2; however, excavation activities ceased so that additional investigation could be conducted to determine lateral extent of the impact to soil and/or groundwater.

1.4 Local Geology and Hydrology

A small pothole in the middle of the excavation was excavated to observe fluid conditions (Figure 2). The pothole did not immediately fill in with water, so LTE collected a sample of the claystone beneath the wet clay, crushed it, and submitted it for laboratory analysis of BTEX and TPH. The goal was to document a clean horizon beneath the impact for vertical delineation. Results confirmed the bedrock beneath the water-bearing unit was not impacted by the release (Table 1, soil sample BR-1). The claystone appeared to represent vertical delineation of the release and an aquitard, preventing vertical migration of observed water deeper into the subsurface.

The water was allowed to accumulate in the pothole at the bottom of the excavation for two days, then a vacuum truck recovered the water to calculate recharge rates and collect a representative sample. Approximately one-half inch of PSH was observed on the water. LTE used a clean, unused, and open-top sample bottle connected to disposable rope on a wooden pole to collect a water sample on May 15, 2018. LTE transferred the sample from the sample "cup" into laboratory provided sample vials for analysis of BTEX. LTE collected a second sample on May 16, 2018 to be analyzed for total dissolved solids (TDS). Freephase product was observed during sampling, but additional recovery was successful in removing the freephase product to allow for water sample collection. Laboratory analytical results are presented on Table 2 and demonstrate that benzene, toluene, total xylenes, and TDS exceeded New Mexico Water Quality





Control Commission (NMWQCC) standards in the water sample. Water quality results and presence of PSH suggested at least a portion of the water volume is sourced from the historical pipeline release.

After removing approximately 75 barrels (bbls) of water over 9 recovery events, Hilcorp allowed water to accumulate for three days in advance of another sampling event, which was conducted in the presence of the NMOCD. LTE collected a sample according to the methods described above on June 12, 2018. The sample was analyzed for BTEX, conductivity, sulfate, and chloride. Laboratory analytical results are presented on Table 2 and indicate benzene, toluene, and total xylenes exceeded remediation action levels. Conductivity and chloride were also elevated.

There were no nearby sources of background water to sample and compare water quality results; however, LTE did collect a sample of produced water at a nearby production well (Walker #1). While significant concentrations of BTEX were not detected in the produced water, conductivity, chloride, and TDS concentrations were elevated and detected at similar ratios to the results for the excavation water (Sample PW01 on Table 2). It is possible that the source of some of the water observed and recovered from the excavation is the released fluids from the pipeline.

Prior to water sampling on June 12, 2018, Hilcorp estimated the total volume of liquid in the excavation pothole was 701 gallons with a ½-inch accumulation, or 15.6 gallons, of PSH on top of the water. Based on the vacuum truck recovery volumes, LTE estimated water accumulated in the excavation pothole at approximately 7 to 14 gallons per hour. The slow recharge rate and lack of vertical migration suggests the water-bearing unit is not conducive to significant water storage or flow. Water migrated swiftly though the porous cobbles and collected on the clay-bedrock interface, where a small volume of water is stored due to the confining properties of the underlying shale. Based on Fetter (2001), a default value for hydraulic conductivity of the clay is assigned to be 10⁻⁹ to 10⁻⁶ centimeters per second (cm/s), which is equivalent to approximately 0.003 feet per day; a low value associated with the lack of permeability in the clay. Assuming hydraulic conductivity of 10⁻⁶ cm/s and a saturated thickness of 1 foot, a transmissivity of 0.0212 gallons per day per foot is estimated. In general, transmissivities greater than 0.37 gallons per day per foot represent good aquifers for domestic water well use (Freeze et. al, 1979); more is required for industrial, agricultural, and recreational use.





2.0 SITE CHARACTERIZATION

Based on site assessment activities, depth to groundwater at the Site is less than 50 feet below ground surface (bgs). Therefore, the following remediation action levels apply for soil according to 19.15.29 NMAC dated August 14, 2018: 10 mg/kg benzene; 50 mg/kg total BTEX; 100 mg/kg TPH; and 600 mg/kg chloride. Additionally, the following New Mexico Water Quality Control Commission (NMWCC) standards apply to groundwater: 10 μ g/l benzene, 750 μ g/l toluene, 750 μ g/l ethylbenzene, and 620 μ g/l total xylenes.

In August and October 2018, LTE conducted soil and groundwater assessment activities at the Site. A variety of drilling techniques were used during assessment activities in order to penetrate and characterize the dense cobble lithology including: hollow-stem auger, air rotary, ODEX, and sonic. A total of 14 boreholes were advanced at the Site ranging from 25 feet to 45 feet bgs. Soil borings were advanced in each cardinal direction outside of the known impacted area and then laterally to define field-identified subsurface hydrocarbon impacts. The soil borings were logged by an LTE geologist who inspected the soil for the presence or absence of petroleum hydrocarbon odor and/or staining. The soil was characterized by visually inspecting the soil samples and field screening the soil headspace using a photo-ionization detector (PID) to monitor for the presence of volatile organic vapors. Two soil samples from each soil boring were submitted for laboratory analysis: the most impacted sample based on field screening techniques and the terminus of the borehole. Groundwater monitoring wells were constructed in each borehole by installing screened casing across the groundwater interface and solid casing to surface. Wells were constructed out of 2-inch diameter Schedule 40 polyvinyl chloride (PVC) casing and 2-inch Schedule 40 PVC 0.010-inch slotted screen. Wells were completed with 10-20 silica sand pack to two feet above the screened interval, then two feet of hydrated bentonite seal, and then bentonite-cement slurry grout to ground surface. The wells were completed aboveground with a locking, steel protective casing cemented into the ground. Borehole locations are depicted on Figure 2. Soil boring logs are included as Appendix A.

Following well construction, monitoring wells were developed using a disposable bailer. Fluid-level measurements were collected using an oil/water interface probe. During well development, ten well casing volumes of groundwater were removed from each monitoring well or the well was purged dry. At least 24 hours after development, groundwater samples were collected using disposable bailers from monitoring wells MW02, MW10, MW11, MW12, and MW14. During well development activities, PSH was observed in monitoring wells MW01 and MW06 with measured thicknesses of 0.15 ft and 0.33 ft, respectively. Due to the presence of PSH in MW01 and MW06, no groundwater samples were collected. Monitoring well MW05 did not contain a sufficient volume of water and monitoring wells MW03, MW04, MW07, MW08, MW09, and MW13 were dry. Therefore, no samples could be collected at these locations.

Soil samples were submitted for laboratory analysis of BTEX by United States Environmental Protection Agency (EPA) Method 8021 and TPH-gasoline range organics (GRO), TPH-diesel range organics (DRO), and TPH-motor oil range organics (MRO) by USEPA Method 8015. Groundwater samples were submitted for laboratory analysis of BTEX by USEPA Method 8260. All samples collected were placed on ice to maintain a temperature of approximately 4 degrees Celsius (°C) and sealed in a cooler for delivery to Hall Environmental Analysis Laboratory (Hall), of Albuquerque, New Mexico, for analysis. Samples were labeled with the date and time of collection, sample name, sampler's name, and parameters to be analyzed. Strict chain-of-custody procedures were documented including the date and time sampled, sample number, type of sample, sampler's name and signature, preservative used, and analyses required.





2.1 Results

Laboratory analytical results of soil samples indicate total BTEX concentrations exceeded the NMOCD remediation action level in soil samples MW06 @ 21'-23' and MW12 @ 17'-19' with concentrations of 86.4 mg/kg and 83.7 mg/kg, respectively. Additionally, TPH concentrations exceeded the NMOCD remediation action level in soil borings MW01, MW03, MW04, MW06, MW09, MW10, and MW12 with concentrations ranging from 129.9 mg/kg (MW03 @ 30'-32') to 1,430 mg/kg (MW12 @ 17'-19'). All other samples collected were below laboratory detection limits for the listed parameters. The soil analytical results as compared to the NMOCD remediation action levels are presented in Figure 2 and Table 1. The laboratory analytical reports are included as Appendix B.

Laboratory analytical results of groundwater samples indicate BTEX concentrations exceeded the NMWQCC standards in MW02, MW10, MW12, and MW14. All BTEX concentrations in MW11 were below laboratory detection limits. The groundwater analytical results as compared to the NMWQCC standards are presented on Figure 3 and summarized in Table 2. The laboratory analytical reports are included as Appendix B.

Depth to groundwater ranged from 19.89 feet below top of casing (btoc) (MW11) to 32.26 feet btoc (MW10). During the groundwater sampling event, PSH was observed in monitoring wells MW01 and MW06 with measured thicknesses of 0.17 ft and 0.4 ft, respectively, during the sampling event. Based on topography, initial data, and regional groundwater trends, the generalized groundwater flow direction is to the northwest, towards the Animas River. However, initial data suggests groundwater flow is relatively flat at the well pad, situated on a potentiometric high that falls off in several directions with distance from the well pad (Figure 3). Groundwater at the Site is discontinuous as evidence by lack of groundwater in several monitoring wells. At this time, LTE is unable to determine what controls accumulation of water in the monitoring wells. Water may even accumulate in monitoring wells as a result of the introduction of a borehole conduit in the subsurface. Based on this unknown and the lack of full delineation of soil and groundwater impacts, additional data points are needed to evaluate remediation options.





3.0 PROPOSED ADDITIONAL DELINEATION

LTE proposes to install at least seven additional soil borings by sonic drilling at the Site to continue delineation of the identified hydrocarbon subsurface impacts. The soil borings will be logged by an LTE geologist who will inspect the soil for the presence or absence of petroleum hydrocarbon odor and/or staining. The soil will be characterized by visually inspecting the soil samples and field screening the soil headspace using a PID to monitor for the presence of volatile organic vapors. Two soil samples from each soil boring will be submitted for laboratory analysis: the most impacted sample based on field screening techniques and the terminus of the borehole. Soil samples will be submitted for analysis of BTEX by USEPA 8021 and TPH-GRO, TPH-DRO, and TPH-MRO by USEPA Method 8015. If groundwater is encountered, monitoring wells will be constructed by installing screened casing across the groundwater interface and solid casing to surface. Upon completion of additional boreholes, groundwater monitoring wells will be developed and tied into the existing survey data. To develop the wells, depth to water will be measured and ten casing volumes will be purged or until dry. At least 48 hours after development, the new groundwater monitoring wells will be sampled with a disposable bailer after three casing volumes have been purged. Groundwater samples will be submitted for analysis of BTEX by USEPA Method 8260. Proposed borehole locations are depicted on Figure 3. Additional borings and monitoring wells will be installed as needed based on field observations to complete delineation of the identified impacts. Prior to drilling activities, all additional proposed borehole locations will be permitted with the New Mexico Office of the State Engineer (NMOSE).

3.1 Proposed Groundwater Monitoring

LTE is proposing quarterly groundwater monitoring at the Site beginning when the additional monitoring wells are installed. Existing monitoring wells will be sampled concurrently with new monitoring wells. Fluid-level measurements will be monitored in all wells using an oil/water interface probe. Based on fluid-level measurements, wells containing sufficient groundwater will be purged and sampled. Each well will be purged of three well casing volumes or until the well is purged dry. Groundwater samples will be collected from each monitoring and submitted for laboratory analysis of BTEX by USEPA 8260. Wells with measurable PSH will not be sampled.

3.2 Quality Assurance

Sampling and analytical techniques have been identified in the text above and conforms with the references identified in Subsection B of 20.6.2.3107 NMAC and with 20.6.4.14 NMAC of the water quality standards for interstate and intrastate surface waters in New Mexico.

3.3 Proposed Schedule

The additional delineation activities are proposed for the first quarter of 2019. The limited availability of sonic drill rigs and public notice will dictate the drilling date. Hilcorp will provide Public Notice within 15 days of notice from NMOCD that this Abatement Plan is administratively complete as required per NMAC 19.15.30.15. Hilcorp has submitted a proposed public notice and participation plan under separate cover. If no public comments are received within 30 days of posting public notice, LTE will proceed with permitting and scheduling additional delineation drilling. Prior to any field work, LTE and/or Hilcorp will provide the NMOCD with 48-hour notification.





Following additional delineation activities, LTE will assess and present the results to the NMOCD in a supplemental report to the Stage 1 Abatement Plan. If the subsurface impacts are fully defined, and the geology and hydrology are fully understood after the second round of site assessment activities, LTE will design and submit remediation options as part of the Stage 2 Abatement Plan for approval from the NMOCD within 60 days of the director's approval of the final site investigation report per NMAC 19.15.30.13.D (1).

LTE appreciates the opportunity to provide this report to the NMOCD. If you have any questions or comments regarding this Stage 1 Abatement Plan, do not hesitate to contact Danny Burns at (970) 385-1096 or via email at <u>dburns@ltenv.com</u> or Jennifer Deal at (505) 324-5128 or at <u>ideal@hilcorp.com</u>.





4.0 REFERENCES

Fetter, C.W., 2001, Applied Hydrogeology, 592 p.

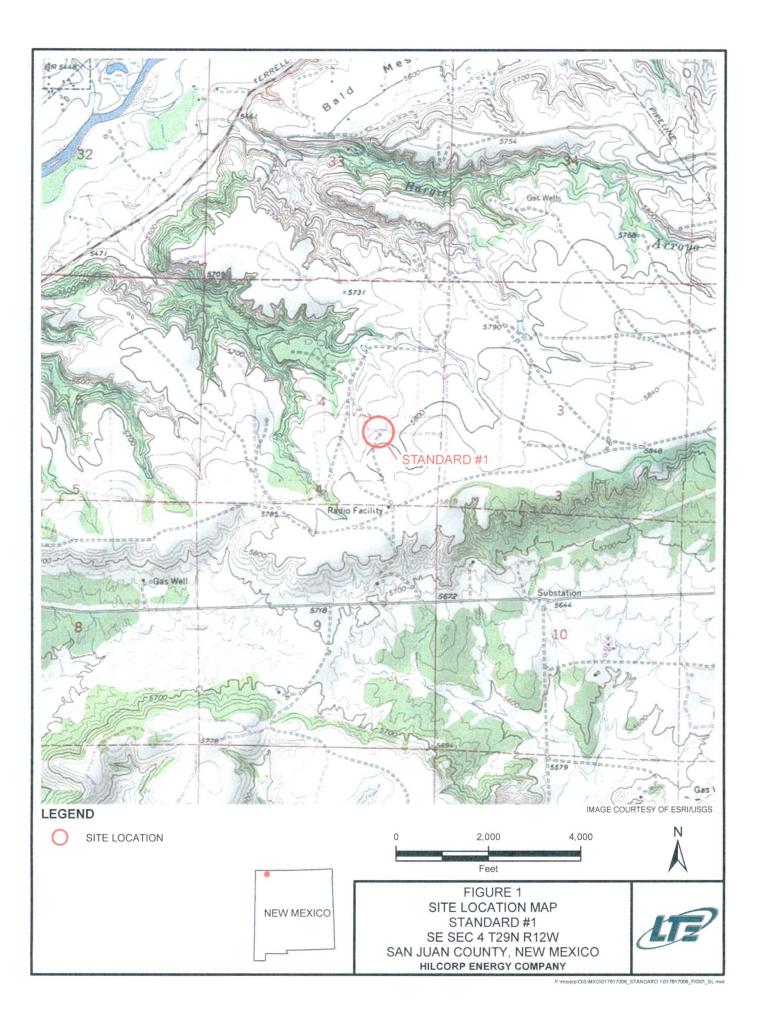
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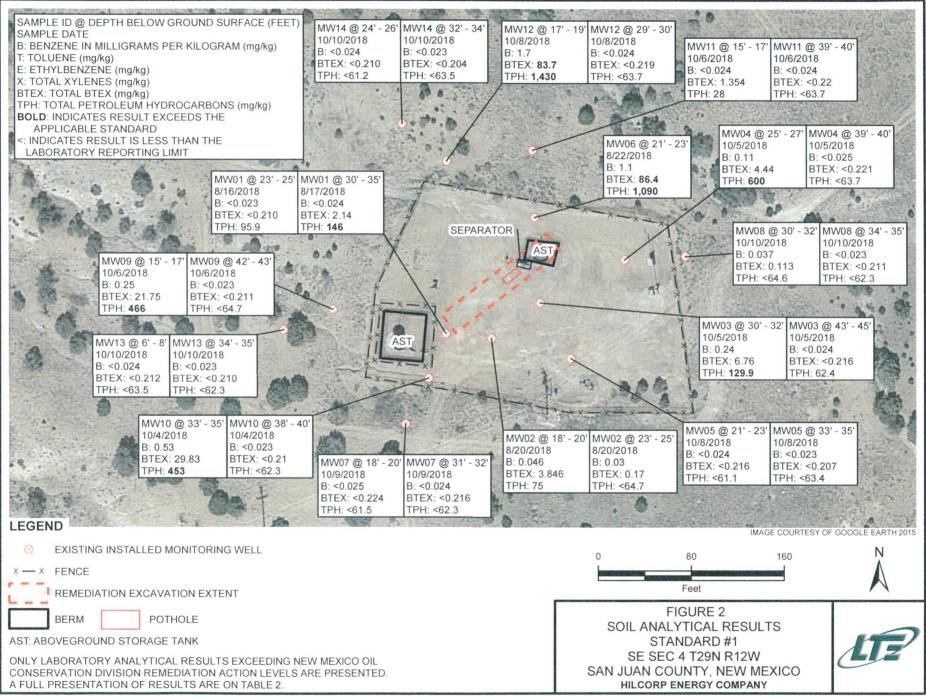
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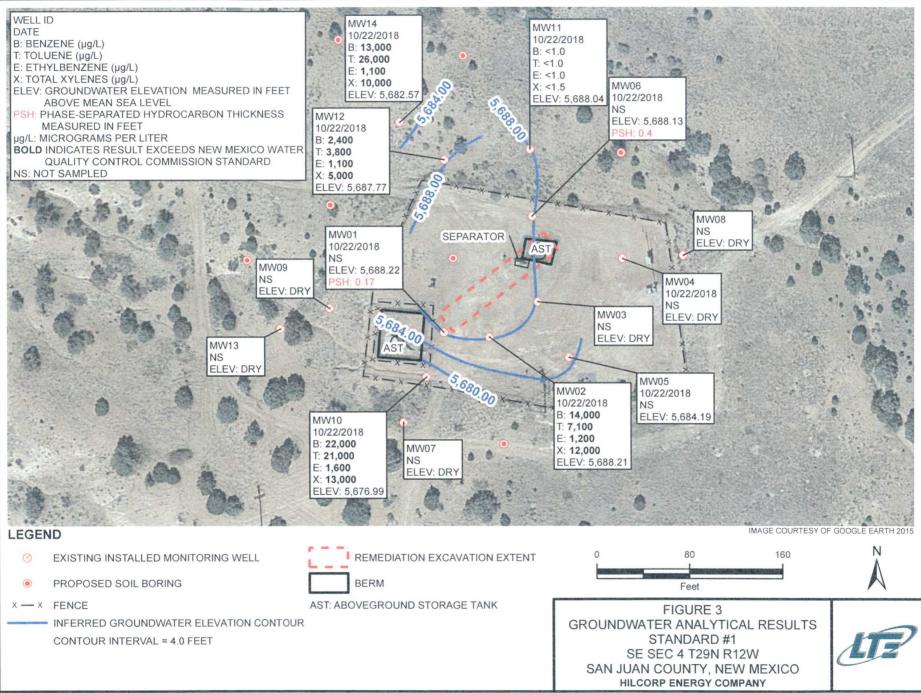


FIGURES





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TABLES

TABLE 1 SOIL ANALYTICAL RESULTS

STANDARD #1 SAN JUAN COUNTY, NEW MEXICO HILCORP ENERGY COMPANY

Soil Sample Identification	Sample Date	PID (ppm)	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)
BR-1	5/7/2018	NA	0.053	<0.041	<0.041	0.11	0.163	<4.1	<10	<50	<64.1
MW01 @ 23' - 25'	8/16/2018	111	<0.023	<0.047	<0.047	<0.093	<0.210	9.9	16	70	95.9
MW01 @ 30' - 35'	8/17/2018	67.3	<0.024	0.20	0.14	1.8	2.14	46	26	74	146
MW02 @ 18' - 20'	8/20/2018	1,809	0.046	0.64	0.26	2.9	3.85	38	37	<49	75
MW02 @ 23' - 25'	8/20/2018	11.0	0.030	0.14	<0.047	< 0.094	0.17	<4.7	<10	<50	<64.7
MW03 @ 30' - 32'	10/5/2018	24.79	0.24	1.7	0.42	4.4	6.76	120	9.9	<49	129.9
MW03 @ 43' - 45'	10/5/2018	11.8	<0.024	< 0.048	<0.048	<0.096	<0.216	<4.8	<9.6	<48	62.4
MW04 @ 25' - 27'	10/5/2018	2,014	0.11	0.82	0.31	3.2	4.44	150	330	120	600
MW04 @ 39' - 40'	10/5/2018	51.4	<0.025	< 0.049	< 0.049	<0.098	<0.221	<4.9	<9.8	<49	<63.7
MW05 @ 21' - 23'	10/8/2018	496.7	<0.024	<0.048	<0.048	<0.096	<0.216	<4.8	<9.3	<47	<61.1
MW05 @ 33' - 35'	10/8/2018	19.2	<0.023	<0.046	<0.046	< 0.092	<0.207	<4.6	<9.8	<49	<63.4
MW06 @ 21' - 23'	8/22/2018	233	1.1	25	5.3	55	86.4	950	140	<49	1,090
MW07 @ 18' - 20'	10/9/2018	18.6	<0.025	<0.050	<0.050	<0.099	<0.224	<5.0	<9.5	<47	<61.5
MW07 @ 31' - 32'	10/9/2018	4.2	<0.024	<0.048	<0.048	< 0.096	<0.216	<4.8	<9.5	<48	<62.3
MW08 @ 30' - 32'	10/10/2018	11.5	0.037	0.076	<0.047	< 0.095	0.113	<4.7	<9.9	<50	<64.6
MW08 @ 34' - 35'	10/10/2018	10.6	< 0.023	<0.047	< 0.047	< 0.094	<0.211	<4.7	<9.6	<48	<62.3
MW09 @ 15' - 17'	10/6/2018	1,821	0.25	3.0	1.5	17	21.75	430	36	<46	466
MW09 @ 42' - 43'	10/6/2018	5.6	< 0.023	< 0.047	< 0.047	< 0.094	<0.211	<4.7	<10	<50	<64.7
MW10 @ 33' - 35'	10/4/2018	2,615	0.53	8.2	2.1	19	29.83	360	93	<48	453
MW10 @ 38' - 40'	10/4/2018	6.5	< 0.023	<0.047	< 0.047	<0.093	<0.21	<4.7	<9.6	<48	<62.3
MW11 @ 15' - 17'	10/6/2018	32.8	<0.024	0.060	0.094	1.2	1.354	28	<9.5	<47	28
MW11 @ 39' - 40'	10/6/2018	8	<0.024	<0.049	<0.049	<0.098	<0.22	<4.9	<9.8	<49	<63.7
MW12 @ 17' - 19'	10/8/2018	28.9	1.7	19	6.0	57	83.7	1,300	130	<46	1,430
MW12 @ 29' - 30'	10/8/2018	10	<0.024	< 0.049	<0.049	<0.097	<0.219	<4.9	<9.8	<49	<63.7
MW13 @ 6' - 8'	10/10/2018	10	<0.024	<0.047	<0.047	< 0.094	<0.212	<4.7	<9.8	<49	<63.5
MW13 @ 34' - 35'	10/10/2018	3	<0.023	< 0.047	< 0.047	< 0.093	<0.210	<4.7	<9.6	<48	<62.3



TABLE 1 SOIL ANALYTICAL RESULTS

STANDARD #1 SAN JUAN COUNTY, NEW MEXICO HILCORP ENERGY COMPANY

Soil Sample Identification	Sample Date	PID (ppm)	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)
MW14 @ 24' - 26'	10/10/2018	18.8	<0.024	<0.047	<0.047	<0.095	<0.210	<4.7	<9.5	<47	<61.2
MW14 @ 32' - 34'	10/10/2018	2.3	<0.023	<0.046	<0.046	<0.092	<0.204	<4.6	<9.9	<49	<63.5
NMOCD T	NMOCD Table 1 Limit		10	NE	NE	NE	50	NE	NE	NE	100

NOTES:

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

NA - not applicable

NE - not established

NMOCD - New Mexico Oil Conservation Division

PID - photo-ionization detector

ppm - parts per million

Table 1 - Closure Criteria for Soils Impacted by a Release per 19.15.19 August 2018

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

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

Bold - indicates value exceeds stated NMOCD standard



TABLE 2 GROUNDWATER ANALYTICAL RESULTS

STANDARD #1 SAN JUAN COUNTY, NEW MEXICO HILCORP ENERGY COMPANY

Sample Identification	Sample Date	Benzene (µg/l)	Toluene (μg/l)	Ethylbenzene (µg/l)	Total Xylenes (µg/l)	Conductivity (µmhos/cm)	Sulfate (mg/L)	Chloride (mg/L)	Total Dissolved Solids (mg/L)
GW01	5/15/2018	3,400	6,800	360	3,600				
GW01	5/16/2018								2,060
GW01	6/12/2018	1,600	4,100	260	3,400	3,400	57	500	
PW01	6/12/2018	5	4	<1.0	10	7,000	160	2,000	3,810
MW-02	10/22/2018	14,000	7,100	1,200	12,000				
MW-10	10/22/2018	22,000	21,000	1,600	13,000				
MW-11	10/22/2018	<1.0	<1.0	<1.0	<1.5				
MW-12	10/22/2018	2,400	3,800	1,100	5,000				
MW-14	10/22/2018	13,000	26,000	1,100	10,000				
NMWQCC Stan	dard	10	750	750	620	NE	600	250	1,000

NOTES:

µg/l - micrograms per liter

µmhos/cm - micromhos per centimeter

mg/L - milligrams per liter

NMWQCC - New Mexico Water Quality Control Commission

NE - not established

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

Bold - indicates value exceeds stated NMWQCC standard





APPENDIX A: SOIL BORING LOGS

			×.,				BORIN Boring/Wel	G LOG/MONITORING	WELL COMPLETI Project: Standa	ON DIAGRAM
2. 35.	0.00	o the					Date:	8/16/2018	Project Number: 01781	
Gacale Harim		·*: • •			Alla.		Logged By:	Eric Carroll	Drilled By: Enviro	
Elevation: 5,79	05	Detector:		PID	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		Drilling Me		Sampling Method: Split S	
Gravel Pack: 10-20 Silica		29')	C210100707070000				Seal: Bentonit	e (14'-17')	Grout: Bentonite/Cement	
Casing Type: Schedule 4							Diameter:	Length: 2" 19'	Hole Diameter: 4.5"	Depth to Liquid:
Screen Type: Schedule 4			Slot: 0.0	10"			Diameter:	Length: 2" 10'	Total Depth: 36.1'	Depth to Water: 21'
Penetration Resistance Moisture	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/R	Remarks	Well Completion
Dry	0.0	N		0	-		SP	Poorly graded sand w/gr compa no stain/o	let	Flush mount
Dry	0.0	N		2 - 3 - 4	- 1 -	40 %	SP	SAA		
Moi	0.0 st	N		4 _ 5 _ 6 _	-		CL	Sandy clay gravel< 15% , reddish No stain	n brown, compact	
Moi	4.3	N		7 _	2		CL	SAA		+ + + +
	7.0	N		9 -	- - -	40 %	CL	Sandy clay and gravel, red cobbles up to 1		
Mois	st			11 12 13	3			No stain/ Switch to OD	odor	
Dry	0.4	N		14 15	-		GP-GC	Poorly graded sand with coarse sand, dark bro No stain/	wn/black, loose	+

									Boring/Well #	MW01	
		7							Project:	Standard #1	
		LT	Envi	ironm	ental,	Inc.			Project #	017817006	
		Adva	ancing Op	portunity					Date	8/16/2018 - 8/17/2	018
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Litho	ology/Remarks	Well Completion
	Dry	17.6	N		15 16 17 18 19	4		GP-GC	ye	gravel, trace clay/silt, light llow brown o stain/odor	
	Dry	25.9	Ν		20	+		GP-GC	ye	gravel, trace clay/silt, light llow brown	
	Dry	96.7	N		21 22 23	5		СН	Silty clay some compact,	o stain/odor sand/gravel, light brown medium plasticity o stain/odor	
	Dry	111	N	MW01 @ 23 - 25'	24 25 26	* + - - -		Bed- rock		vel (bedrock), dark brown o stain/odor	
	Dry	10.5	N		27 28 29 30 31 32 33	6 		Bed- rock	SAA,	No stain/odor	TD = 29' due to slough in borehole
	Dry	67.3	N	MW01 @ 30-	34 35 36	+				SAA	
					30 - 37 -	-			TD at 36.1', bac	ckfilled to 29' to set well	
				10.033							

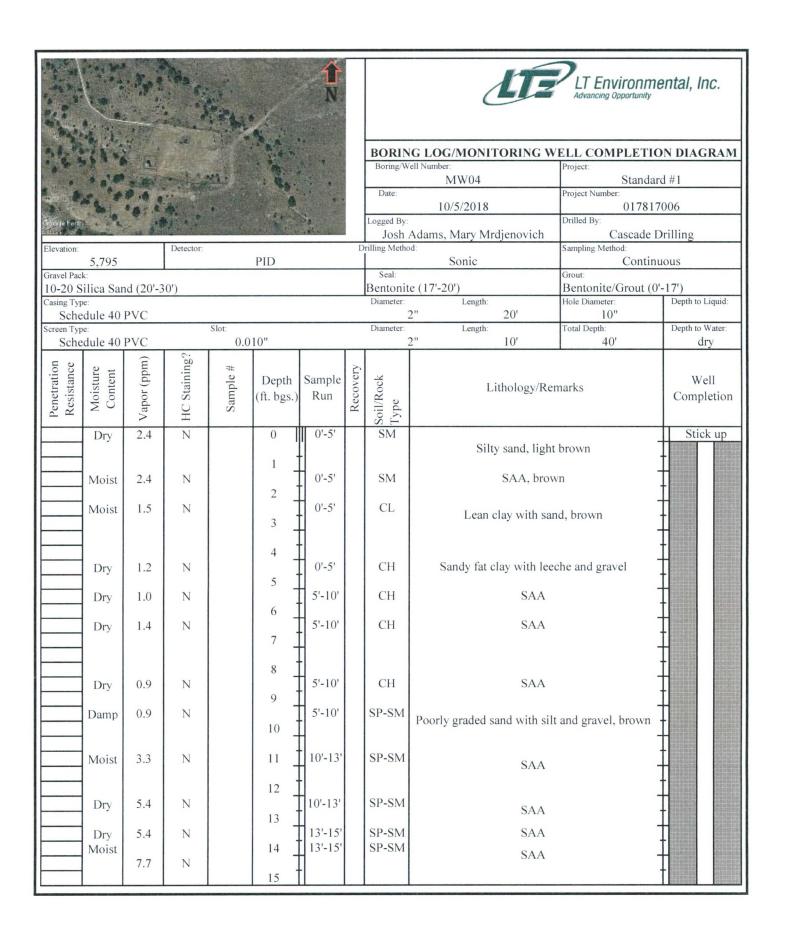
		1		×.			Î.		Ľ		nmental, Inc
· · · · ·							2 4 A.	BORIN	G LOG/MONITORING	G WELL COMPLETI	ON DIAGRAM
	1.00		7	-	1	and an an		Boring/Wel	Number: MW02	Project: Standa	ard #1
1	0 4 S.	8. B						Date:		Project Number:	
19-1 - 19 B		° @ : 0						Logged By:	8/17/2018 - 8/20/2018	Drilled By:	7006
ac nole Farth			教室にある						Eric Carroll	Enviro	Drill
Elevation:	795		Detector:		PID			Drilling Me	thod: ODEX	Sampling Method: Split S	Spoon
Gravel Pack:			L		TID			Seal:	1	Grout:	
10-20 Silica Casing Type:	a Sanc	1 (13'-2	25')					Bentonit	e (10'-13') Length:	Bentonite/Cement	Depth to Liquid:
Schedule	e 40 P	VC							2" 15'	4.5"	
Screen Type: Schedule	e 40 P	VC		Slot: 0.0	10"			Diameter:	Length: 2" 10'	Total Depth: 25'	Depth to Water: $\sim 20'$
Penetration Resistance Moisture	Content	O Vapor (ppm)	Z HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology	/Remarks	Well Completion
Mo	oist	0.0	Ν			+ + + + + + + +	80 %	SM	Silty sand, some clay <1 reddish brow No stai	vn, compact	
	ry	1.4 0.0	N N		5	- 2	30	SM	SA Coarse sand and grav	el, trace fines < 5%,	
50 D	ry	0.0	N		8 9 10	-	%	SP SP	cobbles > 1" diameter, c No stain SAA, No s	n/odor	
Mo	oist	0.0	N		11 12 13	- 3	90 %	SP	Coarse sand some grave loo No stai	el < 15% , dark brown, se	
30 Mo	oist	0.0	N		14 15	-		SP	SA	A	

Project: Standard #1 Project: Standard #1 Project # 017817006 Date 8/20/2018 Well ## Depth Sample Yo Utility	ſ		and the second							Boring/Well #	MW02	
$\begin{array}{ c c c c } \hline \hline$		1										
$\begin{array}{ c c c c c } \hline \hline$			2	LIE	IIVIFON	menta	al, INC			and the second se		
n/a No 15 GP No recovery 15-17; large boulder 50 1.809 Yes MW02 19 30 100 Moist 1.754 Yes 18-20' 20 21 20 21 22 23 5 6P Coarse sandy gravel w/cobbles and boulders, trace fines < 5%, dark brown, loose, slight staining and odor. Becoming saturated at 20'	C			Auvancii	ig opportun	ity				Date	8/20/2018	
Dry 1,809 Yes MW02 19 4 GP Coarse sandy gravel w/cobbles and boulders, trace fines < 5%, dark brown, loose, slight staining and odor. Becoming saturated at 20'	Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #		-	Recovery	Soil/Rock Type	Lithc	blogy/Remarks	Well Completion
$\begin{array}{ c c c c c c } \hline Dry \\ \hline Dry \\ \hline 1,809 \\ \hline Ves \\ \hline 1,754 \\ Ves \\ \hline 18-20' \\ \hline 20 \\ \hline 18-20' \\ 20 \\ \hline 21 \\ 22 \\ 23 \\ 5 \\ \hline 22 \\ 23 \\ 5 \\ \hline 22 \\ 23 \\ 5 \\ \hline 26 \\ \hline 27 \\ 28 \\ 23 \\ \hline 5 \\ 26 \\ \hline 27 \\ 28 \\ 29 \\ 30 \\ \hline 100 \\ \hline Moist \\ \hline 110 \\ No \\ \hline Miwo2 \\ \hline 22 \\ 23 \\ \hline 5 \\ 26 \\ \hline 27 \\ 28 \\ 29 \\ 30 \\ \hline 31 \\ \hline 32 \\ \hline 33 \\ \hline 34 \\ \hline \end{array} \\ \begin{array}{c} GP \\ GP \\ GP \\ Carse sandy gravel w/cobbles and boulders, trace fines < 5%, dark brown, loose, slight stain/odor \\ \hline SAA Slight stain/odor \\ \hline TD at 25' \\ \hline \hline TD at 25' \\ \hline \end{array} \\ \begin{array}{c} Coarse sandy gravel w/cobbles and boulders, trace fines < 5%, dark brown, loose, slight stain/odor \\ \hline TD at 25' \\ \hline \end{array} \\ \hline \end{array}$			n/a	No		15			GP	No recovery	15-17', large boulder	+ $-$
1.809 Yes MW02 (@) 18-20' 19 20 20 20 20 20 20 20 21 4 18 30 % GP Coarse sandy gravel w/cobbles and boulders. trace fines < 5%, dark brown, loose, slight staining and odor. Becoming saturated at 20' Sat 22 23 5 6P SAA Slight stain/odor 100 Moist 110 No MW02 (@) 23-25' 25 5 CL Sandy loam clay, yellow brown, compact No stain/odor 100 Moist 110 No MW02 (@) 23-25' 25 CL Sandy loam clay, yellow brown, compact No stain/odor 100 Moist 110 No 24 CL Sandy loam clay, yellow brown, compact No stain/odor 100 Moist 110 No 24 CL Sandy loam clay, yellow brown, compact No stain/odor 100 Moist 110 No 25 26 CL 28 29 30 31 22 33 4 33 34 34 4 4 4 4						16	-					1 1
1,809 Yes MW02 (@) 18-20' 18 19 19 19 19 10 10 10 10 10 10 10 10 10 10 1754 Yes 21 21 22 23 5 5 6P Coarse sandy gravel w/cobbles and boulders, trace fines < 5%, dark brown, loose, slight staining and odor. Becoming saturated at 20'		Dry				17						1 1
50 1.809 Yes MWU2 19 19 19 100 Coarse sand bounders, sight staining and odor. Becoming saturated at 20' 100 Moist 110 No MW02 24 24 24 24 24 24 25 25 26 27 26 27 26 27 26 27 28 29 30 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>18</td> <td>-</td> <td></td> <td>CP</td> <td></td> <td></td> <td></td>						18	-		CP			
Moist 1,754 Yes 20 96 GP SAA Slight stain/odor Sat 23 5 24 22 23 5 100 Moist 110 No MW02 24 24 25 23 25 26 27 26 27 28 29 29 30 31 32 33 34 10 100 Moist 100<	50		1,809	Yes	a	19	-		Ur	Coarse sandy grav trace fines < 5%,	vel w/cobbles and boulders, , dark brown, loose, slight	
1,754 Yes 22 23 5 100 Moist 110 No 24 25 24 23 5 24 25 25 26 23 25 26 27 26 100 Moist 110 No 26 27 28 29 29 30 31 32 33 34 4 33 34 34 4 4 4 4	I	Moist				20	-					1
Sat 110 No MW02 23 5 24 23 5 100 Moist 110 No 25 25 26 27 26 27 28 29 30 31 32 33 34 34 100 100 No			1 754	Vaa		21	-		GP	SAA S	Slight stain/odor	
100 Moist 110 No 23 24 24 20 23 25 25 26 27 26 27 28 29 30 31 30 31 32 33 34 4			1,734	res		22	-					1
100 Moist 110 No MW02 Sandy loam clay, yellow brown, compact 23-25' 25 26 27 26 TD at 25' 28 29 30 31 10 10 30 31 32 33 10 10 33 34 34 10 10 10		Sat				23	- 5					
Image: Constraint of the second se	100	Aniat	110	No	MW02	24	-		CI	Sandy loam alay	· ····································	
		vioist	110	INO		25			CL	No	o stain/odor	
						26					1D at 25	+
						27	-					+
						28	-					+
						29						+
						30						+
						31	-					+
						32					-	+
						33						+
						34					-	+
						35						+
36						36					-	+
						37						ł

						1		G WEL		C	EN DIAGRA	Advancing Opportunity	nental, Inc.
* *	1.0	1.167		11	1			Date:		1W03		Standa Project Number:	rd #1
· · · ·	541	· · · · · · · · · · · · · · · · · · ·	-					8/20/2	2018-8/2	3/2018,	10/5/2018	01781 Drilled By:	7006
General Forth	and the second second		N I - 7				ALL		ric Carro	ll, Josh /	Adams	Cascade	Drilling
Elevation:	5,795		Detector:		PID			Drilling Met		Sonic		Sampling Method: Contir	nuous
Gravel Pac 10-20 S	k: Silica Sar	nd (20'-3	0')					_{Seal:} Bentonit	e (17'-20	')		Grout: Bentonite/Grout ((
Casing Typ								Diameter:	2"	Length:	20'	Hole Diameter: 10"	Depth to Liquid:
Screen Typ				Slot: 0.01	0"			Diameter	2"	Length:	10'	Total Depth: 45' (set @ 30')	Depth to Water: dry
Penetration	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery			Li	ithology/Rer		Well Completion
	Dry Dry	0	N		0 1 2 3 4 5 6 7 8 9	1	10 0 %	SP CL CL	Sano	<15%, r dy clay, t SA	No stain/oc A No stain ow stem at 8	n, compact or reddish brown, lor /odor /, switch to ODEX	- Flush Moun
	Moist Dry	5.30 28.7	N N		10 - 11 -	10'-13'	40 %	SP-SM			No stain/od	rk brown, loose, or t and gravel, light	
	Dry	42.0	N		12 13	10'-13'		SP-SM	Роо	rly grade	ed sand with	silt and gravel	
	Moist	34.9	N		-	13'-15'		SW	We	ell grade	d sand with	gravel, brown	+
	Moist	31.9	N		14 15	-		SP-SM		-		t, dark brown/grey	$\frac{1}{1}$

	/	-							Boring/Well #	MW03	
			T Env	ironme	ental	Inc.			Project:	Standard #1	
	JZ	AO	Ivancing Op	portunity	nnear, i				Project #	017817006	5
									Date	8/20/18-8/23/18,	10/5/18
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery		Litho	logy/Remarks	
	Moist	59.6	N		15	15'-20'		SP-SM		SAA	
	Moist	45.9	N		16 17	15'-20'		SP-SM		SAA	
	Moist	143.6	N		18 19	15'-20'		SP-SM		SAA	
	Moist	2,294			20 - 21	20'-25'		SP-SM	SAA	with grey stain	+
	Moist	539.8	Υ,			20'-25'		ML	Silt with s	sand, light brown	
	Moist	1,602	yellow Y, yellow		22 23	20'-25'		ML		SAA	
	Dry	1,268	Y, grey		24 25	20'-25'		СН	Fat clay	with sand, brown	
	Moist	1,675	Y, vellow		26	25'-30'		СН		SAA	
	Moist	2,460	Y, grey/		27	25'-30'		SP-SM		and with silt, grey/black	
	Moist	1,979	Y, black/ grey		29	25'-30'		СН	Fat clay with	sand, brown and grey	
	Moist	2,474	Y, grey/ black	MW03 @ 30'-32'	30 31	30'-35'		СН		SAA	TD at 30'
	Moist	2,089	Y, grey yellow		32 33	30'-35'		СН		SAA	+
	Dry Dry	1,436 154.1	Y, grey N		34 _ 35 _	30'-35' 35'-40'		CH CL	Lean clav	SAA with sand, brown	+ + +
	Diy	107.1			36 37	-			Louir only		+

All Allertown								Boring/Well #	MW03
	IT	Fnvir	onme	ental	Inc			Project:	Standard #1
	Advan	icing Oppo	ortunity	ental, l				Project #	017817006
								Date	8/20/18-8/23/18, 10/5/18
Penetratio n <u>Resistance</u> Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Litho	ology/Remarks
Dry	66.6 70.1 12.2	N N N N N	Sample	(ft.		Recove	D Type	Lean clay w Poorly graded s ligh	vith sand light brown sand with silt and gravel at brown/tan SAA SAA SAA sAA kfilled to 30' to set well



		-							Boring/Well #	MW04	
			175-	uiron	monto	1 100			Project:	Standard #1	
1	L	2	LIEL	vironi	menta	и, пс.			Project #	017817006	
C		and south	Advancing	Opportuni	ty				Date	10/5/2018	
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Litho	blogy/Remarks	Well Completion
	Dry	8.5	N		15 16	15'-23'		SP-SM		SAA	+
	Damp	8.9	N		17	15'-23'		SP-SM		SAA	+
					18 19	-				SAA	
	Moist	13.4	Y, black		20	15'-23'		СН		h gravel, brown with black ing, gas odor	
	Damp	1,045	N		21 22	15'-23'		СН	Fat clay with	n sand and gravel, tan	
	Dry	60	N		23 24	23'-30'		СН	SAA, brow	wn, strong HC odor	
	Damp	2,014	N	MW04 @ 25'-27'	25 26	23'-30'		СН	SAA,	strong HC odor	
	Damp	2,014	N	23-21	27 28	23'-30'		СН	SAA,	strong HC odor	
	Damp	706.5	Y, dark grey		29	23'-30'		СН	SAA dark greyis	h-brown, strong HC odor	
	Damp	1,844	Y, grey		³⁰ 31	30'-35'		СН	Fat clay, brown	, grey staining, HC odor	TD at 30'
	Damp Dry	799 710	Y, dark grey Y,		32 33 34 35 36 37	30'-35' 35'-40'		CH CL		strong HC odor rown with sand, slight HC odor	

Dorng Walf Well Completion Dry 51.4 Y. State 38 35 40 5 5 5 5 5 5 5 5 5 5 5 5 </th <th></th>												
Underland Underland Upper Lating U		_	/					Boring/Well # MW04				
Total Total Total Total Total Total Total Total Total Tot		17		ITC	nuiro	nmon	tal Inc	Project:	Standard #1			
Total Total Total Total Total Total Total Total Total Tot		11	2	LIE		iiiieii	al, III			Project #		
unspective unspective <td></td> <td></td> <td></td> <td>Advanci</td> <td>ing Upporti</td> <td>inity</td> <td></td> <td></td> <td></td> <td colspan="2"></td> <td></td>				Advanci	ing Upporti	inity						
Dry 51.4 Y. 37 CL SAA Dry 9.5 Y. 38 35-40' CL SAA Jor 9.5 Y. MW04 40 SS Jor 9.5 Y. MW04 40 SS Jor 9.5 Y. MW04 40 SS Jor 1 42 43 1 1 H 44 45 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 <t< th=""><th>c a</th><th>0</th><th></th><th></th><th>-++</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<>	c a	0			-++							
Dry 51.4 Y. 37 CL SAA Dry 9.5 Y. 38 35-40' CL SAA Jor 9.5 Y. MW04 40 SS Jor 9.5 Y. MW04 40 SS Jor 9.5 Y. MW04 40 SS Jor 1 42 43 1 1 H 44 45 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 <t< td=""><td>atio</td><td>ent</td><td>or n)</td><td>ing</td><td>le #</td><td>Denth</td><td>Sample</td><td>/ery</td><td>ock</td><td></td><td></td><td>Well</td></t<>	atio	ent	or n)	ing	le #	Denth	Sample	/ery	ock			Well
Dry 51.4 Y. 37 CL SAA Dry 9.5 Y. 38 35-40' CL SAA Jor 9.5 Y. MW04 40 SS Jor 9.5 Y. MW04 40 SS Jor 9.5 Y. MW04 40 SS Jor 1 42 43 1 1 H 44 45 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 <t< td=""><td>etra ista</td><td>oist</td><td>ap</td><td>ain</td><td>du</td><td></td><td>Run</td><td>col</td><td>e (Rc</td><td>Lith</td><td>ology/Remarks</td><td></td></t<>	etra ista	oist	ap	ain	du		Run	col	e (Rc	Lith	ology/Remarks	
Dry 51.4 Y. 37 CL SAA Dry 9.5 Y. 38 35-40' CL SAA Jor 9.5 Y. MW04 40 SS Jor 9.5 Y. MW04 40 SS Jor 9.5 Y. MW04 40 SS Jor 1 42 43 1 1 H 44 45 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 1 1 H 1 1 1 <t< td=""><td>ene</td><td>Cά</td><td>> 1</td><td>Ste</td><td>Sai</td><td>(It. 0gs.)</td><td>itun</td><td>Re</td><td>yp</td><td></td><td></td><td>compiction</td></t<>	ene	Cά	> 1	Ste	Sai	(It. 0gs.)	itun	Re	yp			compiction
Dry 51.4 Y, sight	P P					27		-	SE			
Dry 9.5 Sight yellow 38 39 39 Dry 9.5 Y, sight yellow 39 40 39 41 42 41 42 43 42 43 44 45 46 44 45 46 47 48 49 50 51 52 53 53 54 55 56 57 56 57 58 66 57		Duri	51.4	V		57		-	CI			
Dry 9.5 Y. Sight yellow MW04 (@) 39-40 39 41 40 41 42 43 44 45 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58		Dry	51.4			20	- 33-40		CL		SAA	+
Dry 9.5 Y. slight yellow 39 40 40 40 40 40 40 40 40 40 40 40 40 40						38 -	H					+
Dry 9.5 Y. MW04 40 @i 40 41 42 41 42 43 42 43 44 45 46 46 45 46 45 46 46 47 48 48 49 50 51 52 53 53 54 55 56 57 58				yellow			-1					+
slight yellow @ 40						39 -	Н					+
singlin 100 440 yellow 39-40 41 42 42 43 44 44 44 45 46 46 47 48 49 50 51 52 53 53 54 55 56 57 58		Dry	9.5			.			SS	Sandstone, light	brown with thin grey layers	Ļ
41 42 42 43 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58						40 -	Ц			, 0	<i>3</i> , <i>,</i> ,	
				yellow	39'-40'		LI			TD at 40', ba	ackfill to 30' to set well	Ļ
						41	Ц			15 11 10,00		L I
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	~ A ~				a de te			BORIN Boring/Well		Project:	JN DIAGKAM
a la		an at the		223-1	: 0.				MW05	Standa	rd #1
	se t	10.0	Line and					Date:	10/8/2018	Project Number: 01781	7006
Solge Ferth					and free	-	100	Logged By:		Drilled By:	
Elevation:	a literature of		Detector:	计学们的记录 的	THE REAL	18100	9	Drilling Met	Josh Adams	Cascade Sampling Method:	Drilling
	5,795				PID				Sonic	Contin	uous
Gravel Pack 10-20 S	^{k:} ilica Sar	nd (14'-2	(7')					Seal: Bentonite	e (11'-14')	Grout: Bentonite/Grout (0)'-11')
Casing Typ	be:							Diameter:	Length:	Hole Diameter:	Depth to Liquid:
Screen Typ	edule 40	PVC		Slot:				2 Diameter:	<u>L'' 17'</u> Length:	Total Depth:	Depth to Water:
	dule 40	PVC		0.0	10"				2" 10'	35'	28'
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/	Remarks	Well Completion
	Dry	1.2	N		0	0'-5'		SP-SM			Stick up
	Dry	0.8	N			0'-5'		SP-SM	Silty sand with some p	bebbles, light brown	
	Dry	1.6	N		4 -	0'-5'		SP-SM			$\frac{1}{4}$
	Dry	1.9	N			5'-10'		SP-SM	Poorly graded sand v	vith silt and gravel	
	Moist	1.6	N		6 - 7 - 8 -	5'-10'		СН			+
					-	H			Sandy fat clay	with gravel	
	Moist	5.3	N		9 10	5'-10'		SP-SM	Poorly graded sand v	vith silt and gravel	
	NR	NR			11	10'-13'			No Reco	overy	
	Dry	16.9	N		12 13	10'-13'		SP-SM	SAA	Ą	
	Moist	29.0	Ν		14	13'-15'		SW-SM	Well graded sand with s	silt and gravel, brown	<u>]</u>
					15	-					1

	MW05			
LT Environmental Inc.	Boring/Well # Project:	Standard #1		
LT Environmental, Inc. Advancing Opportunity		Project # Date	017817006 10/8/2018	
	2 2	Date	Date 10/8/2018	
Penetration Resistance Moisture Content (ppm) (ppm) Kaining Brainin Brainin Brainin Brainin B	Reco Soil/H Ty	Lithc	ology/Remarks	Well Completion
Moist 10.2 N 15 15'-25'	SW-SM		SAA -	
16				+
17 15'-25'	SW-SM		SAA	
Moist 58.7 N				$\Pi \square I$
19				
Moist 148.9 Y, black 15'-25'	SW-SM			#
20		Slig	ght HC odor	$H \vdash I$
Moist 496.7 N MW05 21 15'-25'	SW-SM			1
	5 W-51VI			
21-23' 23				+ + 1
Moist 143.4 N 15'-25'	СН	Sandy fa	t clay with gravel	
				1 🗄
Moist 19.7 N 25 25'-31'	СН		SAA	$H \vdash I$
				1
27				
Moist 6.4 N 28 25'-31'	СН		SAA	TD at 27'
29			3	÷ -
Moist 9.0 N	СН		SAA	t
				+
Moist 11.4 N 31 31'-35'	СН		SAA	Į.
			OT MA	1
33				ł
Moist 19.2 N MW05 @ 34 31'-35'	СН		SAA	Ŧ
33'-35'				†
35		TD 35'. backf	illed to 27' to set well	+
36				1
37				+
	noroz Medinia Canada			

					*		N	BORING Boring/Well N	G LOG/MONITORING	C WELL COMPLET	
		· · · ·		~1				Date:	MW06	Stand Project Number:	ard #1 17006
Got de Ferlin	-	*#: #	A		1	Sa.		O/ Logged By:	21/2018 - 8/23/2018 Eric Carroll	Drilled By:	o Drill
Elevation:	5,795		Detector:		PID			Drilling Metho H		Sampling Method:	Spoon
Gravel Pack 10-20 Si		nd (12'-2	24')					Seal: Bentonite		Grout: Bentonite/Cemen	
Casing Type	e: dule 40							Diameter: 2"	Length:	Hole Diameter: 10"	Depth to Liquid:
Screen Type	dule 40			Slot: 0.0	10"			Diameter: 2"	Length:	Total Depth: 25'	Depth to Water: 24'
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery		Lithology		Well Completion
40	Dry Moist	0.0	N		0 1 2 3 4 5	1 	90 %	SP-SM	Poorly graded sand, I reddish brov No stai Poorly graded sand, t gravel, reddish b	vn, compact n/odor race silt/clay < 15%,	
	Dry	9.8	N		6 7 8 9	2	40 %	GP	No stair Auger ref Sandy gravel, grey an No stair	usal at 7' Id dark brown, loose n/odor	
	Dry Moist	12.4 37.2	N N		10 11 12	-	40	GP GP	SAA, No SAA, No		
	Moist	53.3	N		13 14 15	- 3	%	GP	SAA, No	stain/odor	

			Boring/Well # MW06					
	TEnuiron	montal	Inc	Project: Standard #1				
	T Environ	mental,	IIIC.	Project # 017817006				
A	avancing opportuni	()				Date 8/21/2018 - 8/23/2018		18
Penetration Resistance Moisture Content Vapor (ppm)	Staining Sample #		ample Run	Recovery	Soil/Rock Type	Lithe	ology/Remarks	Well Completion
Moist 867	N Y Y MW06 @ 21'-23' Y	15 1 16 - 17 - 18 - 19 - 20 - 21 - 22 - 23 - 24 - 25 - 26 - 27 - 28 - 29 - 30 - 31 - 32 - 33 - 34 - 35 - 36 - 37 -	4	No recovery % 80 % Vo recovery	GP GP CL Bed-	Sandy gravel, loo and Sandy clay, rust brov Sligh Bedrock, o	o stain/strong odor ese, yellow brown staining l strong odor colored mottling, yellow wn, compact it stain & odor dark grey, compact 5', well set at 24'	TD at 24'

						1	1		LE	Advancing Opportunity	ental, Inc.
1.1			A. I.		-			BORIN	G LOG/MONITORING	WELL COMPLET	ION DIAGRA
. 4. 8		2	A Statement	AAK	1			Boring/Wel	l Number: MW07	Project: Standa	and #1
10 0		0.6			· .			Date:		Project Number:	
		* # · . *						Logged By:	10/9/2018	01781 Drilled By:	17006
Crie Fadi	a ray to				1. 1. A. A. A.	184			Josh Adams	Cascade	Drilling
evation:	5795		Detector:		PID			Drilling Me	thod: Sonic	Sampling Method: Contin	nuous
avel Pacl	k:	1 (01 22						Seal:		Grout:	
ising Typ	e:	nd (9'-22	()			and the second		Diameter:	ite (7'-9') Length:	Cement Slurry (0' Hole Diameter:	Depth to Liquid:
Sche reen Typ	dule 40	PVC		Slot:				Diameter:	2" 13' Length:	10" Total Depth:	18' Depth to Water:
	dule 40	PVC		0.0	10"				2" 10'	35'	dry
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/R	emarks	Well Completion
					0						Stick up
					1 2 3 4			SM	0-5' Removed with hand Silty Sand, lig		
	Dry	1.3	N		5	5'-10'		SM	Silty sand, light No stain/o		
	Dry	2.4	Ν		7 - 8 - 9	5'-10'		SP-SM	Poorly graded sand with si	lt, gravel and cobbles	
	Dry	4.5	Ν		10	5'-10'		SP-SM	SAA		
	Dry	2.6	Ν		10 -	10'-11'		SP-SM	SAA		1
	Dry	10.4	Ν		12	11'-12.5'		SP-SM	SAA		
	Dry	11.7	Ν		13	12.5'-15'		SP-SM	SAA		
					14 15	-		SP-SM	SAA		

									Boring/Well #	MW07	
		- Constant of	7	-					Project:	Standard #1	
	L	12	LI	Enviro	nmen	tal, Inc.			Project #	017817006	
			Advan	cing Upport	unity				Date	10/9/2018	
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Litho	ology/Remarks	Well Completion
	Dry	4.8	N		15 16	15'-24.5'		SP-SM		SAA	
	Dry	4.3	N		17	15'- 24.5'		SP-SM			
	Moist	18.6	Ν	MW07 @ 18'-20'	19 20	15'- 24.5'		СН	Sandy	fat clay, brown	
	Moist	14.1	Ν		21	15'- 24.5'		СН		SAA	
	Damp	6.7	Ν		22 23	15'- 24.5'		СН		SAA	TD to 22'
	Moist	6.4	Ν		24 25 26	24.5'-		СН	SAA, lig	ht gray and brown	+
	Moist	5.7	Ν		27 28	24.5'- 32'		СН	SA	A dark gray	+
	Moist	7.2	Ν		29 30	24.5'- 32'		СН		SAA	+
	Moist	4.2	Ν	MW07 @ 31'-32'	³¹ ³²	24.5'- 32'		СН		SAA	
				51-52	33 34	-			TD at 32', ba	ckfill to 22' to set well	+
					35 _ 36 _	-					+
					37						†
						the second state of the second state of the					

				R. A.			N		<u>II</u>		mental, Inc.
0.8. 13		31.			. A C			BORIN	G LOG/MONITORING	WELL COMPLET	TON DIAGRAM
1 9 9		1			· .	1	Per la	Boring/Wel		Project:	
	10 A	a m		11	1 80		2210	Date:	MW08	Project Number:	lard #1
	5 . 6		L'and			N 100 .	***	Date.	10/10/2018		17006
acre Farth			6 · · · ·		A start	13.		Logged By:		Drilled By:	
Elevation:	and the second second		Detector:		的大市业的经	A 48 10		Drilling Me	Josh Adams	Sampling Method:	e Drilling
sie ration.	5,795		Detector		PID			Drining wie	Sonic		inuous
Gravel Pack		1 (12) 2	251)					Seal:	4- (01 101)	Grout:	01)
Casing Typ	ilica Sar e:	ia (12-2	23)					Diameter:	te (9'-12') Length:	Bentonite Gel (0) Hole Diameter:	-9') Depth to Liquid:
Sche	dule 40	PVC							2" 15'	10"	
Screen Typ Sche	e: dule 40	PVC		Slot:	10"			Diameter:	Length: 2" 10'	Total Depth: 35'	Depth to Water: dry
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs		Recovery	Soil/Rock Type	Lithology/I	Remarks	Well Completion Stick up
	Dry	0.6	N		1 2 3 4	+++++++++++++++++++++++++++++++++++++++		SM	Removed by hand, S	Silty sand, brown	
	Dry	1.5	N		5	5'-10'		SM	Silty sand, ta	an/cream	
	Dry	2.5	N		7 8	5'-10'		SP-SM	Poorly graded sand with s	ilt, gravel and cobble	s -
	Dry	2.5	N		9	5'-10'		SP-SM	SAA	Δ	+
	Dry	2.0	N		10	10'-15'		SP-SM	SAA		
	Dry Dry	4.2 4.0	N		11 12 13 14	10'-15'		SP-SM SP-SM	SAA	Λ.	
	,				15	1			SAA	Δ	†

									Boring/Well #	MW08	
	1-7		7 177	- nuiro	amont	al Inc			Project:	Standard #1	
	14	2	LIE	NVIROI ing Opportu	ment	ai, inc	•		Project #	017817006	
			Advanc	ing opportu	inty				Date	10/10/2018	
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithe	ology/Remarks	Well Completion
	Dry	5.1	N		15 16	15'-20'		SP-SM		SAA -	
	Moist	2.8	N		17 18	15'-20'		SP-SM		SAA	
	Moist	3.4	Ν		19 20	15'-20'		SP-SM		SAA	
	Moist	1.4	Ν		20	20'-25'		СН	Sandy fat clay with		
	Moist	3.8	N		22 23	20'-25'		СН		SAA	
	Moist	2.7	N		24 25	20'-25'		СН	SAA, dark bro	wn no gravel or cobbles	TD at 25'
	Moist	0.8	Ν		26	25'-30'		СН		SAA	
	Moist	1.8	N		27	25'-30'		СН	SAA, ve	ry brown Fe stain	
	Moist	5.2	Ν		29 30	25'-30'		СН	SAA d	ark brown/grey	+
	Moist	11.5	Ν	MW08 @ 30'-32'	31	30'-35'		СН		SAA	[
	Moist	9.6	N	50-52	32 33	30'-35'		СН		SAA	
	Moist	10.6	N	MW08 @ 30'-32'	34 35 36	30'-35'		СН	TD at 35', bacl	SAA kfilled to 25' to set well	
					37	-					Ŧ

				N. M.		4	V			Î	Advancing Opportunity	ental, Inc.
0, 4, 10	16.5					1		BORIN	G LO	G/MONITORING	WELL COMPLET	TION DIAGRAM
**			ALC: NO.	A48	They are			Boring/Well	Number:	MW09	Project:	dard #1
10 - PA	2000	0.6			. 48.			Date:			Project Number:	
-	~ %	2 g . 1	-					Logged By:	1	0/6/2018	Drilled By:	817006
Cascile Farth	· · · ·				1. 1.	. el .		Logged By	Mary	Mrdjenovich		le Drilling
Elevation:	5,795		Detector		PID			Drilling Met		Sonic	Sampling Method:	tinuous
Gravel Pac	k:		I		FID			Seal:		Solite	Grout:	
10-20 S Casing Typ	Silica Sa	nd (12'-2	25')					Bentonit	e (10'-	12') Length:	Bentonite Gel ()'-10') Depth to Liquid:
Sche	dule 40	PVC							2"	15'	10"	
Screen Typ Sche	e: edule 40	PVC		Slot: 0.0	10"			Diameter:	2"	Length: 10'	Total Depth: 35'	Depth to Water: dry
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type		Lithology/R	Remarks	Well Completion
	Dry	5.4	N		0	0'-5'		SM		Silty Sand,	brown	Stick up
	Dry	8.8	N		1	0'-5'	100%	SM		SAA, with	gravel	
	Dry	12.50	N		3 - 4 - 5 -	0'-5'		CL	Sandy	lean clay with grave	el, light brown, leec	he -
	Dry	5.0	N		5 -	5'-6'	100%	CL		SAA		
	Dry	5.3	N		6	6'-10'		GM	5	Silty sand gravel, lig	nt grayish-brown	
	Dry	7.6	N		8	6'-10'	60%	GM				
	Dry	14.1	N		10	- 10'-13'		GM		SAA, grayisl SAA		
	Moist	282.2	Y, gray yellow		12 13 14 15	13'-20'	100%	СН	F	Fat clay, dark grayish	-brown, Hc odor	

		-							Boring/Well #	MW09	
	1		1	Envir		tal In	0		Project:	Standard #1	
	14	2	L		onmen rtunity	ital, III	C.		Project #	017817006	
(_		Auvan	icing oppoi	tonity				Date	10/6/2018	
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)		Recovery	Soil/Rock Type	Lithe	ology/Remarks	Well Completion
	Damp	1821	Y, slight orange	MW09 @ 15'- 17'	15 16	13'-20'		СН	SA	A, Hc odor	
	Dry	511.1	Y, orange		17 18 19	13'-20'	100%	СН	SAA, gray	and orange, Hc odor	
	Damp	893.3	N		20	20'-25'		СН	SAA, da	ark gray, Hc odor	
	Damp	799.9	N		22	20'-25'	100%	СН	SAA, tan with	gray banding, Hc odor	
	Dry	122.2	N		24	20'-25'		СН	Fat cla	ay, tan, no odor	
	Dry	74.6	Y, orange		25 26	25'-28'		СН	SAA, with sand p	ockets and lenses, Hc odor	TD at 25'
	Dry	17.60	N		27	25'-28'	100%	Bedrock		ellowish-brown with gray banding	ŧ
	Dry	62.0	N		28 29	28'-35'		Bedrock		SAA	+
	Dry	23.9	Y, slight orange		30 31 32	- 28'-35'	100%	Bedrock	Sz	AA, gray	+ + + + +
	Dry	32.9	N		33 34	- 28'-35'		Bedrock	S/	AA, brown	+ + +
	Dry	11.3	N		35 36	35'-43'		Bedrock	S	SAA, gray	‡ + +
					37						<u>†</u>

	1		and and		X		IN				LT Environmer Advancing Opportunity	
1. 34					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						WELL COMPLET	TION DIAGRA
	1.10		* 1 × 1	A				Boring/W		r: MW10	Project	dard #1
. #.	5, "*	0.00	and the second					Date:		0/4/2018	Project Number:	317006
inie Ferlijs			97. 1		a series	Sie.		Logged By:			Drilled By:	
evation:	and the second	an Mar	Detector			.8	I	Drilling Metho		sh Adams	Sampling Method:	e Drilling
ravel Pack	5,795				PID			Seal:		Sonic		tinuous
0-20 Si	lica Sar	nd (15'-3:	5')					Bentonite	e (9.5'-1		Bentonite/Gel (0	
asing Type Sche	e dule 40	PVC						Diameter:	2"	Length: 15'	Hole Diameter: 10"	Depth to Liquid
creen Type				Slot:)10"			Diameter:	 2"	Length:	Total Depth:	Depth to Water 16'
			ç.							20'	35'	10
Resistance	Moisture Content	Vapor (ppm)	Staining?	Sample #	Depth	Sample	Recovery	Soil/Rock Type		T 11 1	/D 1	Well
Penetration Resistance	Moisture Content	por	C Sta	amp	(ft. bgs.	-	teco	oil/Roc Type		Lithology	Remarks	Completio
2 X	2	Va	HC				<u>щ</u>					
	Dry		N		0	0'-5'		SM-SP	Po	orly graded sand w	vith silt, light brown	Stick up
					1	+1						+
						41						-
	Dry	2.5	N		2	0'-5'	100%	SM		Silter and Light he		
					3	4				Silty sand, light bro	own, plastic lines	
					4	<u>+</u>]						
			•		5	Ţ						T
	Dry	1.8	N		5	5'-15'		SM		SA	А	
					6	1						
					7	+						+
	Moist	2.0	N			5'-15'		ML	Silt wi	th sand, gravel an	d organics, light brow	
					8	+1					0	
	D				9							
	Dry	6.1	N		10	5'-15'	100%	ML		SAA, with grav	el and cobbles	+
						Ţ	10070					
	Dry	7.5	N		11	5'-15'		SP-SM		D 1 1 1	1 11 1	+
					12	Ť.				Poorly graded sa	ind with gravel	
					13	+						+
	Dry	7.0	Ν			5'-15'		SP-SM		SA	A	1
					14							4 11
					15	4						41 1

							Boring/Well #	MW10	
		Envi	ronmo	ntal Inc			Project:	Standard #1	
	Adv			ental, Inc.			Project #	017817006	
0	707	incing opp	Jonunity				Date	10/4/2018	
Penetration Resistance Moisture Content	Vapor (ppm)	Staining	Sample #	Depth Sample (ft. bgs.) Run	Recovery	Soil/Rock Type	Lithc	ology/Remarks	Well Completion
Dry	16.7	N		15 15'-25'		SP-SM		SAA	
Moist	4.5	N		16 15'-25' 17 18		SW-SM	Well gra	ded sand with silt	
Moist	14.8 1066	N Y,		19 20 21 21 22 15'-25' 22		SP-SM ML		sand with silt and gravel sand, light brown	
Moist	1098	Y,		22 23 24 25		ML		SAA	
Moist	2188	Y,		26 27 25'-30'		ML	No	Recovery SAA	
Moist	1552	Y,		29 + 25-30	100%	ML		SAA	
Moist	1698	Y,		30 31 32 30'-35'		ML	Nc	Recovery SAA	
Dry	2615	Y,	MW10	33 <u>3</u> 30'-35' 34 <u>35</u>		SM	Silty sand, light	t brown Strong Hc odor	
				35 <u>-</u> 36 <u>-</u> 37 <u>-</u>			No	Recovery	TD at 35'

Drug Nota Million Dispert Sample Data Openation (1, bps) Million unitigging unitigging and and and and and and and and and and					fot an incompany of local and Adamson Court for			and and an drive set in same service and		
Interview of the product of								Boring/Well #	MW10	
Dec Dec <td></td> <td></td> <td>Envi</td> <td>onm</td> <td>antal Inc</td> <td></td> <td></td> <td>Project:</td> <td>Standard #1</td> <td></td>			Envi	onm	antal Inc			Project:	Standard #1	
Dec Dec <td></td> <td>LI</td> <td>EIIVII</td> <td>OIIIIE</td> <td>intal, inc.</td> <td></td> <td></td> <td>Project #</td> <td>017817006</td> <td></td>		LI	EIIVII	OIIIIE	intal, inc.			Project #	017817006	
Dry 12 N Bry 6.5 N MW10 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57	C	AUVAI	icing opp	onumity			_	Date	10/4/2018	
Dry 6.5 N MW10 38 1 SW SAA 10 40 41 42 1 1 1 40 41 42 43 1 1 1 43 44 45 46 1 1 1 44 45 46 1 1 1 1 1 44 45 46 1 1 1 1 1 1 50 51 52 53 54 55 56 1				Sample #	(ft. bgs.) Run	Recovery				Well Completion
Dry 6.5 N MW10 39 40 41 42 43 44 44 45 46 47 48 49 50 51 51 52 53 54 55 56 57 57	Dry	12	N				SW			+
41 42 43 44 44 45 46 47 48 49 50 51 51 52 53 54 55 56 56 57	Dry	6.5	Ν	MW10			SW		SAA	
42 43 43 44 44 45 46 46 47 48 49 50 50 51 51 52 53 54 55 56 57 57					T I			TD at 40', back	cfilled to 35' to set well	J'
44 45 46 47 48 49 50 51 52 53 54 55 56 57					T					
45 46 47 48 48 49 50 51 51 52 53 54 55 56 57 57					T I					
47 48 49 49 50 51 52 53 53 54 55 56 57 57					T					
48 49 49 50 51 51 52 53 53 54 55 56 57 57					T					+
50 51 51 52 52 53 53 54 55 56 57 57					T I					
51 52 52 53 53 53 54 55 55 56 57 57					T					‡
53 53 54 54 55 56 56 57					TI					+
54 55 55 56 57 57					T I					+
					T I					
										‡
										‡
					59					1

		*					î N			T Environme	ntal, Inc.
10, 11 . Par	1				No. of Co.				G LOG/MONITORING W	ELL COMPLE	TION DIAGRAM
· · · ·	1 00	-	13 7 40		1			Boring/W	ell Number: MW11	Project:	ndard #1
			· · ·					Date:		Project Number:	
	%], *	0:04						Logged By:	10/8/2018	Drilled By:	7817006
A Party	and the		Long Cong	Series .		A. 24			Mary Mrdjenovich	Casca	de Drilling
Elevation:	5,795		Detector:		PID		Ľ	Drilling Metho	Sonic	Sampling Method: Co	ntinuous
Gravel Pack:		d (12) 25						Seal: Dontonit	e (10'-12')	Grout: Bentonite/Gel	
10-20 Sili Casing Type:)					Diameter:	Length:	Hole Diameter:	Depth to Liquid:
Sched Screen Type:	lule 40	PVC		Slot:				2 Diameter:	2" 15' Length:	10" Total Depth:	Depth to Water:
	lule 40	and the part of part of a date of		0.0	10"	1			2" 10'	40'	20
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Re	marks	Well Completion
	Dry	1.4	N		0	0'-5'		SM	Silty sand with gravel, light	brown trace lee	che Stick up
	Dry	0.9	N			0'-5'	100%	SM	SAA		
	Dry	0.2	N		5	5'-8'	100%	GM	Silty sand gravel,	light brwn	
	Damp	0.1	N			5'-8'		GM	SAA, brov	vn	
	Damp	1.5	N		8	8'-15'		GM	SAA		
	Jamp	1.5	IN		9	- 8 - 13		GM	SAA		
N	Aoist	2.3	N		10 11	8'-15'		GM	SAA		
N	Aoist	4.7	N		12 13	8'-15'	100%	GM	SAA		
	Aoist	3.2	N		14 15	8'-15'		GM	SAA, dark brown, sli	ight Hc odor	

	/								Boring/Well #	MW11	
	Mr.	17	F Envir	ronme	ntal I	nc			Project:	Standard #1	
		Adv	ancing Opp	ortunity	ental, l	110.			Project #	017817006	
-	_								Date	10/8/2018	
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)		Recovery	Soil/Rock Type	Litho	ology/Remarks	Well Completion
	Dry	32.8	N	MW11	15	15'-25'		GM		SAA	
				@15'- 17'	16	-					
					17						
	Moist	3.1	Y, yellowi		18	15'-25'		CL-GW	Gravelly sandy	y lean clay, dark brown	
			sh- brown		19	-					1 1
	Moist	6.2	N		20	15'-25'	100%	GW	Gravelly	sand, dark brown	# =
	Damp	2.2	Y, yellow		21 22	15'-25'		CL-GW	Sandy lean	clay with gravel, tan	
	Moist	4.6	and N		23	25'-29'		СН	Fat clay	y, grayish brown	
	Damp	32.6	Y, black		25 26	25'-29'		СН	I	Light grey	TD at 25'
	Dry	31.8	Y, black		27 28	25'-29'	100%	СН		SAA	+ + +
	Dry	11.3	and yellow N		29 30	29'-34'		СН	SAA wit	h thin sand lenses	+ + +
	Dry	4.9	Y, slight orange		31 32	29'-34'	100%	Bedrock	Sandstone, yellowi:	sh brown with grey banding ·	
	Dry Dry	29.3 18.4	N Y, slight		33 34 35 36	- 34'-35' 35'-40'	100%	Bedrock Bedrock	SAA	, light brown SAA	
			orange		37	-	10070				Ŧ

Boog Weil MMUI Project Standard 41 Project Standard 41 Project Bit Project Bit Project Bit Project Data Distribution Distribution Completion Dry 8.00 Y. MW11 Bedrock SAA 40 41 42 Bedrock SAA 41 42 43 44 44 45 46 47 48 49 50 51 52 53 56 56 57 58 56 56 56 57 58 56 57 58 56 57 58 56 57 58 57 58	Project Standard #1 Project 0?131706 Project 0?131706 Dase 1082018 Unitary of the standard #1 Dase Dase 1082018 Unitary of the standard #1 Dase Dase 1082018 Unitary of the standard #1 Dase Dry 8.00 Y. MW11 38 39 40 40 A1 42 A3 40 A1 42 A3 44 A4 45 A4 46 A4 47 A8 49 50 51 52 53 54 55 56 56 57						
Image: Project # Image: #	Description Description 0128170% Jamacing logonary Jamacing logonary				Boring/Well #	MW11	
Jose Jose <thjose< th=""> Jose Jose <thj< th=""><th>University University Univers</th><th>IT Environmental</th><th>Inc</th><th></th><th>Project:</th><th>Standard #1</th><th></th></thj<></thjose<>	University Univers	IT Environmental	Inc		Project:	Standard #1	
Jose Jose <thjose< th=""> Jose Jose <thj< th=""><th>University University Univers</th><th>Advancing Opportunity</th><th>10.</th><th></th><th></th><th></th><th></th></thj<></thjose<>	University Univers	Advancing Opportunity	10.				
Dry 8.00 Y, MW11 38 35:40 Bedrock SAA 40 4 41 4 42 4 43 4 44 4 45 4 46 4 47 4 48 4 48 4 49 5 51 5 51 5 51 5 53 5 54 5 54 5 55 5 56 5 58 4	Dry 8.00 Y. MW11 38 35'-40' 39 40 - - 40 - - - 41 - - - 42 - - - 43 - - - 44 - - - 45 - - - 48 - - - 50 - - - 51 - - - 52 - - - 53 - - - 54 - - - 55 - - - 56 - - - 57 - - -				Date	10/8/2018	
Dry 8.00 Y, MW11 38 35:40 Bedrock SAA 40 4 41 4 42 4 43 4 44 4 45 4 46 4 47 4 48 4 48 4 49 5 51 5 51 5 51 5 53 5 54 5 54 5 55 5 56 5 58 4	Dry 8.00 Y. MW11 38 35'-40' Bedroek SAA 39 40 41 42 43 1 41 42 43 1 1 1 43 44 45 1 1 1 46 46 47 1 1 1 48 46 1 1 1 1 50 51 52 53 1 1 55 56 57 58 1 1	Penetration Resistance Moisture Content (ppm) (ppm) Staining Staining		Soil/Rock Type	Lithol	ogy/Remarks	
41 42 43 44 44 45 46 47 48 49 50 51 51 52 53 54 55 56 57 58	41 42 43 44 44 45 46 47 48 48 49 50 51 52 53 54 55 56 57 58	Dry 8.00 Y, MW11 38 39		3edrock		- 	-
		41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57			TD at 40	', set well at 25'	

							î N		Ľ	PL	T Environmen	ital, Inc.
			Te					BORING	LOG/MONIT	ORING WH	ELL COMPLET	TON DIAGRAM
1 d. 1	1.1	A A			***			Boring/Well	Number:		Project:	
	A 8 4	1. A .	The second		· "to :	A and		Date:	MW12		Project Number:	dard #1
B +	· · · · ·	* 6 : 6 !			A BAR			Logged By:	10/8/2018		0178 Drilled By:	317006
	and the second	6		a lands th		des 1			Josh Adams		Cascad	e Drilling
levation:	5,795		Detector:		PID		1	Drilling Method:	Sonic		Sampling Method: Cont	inuous
ravel Pack		nd (9'-22'))					Seal: Bentonite	· (7'-9')		Grout: Bentonite/Gel (0	'-7')
asing Type	e: edule 40		/					Diameter: 2"	Length:	12'	Hole Diameter: 10"	Depth to Liquid:
creen Type	e:			Slot:				Diameter:	Length	12'	Total Depth:	Depth to Water:
	edule 40	and the second second second second	¢;;	0.0	10"			2"		10'	30'	21
Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Li	thology/Ren	narks	Well Completion
	Dry Dry Dry	1.4 2.0 8.4	N N N		0 1	2'-5' 2'-5' 5'-11'	100%	SM SM SP-SM	Si	o Recovery (ilty sand, bro SAA ed sand wth s		Stick up
	Dry	9.6	N		6 7 8 9	5'-11'	100%			SAA		
	Dry Dry	6.1 19.2	N		10 11 12	5'-11'		SP-SM SP-SM		SAA SAA		
	Moist	7.2	N		13 14	- 11'-14'	100%	SP-SM		SAA		
	Moist	15.5	Ν		15	14'-15'	100%	SW-SM	Well graded	sand with s	ilt and gravel	

									Boring/Well #	MW12	
					0				Project:	Standard #	1
		2	Adva	ncing	Uppo	rtunit	V		Project #	01781700	
									Date	10/8/2018	
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Litho	Well Completion	
	Moist Moist	28.9 2800	N Y,	MW12 @ 17'-	15 16 17 18	15-25' 15-25'		SP-SM CH	Poorly graded	ecovery 15'-16' sand with silt and gravel ay with silt and gravel He odor	
	Moist	3042	Y,		19 20 21	15-25'	90%	СН		SAA	
	Moist	11.2	N		22 23	15-25'		СН	Sa	ndy fat clay	TD at 22'
	Moist	8.6	N		24 25	15-25'		СН		SAA	+
	Moist	17.3	N		26	25'-30'		СН		SAA	+
	Moist	1.6	N		27 28	25'-30'	100%	СН		SAA	+
	Moist	1	N	MW12 @ 39'- 40'	29 30 31	25'-30'		СН	TD at 3	SAA 0', set well at 22'	
					32 33 34	-					
					35 _ 36 _	- - - -					
					37	-					<u>†</u>

			Na company				N	BORIN	G LOG/MONITORING	Project:	ION DIAGRAM
2 059	· · · · · ·	0						Date:	MW13 10/10/2018	Project Number:	lard #1 17006
Gacque Facilit		j.M.				Sa. Alte		Logged By:	Josh Adams		e Drilling
	5,795	I	Detector		PID		Ι	Drilling Method	Sonic		inuous
Gravel Pack: 10-20 Silic Casing Type:	a Sand (8	8'-21')						Seal: Bentoni		Grout: Bentonite/Gel (0	-6')
	ile 40 PV	C		Slot:				Diameter: 2		Hole Diameter: 10"	Depth to Liquid:
	ile 40 PV		~:	0.0	10"			2	Length: "10'	Total Depth: 35'	Depth to Water: 13'
Penetration Resistance Moisture	Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology//	Remarks	Well Completion
I	Dry	1	Ν		0	0'-6'		SM	Silty sand, br	owish-red	Stick up
		2.3	N		1	0'-6'	100%	SM SM	SAA SAA, with sor		
[Dry 9	9.6	N	MW13 @ 6'-8'	6	6'-9'	100%	SM	SAA	A	
D	Dry 7	7.7	N		8 _	6'-9'		SP-SM	Poorly graded sand w		
D	Dry 3	3.7	Ν		9 _	9'-16'		SP-SM	cobbles, I SAA	brown A	\pm
C	Dry 3	3.4	N		10	- 9'-16'	100%	SP-SM	SAA	A	
M	oist 4	1.4	N		14 15	9'-16'		SP-SM	SAA	Α	

									Boring/Well #	MW13	
	I-T		TEn	ironn	onto	Inc			Project:	Standard #	
	41	A	dvancino (/ironn)pportunity	iema	i, <i>III</i> C.			Project #	01781700)6
	_			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					Date	10/10/201	18
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.) Run	Recovery	Soil/Rock Type		ology/Remarks	Well Completion
	Moist	3.2	N		15	9'-16'		СН	Sandy	fat clay, brown	
	Moist	8.9	N		16	16'-21'		СН	SA	A, grey/black	
	Moist	2.3	N		17 18 19	+ - 16'-21'	100%	СН		SAA	
	Moist	4.3	N		20	16'-21'		СН		SAA	
	Dry	5.5	N		21 22	21'-26'		СН	Sandy lea	an clay, brown/tan	TD at 21'
	Dry	6.1	N		23 24	21'-26'	100%	СН		SAA	+ + +
	Dry	6.4	N		25 26	21'-26'		СН		SAA	+
	Dry	1.8	Ν		27	26'-30'		СН		SAA	+
	Dry	4.5	N		28 29	- 26'-30'	100%	СН		SAA	
	Dry	2.9	N		30 31	- - 30'-35'		СН		t clay, dark brown AA, brown	Ţ
	Dry	0.8	N		32 33	30'-35'	100%	СН		SAA	
	Dry	3	N	MW13 @ 34'- 35'	34 35	30'-35'		СН		A, light brown kfilled to 21' to set well	
					36 37	+					' * + -

	and the second	1 N			T Environment dvancing Opportunity	al, Inc.
			BORING Boring/We Date: Logged By:	MW14 10/10/2018	Project: Stands Project Number: 0178 Drilled By:	ard #1 7006
Elevation: 5,795 Gravel Pack:	Detector: PID		Drilling Method Seal:	Josh Adams t: Sonic	Cascade Sampling Method: Conti Grout:	
10-20 Silica Sand (11'-26') Casing Type: Schedule 40 PVC			Bentonite Diameter: 2	Length:	Bentonite/Gel (0'- Hole Diameter: 10"	Depth to Liquid:
Screen Type: Schedule 40 PVC	Slot: 0.010"		Diameter: 2	Length:	Total Depth: 34'	Depth to Water: 11'
Penetration Resistance Moisture Content Vapor (ppm)	HC Staining? Sample # (ft. pasr)	Sample Run 22	Soil/Rock Type	Lithology/Re	marks	Well Completion
Dry 2.8 Dry 5.3 Dry 5.3 Dry 2.4 Dry 2.3 Dry 4.3 Moist 3.5 Moist 4.3	N 3 4	0'-4' 50% 4'-9' 1009 4'-9' 1009 9'-14' 1009 9'-14' 1009	SM SP-SM SP-SM SP-SM SP-SM SP-SM	No Recovery Silty sand with gra Poorly graded sand with cobbles, light brown SAA SAA SAA, brow SAA	vel, brown a silt, gravel and n/tan/cream	Stick up

						Non-second of the			Boring/Well #	MW14	1
-	1		TEnu	ironm	antal	Inc			Project:	Standard #	
			Vancing O		ental, l	IIC.			Project #	01781700	06
E			valienty of	oportanity					Date	10/10/201	18
Penetration Resistance		Vapor (ppm)	Staining	Sample #	(ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Litho	ology/Remarks	Well Completion
N N	Aoist	5.2	N		15	14'-24'		SP-SM		SAA	
N	Aoist	10.4	N		16 17	14'-24'		SP-SM	SAA	A, dark brown	
	⁄loist	4.5	N		18 <u>-</u> 19 <u>-</u>	14'-24'	100%	CL	Sandy lean	clay, orange/brown	
N	⁄loist	1.5	N		$\begin{array}{c} 20 \\ 21 \end{array}$	14'-24'		CL	Sandy fo	SAA	
N	⁄loist	2.4	N		22 <u>-</u> 23 <u>-</u>	14'-24'		СН СН	Sandy la	t clay, dark brown SAA	
N	1oist	28.8	N	MW14	24 <u>-</u> 25 <u>-</u>	24'-		СН		SAA	
	Dry	7	N		$\begin{array}{c} 26 \\ 1 \\ 27 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ $	24'- 28.5'	100%	СН		SAA	TD at 26'
	Dry	4.3	N		$\begin{array}{c} 28 \\ 29 \\ 30 \end{array}$	28.5'- 34'		СН		SAA	
	Dry	2.3	N		31	28.5'- 34'	100%	СН	SAA	a, light brown	+
	Dry	2.3	N	MW14 @ 32'- 34'	32 <u>-</u> 33 <u>-</u> 34 -	28.5'- 34'		СН		SAA	+++++++++++++++++++++++++++++++++++++++
					35 36				TD at 34', back	kfilled to 26' to set well	
					37						



APPENDIX B: LABORATORY ANALYTICAL REPORTS

HALL ENVIRONMENTAL ANALYSIS LABORATORY

May 09, 2018

Ashley Ager LTE 848 East 2nd Avenue Durango, CO 81301 TEL: (970) 946-1093 FAX

RE: Standard 1

OrderNo.: 1805383

Hall Environmental Analysis Laboratory

TEL: 505-345-3975 FAX: 505-345-4107

Website: www.hallenvironmental.com

4901 Hawkins NE

Albuquerque, NM 87109

Dear Ashley Ager:

Hall Environmental Analysis Laboratory received 1 sample(s) on 5/8/2018 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 <u>www.hallenvironmental.com</u> 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109



May 09, 2018

Ashley Ager LTE 848 East 2nd Aven Durango, CO 8130 TEL: (970) 946-10 FAX

RE: Standard 1

Dear Ashley Ager:

Hall Environmenta analyses presented

These were analyzed tests please go to we properly interpret y See the sample che sample receipt temp provided if the sam When necessary, da QC summary repor received, unless oth parameters that req chlorine are qualifie

Please don't hesitate

ADHS Cert #AZ06

Sincerely,

andy

Andy Freeman Laboratory Manage 4901 Hawkins NE Albuquerque, NM 3

Analytical Report Lab Order 1805383 Date Reported: 5/9/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: LTE			Client Sample	ID: BR-1	
Project: Standard 1			Collection D	ate: 5/7/20	18 10:17:00 AM
Lab ID: 1805383-001	Matrix: S	SOIL	Received D	ate: 5/8/20	18 7:00:00 AM
Analyses	Result	PQL Qua	l Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS				Analyst: TOM
Diesel Range Organics (DRO)	ND	10	mg/Kg	1	5/8/2018 9:47:30 AM
Motor Oil Range Organics (MRO)	ND	50	mg/Kg	1	5/8/2018 9:47:30 AM
Surr: DNOP	94.6	70-130	%Rec	1	5/8/2018 9:47:30 AM
EPA METHOD 8015D: GASOLINE RAN	GE				Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.1	mg/Kg	1	5/8/2018 9:33:26 AM
Surr: BFB	95.3	15-316	%Rec	1	5/8/2018 9:33:26 AM
EPA METHOD 8021B: VOLATILES					Analyst: NSB
Benzene	0.053	0.020	mg/Kg	1	5/8/2018 9:33:26 AM
Toluene	ND	0.041	mg/Kg	1	5/8/2018 9:33:26 AM
Ethylbenzene	ND	0.041	mg/Kg	1	5/8/2018 9:33:26 AM
Xylenes, Total	0.11	0.082	mg/Kg	1	5/8/2018 9:33:26 AM
Surr: 4-Bromofluorobenzene	107	80-120	%Rec	1	5/8/2018 9:33:26 AM

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

Qualifiers:	*	V
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- * 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 Page 1 of 4
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Client:	
Project:	

: Standard 1

LTE

Sample ID 1805383-001AMS	SampType: MS	Tes	TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: BR-1	Batch ID: 37982	1	RunNo: 51108							
Prep Date: 5/8/2018	Analysis Date: 5/8/2018		SeqNo: 1660535	Units: mg/Kg	Units: mg/Kg					
Analyte	Result PQL SPK v	alue SPK Ref Val	%REC LowLimit	HighLimit %RPD	RPDLimit	Qual				
Diesel Range Organics (DRO)	51 9.5 4	7.62 6.477	92.7 55.8	125						
Surr: DNOP	4.8 4.	762	101 70	130						
Sample ID 1805383-001AMS	SampType: MSD	Tes	TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: BR-1	Batch ID: 37982	1	RunNo: 51108							
Prep Date: 5/8/2018	Analysis Date: 5/8/2018		SeqNo: 1660539	Units: mg/Kg						
Analyte	Result PQL SPK va	alue SPK Ref Val	%REC LowLimit	HighLimit %RPD	RPDLimit	Qual				
Diesel Range Organics (DRO)	54 10 50	0.56 6.477	94.6 55.8	125 6.96	20					
Surr: DNOP	5.0 5.	056	99.4 70	130 0	0					
Sample ID LCS-37982	SampType: LCS	Tes	stCode: EPA Method	8015M/D: Diesel Rang	e Organics					
Client ID: LCSS	Batch ID: 37982	1	RunNo: 51108							
Prep Date: 5/8/2018	Analysis Date: 5/8/2018		SeqNo: 1660547	Units: mg/Kg						
Analyte	Result PQL SPK va	alue SPK Ref Val	%REC LowLimit	HighLimit %RPD	RPDLimit	Qual				
Diesel Range Organics (DRO)	46 10 50	0.00	91.5 70	130						
Surr: DNOP	4.8 5.	000	96.1 70	130						
Sample ID MB-37982	SampType: MBLK	Tes	stCode: EPA Method	8015M/D: Diesel Rang	e Organics					
Client ID: PBS	Batch ID: 37982	1	RunNo: 51108							
Prep Date: 5/8/2018	Analysis Date: 5/8/2018	:	SeqNo: 1660552	Units: mg/Kg						
Analyte		alue SPK Ref Val	%REC LowLimit	HighLimit %RPD	RPDLimit	Qual				
Diesel Range Organics (DRO)	ND 10									
Motor Oil Range Organics (MRO)	ND 50									
Surr: DNOP	9.6 10	0.00	96.0 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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 2 of 4

WO#: **1805383**

09-May-18

Client:

Project: Standard 1

LTE

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Sample ID MB-37971	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015D: Gaso	oline Rang	e	
Client ID: PBS	Batch	n ID: 37	971	F	RunNo: 51106					
Prep Date: 5/7/2018	Analysis D	Analysis Date: 5/8/2018			SeqNo: 1660890			Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		95.5	15	316			
Sample ID LCS-37971	SampT	ype: LC	S	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	6	
Sample ID LCS-37971 Client ID: LCSS		ype: LC			tCode: El RunNo: 5		8015D: Gasc	oline Rang	e	
		1D: 37		F		1106	8015D: Gasc Units: mg/K	0	e	
Client ID: LCSS	Batch	1D: 37	971 8/2018	F	RunNo: 5	1106		0	e RPDLimit	Qual
Client ID: LCSS Prep Date: 5/7/2018	Batch Analysis D	n ID: 379 ate: 5/	971 8/2018	F	RunNo: 5 SeqNo: 1	1106 660891	Units: mg/K	(g		Qual

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Holding times for preparation or analysis exceeded Н
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank В
- E Value above quantitation range
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

Page 3 of 4

Client: Project:

LTE Standard 1

Sample ID MB-37971	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8021B: Volat	tiles		
Client ID: PBS	Batch	n ID: 37	971	F	RunNo: 5	1106				
Prep Date: 5/7/2018	Analysis D	Date: 5/	8/2018	S	SeqNo: 1	660910	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	1.1		1.000		109	80	120			
Sample ID LCS-37971	SampT	ype: LC	S	Tes	tCode: E	PA Method	8021B: Volat	iles		
Client ID: LCSS	Batch	n ID: 37	971	F	RunNo: 5	1106				
Prep Date: 5/7/2018	Analysis D)ate: 5/	8/2018	S	SeqNo: 1	660911	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.025	1.000	0	96.2	77.3	128			
Toluene	0.99	0.050	1.000	0	99.0	79.2	125			
Ethylbenzene	0.98	0.050	1.000	0	98.3	80.7	127			
Xylenes, Total	3.0	0.10	3.000	0	99.9	81.6	129			
Surr: 4-Bromofluorobenzene	1.1		1.000		114	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 4 of 4

WO#: **1805383** *09-May-18*



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

Sample Log-In Check List

Client Name: LTE	Work Order Number: 180538	3	RcptNo	1
		n 1.		
	/8/2018 7:00:00 AM	anne H.	<u> </u>	e e e
Completed By: Anne Thorne 5	/8/2018 7:08:42 AM	ame A.		
Reviewed By: 5 Labeled by: Arostos/17	818			
Chain of Custody	inin y e		*	
1. Is Chain of Custody complete?	Yes 🗸	No 🗌	Not Present	* , : 2
2. How was the sample delivered?	Courier			- 1 - 1 - 4 11
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 pr	reserved? Yes 🗹	No 🗌		
8. Was preservative added to bottles?	Yes 🗌	No 🗹	NA 🗌	
9. VOA vials have zero headspace?	Yes 🗌	No 🗌	No VOA Vials 🗹	
10. Were any sample containers received broken?	Yes 🗌	No 🔽	# of preserved	
		_	bottles checked	
11. Does paperwork match bottle labels?	Yes 🗹	No	for pH:	>12 unless noted)
(Note discrepancies on chain of custody) [2. Are matrices correctly identified on Chain of Cus	tody? Yes 🗹	No	Adjusted?	>12 unless holeu)
13. Is it clear what analyses were requested?	Yes V			
14. Were all holding times able to be met?	Yes 🗸	No 🗌	Checked by:	
(If no, notify customer for authorization.)				
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	8 41 2014 - 20
Regarding:		AN COMPACTOR AND A STOCK OF COMPACTING AND		
Client Instructions:				
16. Additional remarks:		and and the		
17. Cooler Information				
AN INTERNATION OF AN ADDRESS OF A DREAM	ntact Seal No Seal Date	Signed By		
1 1.7 Good Yes				

C	hain	-of-Cu	stody Record	Turn-Around	Time:											~					
Client:	LTE			□ Standard	Rush	Same Day															
				Project Name		0												RA	10		
Mailing	Address	848	E 2nd Ave	Stan	dard =	Same Day		400								tal.co		400			
		DULA	LIDAD MORIZOI	Project #:		New York Contraction of the State of the Sta	1								•		M 87				
Phone #	#: 970	385	1096 (D 81301					Te	1. 50)5-34	15-3		12条 155		1.5 10 10	uesi	410				
email or				Project Mana	ger:		E	only)	(Q)					O4)							Γ
QA/QC F	-			Ach	ey Ager	4	VIB'S (8021)	as o	DRO / MRO)			s)		04,S	PCB's						
Stan			□ Level 4 (Full Validation)	rishic	y ign		se (Ü	RO			SIMS)		PC,	2 P(
Accredit		Othe	r	Sampler: A	shiev Ag	Der No		+ TPH (Gas	(GRO/D	18.1)	04.1)	8270		3,NO	/ 8082		A)				or N)
	(Type)			Sample Tem	perature			ШШ	(G	d 4	d 5() or	tals	NOU,	ides	1	NON-				Z
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX -MTBE	BTEX + MTBE	TPH 8015B	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270	RCRA 8 Metals	Anions (F,Cl,NO ₃ ,NO ₂ ,PO ₄ ,SO ₄)	8081 Pesticides	8260B (VOA)	8270 (Semi-VOA)				Air Bubbles
5-7-18	1017	soil	BR-1	402/1	nool	105	\bigvee														T
														1. 							Γ
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Date: 5-7-18	Time:	Relinquish	Venzam	Received by:	Jar	Date Time 5/7/18 //10	Rer	nark	5;					L							
Date: $5/7/15$	Time:		sthe Watten	Received by	huch	Date Time DS/08/18 0700															

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

May 17, 2018 Ashley Ager LTE 848 East 2nd Avenue Durango, CO 81301 TEL: (970) 946-1093 FAX

RE: Standard 1

OrderNo.: 1805855

Dear Ashley Ager:

Hall Environmental Analysis Laboratory received 1 sample(s) on 5/16/2018 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 <u>www.hallenvironmental.com</u> 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 #NM0190

Sincerely,

ander

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1805855

Date Reported: 5/17/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: LTE			Client Sampl	e ID: GW	/01						
Project: Standard 1			Collection	Date: 5/1:	5/2018 2:15	:00 PM					
Lab ID: 1805855-001	Matrix:	Matrix: AQUEOUS Received				d Date: 5/16/2018 6:45:00 AM					
Analyses	Result	PQL Qu	al Units	DF	Date Analy	zed	Batch				
EPA METHOD 8260: VOLATILES S	HORT LIST					Analyst:	AG				
Benzene	3400	50	µg/L	50	5/16/2018 1	0:52:29 AM	A5132				
Toluene	6800	500	µg/L	500	5/16/2018 1	1:40:51 AM	A5132				
Ethylbenzene	360	50	µg/L	50	5/16/2018 10	0:52:29 AM					
Linybenzene			P-3				A5132				
Xylenes, Total	3600	75	μg/L	50	5/16/2018 1	0:52:29 AM					
,	3600 104	75 70-130		50 50	5/16/2018 10 5/16/2018 10		A5132				

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 1 of 3
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Page 2 of 3

17-May-18

Client:

Project: Standard 1

LTE

And the second sec											the second second second
Sample ID	100ng Ics	SampT	ype: LC	S4	Tes	tCode: E	PA Method	8260: Volatile	es Short I	.ist	
Client ID:	BatchQC	Batch	n ID: A5	1321	F	RunNo: 5	1321				
Prep Date:		Analysis D	ate: 5/	16/2018	S	SeqNo: 1	669406	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene		18	1.0	20.00	0	89.6	80	120			
Toluene		19	1.0	20.00	0	97.0	80	120			
Ethylbenzene		20	1.0	20.00	0	97.9	80	120			
(ylenes, Total		57	1.5	60.00	0	94.7	80	120			
Surr: 4-Brom	nofluorobenzene	9.8		10.00		98.1	70	130			
Surr: Toluen	e-d8	10		10.00		103	70	130			
Sample ID	1805855-001ams	SampT	ype: MS	54	Tes	tCode: E	PA Method	8260: Volatile	es Short L	.ist	
Client ID:	GW01	Batch	n ID: A5	1321	R	unNo: 5	1321				
Prep Date:		Analysis D	ate: 5/	16/2018	S	eqNo: 1	669409	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene		4200	50	1000	3391	81.3	80	120			
Toluene		8600	50	1000	7814	78.4	80	120			ES
Ethylbenzene		1500	50	1000	355.7	110	80	120			
Kylenes, Total		7200	75	3000	3564	121	80	120			S
Surr: 4-Brom	nofluorobenzene	550		500.0		110	70	130			
Surr: Toluen	e-d8	520		500.0		104	70	130			
Sample ID	1805855-001amsd	I SampT	ype: MS	SD4	Test	Code: E	PA Method	8260: Volatile	es Short L	.ist	
Client ID:	GW01	Batch	1D: A5	1321	R	unNo: 5	1321				
Prep Date:		Analysis D	ate: 5/	16/2018	S	eqNo: 1	669410	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene		4200	50	1000	3391	77.5	80	120	0.907	20	S
Toluene		8600	50	1000	7814	83.6	80	120	0.598	20	E
Ethylbenzene		1400	50	1000	355.7	108	80	120	1.52	20	
Xylenes, Total		7200	75	3000	3564	120	80	120	0.626	20	
	ofluorohonzono	530		500.0		106	70	130	0	0	
Surr: 4-Brom	loliuoroberizerie	000									
Surr: 4-Brom Surr: Toluen		530		500.0		106	70	130	0	0	
	e-d8	530	ype: ME		Test	106		130 8260: Volatile			
Surr: Toluen	e-d8	530 SampT	ype: ME 1 ID: A5	BLK		106	PA Method				
Surr: Toluen Sample ID	e-d8	530 SampT	ID: A5	3LK 1321	R	106 Code: El	PA Method 1321				
Surr: Toluen Sample ID Client ID: Prep Date:	e-d8	530 SampT Batch	ID: A5	BLK 1321 16/2018	R	106 Code: El	PA Method 1321	8260: Volatile			Qual
Surr: Toluen Sample ID Client ID: Prep Date: Analyte Benzene	e-d8	530 SampT Batch Analysis D	ate: 5/	BLK 1321 16/2018	R	106 Code: El cunNo: 5 seqNo: 1	PA Method 1321 669411	8260: Volatile Units: μg/L	es Short L	ist	Qual
Surr: Toluen Sample ID Client ID: Prep Date: Analyte Benzene	e-d8	530 SampT Batch Analysis D Result	D: A5 ate: 5/	BLK 1321 16/2018	R	106 Code: El cunNo: 5 seqNo: 1	PA Method 1321 669411	8260: Volatile Units: μg/L	es Short L	ist	Qual
Surr: Toluen Sample ID Client ID: Prep Date:	e-d8	530 SampT Batch Analysis D Result ND	DID: A5 ate: 5/ PQL 1.0	BLK 1321 16/2018	R	106 Code: El cunNo: 5 seqNo: 1	PA Method 1321 669411	8260: Volatile Units: μg/L	es Short L	ist	Qual

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of 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 Detection Limit
- W Sample container temperature is out of limit as specified

WO#: 1805855

17-May-18

Client:	LTE									
Project:	Standard 1									
Sample ID rb	Samp	уре: М	BLK	Tes	tCode: El	PA Method	8260: Volatile	es Short L	.ist	
Client ID: PBW	Batc	n ID: A	51321	R	RunNo: 5	1321				
Prep Date:	Analysis E	Date: 5	/16/2018	S	SeqNo: 1	669411	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluoroben	zene 12		10.00		115	70	130			
Surr: Toluene-d8	10		10.00		101	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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 3 of 3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: LTE Work Order N	umber: 1805855		RcptNo:	1
Received By: Anne Thorne 5/16/2018 6:45:	00 AM	anne Hr		
Completed By: Anne Thome 5/16/2018 7:54:	56 AM	ami Ha		
Reviewed By: Ind 3/16/18				
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 🗌		
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. VOA vials have zero headspace?	Yes 🔽	No 🗌	No VOA Vials	
0. Were any sample containers received broken?	Yes	No 🗹	# of preserved	
			bottles checked	
1. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes 🔽	No 🛄	for pH: (<2 or >	12 unless noted
2. Are matrices correctly identified on Chain of Custody?	Yes 🖌	No 🗌	Adjusted?	
3. Is it clear what analyses were requested?	Yes 🖌	No 🗌		
4. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes 🗹	No 🗌	Checked by:	
pecial Handling (if applicable)			а А. (4)	
15. Was client notified of all discrepancies with this order?	Yes	No 🗌	NA 🔽	2
Person Notified:	ate			
By Whom: Vi	a: 🗌 eMail 🗌 F	Phone 🗌 Fax	In Person	
Regarding:				
Client Instructions:	· · · ·	-		
16. Additional remarks:				
17. <u>Cooler Information</u>				
Cooler No Temp °C Condition Seal Intact Seal No	Seal Date	Signed By		
1 2.4 Good Yes				

C	hain	of-Cu	stody Record	Turn-Around	Time:																3
					Rush	24-Ho	in		14 17 17 18			ALL									~
	QUA	Y Age E 2	nd A. in	Project Name):	FIN					14							RA	TC	RY	3
Mailing	Address	E F	Ave	-							W	ww.ha	llen	viron	ment	al.co	m				
	1		D	Project #:	indard =	#1			490)1 Ha	wkin	NE	- Alt	ouque	erqu	e, NI	M 87	109			
	Deva	190 (0 81301			1 + - 1			Te	1. 50	5-345	-3975		Contraction of the	The number of Street or other	Concession of the local division of the loca	4107	7			
Phone #		1385-			217817	1006							Anal	Contraction of	Req	uest					
email or	Fax#:	AAger	LTEnvicom	Project Mana	ger:			÷	nly)	⁶		1	1.0	04)				1.1	1		
QA/QC P				11				802	as o	DRO / MRO)		S)		04,S	PCB's						
□ Stand	and the second se		Level 4 (Full Validation)	Ash	ley Ager			Ls (Ü	R0		SIMS)		PC,	2 P(
Accredit				Sampler:	lichael A.	Wicker		+ MIBE + IME'S (8021)	BTEX + MTBE + TPH (Gas only)	0	=	102		Anions (F,CI,NO ₃ ,NO ₂ ,PO ₄ ,SO ₄)	8081 Pesticides / 8082						9
		Othe	r	On Ice:	X Yes	E No		Ð	+	R0	418	r 82	S	03,	s / s		(YC				or
	(Type)			Sample Tem	perature	24		B	1B	0	po		etal	CI'N	cide	(A)	i-VC				1
				Container	Preservative Type	a series and		E	∑ +	TPH 8015B (GRO /	TPH (Method 418.1)	PAH's (8310 or 8270	RCRA 8 Metals	E,	esti	8260B (VOA)	8270 (Semi-VOA)				Air Bubbles (Y or N)
Date	Time	Matrix	Sample Request ID	Type and #	Туре	HEAL	No.	×	X	H 80		E S H	RA	suo	1-P	OB	0 (3				Bub
						180583	55	BTEX	BTI	IT I	E E	PA	RC	Ani	808	826	827				Air
5-15-18	1415	AQ	GWOI	2-VOA	HCI		701	\mathbf{X}							·	4					
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Date:	Time:	Relinquishe	ed by:	Received by:	1 ant	Date	Time	Ren	narks	5:											
5-15-18	1520	1		In	Watt	2/15/1	8 1520														
Date:	Time:	Relinquishe		Received by:		Date	Time 116/18														
5/15/18	1816	11:AU	WIN MULL	r C	han	M_	0645	-							e.						-
if	necessary,	samples subr	nitted to Hall Environmental may be subo	contracted to other a	ccredited laboratorie	es. This serves a	as notice of this	possil	oility. A	Any sub	-contra	cted data	a will be	e clear	ly nota	ted on	the ar	nalytica	l report	L	



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

May 21, 2018

Ashley Ager LTE 848 East 2nd Avenue Durango, CO 81301 TEL: (970) 946-1093 FAX

RE: Standard 1

OrderNo.: 1805955

Dear Ashley Ager:

Hall Environmental Analysis Laboratory received 1 sample(s) on 5/17/2018 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 <u>www.hallenvironmental.com</u> 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

<b>Analytical Report</b>	
Lab Order 1805955	

### Hall Environmental Analysis Laboratory, Inc.

Hall Environm	ental Analysis Lab	oratory, I	nc.	Manager and manager and	Date Reported: 5/21/201	8
CLIENT: LTE			(	lient Sar	nple ID: GW01	
Project: Standard 1				Collectio	on Date: 5/16/2018 12:30:00 PM	
Lab ID: 1805955-0	01 Mat	rix: AQUEOU	JS	Receive	ed Date: 5/17/2018 6:50:00 AM	
Analyses	Resu	lt PQL	Qual	Units	DF Date Analyzed	Batch
SM2540C MOD: TOT	AL DISSOLVED SOLIDS				Analyst:	sat
Total Dissolved Solids	20	60 100	D* D	mg/L	1 5/18/2018 1:01:00 PM	38176

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 1 of 2
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

WO#: 1805955

21-May-18

**Client:** LTE **Project:** Standard 1 Sample ID MB-38176 SampType: MBLK TestCode: SM2540C MOD: Total Dissolved Solids Client ID: PBW Batch ID: 38176 RunNo: 51376 Prep Date: Analysis Date: 5/18/2018 5/17/2018 SeqNo: 1671669 Units: mg/L Analyte SPK value SPK Ref Val %REC LowLimit Result PQL HighLimit %RPD **RPDLimit** Qual Total Dissolved Solids ND 20.0 Sample ID LCS-38176 SampType: LCS TestCode: SM2540C MOD: Total Dissolved Solids Client ID: LCSW Batch ID: 38176 RunNo: 51376 Prep Date: 5/17/2018 Analysis Date: 5/18/2018 SeqNo: 1671670 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD **RPDLimit** Qual Total Dissolved Solids 1020 20.0 1000 0 102 80 120

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Н 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
- Analyte detected in the associated Method Blank В
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 2 of 2

HALL ENVIRONMENTAL ANALYSIS LABORATORY	Hall Environmental A Albuq TEL: 505-345-3975 F Website: www.halle	4901 Hawkin uerque, NM 8 AX: 505-345-	15 NE 87109 San 4107	nple Log-In C	neck List
Client Name: LTE W	ork Order Number:	1805955		RcptNo:	1
			a		
Received By: Anne Thorne 5/17	/2018 6:50:00 AM		ame H.	~	
	/2018 8:20:38 AM		anne H.	<b>~</b>	
Reviewed By: JU Labeled by Ar 05/17/17	17/18				
Chain of Custody					
1. Is Chain of Custody complete?		Yes 🗹	No 🗌	Not Present	
2. How was the sample delivered?	<u>(</u>	Courier			
d and a					
Log in 3: Was an attempt made to cool the samples?		res 🔽	No 🗌	NA 🗌	
o. Was an altempt made to ooon the samples r					
4. Were all samples received at a temperature of >0	° C to 6.0°C	res 🗹	No 🗌	NA 🗌	
5. Sample(s) in proper container(s)?	) I	(es 🗹	No 🗌		
6. Sufficient sample volume for indicated test(s)?	Y	es 🗹	No		
7. Are samples (except VOA and ONG) properly pres	erved? Y	es 🖌	No 🗌		
8. Was preservative added to bottles?	Y	es 🗌	No 🗹	NA 🗌	
9. VOA vials have zero headspace?	Y	es	No	No VOA Vials 🗹	
10. Were any sample containers received broken?	٢	es	No 🗹		
		_	_	# of preserved bottles checked	
11. Does paperwork match bottle labels?	Y	es 🖌	No 🗌	for pH:	12 unless noted)
(Note discrepancies on chain of custody) 12. Are matrices correctly identified on Chain of Custod	iv? Y	es 🗹	No 🗌	Adjusted?	Tz unices noted)
13. Is it clear what analyses were requested?		es 🗹	No 🗌		
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Y	es 🗸	No 🗌	Checked by:	
Special Handling (if applicable)					
15. Was client notified of all discrepancies with this or	der?	(es	No 🗌	NA 🗹	
Person Notified:	Date	1-11-20-20-20-20-20-20-20-20-20-20-20-20-20-	Contraction and the second s		
By Whom:	3	eMail 🗍 F	hone Fax	In Person	
Regarding:		CONTRACTOR OF THE OWNER			
Client Instructions:				an ng sanga ngan sa ng	
16. Additional remarks:					
17. <u>Cooler Information</u>					
Cooler No Temp °C Condition Seal Inte	ct Seal No Sea	al Date	Signed By		
1 1.0 Good Yes					

Page 1 of 1

Client: Mailing	Ashley Ager LT Environmental, Inc. Mailing Address: 848 E 2nd Ave Durango, CO Phone #: (970) 385-1096				Turn-Around Time: Standard Rush <u>24-Hour</u> Project Name: Standard #1 Project #: 017817006				HALL ENVIRONMENTAL ANALYSIS LABORATORY www.hallenvironmental.com 4901 Hawkins NE - Albuquerque, NM 87109 Tel. 505-345-3975 Fax 505-345-4107 Analysis Request											
email o QA/QC I □ Stan Accredi □ NEL	email or Fax#: AAgcr @ LTEnv. com QA/QC Package: Standard Level 4 (Full Validation) Accreditation NELAP Other EDD (Type)			Project Mana A S Sampler:	hley A Nichael	ger A Wicker	BE + TMB's (8021)	+ MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	od 418.1)	od 504.1)	8270 SIMS)		Anions (F,CI,NO ₃ ,NO ₂ ,PO ₄ ,SO ₄ )	8081 Pesticides / 8082 PCB's					(Y or N)
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL NO.	BTEX + MTBE	BTEX + MT	TPH 8015B	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or	<b>RCRA 8 Metals</b>	Anions (F,C	8081 Pestic	8260B (VOA)	8270 (Semi-VOA)		<71	Air Bubbles (Y or N)
5-16-18	1230	AQ	GWOI	1-500mL	Gol	<u></u>														
			*																	
					Jan 3-16-18															
Date: 5-16-18 Date: 5/10/15	5-16-18 ISZ 8 G Land			Received by:		5/14/17 Time 5/14/17 1528 Date Time US/17/18 2050	Ren	narks	5:										<u>+-</u>	

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 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

June 25, 2018

Devin Hencmann LTE 848 East 2nd Avenue Durango, CO 81301 TEL: (970) 946-1093 FAX

RE: Standard #1

OrderNo.: 1806759

Dear Devin Hencmann:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/13/2018 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 <u>www.hallenvironmental.com</u> 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1806759 Date Reported: 6/25/2018

## Hall Environmental Analysis Laboratory, Inc.

Chloride Sulfate         500         25         * mg/L         50         6/25/2018 12:264           Sulfate         57         2.5         mg/L         5         6/13/2018 7:02:34           EPA METHOD 8260: VOLATILES SHORT LIST         Analyst: Senzene           Benzene         1600         50         µg/L         50         6/19/2018 5:37:00           Toluene         4100         50         µg/L         50         6/19/2018 5:37:00           Ethylbenzene         260         50         µg/L         50         6/19/2018 5:37:00           Xylenes, Total         3400         75         µg/L         50         6/19/2018 5:37:00           Surr: 1,2-Dichloroethane-d4         98.1         70-130         %Rec         50         6/19/2018 5:37:00           Surr: 4-Bromofluorobenzene         105         70-130         %Rec         50         6/19/2018 5:37:00           Surr: Dibromofluoromethane         93.3         70-130         %Rec         50         6/19/2018 5:37:00													
Lab ID:         1806759-001         Matrix:         AQUEOUS         Received Date:         6/13/2018         7:00:00 AM           Analyses         Result         PQL         Qual         Units         DF         Date Analyzed           EPA METHOD 300.0:         ANIONS         25         * mg/L         50         6/25/2018         12:26:4           Chloride         500         25         * mg/L         50         6/25/2018         12:26:4           Sulfate         57         2.5         mg/L         50         6/25/2018         12:26:4           EPA METHOD 8260: VOLATILES SHORT LIST         Analyst:         Analyst:         Suffate         50         6/13/2018         5:37:00           Benzene         1600         50         µg/L         50         6/19/2018         5:37:00           Toluene         4100         50         µg/L         50         6/19/2018         5:37:00           Xylenes, Total         3400         75         µg/L         50         6/19/2018         5:37:00           Surr:         1,2-Dichloroethane-d4         98.1         70-130         %Rec         50         6/19/2018         5:37:00           Surr:         4-Bromofluorobenzene         303 <th< th=""><th>CLIENT: LTE</th><th></th><th>Client</th><th>Sample ID: (</th><th>GW0</th><th>1</th></th<>	CLIENT: LTE		Client	Sample ID: (	GW0	1							
Analyses         Result         PQL         Qual         Units         DF         Date Analyzed           EPA METHOD 300.0: ANIONS         500         25 * mg/L         50         6/25/2018 12:26:4           Sulfate         57         2.5         mg/L         5         6/13/2018 7:02:34           EPA METHOD 8260: VOLATILES SHORT LIST         Analyst:         Analyst:         Analyst:           Benzene         1600         50         µg/L         50         6/19/2018 5:37:00           Toluene         4100         50         µg/L         50         6/19/2018 5:37:00           Ethylbenzene         260         50         µg/L         50         6/19/2018 5:37:00           Surr: 1,2-Dichloroethane-d4         98.1         70-130         %Rec         50         6/19/2018 5:37:00           Surr: 4-Bromofluorobenzene         105         70-130         %Rec         50         6/19/2018 5:37:00           Surr: Dibromofluoromethane         93.3         70-130         %Rec         50         6/19/2018 5:37:00	<b>Project:</b> Standard #1		<b>Collection Date:</b> 6/12/2018 9:20:00 AM										
EPA METHOD 300.0: ANIONS         Analyst:           Chloride         500         25         * mg/L         50         6/25/2018 12:26:4           Sulfate         57         2.5         mg/L         5         6/13/2018 7:02:34           EPA METHOD 8260: VOLATILES SHORT LIST         Analyst:         Analyst:         Analyst:           Benzene         1600         50         µg/L         50         6/19/2018 5:37:00           Toluene         4100         50         µg/L         50         6/19/2018 5:37:00           Ethylbenzene         260         50         µg/L         50         6/19/2018 5:37:00           Xylenes, Total         3400         75         µg/L         50         6/19/2018 5:37:00           Surr: 1,2-Dichloroethane-d4         98.1         70-130         %Rec         50         6/19/2018 5:37:00           Surr: 2-Bromofluorobenzene         105         70-130         %Rec         50         6/19/2018 5:37:00	Lab ID: 1806759-001	Matrix: AQUEOUS	Rec	eived Date: 6	2018 7:00:00 AM								
Chloride         500         25         * mg/L         50         6/25/2018 12:26:4           Sulfate         57         2.5         mg/L         5         6/13/2018 7:02:34           EPA METHOD 8260: VOLATILES SHORT LIST         Analyst:           Benzene         1600         50         µg/L         50         6/19/2018 5:37:00           Toluene         4100         50         µg/L         50         6/19/2018 5:37:00           Ethylbenzene         260         50         µg/L         50         6/19/2018 5:37:00           Xylenes, Total         3400         75         µg/L         50         6/19/2018 5:37:00           Surr: 1,2-Dichloroethane-d4         98.1         70-130         %Rec         50         6/19/2018 5:37:00           Surr: 2-Bromofluorobenzene         105         70-130         %Rec         50         6/19/2018 5:37:00           Surr: Dibromofluoromethane         93.3         70-130         %Rec         50         6/19/2018 5:37:00	Analyses	Result	PQL Qu	ual Units	DF	Date Analyzed							
Sulfate         500         25         Ingr.c         50         6725/2010 12.20.4           Sulfate         57         2.5         mg/L         5         6/13/2018 7:02:34           EPA METHOD 8260: VOLATILES SHORT LIST         Analyst:           Benzene         1600         50         µg/L         50         6/19/2018 5:37:00           Toluene         4100         50         µg/L         50         6/19/2018 5:37:00           Ethylbenzene         260         50         µg/L         50         6/19/2018 5:37:00           Xylenes, Total         3400         75         µg/L         50         6/19/2018 5:37:00           Surr: 1,2-Dichloroethane-d4         98.1         70-130         %Rec         50         6/19/2018 5:37:00           Surr: 2-Bromofluorobenzene         105         70-130         %Rec         50         6/19/2018 5:37:00           Surr: Dibromofluoromethane         93.3         70-130         %Rec         50         6/19/2018 5:37:00	EPA METHOD 300.0: ANIONS					Analyst: MRA							
EPA METHOD 8260: VOLATILES SHORT LIST         Analyst:           Benzene         1600         50         µg/L         50         6/19/2018 5:37:00           Toluene         4100         50         µg/L         50         6/19/2018 5:37:00           Ethylbenzene         260         50         µg/L         50         6/19/2018 5:37:00           Xylenes, Total         3400         75         µg/L         50         6/19/2018 5:37:00           Surr: 1,2-Dichloroethane-d4         98.1         70-130         %Rec         50         6/19/2018 5:37:00           Surr: 24-Bromofluorobenzene         105         70-130         %Rec         50         6/19/2018 5:37:00           Surr: Dibromofluoromethane         93.3         70-130         %Rec         50         6/19/2018 5:37:00	Chloride	500	25	* mg/L	50	6/25/2018 12:26:44 PM							
Benzene         1600         50         μg/L         50         6/19/2018 5:37:00           Toluene         4100         50         μg/L         50         6/19/2018 5:37:00           Ethylbenzene         260         50         μg/L         50         6/19/2018 5:37:00           Xylenes, Total         3400         75         μg/L         50         6/19/2018 5:37:00           Surr: 1,2-Dichloroethane-d4         98.1         70-130         %Rec         50         6/19/2018 5:37:00           Surr: 4-Bromofluorobenzene         105         70-130         %Rec         50         6/19/2018 5:37:00           Surr: Dibromofluoromethane         93.3         70-130         %Rec         50         6/19/2018 5:37:00	Sulfate	57	2.5	mg/L	5	6/13/2018 7:02:34 PM							
Toluene         4100         50         µg/L         50         6/19/2018 5:37:00           Ethylbenzene         260         50         µg/L         50         6/19/2018 5:37:00           Xylenes, Total         3400         75         µg/L         50         6/19/2018 5:37:00           Surr: 1,2-Dichloroethane-d4         98.1         70-130         %Rec         50         6/19/2018 5:37:00           Surr: 4-Bromofluorobenzene         105         70-130         %Rec         50         6/19/2018 5:37:00           Surr: Dibromofluoromethane         93.3         70-130         %Rec         50         6/19/2018 5:37:00	EPA METHOD 8260: VOLATILES SHO	RTLIST				Analyst: RAA							
Ethylbenzene         260         50         µg/L         50         6/19/2018 5:37:00           Xylenes, Total         3400         75         µg/L         50         6/19/2018 5:37:00           Surr: 1,2-Dichloroethane-d4         98.1         70-130         %Rec         50         6/19/2018 5:37:00           Surr: 4-Bromofluorobenzene         105         70-130         %Rec         50         6/19/2018 5:37:00           Surr: Dibromofluoromethane         93.3         70-130         %Rec         50         6/19/2018 5:37:00	Benzene	1600	50	µg/L	50	6/19/2018 5:37:00 AM							
Xylenes, Total         3400         75         µg/L         50         6/19/2018 5:37:00           Surr: 1,2-Dichloroethane-d4         98.1         70-130         %Rec         50         6/19/2018 5:37:00           Surr: 4-Bromofluorobenzene         105         70-130         %Rec         50         6/19/2018 5:37:00           Surr: Dibromofluoromethane         93.3         70-130         %Rec         50         6/19/2018 5:37:00	Toluene	4100	50	µg/L	50	6/19/2018 5:37:00 AM							
Surr: 1,2-Dichloroethane-d4         98.1         70-130         %Rec         50         6/19/2018 5:37:00           Surr: 4-Bromofluorobenzene         105         70-130         %Rec         50         6/19/2018 5:37:00           Surr: Dibromofluoromethane         93.3         70-130         %Rec         50         6/19/2018 5:37:00	Ethylbenzene	260	50	µg/L	50	6/19/2018 5:37:00 AM							
Surr: 4-Bromofluorobenzene         105         70-130         %Rec         50         6/19/2018 5:37:00           Surr: Dibromofluoromethane         93.3         70-130         %Rec         50         6/19/2018 5:37:00	Xylenes, Total	3400	75	µg/L	50	6/19/2018 5:37:00 AM							
Surr: Dibromofluoromethane         93.3         70-130         %Rec         50         6/19/2018 5:37:00	Surr: 1,2-Dichloroethane-d4	98.1	70-130	%Rec	50	6/19/2018 5:37:00 AM							
	Surr: 4-Bromofluorobenzene	105	70-130	%Rec	50	6/19/2018 5:37:00 AM							
Surr: Toluene-d8 94.4 70-130 % Rec 50 6/19/2018 5:37:00	Surr: Dibromofluoromethane	93.3	70-130	%Rec	50	6/19/2018 5:37:00 AM							
Sun routine do 0/13/2010 3.1.00	Surr: Toluene-d8	94.4	70-130	%Rec	50	6/19/2018 5:37:00 AM							
SM2510B: SPECIFIC CONDUCTANCE Analyst:	SM2510B: SPECIFIC CONDUCTANCE					Analyst: JRR							
Conductivity 3400 5.0 µmhos/c 1 6/18/2018 5:18:54	Conductivity	3400	5.0	µmhos/c	1	6/18/2018 5:18:54 PM							

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 Page 1 of 4
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

WO#: **1806759** 

25-Jun-18

LTE **Client: Project:** Standard #1 Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R51964 RunNo: 51964 Prep Date: Analysis Date: 6/13/2018 SeqNo: 1698742 Units: ma/L SPK value SPK Ref Val Result PQL %REC LowLimit HighLimit %RPD RPDLimit Qual Analyte ND 0.50 Sulfate Sample ID LCS SampType: LCS TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R51964 RunNo: 51964 Prep Date: Analysis Date: 6/13/2018 SeqNo: 1698743 Units: mg/L SPK value SPK Ref Val %REC %RPD RPDLimit Result PQL LowLimit HighLimit Qual Analyte 9.2 0.50 10.00 92.3 90 110 Sulfate 0 Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions Batch ID: R52211 Client ID: PBW RunNo: 52211 Analysis Date: 6/25/2018 SeqNo: 1710769 Units: mg/L Prep Date: Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD **RPDLimit** Qual ND 0.50 Chloride Sample ID LCS SampType: LCS TestCode: EPA Method 300.0: Anions Client ID: RunNo: 52211 LCSW Batch ID: R52211 Analysis Date: 6/25/2018 SeqNo: 1710770 Units: mg/L Prep Date: Result PQL SPK value SPK Ref Val %REC HighLimit %RPD **RPDLimit** Analyte LowLimit Qual Chloride 4.8 0.50 5.000 96.1 90 110 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
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 2 of 4

WO#: **1806759** 

Page 3 of 4

25-Jun-18

Client:

Project: Standard #1

LTE

Sample ID 100ng Ics2 SampType: LCS TestCode: EPA Method 8260: N							8260: Volatile	es Short L	ist	
Client ID: LCSW	Batcl	n ID: SL	.52058	R	unNo: 5	2058				
Prep Date:	Analysis E	Date: 6/	19/2018	S	eqNo: 1	704161	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	108	70	130			
Toluene	20	1.0	20.00	0	99.3	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		99.9	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		105	70	130			
Surr: Dibromofluoromethane	9.6		10.00		96.0	70	130			
Surr: Toluene-d8	9.7		10.00		96.8	70	130			
Sample ID rb2	SampT	ype: ME	BLK	Test	Code: E	PA Method	8260: Volatile	es Short L	.ist	
Client ID: PBW	Batch	n ID: SL	52058	R	unNo: 5	2058				
Prep Date:	Analysis D	)ate: 6/	19/2018	S	eqNo: 1	704162	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.5	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	9.3		10.00		92.8	70	130			
Surr: Toluene-d8			40.00				100			
Sull. Toluelle-uo	9.5		10.00		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 Detection Limit
- W Sample container temperature is out of limit as specified

WO#: **1806759** 

Page 4 of 4

25-Jun-18

Client: Project:	LTE Standard	1 #1									
Sample ID	lcs-1 ~20uS eC	SampT	ype: LC	S	Tes	tCode: S	M2510B: S	pecific Condu	uctance		
Client ID:	LCSW	Batcl	n ID: <b>R5</b>	2062	F	RunNo: 5	2062				
Prep Date:		Analysis D	Date: 6/	18/2018	S	SeqNo: 1	703214	Units: µmh	os/cm		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity		22	5.0	19.98	0	113	80	120			

#### Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY	Hall Environmental Albu TEL: 505-345-3975 Website: www.ha	490 uquerq FAX:	1 Hawkins N ue, NM 8710 505-345-410	VE 09 <b>Sa</b> 07	amp	le Log-In C	Check List
Client Name: LTE	Work Order Number:	1806	6759			RcptNo	: 1
Received By: Isaiah Ortiz Completed By: Isaiah Ortiz Reviewed By: EN M Lb: 5506/13/18	6/13/2018 7:00:00 AM 6/13/2018 9:58:09 AM 0/13/18			IG			
Chain of Custody 1. Is Chain of Custody complete? 2. How was the sample delivered?		Yes <u>Cour</u>		No	]	Not Present	
Log In 3. Was an attempt made to cool the samples?		Yes		No 🗌		NA 🗌	
<ul><li>4. Were all samples received at a temperature</li><li>5. Sample(s) in proper container(s)?</li></ul>	of >0° C to 6.0°C	Yes Yes		No [		NA	
<ul><li>6. Sufficient sample volume for indicated test(s)</li><li>7. Are samples (except VOA and ONG) properly</li></ul>	preserved?	Yes Yes		No 🗌	] ]	_	
8. Was preservative added to bottles?		Yes		No 🗹		NA 🗌	
<ul><li>9. VOA vials have zero headspace?</li><li>10. Were any sample containers received broken</li></ul>		Yes	_	No 🗹	#	of preserved	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)		Yes		No 🗌		ottles checked or pH: (<2 or Adjusted?	r>12 unless noted
<ul> <li>12. Are matrices correctly identified on Chain of 0</li> <li>13. Is it clear what analyses were requested?</li> <li>14. Were all holding times able to be met? (If no, notify customer for authorization.)</li> </ul>		Yes Yes Yes		No No No	]	Checked by	OCHSI
Special Handling (if applicable) 15. Was client notified of all discrepancies with t	his order?	Yes		No	] -	NA 🗹	-
Person Notified: By Whom: Regarding: Client Instructions:	Date:	] eMa	ail 🗌 Pho	ne 🗌 Fa	ax 🗌	] In Person	

17. Cooler Information

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

Chain-of-Custody Record			Turn-Around	Time:								_			-			-			
Client:	Deviv	n Hen	cmann	Standard	🗆 Rush			Butter											NT		
			ment. Inc.	Project Name	:				10												
Mailing	Address	849	E 2nd Ave	St	andavd	#\	www.hallenvironmental.com 4901 Hawkins NE - Albuquerque, NM 87109														
		MAD.		Project #:			Tel. 505-345-3975 Fax 505-345-4107														
Phone #		0)385-			61781700	6	Analysis Request														
email or Fax#: DHencinaning, LTEnv. com			Project Mana	ger:		_	(YIL	RO)					(4)								
QA/QC Package:						(8021)	as or	/ MF			S)		4,SC	PCB's				II			
Standard     Level 4 (Full Validation)				vin Hen	4	3's (8	Ő	2 2 2			SIMS)		PO PO	2 P(	X			N			
Accreditation			Sampler: M On-lice.	ichael W	nckev	TMB's	HdT		(	t.1)	270		NO	808	BTEX			Sullate		or N)	
EDD (Type)					S-CE-110= 1.3	+	+ MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270	sis	Anions (F,CI,NO ₃ ,NO ₂ ,PO ₄ ,SO ₄ )	Pesticides / 8082		8270 (Semi-VOA)		R		Yor	
	(.)po/_						MTBE	MTB	5B (	thoc	thoc	310	Meta	Ū,	sticic	H	-imi		X		es (
Date	Time	Matrix	Sample Request ID	Container Two and #			+	+ ×	801	(Me	(Me	s (8	A 8	ns (F	Pe	B	(Se		hloridt.		lddu
				Type and #	Туре	1806759	BTEX	BTEX	TPH	H	EDB	HAC	RCRA 8 Metals	Anio	8081	8260B (1004)	3270		Chi		Air Bubbles (Y
3-12-18	10920	AQ	GWOI	3-VOA, 1-PON HC1, COOI -001					·			-			Ň			X	-	T	
1	0.70	11	0.0001	1 1019	1101 (001	001											H		4	+	+
											-									+	+
											_								+	+	+
									-										+	+	+
																			+	+	+
											-							$\vdash$	-+-	+	+-
											_							$\vdash$	+	+	+
															-			$\vdash$	+	+	
							-								-		$\left  - \right $	$\vdash$	+	+	+
					1	Up														+	+
					- 11	8-12-18														+	+
Date: Time: Relinquished by:			Received by:	1	Date Time	Ren	narks	3:	~ ~ ~	7	D		6	11			OIA	 `			
6-12-18 1134			Shut	Jalte .	6/12/18 1134	(C. ) Deal M. Millorin, COVI															
Date:	Date: Time: Relinquished by:			Received by:																	
e/12/18 1854 / Aristiv Walt		Chm - 0100																			

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 4901 Hawkins NE Albuquergue, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

August 22, 2018

Devin Hencmann Hilcorp Energy PO Box 61529 Houston, TX 77208-1529 TEL: (337) 276-7676 FAX

RE: Standard 1

OrderNo.: 1808B66

Dear Devin Hencmann:

Hall Environmental Analysis Laboratory received 2 sample(s) on 8/18/2018 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 <u>www.hallenvironmental.com</u> 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

### **Analytical Report**

#### Lab Order 1808B66

Date Reported: 8/22/2018

1 8/21/2018 11:41:05 PM 39888

## Hall Environmental Analysis Laboratory, Inc.

Surr: 4-Bromofluorobenzene

CLIENT:Hilcorp EnergyProject:Standard 1Lab ID:1808B66-001	Client Sample ID: MW01 23-25'           Collection Date: 8/16/2018 4:00:00 PM           Matrix: SOIL         Received Date: 8/18/2018 11:15:00 AM											
Analyses	Result	PQL	Qual Units	DF	Date Analyzed	Batch						
EPA METHOD 8015M/D: DIESEL RANGE	ORGANICS				Analyst	Irm						
Diesel Range Organics (DRO)	16	9.7	mg/Kg	1	8/21/2018 8:30:58 PM	39889						
Motor Oil Range Organics (MRO)	70	48	mg/Kg	1	8/21/2018 8:30:58 PM	39889						
Surr: DNOP	118	50.6-138	%Rec	1	8/21/2018 8:30:58 PM	39889						
EPA METHOD 8015D: GASOLINE RANG	Ξ				Analyst	NSB						
Gasoline Range Organics (GRO)	9.9	4.7	mg/Kg	1	8/21/2018 11:41:05 PM	39888						
Surr: BFB	119	15-316	%Rec	1	8/21/2018 11:41:05 PM	39888						
EPA METHOD 8021B: VOLATILES					Analyst	NSB						
Benzene	ND	0.023	mg/Kg	1	8/21/2018 11:41:05 PM	39888						
Toluene	ND	0.047	mg/Kg	1	8/21/2018 11:41:05 PM	39888						
Ethylbenzene	ND	0.047	mg/Kg	1	8/21/2018 11:41:05 PM	39888						
Xylenes, Total	ND	0.093	mg/Kg	1	8/21/2018 11:41:05 PM	39888						

106

80-120

%Rec

0 110	<u>ب</u>		В	
Qualifiers:	rs: * Value exceeds Maximum Contaminant Level.			Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 1 of 5
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report Lab Order 1808B66 Date Reported: 8/22/2018

### Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy	Client Sample ID: MW01 20-35'										
Project: Standard 1 Collection Date: 8/17/2018 9:											
Lab ID:         1808B66-002         Matrix:         SOIL         Received Date: 8/18/2018 11											
Analyses	Result	PQL	Qual Units	DF	Date Analyzed	Batch					
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS				Analyst:	Irm					
Diesel Range Organics (DRO)	26	9.7	mg/Kg	1	8/21/2018 8:53:00 PM	39889					
Motor Oil Range Organics (MRO)	74	49	mg/Kg	1	8/21/2018 8:53:00 PM	39889					
Surr: DNOP	116	50.6-138	%Rec	1	8/21/2018 8:53:00 PM	39889					
EPA METHOD 8015D: GASOLINE RAN	IGE				Analyst:	NSB					
Gasoline Range Organics (GRO)	46	4.7	mg/Kg	1	8/22/2018 12:27:47 AM	39888					
Surr: BFB	211	15-316	%Rec	1	8/22/2018 12:27:47 AM	39888					
EPA METHOD 8021B: VOLATILES					Analyst:	NSB					
Benzene	ND	0.024	mg/Kg	1	8/22/2018 12:27:47 AM	39888					
Toluene	0.20	0.047	mg/Kg	1	8/22/2018 12:27:47 AM	39888					
Ethylbenzene	0.14	0.047	mg/Kg	1	8/22/2018 12:27:47 AM	39888					
Xylenes, Total	1.8	0.094	mg/Kg	1	8/22/2018 12:27:47 AM	39888					
Surr: 4-Bromofluorobenzene	112	80-120	%Rec	1	8/22/2018 12:27:47 AM	39888					

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 2 of 5
	ND	D Not Detected at the Reporting Limit		Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Client: Hilcorp Project: Standar	0.									
Sample ID MB-39889	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015M/D: Die	esel Rang	e Organics	
Client ID: PBS	Batch	ID: 39	889	F	RunNo: 5	3591				
Prep Date: 8/20/2018	Analysis D	ate: 8/	21/2018	S	SeqNo: 1	768073	Units: mg/K	g		
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	10		10.00		102	50.6	138			
Sample ID LCS-39889	SampT	ype: LC	S	Tes	tCode: El	PA Method	8015M/D: Die	esel Rang	e Organics	
Client ID: LCSS	Batch	ID: 39	889	F	RunNo: 5	3591				
Prep Date: 8/20/2018	Analysis D	ate: 8/	21/2018	S	SeqNo: 1	768074	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	95.6	70	130			
Surr: DNOP	4.6		5.000		91.5	50.6	138			

#### 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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 3 of 5

WO#: 1808B66

Client: Hilcorp Energy Project: Standard 1

Sample ID MB-39888	'SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	le	
Client ID: PBS	Batch	ID: 39	888	F	RunNo: 5	3602				
Prep Date: 8/20/2018	Analysis D	ate: 8/	21/2018	S	SeqNo: 1	767508	Units: mg/H	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	900		1000		90.1	15	316			
Sample ID LCS-39888	SampT	ype: LC	S	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	le	
Client ID: LCSS	Batch	ID: 39	888	F	RunNo: 5	3602				
Prep Date: 8/20/2018	Analysis D	ate: 8/	21/2018	S	SeqNo: 1	767509	Units: mg/M	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	94.0	75.9	131			
Surr: BFB	1000		1000		100	15	316			

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 Detection Limit
- W Sample container temperature is out of limit as specified

WO#: 1808B66

22-Aug-18

Page 4 of 5

Client: Hilcorp Energy Project: Standard 1

Sample ID MB-39888	SampTy	/pe: <b>ME</b>	BLK	Test	Code: E	PA Method	8021B: Volat	iles		
Client ID: PBS	Batch	ID: 398	888	R	RunNo: 53602					
Prep Date: 8/20/2018	Analysis Da	ate: 8/	21/2018	S	eqNo: 1	767540	Units: mg/K	g		
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		104	80	120			
Sample ID LCS-39888	SampTy	pe: LC	S	Test	Code: E	PA Method	8021B: Volat	iles		
Client ID: LCSS	Batch	Batch ID: 39888 RunNo: 53602								
	- artorr	10. 330	000		unite. 0	3002				
Prep Date: 8/20/2018	Analysis Da				eqNo: 1		Units: mg/K	g		
Prep Date: 8/20/2018 Analyte			21/2018				Units: <b>mg/K</b> HighLimit	g %RPD	RPDLimit	Qual
	Analysis Da	ate: 8/2	21/2018	S	eqNo: 1	767541		•	RPDLimit	Qual
Analyte	Analysis Da Result	ate: <b>8/</b> 2 PQL	21/2018 SPK value	S SPK Ref Val	eqNo: 1 %REC	767541 LowLimit	HighLimit	•	RPDLimit	Qual
Analyte	Analysis Da Result 0.98	ate: 8/2 PQL 0.025	21/2018 SPK value 1.000	SPK Ref Val	eqNo: 1 %REC 97.7	767541 LowLimit 77.3	HighLimit 128	•	RPDLimit	Qual
Analyte Benzene Toluene	Analysis Da Result 0.98 1.0	ate: 8/2 PQL 0.025 0.050	21/2018 SPK value 1.000 1.000	SPK Ref Val 0 0	eqNo: <b>1</b> %REC 97.7 101	767541 LowLimit 77.3 79.2	HighLimit 128 125	•	RPDLimit	Qual

#### Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of 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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 5 of 5

WO#: 1808B66

22-Aug-18

ANALYSIS TEL: 50	vironmental Analysis Labora 4901 Hawkins Albuquerque, NM 87 5-345-3975 FAX: 505-3454 ite: www.hallenvtronmental.	NE 109 Sar	nple Log-In Check List
Client Name: HILCORP ENERGY Work Ord	er Number: 1808B66		RcptNo: 1
Received By: Anne Thorne 8/18/2018 1		ame H.	~
Completed By: Ashley Gallegos 8/20/2018 9		A	
Reviewed By: 08/20/18	labeled	by:-	3105 80 OE
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. VOA vials have zero headspace?	Yes	No 🗌	No VOA Vials 🗹
10. Were any sample containers received broken?	Yes	No P	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes 🖌	No 🗌	bottles checkedC for pH: (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes 🖌	No 🗌	Adjusted?
13. Is it clear what analyses were requested?	Yes 🗹	No 🗌	8/20/18
<ol> <li>Were all holding times able to be met? (If no, notify customer for authorization.)</li> </ol>	Yes 🗹	No	Checked by:
Special Handling (if applicable)			
15. Was client notified of all discrepancies with this order?	Yes	No 🗌	NA 🗹
Person Notified:	Date	paprosidan da manandra na manjajar kak	
By Whom:	N	none 🗌 Fax	In Person
Regarding:	ana kata mangangan ngangangan angangan ang	E-414-19-4 Sec. 22-42-42-42-42-42	alananananananananan
Client Instructions:			neonangu organization eta anticipation de la construction de la co
16. Additional remarks:			
17. <u>Cooler Information</u> <u>Cooler No Temp °C Condition Seal Intact Seal</u> 1 1.1 Good Yes	al No Seal Date	Signed By	

С	hain-	of-Cu	stody Record	Turn-Around	Time:	-															
Client:	Hild	Orp	Evergy Company	Ì.☆ Standard																	
		•	5/ 1/	Project Name	):				2.22							tal.co					
Mailing	Address			Stand	ard #1			490	01 H	awkir								109			
				Project #:	2		1			5-34							4107				
Phone #	t:			1			and the second		1. 00	0 04	0-00	-		100 C		uest	STREET, STREET				
email or	and a state of the	ideal	@ hilcorp.com	Project Mana	aer:			5	ô			P.S.M.	Contraction of the local division of the loc							Street, or	
QA/QC F		0.000			Hencman	14 LTE	121)	NO	MR			~		So	B's						
Stan			Level 4 (Full Validation)				TMB's (8021)	TPH (Gas only)	DRO / MRO)			SIMS)		PO	PC						
Accredit	tation			Sampler: Er	ic Carro	11	MB'	H	DR			0.5		02,	082						
		□ Othe	r	On-Ice:	X Yes	🖾 No	F +	F +	02	18.1	504.1)	8270		03,N	\$ / 8		(A				N N
d EDD	(Type)_	PDF		Sample Temp	perature 2./-	CE SE IN	BH	ШШ	G	bd 4	0d 5	0 or	etals	N,N	ides	()	2				2
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEALNO 1808BNOU	BTEX + MTBE	BTEX + MTBE	TPH 8015B (GRO /	TPH (Method 418.1)	EDB (Method	PAH's (8310 or	RCRA 8 Metals	Anions (F,CI,NO ₃ ,NO ₂ ,PO ₄ ,SO ₄ )	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)				Air Bubbles (Y or N)
8/16/18	1600	Soil	MW01 23-25'	1-402	(00)	-001	X		X												
8/17/18	0930	Soil	MW01 30-35'	1-402	(00)	-002	X		X					_						+	+ -
<u> </u>																			+		
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	6										+	-		-						+	+
											+			_				-	+	+	+
Date: 8-17-18	Time: 16:25		ad by:	Received by:	Jar	Date Time	Ren	narks	s: 2	bu	n.	s (	21-	ter	ΛV	. C	on	1	<b>_</b>		
Date:	Time: 1839	Relinquishe	the Wale	Received by:	m	Date Time U3/17/19 115			9	ide	enc ale	ma	lcor	p.c	>1+	tep	n V cc	ard	M Ozal	eh:	loop

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 4901 Hawkins NE Albuquergue, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

August 31, 2018 Devin Hencmann LTE 848 East 2nd Avenue Durango, CO 81301 TEL: (970) 946-1093 FAX

RE: Standard 1

OrderNo.: 1808G06

Dear Devin Hencmann:

Hall Environmental Analysis Laboratory received 3 sample(s) on 8/27/2018 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 <u>www.hallenvironmental.com</u> 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,

ander

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1808G06 Date Reported: 8/31/2018

### Hall Environmental Analysis Laboratory, Inc.

Surr: 4-Bromofluorobenzene

CLIENT:	LTE		Client	Sample ID:	MW0	2 18-20'
<b>Project:</b>	Standard 1		Colle	ction Date:	8/20/2	018 12:30:00 PM
Lab ID:	1808G06-001	Matrix: SOIL	Reco	eived Date:	8/27/2	018 7:48:00 AM
Analyses		Result	PQL Qu	al Units	DF	Date Analyzed
EPA MET	THOD 8015M/D: DIESEL RA	NGE ORGANICS				Analyst: Irm
Diesel R	ange Organics (DRO)	37	9.8	mg/Kg	1	8/29/2018 1:39:29 PM
Motor Oi	I Range Organics (MRO)	ND	49	mg/Kg	1	8/29/2018 1:39:29 PM
Surr: I	DNOP	112	50.6-138	%Rec	1	8/29/2018 1:39:29 PM
EPA MET	HOD 8015D: GASOLINE R	ANGE				Analyst: NSB
Gasoline	Range Organics (GRO)	38	4.7	mg/Kg	1	8/29/2018 10:44:30 AM
Surr: I	BFB	192	15-316	%Rec	1	8/29/2018 10:44:30 AM
EPA MET	HOD 8021B: VOLATILES					Analyst: NSB
Benzene		0.046	0.023	mg/Kg	1	8/29/2018 10:44:30 AM
Toluene		0.64	0.047	mg/Kg	1	8/29/2018 10:44:30 AM
Ethylben	zene	0.26	0.047	mg/Kg	1	8/29/2018 10:44:30 AM
Xylenes,	Total	2.9	0.093	mg/Kg	1	8/29/2018 10:44:30 AM

99.7

80-120

%Rec

1

8/29/2018 10:44:30 AM

Qua	li	fi	0	r	•	
Qua			c		э	

- * 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 Page 1 of 6
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Analytical Report Lab Order 1808G06 Date Reported: 8/31/2018

#### Hall Environmental Analysis Laboratory, Inc.

		CII.			0.00.051
CLIENT: LTE		Client	Sample ID:	MW 0	2 23-25'
Project: Standard 1		Coll	ection Date:	8/20/2	018 1:40:00 PM
Lab ID: 1808G06-002	Matrix: SOIL	Ree	ceived Date:	8/27/2	018 7:48:00 AM
Analyses	Result	PQL Q	ual Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS				Analyst: Irm
Diesel Range Organics (DRO)	ND	10	mg/Kg	1	8/29/2018 2:02:05 PM
Motor Oil Range Organics (MRO)	ND	50	mg/Kg	1	8/29/2018 2:02:05 PM
Surr: DNOP	109	50.6-138	%Rec	1	8/29/2018 2:02:05 PM
EPA METHOD 8015D: GASOLINE RAN	IGE				Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	8/29/2018 12:17:51 PM
Surr: BFB	92.3	15-316	%Rec	1	8/29/2018 12:17:51 PM
EPA METHOD 8021B: VOLATILES					Analyst: NSB
Benzene	0.030	0.023	mg/Kg	1	8/29/2018 12:17:51 PM
Toluene	0.14	0.047	mg/Kg	1	8/29/2018 12:17:51 PM
Ethylbenzene	ND	0.047	mg/Kg	1	8/29/2018 12:17:51 PM
Xylenes, Total	ND	0.094	mg/Kg	1	8/29/2018 12:17:51 PM
Surr: 4-Bromofluorobenzene	93.5	80-120	%Rec	1	8/29/2018 12:17:51 PM

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 Page 2 of 6
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**Analytical Report** Lab Order 1808G06 Date Reported: 8/31/2018

#### Hall Environmental Analysis Laboratory, Inc.

CLIENT: LTE		Client	Samula ID.	MWO	6 21 22
			Sample ID:		
Project: Standard 1		Colle	ction Date:	8/22/2	018 12:15:00 PM
Lab ID: 1808G06-003	Matrix: SOIL	Rece	eived Date:	8/27/2	018 7:48:00 AM
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS				Analyst: Irm
Diesel Range Organics (DRO)	140	9.8	mg/Kg	1	8/29/2018 2:24:22 PM
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	8/29/2018 2:24:22 PM
Surr: DNOP	119	50.6-138	%Rec	1	8/29/2018 2:24:22 PM
EPA METHOD 8015D: GASOLINE RAM	NGE				Analyst: NSB
Gasoline Range Organics (GRO)	950	97	mg/Kg	20	8/29/2018 9:57:35 AM
Surr: BFB	178	15-316	%Rec	20	8/29/2018 9:57:35 AM
EPA METHOD 8021B: VOLATILES					Analyst: NSB
Benzene	1.1	0.48	mg/Kg	20	8/29/2018 9:57:35 AM
Toluene	25	0.97	mg/Kg	20	8/29/2018 9:57:35 AM
Ethylbenzene	5.3	0.97	mg/Kg	20	8/29/2018 9:57:35 AM
Xylenes, Total	55	1.9	mg/Kg	20	8/29/2018 9:57:35 AM
Surr: 4-Bromofluorobenzene	97.5	80-120	%Rec	20	8/29/2018 9:57:35 AM

Ouol	itio met
Qual	lifiers:

- * Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix
- D
- 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
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 3 of 6 J
- Р Sample pH Not In Range
- Reporting Detection Limit RL
- Sample container temperature is out of limit as specified W

WO#: 1808G06

Page 4 of 6

31-Aug-18

Client: LTE Project: Standar	d 1									
Sample ID MB-40034	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: PBS	Batch	ID: 40	034	F	RunNo: 5	3774				
Prep Date: 8/28/2018	Analysis D	ate: 8/	29/2018	S	SeqNo: 1	774604	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		106	50.6	138			
Sample ID LCS-40034	SampT	ype: LC	S	Tes	tCode: El	PA Method	8015M/D: Die	esel Range	e Organics	
Client ID: LCSS	Batch	ID: 400	034	F	RunNo: 5	3774				
Prep Date: 8/28/2018	Analysis D	ate: 8/	29/2018	S	SeqNo: 1	774605	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	54	10	50.00	0	108	70	130			
Surr: DNOP	5.8		5.000		116	50.6	138			

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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 5 of 6

Client: Project:	LTE Standard	1									
Sample ID	MB-40033	SampTy	/pe: MI	BLK	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID:	PBS	Batch	ID: 40	033	F	RunNo: 5	53798				
Prep Date:	8/28/2018	Analysis Da	ate: 8/	/29/2018	S	SeqNo: 1	775348	Units: mg/k	(g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang Surr: BFB	e Organics (GRO)	ND 910	5.0	1000		90.5	15	316			
Sample ID	LCS-40033	SampTy	/pe: LC	s	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	е	
Client ID:	LCSS	Batch	ID: 40	033	F	RunNo: 5	53798				
Prep Date:	8/28/2018	Analysis Da	ate: 8/	/29/2018	S	SeqNo: 1	775349	Units: mg/k	(g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	e Organics (GRO)	28	5.0	25.00	0	111	75.9	131			
Surr: BFB		1000		1000		101	15	316			
Sample ID	1808G06-001AMS	SampTy	/pe: MS	S	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	е	
Client ID:	MW02 18-20'	Batch	ID: 40	033	R	RunNo: 5	53798				
Prep Date:	8/28/2018	Analysis Da	ate: 8/	/29/2018	S	SeqNo: 1	775352	Units: mg/M	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	e Organics (GRO)	79	4.7	23.45	38.21	175	77.8	128			S
Surr: BFB		2300		938.1		244	15	316			
Sample ID	1808G06-001AMS	D SampTy	/pe: M\$	SD	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID:	MW02 18-20'	Batch	ID: 40	033	R	RunNo: 5	3798				
Prep Date:	8/28/2018	Analysis Da	ate: 8/	/29/2018	S	SeqNo: 1	775353	Units: mg/M	(g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	e Organics (GRO)	95	4.7	23.56	38.21	240	77.8	128	18.0	20	S
Surr: BFB		2800		942.5		296	15	316	0	0	

#### Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- Analyte detected in the associated Method Blank В
- Value above quantitation range E
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

WO#: 1808G06

31-Aug-18

WO#: 1808G06

31-Aug-18

Client: LTE Project: Standard	1									
Sample ID MB-40033	Samp	Туре: МЕ	3LK	Tes	tCode: El	PA Method	8021B: Vola	tiles		
Client ID: PBS	Bato	h ID: 40	033	F	RunNo: 5	3798				
Prep Date: 8/28/2018	Analysis I				SeqNo: 1		Units: mg/l	٢g		
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	0.91		1.000		91.1	80	120			
Sample ID LCS-40033	Samp	Type: LC	s	Tes	tCode: El	PA Method	8021B: Vola	tiles		
Client ID: LCSS	Batc	h ID: 40	033	F	RunNo: 5	3798				
Prep Date: 8/28/2018	Analysis [	Date: 8/	29/2018	S	SeqNo: 1	775385	Units: mg/ł	٩g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.025	1.000	0	96.2	77.3	128			
Toluene	0.99	0.050	1.000	0	98.7	79.2	125			
Ethylbenzene	0.99	0.050	1.000	0	98.6	80.7	127			
Xylenes, Total	3.0	0.10	3.000	0	99.6	81.6	129			
Surr: 4-Bromofluorobenzene	0.94		1.000		94.2	80	120			
Sample ID 1808G06-002AMS	Samp	Туре: МS	3	Tes	tCode: El	PA Method	8021B: Vola	tiles		
Client ID: MW 02 23-25'	Batc	h ID: 40	033	F	RunNo: 5	3798				
Prep Date: 8/28/2018	Analysis [	Date: 8/	29/2018	S	SeqNo: 17	775389	Units: mg/k	(g		
Analyte	Result									
-		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	PQL 0.024	SPK value 0.9434	SPK Ref Val 0.03024	%REC 102	LowLimit 68.5	HighLimit 133	%RPD	RPDLimit	Qual
Benzene Toluene	1.0 1.1					and the second sec		%RPD	RPDLimit	Qual
		0.024	0.9434	0.03024	102	68.5	133	%RPD	RPDLimit	Qual
Toluene	1.1	0.024 0.047	0.9434 0.9434	0.03024 0.1417	102 106	68.5 75	133 130	%RPD	RPDLimit	Qual
Toluene Ethylbenzene	1.1 1.0	0.024 0.047 0.047	0.9434 0.9434 0.9434	0.03024 0.1417 0.01479	102 106 109	68.5 75 79.4	133 130 128	%RPD	RPDLimit	Qual
Toluene Ethylbenzene Xylenes, Total	1.1 1.0 3.2 0.89	0.024 0.047 0.047	0.9434 0.9434 0.9434 2.830 0.9434	0.03024 0.1417 0.01479 0.08539	102 106 109 109 94.2	68.5 75 79.4 77.3 80	133 130 128 131		RPDLimit	Qual
Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromofluorobenzene	1.1 1.0 3.2 0.89 D Samp	0.024 0.047 0.047 0.094	0.9434 0.9434 0.9434 2.830 0.9434	0.03024 0.1417 0.01479 0.08539 Test	102 106 109 109 94.2	68.5 75 79.4 77.3 80 PA Method	133 130 128 131 120		RPDLimit	Qual
Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromofluorobenzene Sample ID <b>1808G06-002AMS</b>	1.1 1.0 3.2 0.89 D Samp	0.024 0.047 0.047 0.094 Fype: <b>MS</b>	0.9434 0.9434 0.9434 2.830 0.9434 5D 033	0.03024 0.1417 0.01479 0.08539 Tesi	102 106 109 109 94.2 tCode: EF	68.5 75 79.4 77.3 80 PA Method 3798	133 130 128 131 120	tiles	RPDLimit	Qual
Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromofluorobenzene Sample ID <b>1808G06-002AMS</b> I Client ID: <b>MW 02 23-25'</b>	1.1 1.0 3.2 0.89 D Samp ⁻ Batc	0.024 0.047 0.047 0.094 Fype: <b>MS</b>	0.9434 0.9434 2.830 0.9434 5D 033 29/2018	0.03024 0.1417 0.01479 0.08539 Tesi	102 106 109 94.2 tCode: EF	68.5 75 79.4 77.3 80 PA Method 3798	133 130 128 131 120 8021B: Vola	tiles	RPDLimit	Qual
Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromofluorobenzene Sample ID <b>1808G06-002AMS</b> Client ID: <b>MW 02 23-25'</b> Prep Date: <b>8/28/2018</b>	1.1 1.0 3.2 0.89 D Samp Batc Analysis [	0.024 0.047 0.047 0.094 Type: <b>MS</b> h ID: <b>40</b> Date: <b>8</b> /	0.9434 0.9434 2.830 0.9434 5D 033 29/2018	0.03024 0.1417 0.01479 0.08539 Test R S	102 106 109 94.2 tCode: EF RunNo: 53 SeqNo: 17	68.5 75 79.4 77.3 80 PA Method 3798 775390	133 130 128 131 120 8021B: Vola Units: mg/F	tiles		
Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromofluorobenzene Sample ID <b>1808G06-002AMS</b> Client ID: <b>MW 02 23-25'</b> Prep Date: <b>8/28/2018</b> Analyte	1.1 1.0 3.2 0.89 D Samp Batc Analysis [ Result	0.024 0.047 0.047 0.094 Type: <b>MS</b> h ID: <b>40</b> 0 Date: <b>8</b> /3 PQL	0.9434 0.9434 2.830 0.9434 5D 033 29/2018 SPK value	0.03024 0.1417 0.01479 0.08539 Tesi R SPK Ref Val	102 106 109 94.2 tCode: EF RunNo: 53 SeqNo: 17 %REC	68.5 75 79.4 77.3 80 <b>PA Method</b> 3798 775390 LowLimit	133 130 128 131 120 8021B: Vola Units: mg/P HighLimit	tiles Sg %RPD	RPDLimit	
Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromofluorobenzene Sample ID 1808G06-002AMSI Client ID: MW 02 23-25' Prep Date: 8/28/2018 Analyte Benzene	1.1 1.0 3.2 0.89 D Samp Batc Analysis [ Result 0.97	0.024 0.047 0.047 0.094 Fype: <b>MS</b> h ID: <b>400</b> Date: <b>8</b> /3 PQL 0.024	0.9434 0.9434 2.830 0.9434 5D 033 29/2018 SPK value 0.9681	0.03024 0.1417 0.01479 0.08539 Test R SPK Ref Val 0.03024	102 106 109 94.2 tCode: EF RunNo: 53 SeqNo: 17 %REC 96.7	68.5 75 79.4 77.3 80 <b>PA Method</b> 3798 775390 LowLimit 68.5	133 130 128 131 120 8021B: Vola Units: mg/P HighLimit 133	tiles Sg %RPD 3.10	RPDLimit 20	
Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromofluorobenzene Sample ID 1808G06-002AMSI Client ID: MW 02 23-25' Prep Date: 8/28/2018 Analyte Benzene Toluene	1.1 1.0 3.2 0.89 D Samp Batc Analysis [ Result 0.97 1.1	0.024 0.047 0.047 0.094 Fype: <b>MS</b> h ID: <b>400</b> Date: <b>8</b> /3 PQL 0.024 0.048	0.9434 0.9434 2.830 0.9434 5D 033 29/2018 SPK value 0.9681 0.9681	0.03024 0.1417 0.01479 0.08539 Test R SPK Ref Val 0.03024 0.1417	102 106 109 94.2 tCode: EF RunNo: 53 SeqNo: 17 %REC 96.7 99.8	68.5 75 79.4 77.3 80 <b>PA Method</b> 3798 775390 LowLimit 68.5 75	133 130 128 131 120 8021B: Vola Units: mg/H HighLimit 133 130	tiles 5g 3.10 3.43	RPDLimit 20 20	

#### Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Page 6 of 6

- P Sample pH Not In Range RL Reporting Detection Limi
- W Sample container temperature is out of limit as specified

Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY	Hall Environmental Analysis Laborat 4901 Hawkins Albuquerque, NM 871 TEL: 505-345-3975 FAX: 505-345-4 Website: www.hallenvironmental.c	^{NE} ⁰⁹ Sample Log-In Check List
Client Name: LTE	Work Order Number: 1808G06	RcptNo: 1
Received By: Jazzmine Burkhead	8/27/2018 7:48:00 AM	so al a
Completed By: Ashley Gallegos	8/27/2018 12:49:46 PM	A
Reviewed By: (1/13 8/27/18	labeled	by: JAB 08/27/18
Chain of Custody		
<ol> <li>Is Chain of Custody complete?</li> </ol>	Yes 🗸	No Not Present
2. How was the sample delivered?	Courier	
Log In 3. Was an attempt made to cool the samples?	Yes 🗹	
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 p	preserved? Yes	No 🗆
8. Was preservative added to bottles?	Yes	No 🗹 NA 🗌
9. VOA vials have zero headspace?	Yes	No 🗌 No VDA Vials 🗹
10, Were any sample containers received broken?	Yes 🗌	No 🗹
<ol> <li>Does paperwork match bottle labels? (Note discrepancies on chain of custody)</li> </ol>	Yes 🗹	* of preserved bottles checked for pH: (<2 or >12 upless notice)
12. Are matrices correctly identified on Chain of Cu	istody? Yes 🗹	No Adjusted?
13. Is it clear what analyses were requested?	Yes 🗹	No Checked by:
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes 🗹	No Checked by:)
Special Handling (if applicable)		
15. Was client notified of all discrepancies with this	s order? Yes 🗌	NO NA 🗹
Person Notified: By Whom: Regarding:	Date Via: eMail Ph	one Fax In Person
Client Instructions:		
16. Additional remarks:		
17. <u>Cooler Information</u> <u>Cooler No</u> <u>Temp ^oC</u> <u>Condition</u> <u>Seal</u> 1 4.6 Good Yes	Intact   Seal No   Seal Date   S	igned By

	hain	-of-Cu	istody Record	Turn-Around	Time:						3.4			
Client:			on mental	2 Standard	Rush					_				
				Project Name	5:							v.hai		
Mailing	Address	848	w and Ave	Star	ndard t	<i>≠</i> 1		49	01 H	ławk				
	Durn			Project #:					el. 50					Fa
Phone	#: 97	0-3	00. 81301 85 - 1096	1					1.5			ALC: NO.	naly	ACCR D
			cmann @ 160NV, COM	Project Mana			-	(ylu	30)					12
	Package:				Devin H	tenemann	302	as o	/ MF			ŝ		
Ø Stan	and the second se		Level 4 (Full Validation)				s's (8	Ű	RO			SIMS)		
Accredi			er		Erig Car		TMB's (8021)	TPH (Gas only)	0/0	3.1)	4.1)	270		014
	(Type)	PDF		On Ice: Sample Tem	perature: U.(	□ No	+	+	GR	418	50	or 8	sie	9
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		<b>BTEX'+ MTBE</b>	BTEX + MTBE	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270	RCRA Metals	IC LI TITY
Glac	1380	Soil	MW02 18-20'	1402	C001	-001	N		r					
5/20	1340	1.	MWO2 23-25'	1		-002	×		X					
8/22	1215	-	MW06 21-23'	1	¥	-003	Y		Y					
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Date:	Time:  430 Time:	Relinquish	ui curul	Received by:	E Valt	Date Time 8/23/16 / 430 Date Time	Rer	mark	is: Ple	050	2 0	°C :	đ	lk
3/23/19	8 1901	M	stullbet	Jaylin	: Bullhus	08/24/18 07:44	Ð							

If necessary, samples submitted to Hall Environmental may be subcontracted pother accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be c



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

October 09, 2018

Danny Burns Hilcorp Energy PO Box PO Box 4700 Farmington, NM 84701 TEL: FAX

OrderNo.: 1810389

Dear Danny Burns:

RE: Standard 1

Hall Environmental Analysis Laboratory received 2 sample(s) on 10/6/2018 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 <u>www.hallenvironmental.com</u> 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1810389 Date Reported: 10/9/2018

### Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy		Clien	t Sample ID:	MW-	04 @ 25-27'
Project: Standard 1		Coll	lection Date:	10/5/2	2018 4:45:00 PM
Lab ID: 1810389-001	Matrix: SOIL	Re	ceived Date:	10/6/2	2018 10:00:00 AM
Analyses	Result	PQL Q	Qual Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS				Analyst: Irm
Diesel Range Organics (DRO)	330	9.9	mg/Kg	1	10/8/2018 11:18:24 AM
Motor Oil Range Organics (MRO)	120	50	mg/Kg	1	10/8/2018 11:18:24 AM
Surr: DNOP	119	50.6-138	%Rec	1	10/8/2018 11:18:24 AM
EPA METHOD 8015D: GASOLINE RAM	IGE				Analyst: NSB
Gasoline Range Organics (GRO)	150	19	mg/Kg	5	10/8/2018 9:38:16 AM
Surr: BFB	243	15-316	%Rec	5	10/8/2018 9:38:16 AM
EPA METHOD 8021B: VOLATILES					Analyst: NSB
Benzene	0.11	0.096	mg/Kg	5	10/8/2018 9:38:16 AM
Toluene	0.82	0.19	mg/Kg	5	10/8/2018 9:38:16 AM
Ethylbenzene	0.31	0.19	mg/Kg	5	10/8/2018 9:38:16 AM
Xylenes, Total	3.2	0.38	mg/Kg	5	10/8/2018 9:38:16 AM
Surr: 4-Bromofluorobenzene	105	80-120	%Rec	5	10/8/2018 9:38:16 AM

Qualifiers:	*	Value exceeds Maximum Contaminant Le	vel.
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- 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 Page 1 of 5
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**Analytical Report** Lab Order 1810389 Date Reported: 10/9/2018

### Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy		Client	Sample ID:	MW-	03 @ 30-32'					
Project: Standard 1	Collection Date: 10/5/2018 1:15:00 PM									
Lab ID: 1810389-002	Matrix: SOIL	Rec	eived Date:	10/6/2	2018 10:00:00 AM					
Analyses	Result	PQL Qu	ual Units	DF	Date Analyzed					
EPA METHOD 8015M/D: DIESEL RANGE	ORGANICS				Analyst: Irm					
Diesel Range Organics (DRO)	10	9.9	mg/Kg	1	10/8/2018 11:40:28 AM					
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	10/8/2018 11:40:28 AM					
Surr: DNOP	110	50.6-138	%Rec	1	10/8/2018 11:40:28 AM					
EPA METHOD 8015D: GASOLINE RANG	E				Analyst: NSB					
Gasoline Range Organics (GRO)	120	23	mg/Kg	5	10/8/2018 10:24:56 AM					
Surr: BFB	147	15-316	%Rec	5	10/8/2018 10:24:56 AM					
EPA METHOD 8021B: VOLATILES					Analyst: NSB					
Benzene	0.24	0.11	mg/Kg	5	10/8/2018 10:24:56 AM					
Toluene	1.7	0.23	mg/Kg	5	10/8/2018 10:24:56 AM					
Ethylbenzene	0.42	0.23	mg/Kg	5	10/8/2018 10:24:56 AM					
Xylenes, Total	4.4	0.46	mg/Kg	5	10/8/2018 10:24:56 AM					
Surr: 4-Bromofluorobenzene	104	80-120	%Rec	5	10/8/2018 10:24:56 AM					

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

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*

- Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix D
- 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
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 2 of 5 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**Client:** Hilcorp Energy Proj

ject:	Standard 1	0.		
nple ID	MB-40867	SampType:	MBLK	Test
nt ID:	DBS	Batch ID:	40867	P.

3									
Sample ID MB-40867	SampType: ME	BLK	Tes	tCode: EF	PA Method	8015M/D: Die	esel Rang	e Organics	
Client ID: PBS	Batch ID: 408	867	RunNo: <b>54707</b>						
Prep Date: 10/8/2018	Analysis Date: 10	)/8/2018	S	SeqNo: 18	315572	Units: mg/K	g		
Analyte	Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND 10								
Motor Oil Range Organics (MRO)	ND 50								
Surr: DNOP	11	10.00		107	50.6	138			
Sample ID MB-40867	SampType: ME	BLK	Tes	tCode: EP	A Method	8015M/D: Die	esel Range	e Organics	
Client ID: PBS	Batch ID: 408	867	R	unNo: 54	707				
Prep Date: 10/8/2018	Analysis Date: 10	/8/2018	S	eqNo: 18	815573	Units: mg/K	g		
Analyte	Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND 10								
Motor Oil Range Organics (MRO)	ND 50								
Surr: DNOP	11	10.00		113	50.6	138			
Sample ID LCS-40867	SampType: LC	S	Test	tCode: EP	A Method	8015M/D: Die	esel Range	e Organics	
Client ID: LCSS	Batch ID: 408	867	R	unNo: 54	707				
Prep Date: 10/8/2018	Analysis Date: 10	/8/2018	S	eqNo: 18	15574	Units: mg/K	g		
Analyte	Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47 10	50.00	0	94.1	70	130			
Surr: DNOP	5.1	5.000		102	50.6	138			
Sample ID 1810389-002AMS	SampType: MS	;	Test	Code: EP	A Method	8015 <mark>M</mark> /D: Die	esel Range	e Organics	
Client ID: MW-03 @ 30-32'	Batch ID: 408	867	R	unNo: 54	707				
Prep Date: 10/8/2018	Analysis Date: 10	/8/2018	S	eqNo: 18	15715	Units: mg/K	g		
Analyte	Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	54 9.8	49.21	10.22	89.4	53.5	126			
Surr: DNOP	5.4	4.921		109	50.6	138			
Sample ID 1810389-002AMS	D SampType: MS	D	Test	Code: EP	A Method	8015M/D: Die	esel Range	• Organics	
Client ID: MW-03 @ 30-32'	Batch ID: 408	367	R	unNo: <b>54</b>	707				
Prep Date: 10/8/2018	Analysis Date: 10	/8/2018	S	eqNo: 18	15716	Units: mg/K	g		
Analyte	Result PQL		SPK Ref Val		LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	57 10	49.95	10.22	93.4	53.5	126	4.80	21.7	
Surr: DNOP	5.6	4.995		112	50.6	138	0	0	

#### Qualifiers:

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

Р

W Sample container temperature is out of limit as specified Page 3 of 5

1100

Client: Hilcorp Project: Standar	e Energy rd 1								
Sample ID MB-40841	SampT	pe: M	BLK	Tes	tCode: E	PA Method	8015D: Gaso	line Range	e
Client ID: PBS	Batch	ID: 40	841	F	RunNo: 5	54705			
Prep Date: 10/5/2018	Analysis Da	ate: 1	0/8/2018	S	SeqNo: 1	815940	Units: mg/k	٢g	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	F
Gasoline Range Organics (GRO)	ND	5.0							
Surr: BFB	910		1000		90.8	15	316		
Sample ID LCS-40841	SampTy	/pe: LC	s	Test	tCode: E	PA Method	8015D: Gaso	line Range	e
Client ID: LCSS	Batch	ID: 40	841	R	RunNo: 5	4705			
Prep Date: 10/5/2018	Analysis Da	ate: 1	0/8/2018	S	SeqNo: 1	815941	Units: mg/k	(g	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	F
Gasoline Range Organics (GRO)	25	5.0	25.00	0	100	75.9	131		

1000

106

15

316

Qualifiers:

Surr: BFB

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND
- Practical Quanitative Limit PQL
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

WO#: 1810389

Qual

Qual

09-Oct-18

Page 4 of 5

**RPDLimit** 

**RPDLimit** 

**Client:** Hilcorp Energy **Project:** 

Standard 1

Sample ID MB-40841	SampT	SampType: MBLK TestCode: EPA Method 8021B: Volatiles										
Client ID: PBS	Batch	h ID: 40	841	F	RunNo: 54705							
Prep Date: 10/5/2018	Analysis D	Ilysis Date: 10/8/2018 SeqNo: 1815960 Units						ng/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	0.98	0.98 1.000 98.0 80 120										
Sample ID LCS-40841	SampT	ype: LC	S	Tes	tCode: El	PA Method	8021B: Volat	iles				
Client ID: LCSS	Batch	n ID: 40	841	R	anNo: 5	4705						
Prep Date: 10/5/2018	Analysis D	Date: 10	0/8/2018	S	eqNo: 1	815961	Units: mg/K	g				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Benzene	0.91	0.025	1.000	0	90.7	77.3	128					
Toluene	0.97	0.050	1.000	0	97.1	79.2	125					
Ethylbenzene	0.97	0.050	1.000	0	97.4	80.7	127					
Larybonzono												
Xylenes, Total	2.9	0.10	3.000	0	97.8	81.6	129					

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Holding times for preparation or analysis exceeded Н
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 5 of 5

WO#: 1810389 09-Oct-18

HALL ENVIRONMENTAL ANALYSIS LABORATORY	TEL: 505-345-3:	ntal Analysis Labora 4901 Hawkin, Albuquerque, NM 87 975 FAX: 505-345-4 9.hallenvironmental.	s NE 7109 Sarr 4107	nple Log-In Cł	eck List
Client Name: HILCORP ENE	RGY Work Order Numl	ber: 1810389		RcptNo:	1
Received By: Jazzmine Bu	khead 10/6/2018 10:00:00	AM	frijon Baskhal Anne A-		
Completed By: Anne Thome Reviewed By: Labeled by:	10/8/2018 7:11:20 / 10/9/13 10/08/18	ΑM	Anne H-	~	
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 🗌		×
4. Were all samples received at a	temperature of >0° C to 6.0°C	Yes 🗹	No 🗌		
5. Sample(s) in proper container(	s)?	Yes 🗹	No 🗌		
6. Sufficient sample volume for in	dicated test(s)?	Yes 🖌	No 🗌		
7. Are samples (except VOA and		Yes 🗹	No 🗌	3	
8. Was preservative added to both		Yes	No 🖌	NA 🗌	
9. VOA vials have zero headspac	9?	Yes	No	No VOA Vials 🖌	
10. Were any sample containers re		Yes	No 🗹		
11. Does paperwork match bottle la (Note discrepancies on chain o	abels?	Yes 🗹	No 🗆	# of preserved bottles checked for pH: (<2 or >	2 unless noted)
12. Are matrices correctly identified	on Chain of Custody?	Yes 🗹	No 🗌	Adjusted?	
13. Is it clear what analyses were n	equested?	Yes 🖌	No 🗌		
14. Were all holding times able to b (If no, notify customer for autho		Yes 🖌	No 🗌	Checked by:	
Special Handling (if applica	able)				
15, Was client notified of all discre		Yes	No 🗌	NA 🗹	
Person Notified: By Whom: Regarding: Client Instructions:	Date Via:	eMail 🗌 Pt	none 🗌 Fax	In Person	
16. Additional remarks:					
17. <u>Cooler Information</u>	ndition Seal Intact Seal No	Seal Date	Signed By		
1 5.0 Goo					
		44.414	and the state of t	1	

			stody Record	Turn-Around	Time:					н				NV	TE	20		4Er			
Client:	Hilcon	(D En	al Fay 2nd Are.	□ Standard	图 Rush	24 hr TAT												RA			,
Te	nniCo	Do	000	Project Name	:							_									
Mailing	Address	: 244	In: and Au	Stan	dard #	-	www.hallenvironmental.com 4901 Hawkins NE - Albuquerque, NM 87109														
T	7. 0000	070	QIZAL	Project #:			1			)5-34							4107				
Phone	AIVONO	0, U	-1096	0	81700	10		TE	a. ou	0-34	0-39	Name of Column	States and a	ALC: NOT OTHER	No. of Concession, name	uest	ALL DO NO. OF COM		200		
email or	Fax#	DBurns	@1tenv.com	Project Mana	And an and the second	, <b>v</b>	Sec. 2	<u>y</u> )	ô					No. of Concession, Name							
	Package:	121/21/12	( FENVILOM	1			21)	onl	MR					SO	3's						
□ Stan	-		Level 4 (Full Validation)	Daniel	Burns	)	· 10021)	TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)			(SIMS)	-	Anions (F,CI,NO ₃ ,NO ₂ ,PO ₄ ,SO ₄ )	8081 Pesticides / 8082 PCB's						
Accredi			,	Sampler: Th	sh Adams			) He	DR		=	20 S		02,	082						
	AP	□ Othe	Γ	Sampler: Jo On Ice	Z Yes	D No State State	1 +	F +	20	18.1	8	8270		0 ₃ ,N	\$ / 8	- 78	(A)				or N
	(Type)			Sample Temp	perature: j (	-0.4 (A) - 5	出	BTEX + MTBE +	Đ)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or	RCRA 8 Metals	J'NG	sides	(A	8270 (Semi-VOA)				Air Bubbles (Y or N)
				AT 10/0011			BTEX + WIN	TM	15B	etho	eth	831	3 Me	E)	estic	8260B (VOA)	emi				bles
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL NO	×	+ X	H 80	N)	N N	L's (	A	suc	1 P	OB	0 (S				Bub
				Medtket.		18/0389	BTE	BTE	TPH	TPI		PA	RC	Anio	808	826	827				Air
105/18	16:45	5	MW-04 @ 25-27'	1-802'5"	Mone	105	X		X												
1015/18	<b>Widda</b> a	S	MW-03@30-32'	1-80-2jer	none	202	X		X												
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Date:	Time:	Relinquish	ed by	Réceived by:		Date Time	Ror	nark													Ц
10-5-18	1.700		all adars	ha. L	1 601	10/5/18 1745				1				i							
Date:	Time:	Relinquish		Received by:	March	Date Time	-	C	6	di	DUY	ns	CI	161	nr.	Con	2				
10/5/18	11211	Ch	1-1 1/2M	Valu	i Bull	intration in	loc	)		aa	Vgt	ere	21.	ten	V. c	con	n				
	f necessary.	amples sub	nitted to Hall Environmental may be subc	contracted to other ad	ccredited laboratori	WART TO THE TO THE	-		Any si	ub-cont	racted	data	will be	clear	ly not	ated or	the ar	nalytical	report.		
		C					-	.7.													



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

October 16, 2018 Jennifer Deal Hilcorp Energy PO Box PO Box 4700 Farmington, NM 84701 TEL: FAX

OrderNo.: 1810699

Dear Jennifer Deal:

RE: Standard 1

Hall Environmental Analysis Laboratory received 12 sample(s) on 10/10/2018 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 <u>www.hallenvironmental.com</u> 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1810699 Date Reported: 10/16/2018

10/13/2018 2:48:39 AM

### Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy		Clie	ent Sar	nple ID:	MW1	0 @ 33'-35'			
Project: Standard 1	Collection Date: 10/4/2018 5:00:00 PM								
Lab ID: 1810699-001	Matrix: SOIL	10/10/	2018 8:00:00 AM						
Analyses	Result	PQL	Qual	Units	DF	Date Analyzed			
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS					Analyst: Irm			
Diesel Range Organics (DRO)	93	9.6		mg/Kg	1	10/15/2018 4:43:44 PM			
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/15/2018 4:43:44 PM			
Surr: DNOP	98.6	50.6-138		%Rec	1	10/15/2018 4:43:44 PM			
EPA METHOD 8015D: GASOLINE RANG	GE					Analyst: RAA			
Gasoline Range Organics (GRO)	360	23		mg/Kg	5	10/13/2018 2:48:39 AM			
Surr: BFB	327	15-316	S	%Rec	5	10/13/2018 2:48:39 AM			
EPA METHOD 8021B: VOLATILES						Analyst: RAA			
Benzene	0.53	0.12		mg/Kg	5	10/13/2018 2:48:39 AM			
Toluene	8.2	0.23		mg/Kg	5	10/13/2018 2:48:39 AM			
Ethylbenzene	2.1	0.23		mg/Kg	5	10/13/2018 2:48:39 AM			
Xylenes, Total	19	0.46		mg/Kg	5	10/13/2018 2:48:39 AM			

114

80-120

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

Surr: 4-Bromofluorobenzene

- 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

%Rec

5

- J Analyte detected below quantitation limits Page 1 of 16
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

#### **Analytical Report** Lab Order 1810699

#### Date Reported: 10/16/2018

### Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Hilcorp Energy		Client Sample ID: MW10 @ 38'-40'								
Project:	Standard 1	Collection Date: 10/4/2018 5:05:00 PM									
Lab ID:	1810699-002	Matrix:         SOIL         Received Date: 10/10/2018 8:00:00 AM									
Analyses		Result PQL Qual Units DF Date Analyzed									
EPA MET	THOD 8015M/D: DIESEL RA	NGE ORGANICS				Analyst: Irm					
Diesel R	ange Organics (DRO)	ND	9.6	mg/Kg	1	10/15/2018 5:49:50 PM					
Motor Oi	il Range Organics (MRO)	ND	48	mg/Kg	1	10/15/2018 5:49:50 PM					
Surr: I	DNOP	98.0	50.6-138	%Rec	1	10/15/2018 5:49:50 PM					

EPA METHOD 8015D: GASOLINE RANGE					Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	10/13/2018 3:11:26 AM
Surr: BFB	91.9	15-316	%Rec	1	10/13/2018 3:11:26 AM
EPA METHOD 8021B: VOLATILES					Analyst: RAA
Benzene	ND	0.023	mg/Kg	1	10/13/2018 3:11:26 AM
Toluene	ND	0.047	mg/Kg	1	10/13/2018 3:11:26 AM
Ethylbenzene	ND	0.047	mg/Kg	1	10/13/2018 3:11:26 AM
Xylenes, Total	ND	0.093	mg/Kg	1	10/13/2018 3:11:26 AM
Surr: 4-Bromofluorobenzene	106	80-120	%Rec	1	10/13/2018 3:11:26 AM

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- * Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix
- D
- 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
- Analyte detected in the associated Method Blank В
- E Value above quantitation range
- Analyte detected below quantitation limits Page 2 of 16 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy	ergy         Client Sample ID: MW-4 @ 39'-40'           Collection Date: 10/5/2018 4:47:00 PM						
Project: Standard 1							
Lab ID: 1810699-003	Matrix: SOIL	Rec	2018 8:00:00 AM				
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed		
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS				Analyst: Irm		
Diesel Range Organics (DRO)	ND	9.8	mg/Kg	1	10/15/2018 6:11:43 PM		
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	10/15/2018 6:11:43 PM		
Surr: DNOP	95.3	50.6-138	%Rec	1	10/15/2018 6:11:43 PM		
EPA METHOD 8015D: GASOLINE RANG	GE				Analyst: RAA		
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	10/13/2018 3:34:09 AM		
Surr: BFB	88.3	15-316	%Rec	1	10/13/2018 3:34:09 AM		
EPA METHOD 8021B: VOLATILES					Analyst: RAA		
Benzene	ND	0.025	mg/Kg	1	10/13/2018 3:34:09 AM		
Toluene	ND	0.049	mg/Kg	1	10/13/2018 3:34:09 AM		
Ethylbenzene	ND	0.049	mg/Kg	1	10/13/2018 3:34:09 AM		
Xylenes, Total	ND	0.098	mg/Kg	1	10/13/2018 3:34:09 AM		
Surr: 4-Bromofluorobenzene	102	80-120	%Rec	1	10/13/2018 3:34:09 AM		

Qualifiers:	k	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 Page 3 of 16
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy	Client Sample ID: MW-3 @ 43'-45'						
Project: Standard 1	Collection Date: 10/5/2018 1:30:00 PM						
Lab ID: 1810699-004	Matrix: SOIL	Rece	2018 8:00:00 AM				
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed		
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS				Analyst: Irm		
Diesel Range Organics (DRO)	ND	9.6	mg/Kg	1	10/15/2018 6:33:43 PM		
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	10/15/2018 6:33:43 PM		
Surr: DNOP	98.4	50.6-138	%Rec	1	10/15/2018 6:33:43 PM		
EPA METHOD 8015D: GASOLINE RANG	GE				Analyst: RAA		
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	10/13/2018 3:56:47 AM		
Surr: BFB	92.1	15-316	%Rec	1	10/13/2018 3:56:47 AM		
EPA METHOD 8021B: VOLATILES					Analyst: RAA		
Benzene	ND	0.024	mg/Kg	1	10/13/2018 3:56:47 AM		
Toluene	ND	0.048	mg/Kg	1	10/13/2018 3:56:47 AM		
Ethylbenzene	ND	0.048	mg/Kg	1	10/13/2018 3:56:47 AM		
Xylenes, Total	ND	0.096	mg/Kg	1	10/13/2018 3:56:47 AM		
Surr: 4-Bromofluorobenzene	106	80-120	%Rec	1	10/13/2018 3:56:47 AM		

Qua	lifiers:
Qua	miller 3.

- * Value exceeds Maximum Contaminant Level.D Sample Diluted Due to Matrix
- D Sample Difuted 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 Page 4 of 16
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy	Client Sample ID: MW-11 @ 15'-17'						
Project: Standard 1	Collection Date: 10/6/2018 12:00:00 PM						
Lab ID: 1810699-005	Matrix: SOIL	Rece	Received Date: 10/10/2018 8:00:00 AM				
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed		
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS				Analyst: Irm		
Diesel Range Organics (DRO)	ND	9.5	mg/Kg	1	10/15/2018 6:55:33 PM		
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	10/15/2018 6:55:33 PM		
Surr: DNOP	94.0	50.6-138	%Rec	1	10/15/2018 6:55:33 PM		
EPA METHOD 8015D: GASOLINE RAN	NGE				Analyst: RAA		
Gasoline Range Organics (GRO)	28	4.7	mg/Kg	1	10/13/2018 2:13:14 AM		
Surr: BFB	208	15-316	%Rec	1	10/13/2018 2:13:14 AM		
EPA METHOD 8021B: VOLATILES					Analyst: RAA		
Benzene	ND	0.024	mg/Kg	1	10/13/2018 2:13:14 AM		
Toluene	0.060	0.047	mg/Kg	1	10/13/2018 2:13:14 AM		
Ethylbenzene	0.094	0.047	mg/Kg	1	10/13/2018 2:13:14 AM		
Xylenes, Total	1.2	0.095	mg/Kg	1	10/13/2018 2:13:14 AM		
Surr: 4-Bromofluorobenzene	104	80-120	%Rec	1	10/13/2018 2:13:14 AM		

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

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

- Analyte detected below quantitation limits Page 5 of 16 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

10/13/2018 2:36:41 AM

10/13/2018 2:36:41 AM

10/13/2018 2:36:41 AM

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy	Client Sample ID: MW-11 @ 39-40' Collection Date: 10/6/2018 12:05:00 PM					
Project: Standard 1						
Lab ID: 1810699-006	Matrix: SOIL	/2018 8:00:00 AM				
Analyses	Result	PQL Qu	ual Units	DF	Date Analyzed	
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS				Analyst: Irm	
Diesel Range Organics (DRO)	ND	9.8	mg/Kg	1	10/15/2018 7:17:30 PM	
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	10/15/2018 7:17:30 PM	
Surr: DNOP	98.0	50.6-138	%Rec	1	10/15/2018 7:17:30 PM	
EPA METHOD 8015D: GASOLINE RAM	IGE				Analyst: RAA	
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	10/13/2018 2:36:41 AM	
Surr: BFB	90.8	15-316	%Rec	1	10/13/2018 2:36:41 AM	
EPA METHOD 8021B: VOLATILES					Analyst: RAA	
Benzene	ND	0.024	mg/Kg	1	10/13/2018 2:36:41 AM	
Toluene	ND	0.049	mg/Kg	1	10/13/2018 2:36:41 AM	

ND

ND

95.7

0.049

0.098

80-120

mg/Kg

mg/Kg

%Rec

1

1

1

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

0	1.6.
Ona	lifiers:

*

Ethylbenzene

Xylenes, Total

Surr: 4-Bromofluorobenzene

- Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix
- D
- 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
- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 6 of 16 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy	Client Sample ID: MW-09 @ 15'-17'						
Project: Standard 1	Collection Date: 10/6/2018 5:40:00 PM						
Lab ID: 1810699-007	Matrix: SOIL Received Date: 10/10/2018 8:00:00 AM						
Analyses	Result	PQL (	Qual Units	DF	Date Analyzed		
EPA METHOD 8015M/D: DIESEL RANGE	ORGANICS				Analyst: Irm		
Diesel Range Organics (DRO)	36	9.2	mg/Kg	1	10/15/2018 7:39:18 PM		
Motor Oil Range Organics (MRO)	ND	46	mg/Kg	1	10/15/2018 7:39:18 PM		
Surr: DNOP	99.7	50.6-138	%Rec	1	10/15/2018 7:39:18 PM		
EPA METHOD 8015D: GASOLINE RANGE					Analyst: RAA		
Gasoline Range Organics (GRO)	430	23	mg/Kg	5	10/13/2018 3:00:10 AM		
Surr: BFB	267	15-316	%Rec	5	10/13/2018 3:00:10 AM		
EPA METHOD 8021B: VOLATILES					Analyst: RAA		
Benzene	0.25	0.12	mg/Kg	5	10/13/2018 3:00:10 AM		
Toluene	3.0	0.23	mg/Kg	5	10/13/2018 3:00:10 AM		
Ethylbenzene	1.5	0.23	mg/Kg	5	10/13/2018 3:00:10 AM		
Xylenes, Total	17	0.47	mg/Kg	5	10/13/2018 3:00:10 AM		
Surr: 4-Bromofluorobenzene	108	80-120	%Rec	5	10/13/2018 3:00:10 AM		

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 Page 7 of 16
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

10/13/2018 3:23:29 AM 10/13/2018 3:23:29 AM

10/13/2018 3:23:29 AM

10/13/2018 3:23:29 AM

10/13/2018 3:23:29 AM

10/13/2018 3:23:29 AM

10/13/2018 3:23:29 AM

Analyst: RAA

## Hall Environmental Analysis Laboratory, Inc.

Gasoline Range Organics (GRO)

Surr: 4-Bromofluorobenzene

EPA METHOD 8021B: VOLATILES

Surr: BFB

Benzene

Toluene

Ethylbenzene

Xylenes, Total

CLIENT: Hilcorp Energy	<b>Client Sample ID:</b> MW-09 @ 42'-43'					
Project: Standard 1	Collection Date: 10/6/2018 5:45:00 PM					
Lab ID: 1810699-008	Matrix: SOIL         Received Date: 10/10/2018 8:00:00 AM					
Analyses	Result	PQL Qua	l Units	DF	Date Analyzed	
EPA METHOD 8015M/D: DIESEL RAM	IGE ORGANICS				Analyst: Irm	
Diesel Range Organics (DRO)	ND	10	mg/Kg	1	10/15/2018 8:23:02 PM	
Motor Oil Range Organics (MRO)	ND	50	mg/Kg	1	10/15/2018 8:23:02 PM	
Surr: DNOP	99.6	50.6-138	%Rec	1	10/15/2018 8:23:02 PM	
EPA METHOD 8015D: GASOLINE RA	NGE				Analyst: RAA	

ND

90.6

ND

ND

ND

ND

95.4

4.7

15-316

0.023

0.047

0.047

0.094

80-120

mg/Kg

%Rec

mg/Kg

mg/Kg

mg/Kg

mg/Kg

%Rec

1

1

1

1

1

1

1

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

Qualifiers:

*

- Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix
- D
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 8 of 16 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy	Client Sample ID: MW5 @ 21'-23'							
Project: Standard 1		Collection Date: 10/8/2018 10:40:00 AM						
Lab ID: 1810699-009	Matrix: SOIL	Received Date: 10/10/2018 8:00:00 AM						
Analyses	Result	PQL Q	Qual Units	DF	Date Analyzed			
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS				Analyst: Irm			
Diesel Range Organics (DRO)	ND	9.3	mg/Kg	1	10/15/2018 8:45:03 PM			
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	10/15/2018 8:45:03 PM			
Surr: DNOP	95.6	50.6-138	%Rec	1	10/15/2018 8:45:03 PM			
EPA METHOD 8015D: GASOLINE RAN	IGE				Analyst: RAA			
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	10/13/2018 3:47:06 AM			
Surr: BFB	94.7	15-316	%Rec	1	10/13/2018 3:47:06 AM			
EPA METHOD 8021B: VOLATILES					Analyst: RAA			
Benzene	ND	0.024	mg/Kg	1	10/13/2018 3:47:06 AM			
Toluene	ND	0.048	mg/Kg	1	10/13/2018 3:47:06 AM			
Ethylbenzene	ND	0.048	mg/Kg	1	10/13/2018 3:47:06 AM			
Xylenes, Total	ND	0.096	mg/Kg	1	10/13/2018 3:47:06 AM			
Surr: 4-Bromofluorobenzene	96.8	80-120	%Rec	1	10/13/2018 3:47:06 AM			

- 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 Page 9 of 16
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy		Client S	ample ID:	MW5	@ 33'-35'
Project: Standard 1		Collect	tion Date:	10/8/2	2018 10:45:00 AM
Lab ID: 1810699-010	Matrix: SOIL	Recei	ved Date:	10/10/	/2018 8:00:00 AM
Analyses	Result	PQL Qua	l Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RAM	NGE ORGANICS				Analyst: Irm
Disas Panas Organias (DPO)	ND	0.0		4	10/15/0010 0 00 10 00
Diesel Range Organics (DRO)	ND	9.8	mg/Kg		10/15/2018 9:06:46 PM
Motor Oil Range Organics (MRO)	ND	9.8 49	mg/Kg mg/Kg	1	10/15/2018 9:06:46 PM 10/15/2018 9:06:46 PM
0 0 1			0 0	1 1 1	

				Analyst: RAA
ND	4.6	mg/Kg	1	10/13/2018 4:10:37 AM
91.0	15-316	%Rec	1	10/13/2018 4:10:37 AM
				Analyst: RAA
ND	0.023	mg/Kg	1	10/13/2018 4:10:37 AM
ND	0.046	mg/Kg	1	10/13/2018 4:10:37 AM
ND	0.046	mg/Kg	1	10/13/2018 4:10:37 AM
ND	0.092	mg/Kg	1	10/13/2018 4:10:37 AM
96.0	80-120	%Rec	1	10/13/2018 4:10:37 AM
	91.0 ND ND ND	91.0 15-316 ND 0.023 ND 0.046 ND 0.046 ND 0.092	91.0         15-316         %Rec           ND         0.023         mg/Kg           ND         0.046         mg/Kg           ND         0.046         mg/Kg           ND         0.092         mg/Kg	91.0         15-316         %Rec         1           ND         0.023         mg/Kg         1           ND         0.046         mg/Kg         1           ND         0.046         mg/Kg         1           ND         0.046         mg/Kg         1           ND         0.092         mg/Kg         1

ual			

- * 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 Page 10 of 16
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy		Client	Sample ID:	MW1	2 @ 17'-19'
Project: Standard 1		Coll	ection Date:	10/8/2	2018 3:40:00 PM
Lab ID: 1810699-011	Matrix: SOIL	Ree	ceived Date:	10/10/	/2018 8:00:00 AM
Analyses	Result	PQL Q	ual Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS				Analyst: Irm
Diesel Range Organics (DRO)	130	9.2	mg/Kg	1	10/15/2018 9:28:37 PM
Motor Oil Range Organics (MRO)	ND	46	mg/Kg	1	10/15/2018 9:28:37 PM
Surr: DNOP	98.0	50.6-138	%Rec	1	10/15/2018 9:28:37 PM
EPA METHOD 8015D: GASOLINE RAN	IGE				Analyst: RAA
Gasoline Range Organics (GRO)	1300	230	mg/Kg	50	10/13/2018 4:34:07 AM
Surr: BFB	132	15-316	%Rec	50	10/13/2018 4:34:07 AM
EPA METHOD 8021B: VOLATILES					Analyst: RAA
Benzene	1.7	1.2	mg/Kg	50	10/13/2018 4:34:07 AM
Toluene	19	2.3	mg/Kg	50	10/13/2018 4:34:07 AM
Ethylbenzene	6.0	2.3	mg/Kg	50	10/13/2018 4:34:07 AM
Xylenes, Total	57	4.6	mg/Kg	50	10/13/2018 4:34:07 AM
Surr: 4-Bromofluorobenzene	100	80-120	%Rec	50	10/13/2018 4:34:07 AM

Qualifiers: *	Value exceeds Maximum	Contaminant Level.
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- 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 Page 11 of 16
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Analyst: RAA 10/13/2018 4:57:32 AM

Analyst: RAA

10/13/2018 4:57:32 AM

## Hall Environmental Analysis Laboratory, Inc.

EPA METHOD 8015D: GASOLINE RANGE

Gasoline Range Organics (GRO)

Surr: 4-Bromofluorobenzene

EPA METHOD 8021B: VOLATILES

Surr: BFB

Benzene

Toluene

Ethylbenzene

Xylenes, Total

CLIENT:	Hilcorp Energy		Client S	ample ID:	MW12	2 @ 29'-30'
Project:	Standard 1		Collec	tion Date:	10/8/2	018 3:45:00 PM
Lab ID:	1810699-012	Matrix: SOIL	Rece	ived Date:	10/10/	2018 8:00:00 AM
Analyses		Result	PQL Qua	al Units	DF	Date Analyzed
EPA MET	HOD 8015M/D: DIESEL RA	NGE ORGANICS				Analyst: Irm
Diesel Ra	ange Organics (DRO)	ND	9.8	mg/Kg	1	10/15/2018 9:50:32 PM
Motor Oil	Range Organics (MRO)	ND	49	mg/Kg	1	10/15/2018 9:50:32 PM
Surr: D	DNOP	100	50.6-138	%Rec	1	10/15/2018 9:50:32 PM

ND

90.9

ND

ND

ND

ND

96.2

4.9

15-316

0.024

0.049

0.049

0.097

80-120

mg/Kg

%Rec

mg/Kg

mg/Kg

mg/Kg

mg/Kg

%Rec

1

1

1

1

1

1

1

0		1:4		-	
•••	ня		re	<b>FS</b>	

- * 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 Page 12 of 16
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**Client:** Hilcorp Energy **Project:** 

Standard 1

	• •			
Sample ID LCS-40978	SampType: LCS	TestCode: EPA Method	8015M/D: Diesel Range Organics	
Client ID: LCSS	Batch ID: 40978	RunNo: 54866		
Prep Date: 10/12/2018	Analysis Date: 10/15/2018	SeqNo: 1823620	Units: mg/Kg	
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD RPDLimit	Qual
Diesel Range Organics (DRO)	42 10 50.00	0 83.4 70	130	
Surr: DNOP	4.7 5.000	94.0 50.6	138	
Sample ID MB-40978	SampType: MBLK	TestCode: EPA Method	8015M/D: Diesel Range Organics	
Client ID: PBS	Batch ID: 40978	RunNo: 54866		
Prep Date: 10/12/2018	Analysis Date: 10/15/2018	SeqNo: 1823621	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	9.6 10.00	95.9 50.6	138	
Sample ID 1810699-001AMS	SampType: MS	TestCode: EPA Method	8015M/D: Diesel Range Organics	
Client ID: MW10 @ 33'-35'	Batch ID: 40978	RunNo: 54866		
Prep Date: 10/12/2018	Analysis Date: 10/15/2018	SeqNo: 1824372	Units: mg/Kg	
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD RPDLimit	Qual
Diesel Range Organics (DRO)	98 9.9 49.26	93.45 9.38 53.5	126	S
Surr: DNOP	4.4 4.926	88.8 50.6	138	
Sample ID 1810699-001AMS	D SampType: MSD	TestCode: EPA Method	8015M/D: Diesel Range Organics	
Client ID: MW10 @ 33'-35'	Batch ID: 40978	RunNo: 54866		
Prep Date: 10/12/2018	Analysis Date: 10/15/2018	SeqNo: 1824373	Units: mg/Kg	
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD RPDLimit	Qual
Diesel Range Organics (DRO)	110 9.7 48.64	93.45 29.1 53.5	126 9.26 21.7	S
Surr: DNOP	4.7 4.864	97.3 50.6	138 0 0	
Sample ID LCS-40976	SampType: LCS	TestCode: EPA Method	8015M/D: Diesel Range Organics	
Client ID: LCSS	Batch ID: 40976	RunNo: 54866		
Prep Date: 10/12/2018	Analysis Date: 10/15/2018	SeqNo: 1824398	Units: %Rec	
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD RPDLimit	Qual
Analyte Surr: DNOP	ResultPQLSPK value4.65.000	SPK Ref Val %REC LowLimit 92.7 50.6	HighLimit %RPD RPDLimit 138	Qual
		92.7 50.6		Qual
Surr: DNOP	4.6 5.000	92.7 50.6	138	Qual
Surr: DNOP Sample ID MB-40976	4.6 5.000 SampType: <b>MBLK</b>	92.7 50.6 TestCode: EPA Method	138	Qual
Surr: DNOP Sample ID MB-40976 Client ID: PBS	4.6         5.000           SampType:         MBLK           Batch ID:         40976           Analysis Date:         10/15/2018	92.7 50.6 TestCode: <b>EPA Method</b> RunNo: <b>54866</b>	138 8015M/D: Diesel Range Organics	Qual

#### Qualifiers:

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

### Page 13 of 16

- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

WO#: 1810699

16-Oct-18

Client:Hilcorp EnergyProject:Standard 1

Sample ID MB-40976	SampT	ype: MI	BLK	Test	Code: E	PA Method	8015M/D: Die	esel Rang	e Organics	
Client ID: PBS	Batch	ID: 40	976	R	unNo:	54866				
Prep Date: 10/12/2018	Analysis D	ate: 1	0/15/2018	S	eqNo: 1	824399	Units: %Red	;		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.4		10.00		94.2	50.6	138			

### 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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: **1810699** *16-Oct-18* 

Hilcorp Energy Client: **Project:** 

HIICOTP E	n
Standard	1

Sample ID LCS-40965	SampT	ype: LC	S	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID: LCSS	Batch	D: 40	965	F	RunNo: 54	4834				
Prep Date: 10/11/2018	Analysis D	ate: 10	0/12/2018	S	SeqNo: 1	822840	Units: mg/M	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	92.6	75.9	131			
Surr: BFB	1000		1000		100	15	316			
Sample ID MB-40965	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID: PBS	Batch	1D: 40	965	F	RunNo: 54	4834				
Prep Date: 10/11/2018	Analysis D	ate: 10	)/12/2018	S	SeqNo: 1	822841	Units: mg/M	(g		
			0.01/		VDEO	Low/ imit	HighLimit	%RPD	RPDLimit	Qual
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LOWLIIIII	riigiteittiit	JUIN D		
Analyte Gasoline Range Organics (GRO)	Result ND	PQL 5.0	SPK value	SPK Ref Val	%REC	LOWLINII	Tigriciinit	701(1 D		
Analyte			SPK value	SPK Ref Val	%REC 86.7	15	316	7014110		
Analyte Gasoline Range Organics (GRO)	ND 870		1000		86.7	15				
Analyte Gasoline Range Organics (GRO) Surr: BFB	ND 870 SampT	5.0	1000 S	Tesi	86.7	15 PA Method	316			
Analyte Gasoline Range Organics (GRO) Surr: BFB Sample ID LCS-40955	ND 870 SampT	5.0 ype: LC n ID: 409	1000 S 955	Tesi	86.7 tCode: El	15 PA Method 4829	316	oline Rang		
Analyte Gasoline Range Organics (GRO) Surr: BFB Sample ID LCS-40955 Client ID: LCSS	ND 870 SampT Batch	5.0 ype: LC n ID: 409	1000 S 955 0/12/2018	Tesi	86.7 tCode: El RunNo: 54 SeqNo: 1	15 PA Method 4829	316 8015D: Gasc	oline Rang		Qual
Analyte Gasoline Range Organics (GRO) Surr: BFB Sample ID LCS-40955 Client ID: LCSS Prep Date: 10/11/2018	ND 870 SampT Batch Analysis D	5.0 ype: LC n ID: 409 ate: 10	1000 S 955 0/12/2018	Tesi R S	86.7 tCode: El RunNo: 54 SeqNo: 1	15 PA Method 4829 823271	316 8015D: Gasc Units: mg/K	bline Rang	e	Qual
Analyte Gasoline Range Organics (GRO) Surr: BFB Sample ID LCS-40955 Client ID: LCSS Prep Date: 10/11/2018 Analyte	ND 870 SampT Batch Analysis D Result	5.0 ype: LC 1 ID: 409 ate: 10 PQL	1000 S 955 0/12/2018 SPK value	Tes R S SPK Ref Val	86.7 tCode: <b>El</b> tunNo: <b>5</b> SeqNo: <b>1</b> %REC	15 PA Method 4829 823271 LowLimit	316 8015D: Gasc Units: mg/K HighLimit	bline Rang	e	Qual
Analyte Gasoline Range Organics (GRO) Surr: BFB Sample ID LCS-40955 Client ID: LCSS Prep Date: 10/11/2018 Analyte Gasoline Range Organics (GRO)	ND 870 SampT Batch Analysis D Result 22 1100	5.0 ype: LC 1 ID: 409 ate: 10 PQL	1000 S 955 0/12/2018 SPK value 25.00 1000	Tes R S SPK Ref Val 0	86.7 Code: El RunNo: 5 SeqNo: 18 %REC 89.4 105	15 PA Method 4829 823271 LowLimit 75.9 15	316 8015D: Gasc Units: mg/M HighLimit 131	oline Rang Xg %RPD	e RPDLimit	Qual
Analyte Gasoline Range Organics (GRO) Surr: BFB Sample ID LCS-40955 Client ID: LCSS Prep Date: 10/11/2018 Analyte Gasoline Range Organics (GRO) Surr: BFB	ND 870 SampT Batch Analysis D Result 22 1100 SampT	5.0 ype: LC h ID: 409 hate: 10 PQL 5.0	1000 <b>S</b> <b>955</b> <b>D/12/2018</b> SPK value 25.00 1000 <b>BLK</b>	Tesi R S SPK Ref Val 0 Tesi	86.7 Code: El RunNo: 5 SeqNo: 18 %REC 89.4 105	15 PA Method 4829 823271 LowLimit 75.9 15 PA Method	316 8015D: Gaso Units: mg/K HighLimit 131 316	oline Rang Xg %RPD	e RPDLimit	Qual
Analyte Gasoline Range Organics (GRO) Surr: BFB Sample ID LCS-40955 Client ID: LCSS Prep Date: 10/11/2018 Analyte Gasoline Range Organics (GRO) Surr: BFB Sample ID MB-40955	ND 870 SampT Batch Analysis D Result 22 1100 SampT	5.0 ype: LC 1D: 409 ate: 10 PQL 5.0 ype: ME	1000 \$ 955 0/12/2018 SPK value 25.00 1000 3LK 955	Tesi S SPK Ref Val 0 Tesi R	86.7 tCode: El RunNo: 54 SeqNo: 11 %REC 89.4 105 tCode: El	15 PA Method 4829 823271 LowLimit 75.9 15 PA Method 4829	316 8015D: Gaso Units: mg/K HighLimit 131 316	oline Rang %RPD oline Rang	e RPDLimit	Qual
Analyte Gasoline Range Organics (GRO) Surr: BFB Sample ID LCS-40955 Client ID: LCSS Prep Date: 10/11/2018 Analyte Gasoline Range Organics (GRO) Surr: BFB Sample ID MB-40955 Client ID: PBS	ND 870 SampT Batch Analysis D Result 22 1100 SampT Batch	5.0 ype: LC 1D: 409 ate: 10 PQL 5.0 ype: ME	1000 S 955 0/12/2018 SPK value 25.00 1000 3LK 955 0/12/2018	Tesi S SPK Ref Val 0 Tesi R	86.7 tCode: El tunNo: 54 SeqNo: 11 %REC 89.4 105 tCode: El tunNo: 54 SeqNo: 11	15 PA Method 4829 823271 LowLimit 75.9 15 PA Method 4829 823272	316 8015D: Gaso Units: mg/k HighLimit 131 316 8015D: Gaso	oline Rang %RPD oline Rang	e RPDLimit	Qual
Analyte Gasoline Range Organics (GRO) Surr: BFB Sample ID LCS-40955 Client ID: LCSS Prep Date: 10/11/2018 Analyte Gasoline Range Organics (GRO) Surr: BFB Sample ID MB-40955 Client ID: PBS Prep Date: 10/11/2018	ND 870 SampT Batch Analysis D Result 22 1100 SampT Batch Analysis D	5.0 ype: LC 1D: 409 ate: 10 PQL 5.0 ype: ME 1D: 409 ate: 10	1000 S 955 0/12/2018 SPK value 25.00 1000 3LK 955 0/12/2018	Tesi R SPK Ref Val 0 Tesi R S	86.7 tCode: El tunNo: 54 SeqNo: 11 %REC 89.4 105 tCode: El tunNo: 54 SeqNo: 11	15 PA Method 4829 823271 LowLimit 75.9 15 PA Method 4829 823272	316 8015D: Gasc Units: mg/K HighLimit 131 316 8015D: Gasc Units: mg/K	oline Rang %g %RPD oline Rang	e RPDLimit e	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Value above quantitation range E
- Analyte detected below quantitation limits J
- Page 15 of 16

- Р Sample pH Not In Range RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

WO#: 1810699

16-Oct-18

**Client:** Hilcorp Energy **Project:** 

Standard 1

Sample ID LCS-40965	SampTyp	e: LCS		Tes	tCode: El	PA Method	8021B: Volat	iles		
Client ID: LCSS	Batch II	D: 40965	5	R	RunNo: 54	4834				
Prep Date: 10/11/2018	Analysis Date	e: 10/12	2/2018	S	SeqNo: 1	822881	Units: mg/K	g		
Analyte	Result	PQL S	PK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91 (	0.025	1.000	0	91.2	77.3	128			
Toluene	0.96 0	0.050	1.000	0	96.0	79.2	125			
Ethylbenzene	0.95 (	0.050	1.000	0	94.9	80.7	127			
Xylenes, Total	2.9	0.10	3.000	0	96.8	81.6	129			
Surr: 4-Bromofluorobenzene	0.96		1.000		96.3	80	120			
Sample ID MB-40965	SampTyp	e: MBL	ĸ	Test	tCode: El	PA Method	8021B: Volat	iles		
Client ID: PBS	Batch II	D: 40965	5	R	RunNo: 54	4834				
Prep Date: 10/11/2018	Analysis Date	e: 10/12	2/2018	S	SeqNo: 1	322882	Units: mg/K	g		
Analyte	Result	PQL S	PK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene		0.025								
Toluene	ND (	0.050								
Ethylbenzene	ND (	0.050								
Kylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.92		1.000		92.0	80	120			
Sample ID LCS-40955	SampTyp	e: LCS		Test	tCode: El	PA Method	8021B: Volat	iles		
Sample ID LCS-40955 Client ID: LCSS		De: LCS	5		tCode: EF		8021B: Volat	iles		
		D: 40955		R		1829	8021B: Volat Units: mg/K			
Client ID: LCSS	Batch II Analysis Date	D: 40955 e: 10/12	2/2018	R	RunNo: 54	1829			RPDLimit	Qual
Client ID: LCSS Prep Date: 10/11/2018	Batch IE Analysis Date Result I	D: 40955 e: 10/12	2/2018	R S SPK Ref Val 0	RunNo: 54 SeqNo: 18	<b>4829</b> 323414 LowLimit 77.3	Units: mg/K HighLimit 128	g	RPDLimit	Qual
Client ID: LCSS Prep Date: 10/11/2018 Analyte	Batch II Analysis Date Result I 1.1 (	D: 40955 e: 10/12 PQL S	<b>2/2018</b> PK value	R S SPK Ref Val	RunNo: 54 SeqNo: 18 %REC	4829 323414 LowLimit	Units: <b>mg/K</b> HighLimit	g	RPDLimit	Qual
Client ID: LCSS Prep Date: 10/11/2018 Analyte Benzene	Batch II Analysis Date Result I 1.1 ( 1.1 (	D: 40955 e: 10/12 PQL S 0.025	2/2018 PK value 1.000	R S SPK Ref Val 0	RunNo: <b>5</b> 4 SeqNo: <b>1</b> 8 %REC 108	<b>4829</b> 323414 LowLimit 77.3	Units: mg/K HighLimit 128	g	RPDLimit	Qual
Client ID: LCSS Prep Date: 10/11/2018 Analyte Benzene Foluene	Batch II Analysis Date Result I 1.1 ( 1.1 (	D: 40955 e: 10/12 PQL S 0.025 0.050	2/2018 PK value 1.000 1.000	R S SPK Ref Val 0 0	RunNo: <b>54</b> SeqNo: <b>18</b> <u>%REC</u> 108 110	<b>1829</b> <b>323414</b> LowLimit 77.3 79.2	Units: mg/K HighLimit 128 125 127 129	g	RPDLimit	Qual
Client ID: LCSS Prep Date: 10/11/2018 Analyte Benzene Foluene Ethylbenzene	Batch II Analysis Date Result I 1.1 ( 1.1 ( 1.1 (	D: 40955 e: 10/12 PQL SI 0.025 0.050 0.050	2/2018 PK value 1.000 1.000 1.000	R S SPK Ref Val 0 0 0	RunNo: <b>5</b> 4 SeqNo: <b>1</b> 8 <u>%REC</u> 108 110 106	<b>4829</b> <b>323414</b> LowLimit 77.3 79.2 80.7	Units: mg/K HighLimit 128 125 127	g	RPDLimit	Qual
Client ID: LCSS Prep Date: 10/11/2018 Analyte Benzene Foluene Ethylbenzene Kylenes, Total	Batch II           Analysis Date           Result         I           1.1         0           1.1         0           1.1         0           3.1         0	D: 40955 e: 10/12 PQL SI 0.025 0.050 0.050 0.10	2/2018 PK value 1.000 1.000 1.000 3.000 1.000	R S SPK Ref Val 0 0 0 0	RunNo: 54 GeqNo: 18 %REC 108 110 106 104 108	4829 323414 LowLimit 77.3 79.2 80.7 81.6 80	Units: mg/K HighLimit 128 125 127 129	g %RPD	RPDLimit	Qual
Client ID: LCSS Prep Date: 10/11/2018 Analyte Benzene Foluene Ethylbenzene Kylenes, Total Surr: 4-Bromofluorobenzene	Batch II Analysis Date Result I 1.1 ( 1.1 ( 3.1 1.1 SampTyp	D: 40955 e: 10/12 PQL SI 0.025 0.050 0.050 0.10	2/2018 PK value 1.000 1.000 3.000 1.000 4	R SPK Ref Val 0 0 0 0 Test	RunNo: 54 GeqNo: 18 %REC 108 110 106 104 108	4829 323414 77.3 79.2 80.7 81.6 80 PA Method	Units: mg/K HighLimit 128 125 127 129 120	g %RPD	RPDLimit	Qual
Client ID: LCSS Prep Date: 10/11/2018 Analyte Benzene Foluene Ethylbenzene Kylenes, Total Surr: 4-Bromofluorobenzene Sample ID MB-40955	Batch II Analysis Date Result I 1.1 ( 1.1 ( 3.1 1.1 SampTyp	D: 40955 e: 10/12 PQL S 0.025 0.050 0.050 0.10 me: MBLP D: 40955	2/2018 PK value 1.000 1.000 3.000 1.000 5	R S SPK Ref Val 0 0 0 0 Tesl R	RunNo: 54 SeqNo: 18 %REC 108 110 106 104 108 tCode: EF	4829 323414 77.3 79.2 80.7 81.6 80 PA Method 4829	Units: mg/K HighLimit 128 125 127 129 120	g %RPD iles	RPDLimit	Qual
Client ID: LCSS Prep Date: 10/11/2018 Analyte Benzene Foluene Ethylbenzene Kylenes, Total Surr: 4-Bromofluorobenzene Sample ID MB-40955 Client ID: PBS Prep Date: 10/11/2018 Analyte	Batch II Analysis Date Result I 1.1 ( 1.1 ( 3.1 1.1 SampTyp Batch II Analysis Date Result I	D: 40955 e: 10/12 PQL S 0.025 0.050 0.050 0.10 e: MBLP D: 40955 e: 10/12 PQL S	2/2018 PK value 1.000 1.000 1.000 3.000 1.000 5 2/2018	R S SPK Ref Val 0 0 0 0 Tesl R	RunNo: 54 SeqNo: 18 <u>%REC</u> 108 110 106 104 108 RCode: EF RunNo: 54 SeqNo: 18	4829 323414 77.3 79.2 80.7 81.6 80 PA Method 4829	Units: mg/K HighLimit 128 125 127 129 120 8021B: Volat	g %RPD iles	RPDLimit	Qual
Client ID: LCSS Prep Date: 10/11/2018 Analyte Benzene Foluene Ethylbenzene Kylenes, Total Surr: 4-Bromofluorobenzene Sample ID MB-40955 Client ID: PBS Prep Date: 10/11/2018 Analyte Benzene	Batch II Analysis Date Result I 1.1 ( 1.1 ( 3.1 1.1 SampTyp Batch II Analysis Date Result II	D: 40955 e: 10/12 PQL S 0.025 0.050 0.050 0.10 e: MBLP D: 40955 e: 10/12 PQL S 0.025	2/2018 PK value 1.000 1.000 1.000 3.000 1.000 5 2/2018	R SPK Ref Val 0 0 0 0 Test R S	RunNo: 54 SeqNo: 18 <u>%REC</u> 108 110 106 104 108 RCode: EF RunNo: 54 SeqNo: 18	4829 323414 77.3 79.2 80.7 81.6 80 PA Method 4829 323415	Units: mg/K HighLimit 128 125 127 129 120 8021B: Volat Units: mg/K	g %RPD iles g		
Client ID: LCSS Prep Date: 10/11/2018 Analyte Benzene Foluene Ethylbenzene Kylenes, Total Surr: 4-Bromofluorobenzene Sample ID MB-40955 Client ID: PBS Prep Date: 10/11/2018 Analyte	Batch II Analysis Date Result I 1.1 ( 1.1 ( 3.1 1.1 SampTyp Batch II Analysis Date Result II	D: 40955 e: 10/12 PQL S 0.025 0.050 0.050 0.10 e: MBLP D: 40955 e: 10/12 PQL S	2/2018 PK value 1.000 1.000 1.000 3.000 1.000 5 2/2018	R SPK Ref Val 0 0 0 0 Test R S	RunNo: 54 SeqNo: 18 <u>%REC</u> 108 110 106 104 108 RCode: EF RunNo: 54 SeqNo: 18	4829 323414 77.3 79.2 80.7 81.6 80 PA Method 4829 323415	Units: mg/K HighLimit 128 125 127 129 120 8021B: Volat Units: mg/K	g %RPD iles g		
Client ID: LCSS Prep Date: 10/11/2018 Analyte Benzene Foluene Ethylbenzene Kylenes, Total Surr: 4-Bromofluorobenzene Sample ID MB-40955 Client ID: PBS Prep Date: 10/11/2018 Analyte Benzene	Batch II Analysis Date Result I 1.1 ( 1.1 ( 3.1 1.1 SampTyp Batch II Analysis Date Result I ND ( ND (	D: 40955 e: 10/12 PQL S 0.025 0.050 0.050 0.10 e: MBLP D: 40955 e: 10/12 PQL S 0.025	2/2018 PK value 1.000 1.000 1.000 3.000 1.000 5 2/2018	R SPK Ref Val 0 0 0 0 Test R S	RunNo: 54 SeqNo: 18 <u>%REC</u> 108 110 106 104 108 RCode: EF RunNo: 54 SeqNo: 18	4829 323414 77.3 79.2 80.7 81.6 80 PA Method 4829 323415	Units: mg/K HighLimit 128 125 127 129 120 8021B: Volat Units: mg/K	g %RPD iles g		
Client ID: LCSS Prep Date: 10/11/2018 Analyte Benzene Foluene Ethylbenzene Kylenes, Total Surr: 4-Bromofluorobenzene Sample ID MB-40955 Client ID: PBS Prep Date: 10/11/2018 Analyte Benzene Foluene	Batch II Analysis Date Result I 1.1 ( 1.1 ( 3.1 1.1 SampTyp Batch II Analysis Date Result I ND ( ND (	D: 40955 e: 10/12 PQL S 0.025 0.050 0.050 0.10 e: MBLF D: 40955 e: 10/12 PQL SI 0.025 0.050	2/2018 PK value 1.000 1.000 1.000 3.000 1.000 5 2/2018	R SPK Ref Val 0 0 0 0 Test R S	RunNo: 54 SeqNo: 18 <u>%REC</u> 108 110 106 104 108 RCode: EF RunNo: 54 SeqNo: 18	4829 323414 77.3 79.2 80.7 81.6 80 PA Method 4829 323415	Units: mg/K HighLimit 128 125 127 129 120 8021B: Volat Units: mg/K	g %RPD iles g		

### Qualifiers:

D

Н

ND

Value exceeds Maximum Contaminant Level. *

В Analyte detected in the associated Method Blank E

Value above quantitation range

Reporting Detection Limit

- J Analyte detected below quantitation limits
- Р Sample pH Not In Range

RL

PQL Practical Quanitative Limit

Sample Diluted Due to Matrix

Not Detected at the Reporting Limit

% Recovery outside of range due to dilution or matrix S

Holding times for preparation or analysis exceeded

W Sample container temperature is out of limit as specified Page 16 of 16

WO#: 1810699

16-Oct-18

(Note discrepancies on chain of custody)       (<2 or >12 unless noted)         12. Are matrices correctly identified on Chain of Custody?       Yes ♥       No       Adjusted?         13. Is it clear what analyses were requested?       Yes ♥       No       Adjusted?         14. Were all holding times able to be met? (If no, notify customer for authorization.)       Yes ♥       No       Checked by:	HALL ENVIRONMENTAL ANALYSIS LABORATORY	Hall Environment Al TEL: 505-345-39 Website: www.	490) Ibuquerqi 75 FAX: .	Hawkins   ue. NM 87  505-345-41	09 Sam	ple Log-In Ch	eck List
Reviewed By:       JALS [d][[I] B         Label	Client Name: HILCORP ENERGY	Work Order Number	er: 1810	699		RcptNo: 1	
Reviewed By:       JALS [d][[I] B         Label	Received By: Victoria Zellar	10/10/2018 8:00:00 /	AM		Vatinia, Gill	an	
Chain of Custody complete?       Yes       No       Not Present         1. Is Chain of Custody complete?       Coultier         Log In	TAB INIII8	10/11/2018 1:26:07 1	PM		Anne A.	_	
Chain of Custody complete?       Yes       No       Not Present         1. Is Chain of Custody complete?       Coultier         Log In	Labered by: To 10	11/18					
1. In the initial of output of output of the sample delivered?       Courtier         2. How was the sample delivered?       Courtier         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       NA         6. Sufficient sample volume for indicated test(s)?       Yes       No       NA         7. Are samples (except VOA and ONG) propery preserved?       Yes       No       NA         8. Was preservative added to bottles?       Yes       No       NA         9. VOA viats have zero headspace?       Yes       No       No       No         10. Were any sample containers received broken?       Yes       No       No       No       Adjusted?         11. Does paperwork match bottle labels?       Yes       No       Adjusted?       Adjusted?       Adjusted?         12. Are matrices correctly identified on Chain of Custody?       Yes       No       Checked by:       Checked by:         13. Is to clear what analyses were requested?       Yes       No       No       Checked by:       Checked by:         14. Were all holding times able to bo mot?       Yes		. ,				_	
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       NA         6. Sufficient sample volume for indicated test(s)?       Yes       No       NA         7. Are samples (except VOA and ONG) properly preserved?       Yes       No       NA         8. Was preservative added to bottles?       Yes       No       NA         9. VOA viats have zero headspace?       Yes       No       No       No         10. Were any sample containers received broken?       Yes       No       No       No VOA Vials       Image: Containers received broken?         11. Does papervork match bottle labels?       Yes       No       No       Image: Containers received broken?       Yes       No         12. Are matrices correctly identified on Clustody?       Yes       No       Acjusted?       Acjusted?         13. Is it clear what analyses were requested?       Yes       No       No       Checked by:         (if no, notify customer for authorization.)       Special Handling (if applicable)       Date       No       Na         15. Was client notified of all discrepancies with this order?	1. Is Chain of Custody complete?		Yes	$\checkmark$	No	Not Present	
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       NA         6. Sufficient sample volume for indicated test(s)?       Yes       ✓       No       NA         7. Are samples (axcept VDA and ONG) properly preserved?       Yes       ✓       No       ✓         8. Was preservative added to bottles?       Yes       ✓       No       ✓         9. VOA viais have zero headspace?       Yes       No       ✓       No       ✓         10. Were any sample containers received broken?       Yes       ✓       No       ✓       ✓         11. Does paperwork match bottle labels?       Yes       ✓       No       ✓       ✓       ✓         12. Are matrices correctly identified on Chain of Custody?       Yes       ✓       No       ✓       Acjusted?         13. Is tickear what analyses were requested?       Yes       ✓       No       ✓       Checked by:         14. Were all holding times able to be met?       Yes       ✓       No       NA       ✓         15. Was client notified of all discrepancies with th	2. How was the sample delivered?		Cour	ier			
4. Were an samples received at a temperature of PO C to B C V       Yes       Ves       Ves <td< td=""><td></td><td>?</td><td>Yes</td><td><b>V</b></td><td>No 🗆</td><td>NA 🗌</td><td></td></td<>		?	Yes	<b>V</b>	No 🗆	NA 🗌	
6. Sufficient sample volume for indicated test(s)?       Yes       No         7. Are samples (axcept VOA and ONG) properly preserved?       Yes       No         8. Was preservative added to bottles?       Yes       No         9. VOA vials have zero headspace?       Yes       No         10. Were any sample containers received broken?       Yes       No         11. Does paperwork match bottle labels?       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 bo met?       Yes       No         15. Was client notified of all discrepancies with this order?       Yes       No         15. Was client notified of all discrepancies with this order?       Yes       No         16. Additional remarks:       Coler Information       Cordition         17. Cooler Information       Condition       Seal Intact       Seal No	4. Were all samples received at a temperature	of >0" C to 6.0°C	Yes	~	No 🗌	NA	
7. Are samples (axcept VOA and ONG) properly preserved?       Yes       No         8. Was preservative added to bottles?       Yes       No       NA         9. VOA vials have zero headspace?       Yes       No       No       No         10. Were any sample containers received broken?       Yes       No       Mo       Are samples (accept VOA vials Ø         11. Does paperwork match bottle labels?       Yes       No       Mo       Are samples (accept VOA vials Ø         12. Are matrices correctly identified on Chain of Custody?       Yes       No       Adjusted?         13. Is it clear what analyses were requested?       Yes       No       Adjusted?         14. Were all holding times able to bo met?       Yes       No       Checked by:         (If no, notify customer for authorization.)       Special Handling (If applicable)       No       Na         15. Was client notified:       Date       By Whom:       Via:       ethalt       Phone       Fax       In Person         Regarding:       Client Instructions:       1       Seal Date       Signed By       Signed By	5. Sample(s) in proper container(s)?		Yes	•	No		
8. Was preservative added to bottles?       Yes       No       NA         9. VOA viais have zero headspace?       Yes       No       No       No VOA viais         9. VOA viais have zero headspace?       Yes       No       No VOA viais       Image: Containers received broken?         10. Were any sample containers received broken?       Yes       No       No       Image: Containers received broken?         11. Does paperwork match bottle labels?       Yes       Ves       No       Image: Containers received broken?         11. Does paperwork match bottle labels?       Yes       Ves       No       Image: Containers received broken?         11. Does paperwork match bottle labels?       Yes       Ves       No       Image: Containers received broken?         12. Are matrices correctly identified on Chain of Custody?       Yes       No       Acjusted?         13. Is it clear what analyses were requested?       Yes       No       Checked by:         14. Were all holding times able to bo mot?       Yes       No       NA         Special Handling (if applicable)       Image: Checked       Na       Image: Checked         15. Was client notified of all discrepancies with this order?       Yes       No       NA       Image: Checked         16. Additional remarks:       Image: Condition <t< td=""><td>6. Sufficient sample volume for indicated test(</td><td>s)?</td><td>Yes</td><td>~</td><td>No</td><td></td><td></td></t<>	6. Sufficient sample volume for indicated test(	s)?	Yes	~	No		
9. VOA vials have zero headspace?       Yes       No       No VOA Vials       ✓         10. Were any sample containers received broken?       Yes       No       ✓       # of preserved bottles checked for pH:         11. Does paperwork match bottle labels?       Yes       No       ✓       # of preserved bottles checked for pH:         12. Are matrices correctly identified on Chain of Custody?       Yes       No       Adjusted?         13. Is it clear what analyses were requested?       Yes       No       Checked by:         14. Were all holding times able to be met?       Yes       No       Checked by:         15. Was client notified of all discrepancies with this order?       Yes       No       Na         9. Whom:       Via:       eMail       Phone       Fax       In Person         Regarding:       Client Instructions:       In Person       Seal Intact       Seal No       Seal Date       Signed By	7. Are samples (except VOA and ONG) prope	rly preserved?	Yes	1	No		
3. VOA trials have 2 do headspace?       Yes       No       Image: Containers received broken?         10. Were any sample containers received broken?       Yes       No       Image: Containers received broken?         11. Does paperwork match bottle labels?       Yes       No       Image: Containers received broken?         11. Does paperwork match bottle labels?       Yes       No       Image: Containers received broken?         12. Are matrices correctly identified on Chain of Custody?       Yes       No       Adjusted?         13. Is it clear what analyses were requested?       Yes       No       Adjusted?         14. Were all holding times able to be met?       Yes       No       Checked by:         (If no, notify customer for authorization.)       Special Handling (if applicable)       Image: Container?       Yes       No       NA         15. Was client notified of all discrepancies with this order?       Yes       No       NA       Image: Container?         16. Additional remarks:       Image: Container       Via:       eMail       Phone       Fax       In Person         17. Cooler Information       Cooler No       Temp °C       Condition       Seal No       Seal Date       Signed By	8. Was preservative added to bottles?		Yes		No 🖌	NA	
10. Noted any sample centamer retained or order   11. Does paperwork match bottle labels?   (Note discrepancies on chain of custody)   12. Are matrices correctly identified on Chain of Custody?   13. Is it clear what analyses were requested?   14. Were all holding times able to be met?   (If no, notify customer for authorization.)   Special Handling (if applicable)   15. Was client notified of all discrepancies with this order?   Yes   No   No   No   No   No   Adjusted?   Yes   No   Checked by:   (If no, notify customer for authorization.)   Special Handling (if applicable)   15. Was client notified of all discrepancies with this order?   Yes   No	9. VOA vials have zero headspace?		Yes			No VOA Vials 🗹	-70
11. Does paperwork match bottle labels?       Yes ♥       No       Idription         (Note discrepancies on chain of custody)       (2 or >12 unless noted)         12. Are matrices correctly identified on Chain of Custody?       Yes ♥       No       Adjusted?         13. Is it clear what analyses were requested?       Yes ♥       No       Adjusted?         14. Were all holding times able to be met?       Yes ♥       No       Checked by:         14. Were all holding times able to be met?       Yes ♥       No       Checked by:         (If no, notify customer for authorization.)       Special Handling (if applicable)       Checked by:       (If no, notified:         15. Was client notified?       Date	10. Were any sample containers received brok	en?	Yes		No 🗹		Interlay
12. Are matrices correctly identified on chain of clustody?       Tes y       No         13. Is it clear what analyses were requested?       Yes v       No         14. Were all holding times able to be met?       Yes v       No         14. Were all holding times able to be met?       Yes v       No         (If no, notify customer for authorization.)       Special Handling (if applicable)         15. Was client notified of all discrepancies with this order?       Yes       No       NA         Person Notified:       Date	11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)		Yes	$\checkmark$	No 🗌	for pH:	
10. We re all holding times able to be met?       Yes       No       Checked by:         14. Were all holding times able to be met?       Yes       No       Checked by:         (If no, notify customer for authorization.)       Special Handling (if applicable)       No       NA         15. Was client notified of all discrepancies with this order?       Yes       No       NA       ✓         Person Notified:       Date       Date            By Whom:       Via:       eMail       Phone       Fax       In Person         Client Instructions:       Client Instructions:             16. Additional remarks:       17. Cooler Information       Seal Intact       Seal No       Seal Date       Signed By	12. Are matrices correctly identified on Chain of	f Custody?	Yes	4	No 🗌	Adjusted?	
14. were all holding (times able to be mat?       Tes I in the line line in the line in the line in the line in the line	13. Is it clear what analyses were requested?		Yes	$\checkmark$	No		
15. Was client notified of all discrepancies with this order?       Yes       No       NA       ✓         Person Notified:       Date	14. Were all holding times able to be met? (If no, notify customer for authorization.)		Yes	$\checkmark$	No 🗌	Checked by:	
Person Notified:       Date         By Whom:       Via:         Regarding:         Client Instructions:	Special Handling (if applicable)						
By Whom:       Via:       eMail       Phone       Fax       In Person         Regarding:		this order?	Yes		Na	NA 🗹	
Regarding:         Client Instructions:         16. Additional remarks:         17. Cooler Information         Cooler No       Temp °C							
Client Instructions: 16. Additional remarks: 17. <u>Cooler Information</u> <u>Cooler No Temp °C Condition Seal Intact Seal No Seal Date Signed By</u>		Via:	em	all _ Pr	none Fax	In Person	
16. Additional remarks: 17. <u>Cooler Information</u> <u>Cooler No</u> Temp °C Condition Seal Intact   Seal No   Seal Date   Signed By				and the first state of the	and the second se		
17. <u>Cooler Information</u> <u>Cooler No</u> Temp °C Condition Seal Intact Seal No Seal Date Signed By							
	17. Cooler Information	Seal Intact   Seal No	Seal D	ate	Signed By		
	provide the second s						

A DESCRIPTION OF A DESC	ain-c		tody Record	Tum-Around	Time:				*		H			- N	VI	D		м	EN	IT/	
Client:		Hilcorp	Energy L48 West	X Standard	C Rush												-				RY
		Jennife	Deal	Project Name	):			364	1							al.co				. •	
Mailing Add	dress:	Jennie	Deal		Standard	4.444		40	01 Ha									7100			
				Project #:	Standart	1#1			el. 50	-						-345-					
Phone #:			505-324-5128	(	017817	2006	F Ton	1	er. 50	5-545	5-39	and the second second	-	Contraction of the local	Requ		410	í.			
email or Fa	x#:		ideal@hilcorp.com	Project Mana				-													
QAVQC Pac	kage:				Jennifer Deal	- Hilcorp		R0													
X Standard	d		Level 4 (Full Validation)		Danny Burn	s - LTE		NO													
Accreditation	on:			Sampler: Josh Adams & Mary Mrdjenovich				NDR													î
D NELAP		Other		On Ice: Ves INO WE IN		NG NG													o		
X EDD (T)	/pe)		PDF	Sample Tem	perature 2.[-[	(F)D=A - 7 - 7 - 10001	5	B													ss ()
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservativ e Type	HEAL NO.	BTEX (8021)	TPH 8015B (GRO/DRO/MRO)													Air Bubbles (Y or N)
10/4/2018	17:00	Soil	MW10 @ 33'-35'	1 4oz	Cool	201	x	x													
10/4/2018	17:05	Soil	MW10 @ 38'-40'	1 4oz	Cool	202	x	x													
10/5/2018	16:47		MW-4 @39'-40'	1 4oz	Cool	-203	x	x													
10/5/2018	13:30	Soil	MW-3 @43'-45'	1 4oz	Cool	-204	x	x													
10/6/2018	12:00	Soil	MW-11 @15'-17'	2 4oz	Cool	705	x	x													
10/6/2018	12:05	Soil	MW-11 @39'-40'	2 4oz	Cool	206	x	x													
10/6/2018	17:40	Soil	MW -09 @ 15'-17"	2 4oz	Cool	-201	x	x							_						
10/6/2018	17:45	Soil	MW-09 @ 42'-43'	2 4oz	Cool	-708	x	x													
10/8/2018	10:40	Soil	MW5 @ 21'-23'	2 4oz	Cool	-709	x	x													
10/8/2018	10:45	Soil	MW5 @ 33'-35'	2 4oz	Cool	-010-	×	x													
10/8/2018	15:40	Soil	MW12 @17'-19'	1 4oz	Cool	-01	x	x													
10/8/2018	15:45		MW12 @ 29'-30'	1 4oz	Cool	-212-		x													
Date: 10-7-18	Time: [633	Relinquist	apurs	Mist	Received by: Date Time				ks: Ple	ease	CC:	dbu	Ins	@lte	env.c	iom.					
Date:	Time:	Belinquish	Abil Was	Repeived by:	hollen 8:00	10/10/18 8:00															

If necessary, samples submitted to Hall Environmental may be subcontracted to uther 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 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

October 16, 2018

Danny Burns Hilcorp Energy PO Box 61529 Houston, TX 77208-1529 TEL: (337) 276-7676 FAX

OrderNo.: 1810573

Dear Danny Burns:

RE: Standard 1

Hall Environmental Analysis Laboratory received 2 sample(s) on 10/10/2018 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 <u>www.hallenvironmental.com</u> 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

<b>Analytical Report</b>
Lab Order 1810573
Date Reported: 10/16/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy Project: Standard 1					W 7 @ 18-20' 0/9/2018 3:50:00 PM
Lab ID: 1810573-001	Matrix: SOIL				/10/2018 8:00:00 AM
Analyses	Result	PQL	Qual Units	DF	Date Analyzed Batch
EPA METHOD 8015M/D: DIESEL RANG	SE ORGANICS				Analyst: Irm
Diesel Range Organics (DRO)	ND	9.5	mg/Kg	1	10/12/2018 7:17:06 PM 40958
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	10/12/2018 7:17:06 PM 40958
Surr: DNOP	103	50.6-138	%Rec	1	10/12/2018 7:17:06 PM 40958
EPA METHOD 8015D: GASOLINE RAN	GE				Analyst: RAA
Gasoline Range Organics (GRO)	ND	5.0	mg/Kg	1	10/11/2018 10:35:41 PM 40915
Surr: BFB	86.0	15-316	%Rec	1	10/11/2018 10:35:41 PM 40915
EPA METHOD 8021B: VOLATILES					Analyst: RAA
Benzene	ND	0.025	mg/Kg	1	10/11/2018 10:35:41 PM 40915

ND 0.050 mg/Kg 10/11/2018 10:35:41 PM 40915 Toluene 1 Ethylbenzene ND 0.050 mg/Kg 10/11/2018 10:35:41 PM 40915 1 mg/Kg 10/11/2018 10:35:41 PM 40915 Xylenes, Total ND 0.099 1 Surr: 4-Bromofluorobenzene 93.0 80-120 %Rec 1 10/11/2018 10:35:41 PM 40915

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 1 of 5
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy			ient Sample II		<u> </u>
Project: Standard 1		(			/9/2018 3:55:00 PM
Lab ID: 1810573-002	Matrix: SOIL		Received Date	e: 10	/10/2018 8:00:00 AM
Analyses	Result	PQL	Qual Units	DF	Date Analyzed Batch
EPA METHOD 8015M/D: DIESEL RANGE	ORGANICS				Analyst: Irm
Diesel Range Organics (DRO)	ND	9.5	mg/Kg	1	10/12/2018 7:41:31 PM 40958
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	10/12/2018 7:41:31 PM 40958
Surr: DNOP	106	50.6-138	%Rec	1	10/12/2018 7:41:31 PM 40958
EPA METHOD 8015D: GASOLINE RANG	E				Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	10/11/2018 10:58:59 PM 40915
Surr: BFB	89.4	15-316	%Rec	1	10/11/2018 10:58:59 PM 40915
EPA METHOD 8021B: VOLATILES					Analyst: RAA
Benzene	ND	0.024	mg/Kg	1	10/11/2018 10:58:59 PM 40915
Toluene	ND	0.048	mg/Kg	1	10/11/2018 10:58:59 PM 40915
Ethylbenzene	ND	0.048	mg/Kg	1	10/11/2018 10:58:59 PM 40915
Xylenes, Total	ND	0.096	mg/Kg	1	10/11/2018 10:58:59 PM 40915
Surr: 4-Bromofluorobenzene	96.8	80-120	%Rec	1	10/11/2018 10:58:59 PM 40915

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 2 of 5
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hilcorp Energy

Project: Standard	d 1									
Sample ID LCS-40958	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: LCSS	Batch	ID: 40	958	F	4841					
Prep Date: 10/11/2018	Analysis Da	ate: 10	0/12/2018	5	823156	Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	10	50.00	0	98.0	70	130			
Surr: DNOP	5.2		5.000		104	50.6	138			
Sample ID MB-40958	SampT	pe: ME	BLK	Tes	tCode: E	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: PBS	Batch	ID: 40	958	F	RunNo: 5	4841				
Prep Date: 10/11/2018	Analysis Da	ate: 10	0/12/2018	S	SeqNo: 1	823157	Units: mg/M	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10			1					
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		99.7	50.6	138			

Qualifiers:

**Client:** 

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 3 of 5

WO#: 1810573 16-Oct-18

Client: Hilcorp Energy Project: Standard 1

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Sample ID LCS-40915	SampType: LCS	TestCode: EPA Method	8015D: Gasoline Range
Client ID: LCSS	Batch ID: 40915	RunNo: 54814	
Prep Date: 10/10/2018	Analysis Date: 10/11/2018	SeqNo: 1820394	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	0 103 75.9	131
Surr: BFB	1100 1000	107 15	316
Sample ID MB-40915	SampType: MBLK	TestCode: EPA Method	8015D: Gasoline Range
Client ID: PBS	Batch ID: 40915	RunNo: 54814	
Prep Date: 10/10/2018	Analysis Date: 10/11/2018	SeqNo: 1821138	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	90.6 15	316
Sample ID LCS-40965	SampType: LCS	TestCode: EPA Method	8015D: Gasoline Range
Client ID: LCSS	Batch ID: 40965	RunNo: 54834	
Prep Date: 10/11/2018	Analysis Date: 10/12/2018	SeqNo: 1822840	Units: %Rec
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD RPDLimit Qual
Surr: BFB	1000 1000	100 15	316
Sample ID MB-40965	SampType: MBLK	TestCode: EPA Method	8015D: Gasoline Range
Client ID: PBS	Batch ID: 40965	RunNo: 54834	
Prep Date: 10/11/2018	Analysis Date: 10/12/2018	SeqNo: 1822841	Units: %Rec
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD RPDLimit Qual
Surr: BFB	870 1000	86.7 15	316

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 Detection Limit
- W Sample container temperature is out of limit as specified

WO#: 1810573

16-Oct-18

Page 4 of 5

**Client:** Hilcorp Energy **Project:** 

Standard 1

Sample ID LCS-40915	SampType: LCS	TestCode: EPA Method	8021B: Volatiles						
Client ID: LCSS	Batch ID: 40915	RunNo: 54814							
Prep Date: 10/10/2018	Analysis Date: 10/11/2018	SeqNo: 1820396	Units: mg/Kg						
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual					
Benzene	0.97 0.025 1.000	0 96.6 77.3	128						
Toluene	1.0 0.050 1.000	0 102 79.2	125						
Ethylbenzene	1.0 0.050 1.000	0 101 80.7	127						
Xylenes, Total	3.1 0.10 3.000	0 102 81.6	129						
Surr: 4-Bromofluorobenzene	0.96 1.000	96.4 80	120						
Sample ID MB-40915	SampType: MBLK	TestCode: EPA Method	8021B: Volatiles						
Client ID: PBS	Batch ID: 40915	D: 40915 RunNo: 54814							
Prep Date: 10/10/2018	Analysis Date: 10/11/2018	SeqNo: 1821178	SeqNo: 1821178 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	0.98 1.000	97.7 80	120						
Sample ID LCS-40965	SampType: LCS	TestCode: EPA Method	8021B: Volatiles						
Client ID: LCSS	Batch ID: 40965	RunNo: 54834							
Prep Date: 10/11/2018	Analysis Date: 10/12/2018	SeqNo: 1822881	Units: %Rec						
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual					
Surr: 4-Bromofluorobenzene	0.96 1.000	96.3 80	120						
Sample ID MB-40965	SampType: MBLK	TestCode: EPA Method	8021B: Volatiles						
Client ID: PBS	Batch ID: 40965	RunNo: 54834							
		Cooklas 4000000	Units: %Rec						
Prep Date: 10/11/2018	Analysis Date: 10/12/2018	SeqNo: 1822882	onits. %Rec						
Prep Date: 10/11/2018 Analyte		SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual					

**Qualifiers:** 

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- I Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 5 of 5

WO#: 1810573 16-Oct-18

HALL ENVIRONMENTAL ANALYSIS LABORATORY		01 Hawkins NE sque, NM 87105 <b>S</b> 2 505-345-4102	n <b>ple Log-In</b> (	heck List
Client Name: HILCORP ENERGY	Work Order Number: 181	0573	ReptiNo	1
Received By: Victoria Zellar Completed By: Ashley Gallegos Reviewed By:	10/10/2018 8:00:00 AM 10/10/2018 10:48:33 AM	Vininia Az		R salaha
Chain of Custody 1. Is Chain of Custody complete? 2. How was the sample delivered?	Ye			
Log In 3. Was an attempt made to cool the samples?	Ye	No L	NA 🗌	
4. Were all samples received at a temperature of	f >0° C to 6.0°C Yes	No 🖸	NA L	
5. Sample(s) in proper container(s)?	Yes	No 🖸	]	
6. Sufficient sample volume for indicated test(s)		V No		
7. Are samples (except VOA and ONG) properly	preserved? Yes	No No		/
8. Was preservative added to bottles?	Yes	No 🗹	NA 🗌	
9. VOA viais have zero headspace?		No C		teals
10. Were any sample containers received broken	? Yes	, 🗌 No 🗹	# of preserved	Allelio
<ol> <li>Does paperwork match bottle labels? (Note discrepancies on chain of custody)</li> </ol>	Yes	No 🖸		-12 unless noted)
12. Are matrices correctly identified on Chain of C	ustody? Yes	No No	Adjusted?	$\mathcal{V}$
13, Is it clear what analyses were requested?	Yes	No D		
<ol> <li>Were all holding times able to be met? (If no, notify customer for authorization.)</li> </ol>	Yes	✓ No	Checked by:	
Special Handling (if applicable)				
15. Was client notified of all discrepancies with th	his order? Ye	s 🗌 No 🗌	NA 🗹	
Person Notified: By Whom: Regarding:	Date Via: et	Aail 🗌 Phone 🗌 F	ax 🗌 In Person	
Client Instructions:				
16. Additional remarks:				
17. <u>Cooler Information</u> <u>Cooler No</u> <u>Temp ℃</u> <u>Condition</u> <u>Se</u> 1 1.1 Good Yes	al Intact   Seal No   Seal	Date Signed By		

Page 1 of 1

Client:																
Standard	□ Rush															,
Project Name	e:				1								RA		NK 1	
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h h	Parry Durns			(Ga	80			MIS	DO	PC						
Sampler:	Sampler: Josh Adam S			H	10/	=	-	10	Ş	3082						7
On Ice:	1 Yes	□ No	1	+	RO	418.	504.	r 82	0.0	S / 8		(YO				O. N
Sample Tem	perature:2.14	(05)1.0=1.1	N	1BE	0	po	pol	00		cide	(A)	i-VC				S
Container Type and #	Preservative Type	HEAL NO.	BTEX	BTEX + M	TPH 8015	TPH (Meth	EDB (Meth	PAH's (83	Anions (F.	8081 Pesti	8260B (VC	8270 (Sem				Air Bubbles (Y or N)
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	Project Name Project Name Project Name Project #: Project Mana Sampler: On Ice: Sample Tem Container Type and # (1) 46 z	* Standard       Rush         Project Name:       Standard         Project Name:       Ol 78 /:         Project #:       Ol 78 /:         Project Manager:       Dan y Bas         Sampler:       Josh Ac         On Ice:       DYes         Sample Temperature:       1.4         1) 4/oz       Cool         1) 4/oz       Cool         1) 4/oz       Cool         1       Josh Ac         Notationer       Preservative         Type and #       Type         1) 4/oz       Cool         I       Josh Ac         I       Josh Ac         Notationer       Preservative         Type and #       Type         I       Josh Ac         I       Josh Ac	Image: Standard       □       Rush	Image: Standard       □       Rush	Image: Standard       Image: Hold       490         Project Name:       0178/7006         Project #:       0178/7006         Project Manager:       0178/7006         Image: Dash Adam S       000000000000000000000000000000000000	Image: Standard       Image: How Standard       4901 H         Project Name:       C178 / Jack       4901 H         Project #:       C178 / Jack       100 H         Project Manager:       Image: Standard       100 H         Dam y Burns       Sampler:       Josh Adam S         On Ice:       DYes       No         Sample Temperature:       Image: Type       HEAL No.         Container       Project (Cr) IO = [.1]       X         Container       Project (Color (Col	Image: Standard       Image: Standard	Standard       Rush	Standard       Rush	Image: Standard       Image: Standard	Standard       Rush	Image: Standard       Image: Rush	Image: Standard       Image: Standard	Image: Standard	Image: Standard       Rush	

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 4901 Hawkins NE Albuquergue, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

October 16, 2018

Danny Burns Hilcorp Energy PO Box PO Box 4700 Farmington, NM 84701 TEL: FAX

OrderNo.: 1810653

Dear Danny Burns:

RE: Standard 1

Hall Environmental Analysis Laboratory received 6 sample(s) on 10/11/2018 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 <u>www.hallenvironmental.com</u> 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

## Analytical Report Lab Order 1810653

## Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Hilcorp Energy

Project: Standard 1

# Date Reported: 10/16/2018 Client Sample ID: MW8 @ 30-32' Collection Date: 10/10/2018 9:00:00 AM

Lab ID: 1810653-001									
Lab ID: 1810033-001	Matrix: SOIL	Rec	eived Date:	d Date: 10/11/2018 7:00:00 AM					
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed				
EPA METHOD 8015M/D: DIESEL RAN	IGE ORGANICS				Analyst: Irm				
Diesel Range Organics (DRO)	ND	9.9	mg/Kg	1	10/12/2018 9:18:50 PM				
Motor Oil Range Organics (MRO)	ND	50	mg/Kg	1	10/12/2018 9:18:50 PM				
Surr: DNOP	111	50.6-138	%Rec	1	10/12/2018 9:18:50 PM				
EPA METHOD 8015D: GASOLINE RAI	NGE				Analyst: RAA				
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	10/12/2018 10:39:29 PM				
Surr: BFB	96.2	15-316	%Rec	1	10/12/2018 10:39:29 PM				
EPA METHOD 8021B: VOLATILES					Analyst: RAA				
Benzene	0.037	0.024	mg/Kg	1	10/12/2018 10:39:29 PM				
Toluene	0.076	0.047	mg/Kg	1	10/12/2018 10:39:29 PM				
Ethylbenzene	ND	0.047	mg/Kg	1	10/12/2018 10:39:29 PM				
Xylenes, Total	ND	0.095	mg/Kg	1	10/12/2018 10:39:29 PM				
Surr: 4-Bromofluorobenzene	108	80-120	%Rec	1	10/12/2018 10:39:29 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 Page 1 of 9
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy		Client	Sample ID:	MW8	@ 34-35'
Project: Standard 1		Colle	ction Date:	10/10/	/2018 9:05:00 AM
Lab ID: 1810653-002	Matrix: SOIL	Reco	eived Date:	10/11/	/2018 7:00:00 AM
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS				Analyst: Irm
Diesel Range Organics (DRO)	ND	9.6	mg/Kg	1	10/12/2018 9:43:16 PM
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	10/12/2018 9:43:16 PM
Surr: DNOP	103	50.6-138	%Rec	1	10/12/2018 9:43:16 PM
EPA METHOD 8015D: GASOLINE RAN	IGE				Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	10/13/2018 12:32:32 AM
Surr: BFB	92.9	15-316	%Rec	1	10/13/2018 12:32:32 AM
EPA METHOD 8021B: VOLATILES					Analyst: RAA
Benzene	ND	0.023	mg/Kg	1	10/13/2018 12:32:32 AM
Toluene	ND	0.047	mg/Kg	1	10/13/2018 12:32:32 AM
Ethylbenzene	ND	0.047	mg/Kg	1	10/13/2018 12:32:32 AM
Xylenes, Total	ND	0.094	mg/Kg	1	10/13/2018 12:32:32 AM
Surr: 4-Bromofluorobenzene	107	80-120	%Rec	1	10/13/2018 12:32:32 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
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 9
- P Sample pH Not In Range
- RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

10/13/2018 12:55:15 AM

## Hall Environmental Analysis Laboratory, Inc.

Surr: 4-Bromofluorobenzene

CLIENT: Hilcorp Energy		Clien	t Sample ID:	MW1	3 @ 6-8'				
Project: Standard 1		Col	llection Date:	10/10	/2018 12:15:00 PM				
Lab ID: 1810653-003	Matrix: SOIL	R	eceived Date:	10/11/	/2018 7:00:00 AM				
Analyses	Result	PQL (	Qual Units	DF	Date Analyzed				
EPA METHOD 8015M/D: DIESEL RANGE	ORGANICS				Analyst: Irm				
Diesel Range Organics (DRO)	ND	9.8	mg/Kg	1	10/12/2018 10:07:37 PM				
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	10/12/2018 10:07:37 PM				
Surr: DNOP	101	50.6-138	%Rec	1	10/12/2018 10:07:37 PM				
EPA METHOD 8015D: GASOLINE RANG	iΕ				Analyst: RAA				
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	10/13/2018 12:55:15 AM				
Surr: BFB	93.4	15-316	%Rec	1	10/13/2018 12:55:15 AM				
EPA METHOD 8021B: VOLATILES					Analyst: RAA				
Benzene	ND	0.024	mg/Kg	1	10/13/2018 12:55:15 AM				
Toluene	ND	0.047	mg/Kg	1	10/13/2018 12:55:15 AM				
Ethylbenzene	ND	0.047	mg/Kg	1	10/13/2018 12:55:15 AM				
Xylenes, Total	ND	0.094	mg/Kg	1	10/13/2018 12:55:15 AM				

108

80-120

%Rec

1

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 Page 3 of 9
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy		Client	Sample ID:	MW1	3 @ 34-35'				
Project: Standard 1		Collection Date: 10/10/2018 12:20:00 PM							
Lab ID: 1810653-004	Matrix: SOIL	10/11/2018 7:00:00 AM							
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed				
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS				Analyst: Irm				
Diesel Range Organics (DRO)	ND	9.6	mg/Kg	1	10/12/2018 10:32:02 PM				
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	10/12/2018 10:32:02 PM				
Surr: DNOP	93.9	50.6-138	%Rec	1	10/12/2018 10:32:02 PM				
EPA METHOD 8015D: GASOLINE RAM	IGE				Analyst: RAA				
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	10/13/2018 1:17:53 AM				
Surr: BFB	93.6	15-316	%Rec	1	10/13/2018 1:17:53 AM				
EPA METHOD 8021B: VOLATILES					Analyst: RAA				
Benzene	ND	0.023	mg/Kg	1	10/13/2018 1:17:53 AM				
Toluene	ND	0.047	mg/Kg	1	10/13/2018 1:17:53 AM				
Ethylbenzene	ND	0.047	mg/Kg	1	10/13/2018 1:17:53 AM				
Xylenes, Total	ND	0.093	mg/Kg	1	10/13/2018 1:17:53 AM				
Surr: 4-Bromofluorobenzene	108	80-120	%Rec	1	10/13/2018 1:17:53 AM				

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 Page 4 of 9
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

10/13/2018 1:40:32 AM

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp EnergyProject:Standard 1Lab ID:1810653-005	Matrix: SOIL	Collec		10/10/	4 @ 24-26' 2018 4:30:00 PM 2018 7:00:00 AM
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RAM	NGE ORGANICS				Analyst: Irm
Diesel Range Organics (DRO)	ND	9.5	mg/Kg	1	10/12/2018 10:56:17 PM
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	10/12/2018 10:56:17 PM
Surr: DNOP	107	50.6-138	%Rec	1	10/12/2018 10:56:17 PM
EPA METHOD 8015D: GASOLINE RA	NGE				Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	10/13/2018 1:40:32 AM
Surr: BFB	101	15-316	%Rec	1	10/13/2018 1:40:32 AM
EPA METHOD 8021B: VOLATILES					Analyst: RAA

ND

ND

ND

ND

106

0.024

0.047

0.047

0.095

80-120

mg/Kg

mg/Kg

mg/Kg

mg/Kg

%Rec

1

1

1

1

1

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

Qualifiers:

*

Benzene

Toluene

Ethylbenzene

Xylenes, Total

Surr: 4-Bromofluorobenzene

- Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix
- D
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- Analyte detected in the associated Method Blank В
- E Value above quantitation range
- Analyte detected below quantitation limits Page 5 of 9 J
- Ρ Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

CLIENT, Hilson Energy		Client	ample ID.	MWI	1 @ 22 24'
CLIENT: Hilcorp Energy					4 @ 32-34'
Project: Standard 1		Collec	tion Date:	10/10	/2018 4:45:00 PM
Lab ID: 1810653-006	Matrix: SOIL	Rece	ived Date:	10/11	/2018 7:00:00 AM
Analyses	Result	PQL Qua	al Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE	ORGANICS				Analyst: Irm
Diesel Range Organics (DRO)	ND	9.9	mg/Kg	1	10/12/2018 11:20:42 PM
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	10/12/2018 11:20:42 PM
Surr: DNOP	105	50.6-138	%Rec	1	10/12/2018 11:20:42 PM
EPA METHOD 8015D: GASOLINE RANG	E				Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.6	mg/Kg	1	10/13/2018 2:03:13 AM
Surr: BFB	91.1	15-316	%Rec	1	10/13/2018 2:03:13 AM
EPA METHOD 8021B: VOLATILES					Analyst: RAA
Benzene	ND	0.023	mg/Kg	1	10/13/2018 2:03:13 AM
Toluene	ND	0.046	mg/Kg	1	10/13/2018 2:03:13 AM
Ethylbenzene	ND	0.046	mg/Kg	1	10/13/2018 2:03:13 AM
Xylenes, Total	ND	0.092	mg/Kg	1	10/13/2018 2:03:13 AM
Surr: 4-Bromofluorobenzene	103	80-120	%Rec	1	10/13/2018 2:03:13 AM

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 Page 6 of 9
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hilcorp Energy

**Client:** 

Project: Standard	d 1										
Sample ID LCS-40958	SampTy	/pe: LC	S	Tes	TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID: LCSS	Batch	Batch ID: 40958 RunNo: 54841									
Prep Date: 10/11/2018	Analysis Da	ate: 10	)/12/2018	S	SeqNo: 1	823156	Units: mg/k	ζg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	49	10	50.00	0	98.0	70	130				
Surr: DNOP	5.2		5.000		104	50.6	138				
Sample ID MB-40958	SampTy	/pe: ME	BLK	Test	tCode: El	PA Method	8015M/D: Die	esel Range	e Organics		
Sample ID MB-40958 Client ID: PBS		/pe: ME			tCode: El		8015M/D: Die	esel Range	e Organics		
Client ID: PBS		ID: 409	958	R		4841	8015M/D: Die Units: mg/K	-	e Organics		
Client ID: PBS	Batch	ID: 409	958 0/12/2018	R	anNo: 54	4841		-	e Organics	Qual	
Client ID: PBS Prep Date: 10/11/2018 Analyte	Batch Analysis Da	ID: 409 ate: 10	958 0/12/2018	R	RunNo: 54 SeqNo: 11	4841 823157	Units: mg/K	íg		Qual	
Client ID: PBS Prep Date: 10/11/2018	Batch Analysis Da Result	ID: 409 ate: 10 PQL	958 0/12/2018	R	RunNo: 54 SeqNo: 11	4841 823157	Units: mg/K	íg		Qual	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of 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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: **1810653** *16-Oct-18* 

Client: Hilcorp Energy Project: Standard 1

Sample ID LCS-40955	SampT	vpe: LC	S	Tes	tCode: El	EPA Method 8015D: Gasoline Range					
Client ID: LCSS		DID: 40			RunNo: 54	•					
Prep Date: 10/11/2018	Analysis Date: 10/12/2018			S	SeqNo: 1823271 Units			nits: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	22	5.0	25.00	0	89.4	75.9	131				
Surr: BFB	1100		1000		105	15	316				
	the second se	SampType: MBLK TestCode: EPA Method 8015D: Gasoline Range						the second s			
Sample ID MB-40955	SampT	уре: МЕ	BLK	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e		
Sample ID MB-40955 Client ID: PBS		ype: ME			tCode: El		8015D: Gasc	line Rang	e		
		n ID: 40	955	F		4829	8015D: Gaso Units: mg/K	0	e		
Client ID: PBS	Batch	n ID: 40	955 )/12/2018	F	RunNo: 54	4829		0	e RPDLimit	Qual	
Client ID: PBS Prep Date: 10/11/2018	Batch Analysis D	n ID: 409 ate: 10	955 )/12/2018	F	RunNo: 54 SeqNo: 11	4829 823272	Units: <b>mg/k</b>	(g		Qual	

### Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of 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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 8 of 9

#### Hilcorp Energy **Client: Project:**

Standard 1

Sample ID LCS-40955	SampT	ype: LC	s	Tes	TestCode: EPA Method 8021B: Volatiles					
Client ID: LCSS	Batch	n ID: 40	955	F	RunNo: <b>54829</b>					
Prep Date: 10/11/2018	Analysis D	ate: 10	0/12/2018	S	SeqNo: 1	823414	Units: mg/k	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	108	77.3	128			
Toluene	1.1	0.050	1.000	0	110	79.2	125			
Ethylbenzene	1.1	0.050	1.000	0	106	80.7	127			
Xylenes, Total	3.1	0.10	3.000	0	104	81.6	129			
Surr: 4-Bromofluorobenzene	1.1		1.000		108	80	120			
Sample ID MB-40955	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8021B: Volat	tiles		
Client ID: PBS	Batch	n ID: 40	955	R	RunNo: 54829					
Prep Date: 10/11/2018	Analysis D	ate: 10	0/12/2018	S	eqNo: 1	823415	Units: mg/K	g		
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								
Euryidenzene	ND	0.000								
Xylenes, Total	ND	0.10								
·			1.000		110	80	120			

#### Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- Practical Quanitative Limit PQL
- % Recovery outside of range due to dilution or matrix S
- Analyte detected in the associated Method Blank В
- E Value above quantitation range
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

Page 9 of 9

WO#: 1810653

16-Oct-18

HALL ENVIRONMENTAL ANALYSIS LABORATORY	Hall Environment Ai TEL: 505-345-39 Website: www.	490 Ibuquerq 75 FAX:	1 Hawkins N ue, NM 8710 505-345-410	s Sa	Sample Log-In Check List										
Client Name: HILCORP ENERGY	Work Order Numbe	er: 181	0653		ReptNo:	1									
Received By: Anne Thome	10/11/2018 7:00:00 /	AM		Arre 's											
Completed By: Anne Thome	10/11/2018 7:58:50 /	AM		Ame 2	R										
Reviewed By ENM	10/11/18														
Labelal by SAB 10/11/	8														
Chain of Custody	0														
1. Is Chain of Custody complete?		Yes		No	Not Present										
2. How was the sample delivered?		Cou	ier												
Log In 3. Was an attempt made to cool the samples	2	Yes	<b>V</b>	No	NA 🗆										
4. Were all samples received at a temporature	e 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(	Yes	$\checkmark$	No												
7. Are samples (except VOA and ONG) prope	Yes	$\checkmark$	No 🗌												
8. Was preservative added to bottles?	Yes		No 🗹	NA											
9. VOA vials have zero headspace?		Yes		No 🗌	No VOA Vials 🗹										
10. Were any sample containers received brok	en?	Yes		No 🗸	# of preserved bottles checked										
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes		No 🗌	for pH: (<2 or	>12 unites hoteu)										
12. Are matrices correctly identified on Chain of	Yes	$\checkmark$	No 🗌	Adjusted?	10111										
13. Is it clear what analyses were requested?	Yes		No 🗌	A	60										
<ol> <li>Were all holding times able to be met? (if no, notify customer for authorization.)</li> </ol>		Yes	$\checkmark$	No	Cheetled by:	$\mathcal{V}_{$									
Special Handling (if applicable)															
15. Was client notified of all discrepancies with	this order?	Yes		No	NA 🗹										
Person Notified:	Date	dianis, monthatically	hands field Parties and raid												
By Whom:	Via	eMa	ail 🗌 Phor	ne 🗌 Fa	In Person										
Regarding															
Client Instructions:															
16. Additional remarks:															
17. <u>Cooler Information</u> Cooler No Temp °C Condition S 1 1.4 Good Ye	eal Intact Seal No	Seal Da	ate Sig	gned By	_										
					1										

					•																
Chain-of-Custody Record			Turn-Around Time:																		
Client: Hilcorp Energy L48 West Jonnifer Peal			DerStandard   Rush			HALL ENVIRONMENTAL ANALYSIS LABORATORY															
In Fr Deal			Project Name:			www.hallenvironmental.com															
Mailing Address:		Standascl #) Project#:			4901 Hawkins NE - Albuquerque, NM 87109																
					Project#:			Tel. 505-345-3975 Fax 505-345-4107													
Phone #: 505-324-5128			017817006				Analysis Request														
email or	email or Fax#: ideal @ hikorp.com			Project Manager:			(	(YI	Ô					()							
QA/QC Package:		Danny Burns			<b>**</b> (8021)	as or	/ WE			IS)		04,SC	PCB's								
□ Stan	Standard     Level 4 (Full Validation)			Danity Durits			Ĩ	Ö	S			SIMS)		ď.	2 D						
	Accreditation			Sampler: July Adams				H	0/0	<del>(</del>	Ē	8270		NO	808						î
	WELAP     □ Other       X EDD (Type)     P0F			On Ice: XTYes □ No Sample Temperature: 2.4-0.4-1.0=1.1			ł.	+	No.	418	50	01 8	s	03	es /		NO N				ō
X EDD	(Type)_	PDF		Sample lien	nperature:	-7-CF-1.0=114		Ē	B	Por	pou	10	leta	CI	icid	(YC	>-i∩				S (Y
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservativ Type	e HEAL NO. 18/0653	BTEX + M	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or	RCRA 8 Metals	Anions (F,CI,NO ₃ ,NO ₂ ,PO ₄ ,SO ₄ )	8081 Pesticides / 8082	8260B (VOA)	8270 (Semi-VOA)				Air Bubbles (Y or N)
10-10-18		5	MU8@30-32'	11402	(00)	105	Ž		X	-	-	-	-	-	~		~		+	+	
1	CAOS	1	MW8@34-35'			202	ŔŻ		X												
	1215		MWIJE 6-B'			-203	X		X												
	1220		MW 13 @ 34-35'			-204	X		X												
	1630		MW14@24-26'			705	X		X												
V	1645	J.	MW 14@ 32-34	V	V	206	X		X												
											_										
							-		_	_	-		_			_		$ \rightarrow $	$\rightarrow$	-	
							-		-	-	-	-							-	+	
							-		-	-	-	_	-			-		-+	+	-	
							+				-		-						-	+	+-
Date: 10-10-18 Date: 10/10/10	Time: 1718 Time: 1842	Relinquish Relinquish	r alung	Received by:	t ike	Date Time 10/10/15/718 Date Time 12/11/1/8 0706	Rer	marks	5: C	C :	di	bur	nse	el+ @1	teni	U.C.	om	n			
1 1 1		samples sub	mitted to Hall Environmental may be sub	contracted to other	accredited laborate	ories. This serves as notice of thi	s possi	ibility. /	Any si	ih-con	tracted	dets	will be	e clear	ly not	aned or	n the a	natytica	a report	t	