



ENSOLUM

1. Continue with O & M schedule.
2. Submit next quarterly report by January 15, 2024.

October 10, 2023

New Mexico Oil Conservation Division

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

Re: Third Quarter 2023 – SVE System Update

OH Randel #5
San Juan County, New Mexico
Hilcorp Energy Company
NMOCD Incident Number: NVF1602039091
Ensolum Project No. 07A1988025

To Whom it May Concern:

Ensolum, LLC (Ensolum), on behalf of Hilcorp Energy Company (Hilcorp), presents this *Third Quarter 2023 – SVE System Update* report summarizing the soil vapor extraction (SVE) system performance at the OH Randel #5 natural gas production well (Site), located in Unit D of Section 10, Township 26 North, and Range 11 West in San Juan County, New Mexico (Figure 1). Specifically, this report summarizes Site activities performed in July, August, and September of 2023 to the New Mexico Oil Conservation Division (NMOCD).

SVE SYSTEM SPECIFICATIONS

The current operation at the Site consists of two SVE systems, each with a dedicated blower, knockout tank, and control panel. The original SVE system (“SVE Skid 1”) was installed at the Site in 2016 by XTO Energy (the previous owner and operator of the Site) and subsequently upgraded by Hilcorp in 2019. This SVE system consists of a 2 horsepower Atlantic Blower AB-301 blower capable of producing 110 standard cubic feet per minute (scfm) of flow and 72 inches of water column (IWC) vacuum. A third SVE system (“SVE Skid 2”) was installed at the Site and became operational on March 11, 2022 in order to more efficiently address residual soil impacts at the Site. Specifically, the new system was built with a 3.4 horsepower Republic Manufacturing HRC501 blower capable of producing 221 scfm of flow and 72 IWC vacuum. When operated concurrently, the two SVE systems are able to induce the necessary flow and vacuum on all SVE wells at the Site simultaneously with no need to rotate operating wells.

SVE wells are located and screened in the “Secondary” and “Tertiary” Source Zones, as identified in the WSP USA Inc. *Site Summary Report*, dated October 1, 2021. Once the new SVE Skid 2 was installed at the Site, new manifolds were constructed so SVE Skid 1 operated wells located in the Secondary Source Zone (SVE-5, SVE-8, and SVE-9) and Tertiary Zone (SVE-7, SVE-10, and SVE-12). SVE Skid 2 operated wells located in the Tertiary Source Zone (SVE-13, SVE-14, SVE-15, SVE-16, SVE-17, SVE-18, SVE-19, SVE-20, SVE-21, and SVE-22). The SVE well locations are shown on Figure 2.

THIRD QUARTER 2023 ACTIVITIES

During the third quarter of 2023, Ensolum and Hilcorp personnel performed bi-weekly operation and maintenance (O&M) visits to verify the system was operating as designed and to perform any required maintenance. Field notes taken during O&M visits are presented in Appendix A. During the third quarter of 2023, all SVE wells, except SVE-6 and SVE-11, were operated in order to induce flow in areas with remaining soil impacts. SVE wells SVE-6 and SVE-11 are screened at depths shallower than the remaining soil impacts at the Site and have been turned off in order for the SVE system to induce a higher flow and vacuum on the remaining open wells. Between June 23 and September 26, 2023, SVE Skid 1 operated for 2,198 hours with a runtime efficiency of 96 percent (%) and Skid 2 operated for 2,282 hours with a runtime efficiency of 100%. Table 1 presents the SVE system operational hours and percent runtime. Appendix B presents photographs of the runtime meter for calculating the third quarter runtime efficiency.

Emissions samples were collected from sample ports located between the SVE piping manifold and the SVE blower using a high vacuum air sampler. Prior to collection, the emission samples were field screened with a photoionization detector (PID) for organic vapor monitoring (OVM). Third quarter 2023 emissions samples were collected from both SVE skids on August 21, 2023. The emission samples were collected directly into two 1-Liter Tedlar[®] bags and submitted to Hall Environmental Analysis Laboratory (Hall) in Albuquerque, New Mexico for analysis of total volatile petroleum hydrocarbons (TVPH – also known as total petroleum hydrocarbons – gasoline range organics (TPH-GRO)) following United States Environmental Protection Agency (EPA) Method 8015D, volatile organic compounds (VOCs) following EPA Method 8260B, and fixed gas analysis of oxygen and carbon dioxide following Gas Processors Association (GPA) Method 2261.

Table 2 presents a summary of analytical data collected during the sampling events and from historical sampling events, with the full laboratory analytical report included in Appendix C. Emission sample data and measured stack flow rates are used to estimate total mass recovered and total emissions generated by the SVE systems (Tables 3 and 4). Based on these estimates, a total of 733,748 pounds (366 tons) of TVPH have been removed by the systems to date.

RECOMMENDATIONS

Bi-weekly O&M visits will continue to be performed by Ensolum and/or Hilcorp personnel to verify the SVE systems are operating within normal working ranges (i.e., temperature, pressure, and vacuum). Deviations from regular operations will be noted on field logs and included in the following quarterly report. Hilcorp will continue operating the SVE systems until asymptotic emissions are observed. At that time, an evaluation of residual petroleum hydrocarbons will be assessed and further recommendations for remedial actions, if any, will be provided to NMOCD.

We appreciate the opportunity to provide this report to the New Mexico Oil Conservation Division. If you should have any questions or comments regarding this report, please contact the undersigned.

Sincerely,
Ensolum, LLC



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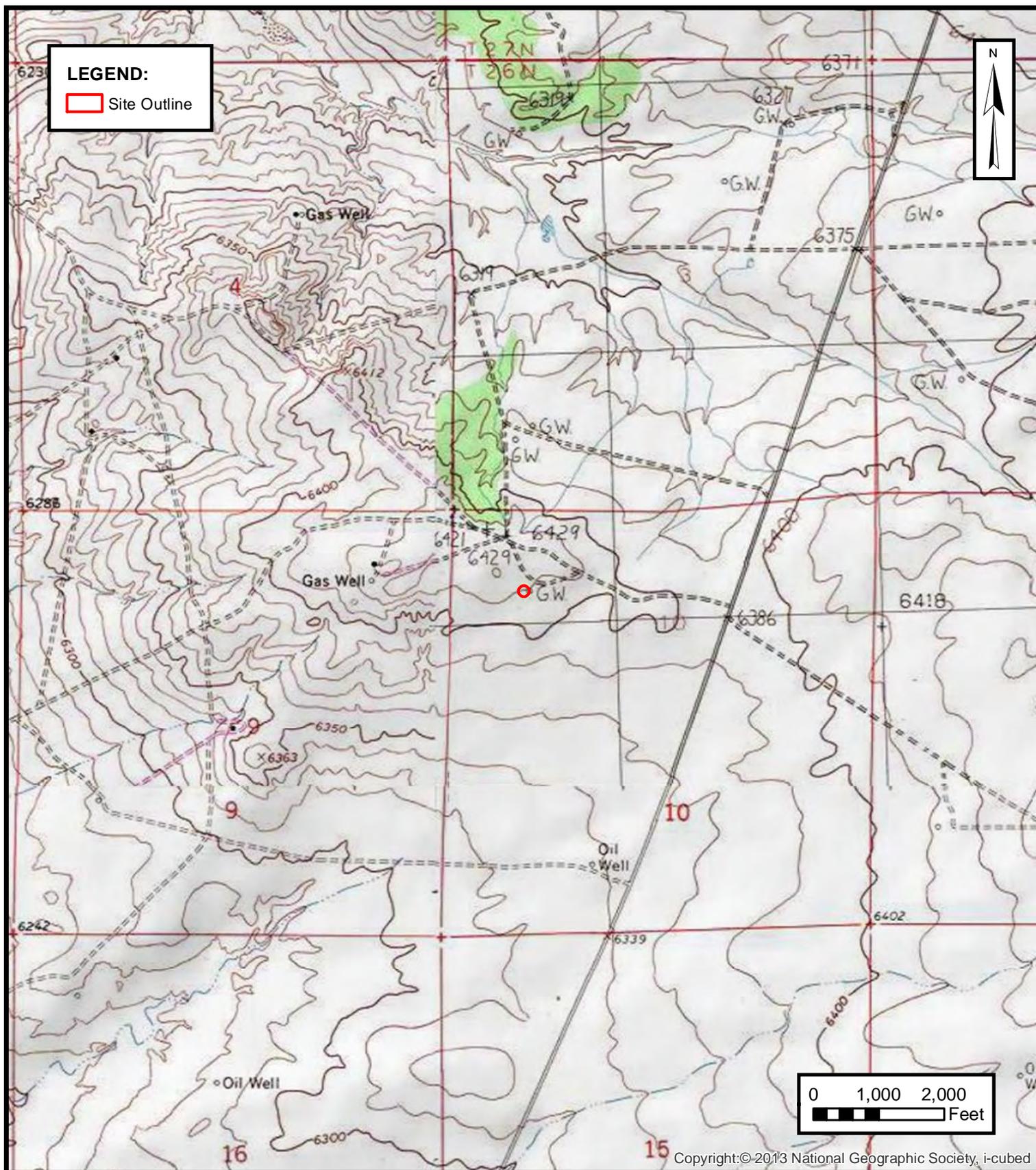
Figure 1 Site Location Map
Figure 2 SVE System Layout

Table 1 Soil Vapor Extraction System Runtime Calculations
Table 2 Soil Vapor Extraction System Emissions Analytical Results
Table 3 Soil Vapor Extraction System Mass Removal and Emissions – Skid 1
Table 4 Soil Vapor Extraction System Mass Removal and Emissions – Skid 2

Appendix A Field Notes
Appendix B Project Photographs
Appendix C Laboratory Analytical Reports



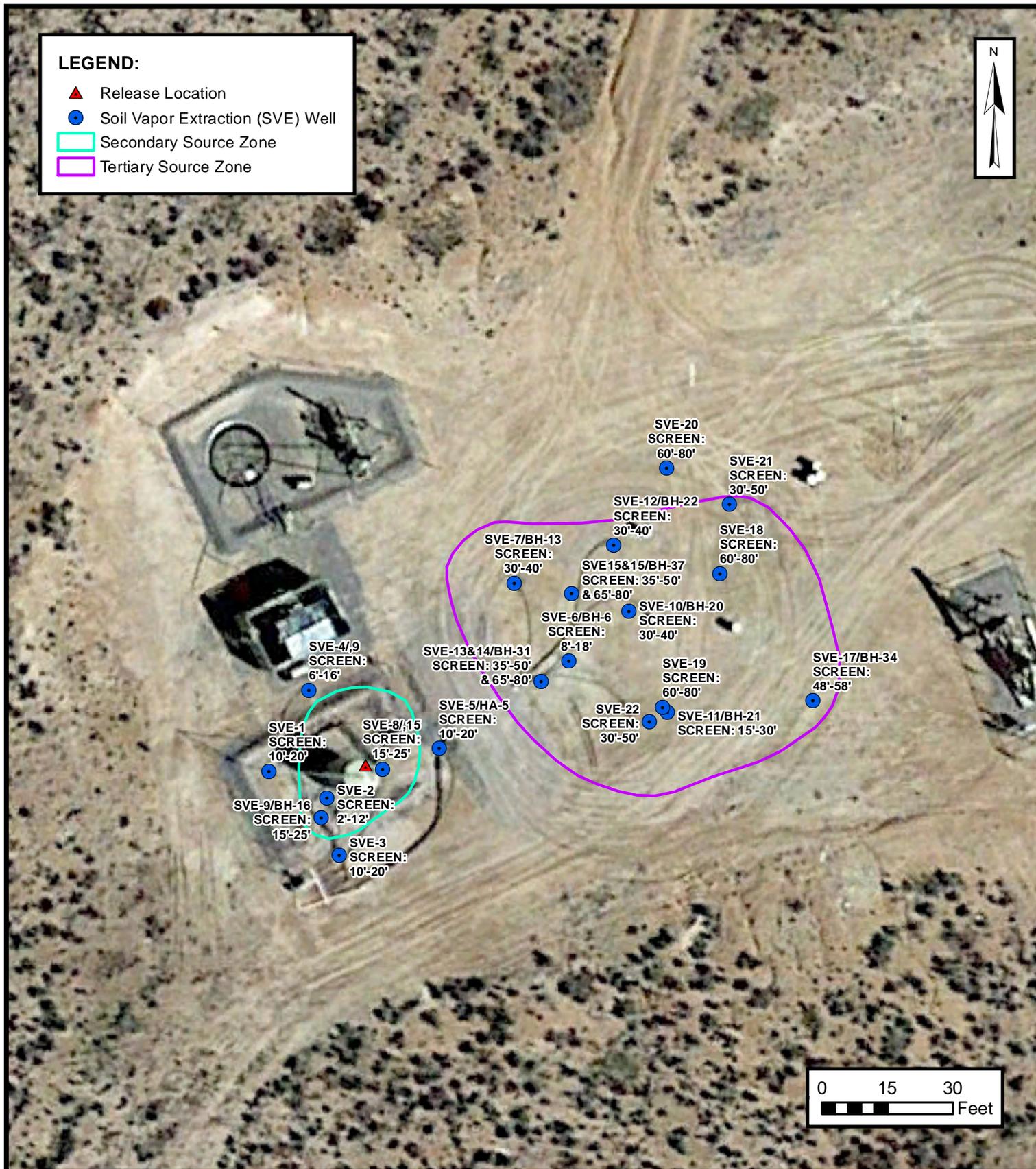
FIGURES



ENSOLUM
Environmental & Hydrogeologic Consultants

SITE LOCATION MAP
 HILCORP ENERGY COMPANY
 OH RANDEL #5
 NWNW SEC 10 T26N R11W, San Juan County, New Mexico
 36.506504° N, 107.996993° W
 PROJECT NUMBER: 07A1988025

FIGURE
1



SVE SYSTEM LAYOUT

HILCORP ENERGY COMPANY
OH RANDEL #5
NWNW SEC 10 T26N R11W, San Juan County, New Mexico
36.506504° N, 107.996993° W

PROJECT NUMBER: 07A1988025

FIGURE
2



TABLES



TABLE 1
SOIL VAPOR EXTRACTION SYSTEM RUNTIME CALCULATIONS
 OH Randel #5
 Hilcorp Energy Company
 San Juan County, New Mexico

SVE Skid 1 - Original System Runtime Operation

Date	Total Operational Hours	Delta Hours	Days	Percent Runtime
6/23/2023	43,065.2	--	--	--
9/26/2023	45,263.6	2,198	95	96%

SVE Skid 2 - New System Runtime Operation

Date	Total Operational Hours	Delta Hours	Days	Percent Runtime
6/23/2023	10,665.7	--	--	--
9/26/2023	12,947.5	2,282	95	100%



TABLE 2
SOIL VAPOR EXTRACTION SYSTEM EMISSIONS ANALYTICAL RESULTS

OH Randel #5
Hilcorp Energy Company
San Juan County, New Mexico

SVE Skid 1 - Original System Analytical Results

Date	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	TVPH/GRO (µg/L)	Oxygen (%)	Carbon Dioxide (%)
8/11/2016	4,072	160	1,700	61	500	46,000	--	--
8/17/2018	719	130	230	10	110	8,900	--	--
6/28/2019	1,257	7,200	15,000	360	3,000	460,000	--	--
12/16/2019	1,685	1,800	4,400	83	660	170,000	--	--
3/10/2020	897	1,700	3,300	89	700	130,000	--	--
4/30/2020	1,853	2,440	4,737	128	1,005	186,592	--	--
6/24/2020 (1)	--	--	--	--	--	--	--	--
11/10/2020	1,385	320	1,100	43	380	43,000	21.45%	0.35%
2/10/2021	865	360	950	35	250	32,000	--	--
6/11/2021	400	170	390	11	110	18,000	22.05%	0.15%
9/29/2021	505	99	190	7.0	55	8,200	--	--
12/15/2021	1,163	130	290	6.9	62	37,137	22.21%	0.092%
3/21/2022	274	6.5	23	0.98	11	550	22.38%	0.041%
6/17/2022	88	5.5	19	0.69	7.0	650	21.83%	0.060%
9/22/2022	55	9.0	42	1.9	20	670	21.84%	0.10%
12/7/2022	28	5.2	34	1.5	15	480	21.92%	0.05%
3/10/2023	87	2.5	8.2	<1.0	4.2	260	21.85%	0.06%
6/23/2023	290	4.8	31	2.0	24	670	21.82%	0.07%
8/21/2023	92	22	63	3.1	31	1,900	21.54%	0.13%

SVE Skid 2 - Original System Analytical Results

Date	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	TVPH (µg/L)	Oxygen (%)	Carbon Dioxide (%)
3/21/2022	1,354	310	510	13	120	35,000	21.81%	0.31%
6/17/2022	1,058	200	410	<10	66	33,000	21.27%	0.39%
9/8/2022	1,258	479	1,190	26	1,041	31,900	20.10%	0.50%
12/7/2022	918	230	370	9.1	65	18,000	21.53%	0.36%
3/10/2023	1,790	140	230	7.5	60	12,000	21.71%	0.17%
6/23/2023	1,450	160	430	12	100	18,000	21.29%	0.39%
8/21/2023	1,477	180	400	9.6	78	15,000	21.00%	0.40%

Notes:

(1) - blower not operational for sampling in May and June 2020

GRO: gasoline range organics

µg/L: microgram per liter

PID: photoionization detector

ppm: parts per million

TVPH: total volatile petroleum hydrocarbons

%: percent

--: not sampled

<0.037: gray indicates result less than the stated laboratory reporting limit (PQL)



TABLE 3
SOIL VAPOR EXTRACTION SYSTEM MASS REMOVAL AND EMISSIONS - SKID 1
 OH Randel #5
 Hilcorp Energy Company
 San Juan County, New Mexico

Flow and Laboratory Analysis						
Date	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	TVPH (µg/L)
8/11/2016	4,072	160	1,700	61	500	46,000
8/17/2018	719	130	230	10	110	8,900
12/16/2019	1,902	1,800	4,400	83	660	170,000
3/10/2020	897	1,700	3,300	89	700	130,000
4/30/2020	1,853	2,440	4,737	128	1,005	186,592
6/24/2020	Blower Not Operational (1)					
11/10/2021	1,385	320	1,100	43	380	43,000
2/10/2021	865	360	950	35	250	32,000
6/11/2021	400	170	390	11	110	18,000
9/29/2021	505	99	190	7.0	55	8,200
12/15/2021	1,163	130	290	6.9	62	37,137
3/21/2022	274	6.5	23	1.0	11	550
6/17/2022	88	6	19	0.7	7	650
9/22/2022	55	9.0	42	1.9	20	670
12/7/2022	28	5.2	34	1.5	15	480
3/10/2023	87	2.5	8.2	1.0	4.2	260
6/23/2023	290	4.8	31.0	2.0	24.0	670
8/21/2023	92	22.0	63.0	3.1	31.0	1,900
Average	863	433	1,030	29	232	40,295

Vapor Extraction Summary								
Date	Flow Rate (cfm)	Total System Flow (cf)	Delta Flow (cf)	Benzene (lb/hr)	Toluene (lb/hr)	Ethylbenzene (lb/hr)	Total Xylenes (lb/hr)	TVPH (lb/hr)
8/11/2016	105	31,500	31,500	0.063	0.67	0.024	0.20	18
8/17/2018	100	59,647,500	59,616,000	0.054	0.36	0.013	0.11	10
12/16/2019	110	109,635,900	49,988,400	0.40	0.95	0.019	0.16	37
3/10/2020	110	121,707,300	12,071,400	0.72	1.6	0.035	0.28	62
4/30/2020 (1)	105	130,917,900	9,210,600	0.81	1.6	0.043	0.33	62
6/24/2020 (1)	Blower Not Operational							
11/10/2021	105	130,917,900	0	0	0	0	0	0
2/10/2021	92	143,580,780	12,662,880	0.12	0.35	0.013	0.11	13
6/11/2021	90	158,657,580	15,076,800	0.089	0.23	0.0077	0.061	8.4
9/29/2021	69	168,249,960	9,592,380	0.035	0.075	0.0023	0.021	3.4
12/15/2021	90	178,207,560	9,957,600	0.039	0.081	0.0023	0.020	7.6
3/16/2022	70	187,343,904	9,136,344	0.018	0.041	0.0010	0.010	4.9
6/17/2022	70	196,703,520	9,359,616	0.0016	0.0055	0.00022	0.0024	0.16
9/21/2022	65	205,627,890	8,924,370	0.0018	0.0074	0.00031	0.0033	0.16
12/7/2022	70	213,411,456	7,783,566	0.0019	0.0099	0.00045	0.0046	0.15
3/10/2023	73	223,160,241	9,748,785	0.0011	0.0058	0.00034	0.0026	0.10
6/23/2023	60	231,228,093	8,067,852	0.00082	0.0044	0.00034	0.0032	0.10
8/21/2023	62	236,382,227	5,154,134	0.0031	0.011	0.00059	0.0064	0.30
Average				0.14	0.35	0.010	0.078	13

Flow and Laboratory Analysis								
Date	Total SVE System Hours	Delta Hours	Benzene (pounds)	Toluene (pounds)	Ethylbenzene (pounds)	Total Xylenes (pounds)	TVPH (pounds)	TVPH (tons)
8/11/2016	5	5	0.31	3.3	0.12	1.0	90	0.045
8/17/2018	9,941	9,936	539	3,586	132	1,133	102,008	51
12/16/2019	17,515	7,574	3,007	7,214	145	1,200	278,728	139
3/10/2020	19,344	1,829	1,317	2,897	65	512	112,870	56
4/30/2020 (1)	20,806	1,462	1,188	2,307	62	489	90,884	45
6/24/2020 (1)	Blower Not Operational							
11/10/2021	20,806	0	0	0	0	0	0	0
2/10/2021	23,100	2,294	268	809	31	249	29,600	15
6/11/2021	25,892	2,792	249	630	22	169	23,495	12
9/29/2021	28,209	2,317	80	173	5.4	49	7,833	3.9
12/15/2021	30,053	1,844	71	149	4.3	36	14,070	7.0
3/16/2022	32,228	2,175	39	89	2.2	21	10,732	5.4
6/17/2022	34,457	2,228	3.5	12	0.49	5.3	350	0.18
9/21/2022	36,745	2,288	4.0	17	0.72	7.5	367	0.18
12/7/2022	38,598	1,853	3.4	18	0.82	8.5	279	0.14
3/10/2023	40,824	2,226	2.3	13	0.76	5.8	225	0.11
6/23/2023	43,065	2,241	1.8	10	0.75	7.1	234	0.12
8/21/2023	44,451	1,386	4.3	15	0.82	8.8	413	0.21
Total Mass Recovery to Date			6,779	17,943	473	3,902	672,179	336

Notes:
 (1) - blower not operational for sampling in May and June 2020
 cf: cubic feet
 cfm: cubic feet per minute
 µg/L: micrograms per liter
 lb/hr: pounds per hour

--: not sampled
 PID: photoionization detector
 ppm: parts per million
 TVPH: total volatile petroleum hydrocarbons
 gray: laboratory reporting limit used for calculating emissions



TABLE 4
SOIL VAPOR EXTRACTION SYSTEM MASS REMOVAL AND EMISSIONS - SKID 2
 OH Randel #5
 Hilcorp Energy Company
 San Juan County, New Mexico

Flow and Laboratory Analysis

Date	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	TVPH (µg/L)
3/21/2022	1,354	310	510	13	120	35,000
6/17/2022	1,058	200	410	10	66	33,000
9/8/2022	1,258	479	1,190	26	1,041	31,900
12/7/2022	918	230	370	9.0	65	18,000
3/10/2023	1,790	140	230	7.5	60	12,000
6/23/2023	1,450	160	430	12	100	18,000
8/21/2023	1,477	180	400	10	78	15,000
Average	1,329	243	506	12	219	23,271

Vapor Extraction Summary

Date	Flow Rate (cfm)	Total System Flow (cf)	Delta Flow (cf)	Benzene (lb/hr)	Toluene (lb/hr)	Ethylbenzene (lb/hr)	Total Xylenes (lb/hr)	TVPH (lb/hr)
3/16/2022	70	499,800	499,800	0.081	0.13	0.0034	0.031	9.2
6/17/2022	60	8,533,560	8,033,760	0.057	0.10	0.0026	0.021	7.6
9/8/2022	56	15,138,648	6,605,088	0.071	0.17	0.0038	0.12	6.8
12/7/2022 (1)	56	22,499,736	7,361,088	0.074	0.16	0.0037	0.12	5.2
3/10/2023	58	30,214,896	7,715,160	0.040	0.065	0.0018	0.014	3.3
6/23/2023	64	37,670,256	7,455,360	0.036	0.079	0.0023	0.019	3.6
8/21/2023	51	42,004,746	4,334,490	0.032	0.079	0.0021	0.017	3.1
Average				0.056	0.113	0.0028	0.048	5.5

Flow and Laboratory Analysis

Date	Total SVE System Hours	Delta Hours	Benzene (pounds)	Toluene (pounds)	Ethylbenzene (pounds)	Total Xylenes (pounds)	TVPH (pounds)	TVPH (tons)
3/16/2022	119	119	10	16	0.41	3.7	1,090	0.55
6/17/2022	2,351	2,232	128	230	5.8	47	17,027	8.5
9/8/2022	4,316	1,966	140	329	7.4	228	13,361	6.7
12/7/2022 (1)	6,507	2,191	163	358	8.0	254	11,448	5.7
3/10/2023	8,724	2,217	89	144	4.0	30	7,214	3.6
6/23/2023	10,666	1,942	70	153	4.5	37	6,971	3.5
8/21/2023	12,082	1,417	46	112	2.9	24	4,458	2.2
Total Mass Recovery to Date			644	1,343	33	623	61,569	31

Notes:

- (1): rotameter float frozen in place, flow rate based on 11/16/2022 site visit flow rate and similar applied vacuum recorded during 11/16/2022 and 12/7/2022 site visits
- cf: cubic feet
- cfm: cubic feet per minute
- µg/L: micrograms per liter
- lb/hr: pounds per hour
- PID: photoionization detector
- ppm: parts per million
- TVPH: total volatile petroleum hydrocarbons
- gray: laboratory reporting limit used for calculating emissions



APPENDIX A

Field Notes

OH RANDEL #5 SVE SYSTEM BIWEEKLY O&M FORM

DATE: 7-6
TIME ONSITE: _____

O&M PERSONNEL: B Sinclair
TIME OFFSITE: _____

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: _____ KO TANK HIGH LEVEL

SVE SYSTEM	Skid 1	Skid 2
Blower Hours (take photo)	43399.76	11000.3
Inlet Vacuum (IWC)	48	59
Inlet Flow from Rotameter (SCFM)	59	61
Exhaust Vacuum (IWC)	-55	-72
Inlet PID	164.6	1363
Exhaust PID	55.8	1611
K/O Tank Liquid Level		
K/O Liquid Drained (gallons)		

SVE SYSTEM - QUARTERLY SAMPLING

SAMPLE ID: _____ SAMPLE TIME: _____
 Analytes: TVPH (8015), VOCs (8260), Fixed Gas (CO/CO2/O2)
 OPERATING WELLS _____

ZONES

Change in Well Operation: _____

Zone A - Secondary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-5		20.8	
SVE-8		45.3	
9		65.4	

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7		686.8	
SVE-10		82.7	
SVE-11			
SVE-12		608.6	
SVE-13		1840	
SVE-14		172.6	
SVE-15		850.8	
SVE-16		1679	
SVE-17		699	
SVE-18		861.2	
SVE-19		1891	
SVE-20		1434	
SVE-21		236.8	
SVE-22		785.9	

COMMENTS/OTHER MAINTENANCE:

OH RANDEL #5 SVE SYSTEM BIWEEKLY O&M FORM

DATE: 7-26
TIME ONSITE: _____

O&M PERSONNEL: B Sinclair
TIME OFFSITE: _____

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: _____ KO TANK HIGH LEVEL

SVE SYSTEM	Skid 1	Skid 2
Blower Hours (take photo)	43853.96	11455.0
Inlet Vacuum (IWC)	51	61
Inlet Flow from Rotameter (SCFM)	56	58
Exhaust Vacuum (IWC)	-56	-72
Inlet PID	25.9	1173
Exhaust PID	60.3	1553
K/O Tank Liquid Level		
K/O Liquid Drained (gallons)		

SVE SYSTEM - QUARTERLY SAMPLING

SAMPLE ID: _____ SAMPLE TIME: _____
 Analytes: TVPH (8015), VOCs (8260), Fixed Gas (CO/CO2/O2)
 OPERATING WELLS: _____

ZONES

Change in Well Operation: _____

Zone A - Secondary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-5		15.2	
SVE-8		23.6	
		35.5	

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7		347.3	
SVE-10		175.2	
SVE-11			
SVE-12		263.5	
SVE-13		175.2	
SVE-14		1500	
SVE-15		733.8	
SVE-16		1439	
SVE-17		606.6	
SVE-18		1749	
SVE-19		1932	
SVE-20		786.8	
SVE-21		175.5	
SVE-22		1588	

COMMENTS/OTHER MAINTENANCE:

OH RANDEL #5 SVE SYSTEM BIWEEKLY O&M FORM

DATE: 8-8
TIME ONSITE: _____

O&M PERSONNEL: B Sinclair
TIME OFFSITE: _____

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: _____ KO TANK HIGH LEVEL

SVE SYSTEM	Skid 1	Skid 2
Blower Hours (take photo)	44154.17	11770.4
Inlet Vacuum (IWC)	52	57
Inlet Flow from Rotameter (SCFM)	56	54
Exhaust Vacuum (IWC)	-57	-68
Inlet PID	85.1	142.6
Exhaust PID	74	147.2
K/O Tank Liquid Level		
K/O Liquid Drained (gallons)		

SVE SYSTEM - QUARTERLY SAMPLING

SAMPLE ID: _____ SAMPLE TIME: _____
 Analytes: TVPH (8015), VOCs (8260), Fixed Gas (CO/CO2/O2)
 OPERATING WELLS _____

ZONES

Change in Well Operation: _____

Zone A - Secondary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-5		18.1	
SVE-8		26.1	
		39.3	

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7		627.9	
SVE-10		243.5	
SVE-11			
SVE-12		312.2	
SVE-13		165.5	
SVE-14		127.4	
SVE-15		128.6	
SVE-16		153.2	
SVE-17		458.7	
SVE-18		168.6	
SVE-19		190.9	
SVE-20		159.4	
SVE-21		331.2	
SVE-22		633.1	

COMMENTS/OTHER MAINTENANCE: _____

Empty box for comments or other maintenance notes.

OH RANDEL #5 SVE SYSTEM
BIWEEKLY O&M FORM

DATE: 8-21
TIME ONSITE: _____

O&M PERSONNEL: B Sinclair
TIME OFFSITE: _____

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: _____ KO TANK HIGH LEVEL

SVE SYSTEM	Skid 1	Skid 2
Blower Hours (take photo)	44459.67	12082.2
Inlet Vacuum (IWC)	51	57
Inlet Flow from Rotameter (SCFM)	62	51
Exhaust Vacuum (IWC)	-57	-69
Inlet PID	91.8	1477
Exhaust PID	72.7	1417
K/O Tank Liquid Level		
K/O Liquid Drained (gallons)		

SVE SYSTEM - QUARTERLY SAMPLING

SAMPLE ID: _____ SAMPLE TIME: _____

Analytes: TVPH (8015), VOCs (8260), Fixed Gas (CO/CO2/O2)

OPERATING WELLS

ZONES

Change in Well Operation: _____

Zone A - Secondary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-5		48.3	
SVE-8		87.4	
		181	

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7		363.5	
SVE-10		155.3	
SVE-11			
SVE-12		370.6	
SVE-13		1746	
SVE-14		1277	
SVE-15		1162	
SVE-16		1646	
SVE-17		545.8	
SVE-18		1306	
SVE-19		2044	
SVE-20		1485	
SVE-21		201.6	
SVE-22		777.7	

COMMENTS/OTHER MAINTENANCE:

Empty box for comments or other maintenance notes.

www.sanders-usa.com

OH RANDEL #5 SVE SYSTEM BIWEEKLY O&M FORM

DATE: 9-7
TIME ONSITE: _____

O&M PERSONNEL: B Sinclair
TIME OFFSITE: _____

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: _____ KO TANK HIGH LEVEL _____

SVE SYSTEM	Skid 1	Skid 2
Blower Hours (take photo)	44813.00	12987.6
Inlet Vacuum (IWC)	3.3	4.2
Inlet Flow from Rotameter (SCFM)	52	52
Exhaust Vacuum (IWC)	-47	-69
Inlet PID	291.8	1413
Exhaust PID	63.8	1475
K/O Tank Liquid Level		
K/O Liquid Drained (gallons)		

SVE SYSTEM - QUARTERLY SAMPLING

SAMPLE ID:	SAMPLE TIME:
Analytes: TVPH (8015), VOCs (8260), Fixed Gas (CO/CO2/O2)	
OPERATING WELLS	

ZONES

Change in Well Operation: _____

Zone A - Secondary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-5		37.8	
SVE-8		66.7	
9		61.8	

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7		111.8	
SVE-10		152.9	
SVE-11			
SVE-12		157.2	
SVE-13		143.4	
SVE-14		162.8	
SVE-15		689.4	
SVE-16		1466	
SVE-17		386.1	
SVE-18		125.4	
SVE-19		2210	
SVE-20		975.2	
SVE-21		162.1	
SVE-22		335	

COMMENTS/OTHER MAINTENANCE:

Replaced SVE-8 well cap

OH RANDEL #5 SVE SYSTEM BIWEEKLY O&M FORM

DATE: 9-28
TIME ONSITE: _____

O&M PERSONNEL: B Sinclair
TIME OFFSITE: _____

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: _____ KO TANK HIGH LEVEL _____

SVE SYSTEM	Skid 1	Skid 2
Blower Hours (take photo)	45263.60	12947.5
Inlet Vacuum (IWC)	49	58
Inlet Flow from Rotameter (SCFM)	52	50
Exhaust Vacuum (IWC)	-49	-69
Inlet PID	142.4	1394
Exhaust PID	88.1	1474
K/O Tank Liquid Level		
K/O Liquid Drained (gallons)		

SVE SYSTEM - QUARTERLY SAMPLING

SAMPLE ID: _____ SAMPLE TIME: _____
 Analytes: TVPH (8015), VOCs (8260), Fixed Gas (CO/CO2/O2)
 OPERATING WELLS _____

ZONES

Change in Well Operation: _____

Zone A - Secondary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-5		24.1	
SVE-8		68.3	
9		63.7	

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7		287.7	
SVE-10		184	
SVE-11			
SVE-12		519.1	
SVE-13		1767	
SVE-14		1492	
SVE-15		926.8	
SVE-16		1429	
SVE-17		724.5	
SVE-18		1803	
SVE-19		2122	
SVE-20		1601	
SVE-21		381.1	
SVE-22		715.8	

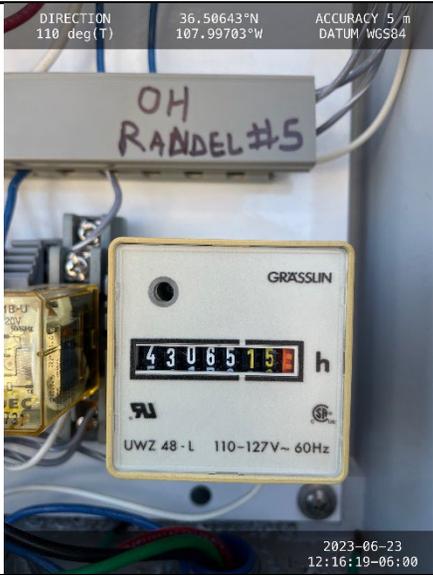
COMMENTS/OTHER MAINTENANCE: _____



APPENDIX B

Project Photographs

PROJECT PHOTOGRAPHS
OH Randel #5
San Juan County, New Mexico
Hilcorp Energy Company

<p>Photograph 1</p> <p>Runtime meter taken on June 23, 2023 from SVE Skid 1 (original SVE system) at 12:16 PM Hours = 43,065.15</p>	
<p>Photograph 2</p> <p>Runtime meter taken on June 23, 2023 from SVE Skid 2 (new SVE system) at 12:16 PM Hours = 10,665.7</p>	

PROJECT PHOTOGRAPHS
OH Randel #5
San Juan County, New Mexico
Hilcorp Energy Company

<p>Photograph 3</p> <p>Runtime meter taken on September 26, 2023 from SVE Skid 1 (original SVE system) at 2:07 PM Hours = 45,263.60</p>	
<p>Photograph 4</p> <p>Runtime meter taken on September 26, 2023 from SVE Skid 2 (new SVE system) at 2:07 PM Hours = 12,947.5</p>	



APPENDIX C

Laboratory Analytical Reports



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

September 07, 2023

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

RE: O H Randel 5

OrderNo.: 2308B45

Dear Kate Kaufman:

Hall Environmental Analysis Laboratory received 2 sample(s) on 8/22/2023 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order **2308B45**

Date Reported: **9/7/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: Skid 1

Project: O H Randel 5

Collection Date: 8/21/2023 12:30:00 PM

Lab ID: 2308B45-001

Matrix: AIR

Received Date: 8/22/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: CCM
Benzene	22	0.50		µg/L	5	8/29/2023 4:42:00 PM
Toluene	63	5.0		µg/L	50	8/29/2023 5:56:00 PM
Ethylbenzene	3.1	0.50		µg/L	5	8/29/2023 4:42:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,2,4-Trimethylbenzene	1.1	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,3,5-Trimethylbenzene	1.0	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
Naphthalene	ND	1.0		µg/L	5	8/29/2023 4:42:00 PM
1-Methylnaphthalene	ND	2.0		µg/L	5	8/29/2023 4:42:00 PM
2-Methylnaphthalene	ND	2.0		µg/L	5	8/29/2023 4:42:00 PM
Acetone	ND	5.0		µg/L	5	8/29/2023 4:42:00 PM
Bromobenzene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
Bromodichloromethane	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
Bromoform	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
Bromomethane	ND	1.0		µg/L	5	8/29/2023 4:42:00 PM
2-Butanone	ND	5.0		µg/L	5	8/29/2023 4:42:00 PM
Carbon disulfide	ND	5.0		µg/L	5	8/29/2023 4:42:00 PM
Carbon tetrachloride	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
Chlorobenzene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
Chloroethane	ND	1.0		µg/L	5	8/29/2023 4:42:00 PM
Chloroform	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
Chloromethane	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
2-Chlorotoluene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
4-Chlorotoluene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
cis-1,2-DCE	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,2-Dibromo-3-chloropropane	ND	1.0		µg/L	5	8/29/2023 4:42:00 PM
Dibromochloromethane	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
Dibromomethane	ND	1.0		µg/L	5	8/29/2023 4:42:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
Dichlorodifluoromethane	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,1-Dichloroethane	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,3-Dichloropropane	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
2,2-Dichloropropane	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM

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

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

Analytical Report

Lab Order **2308B45**

Date Reported: **9/7/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: Skid 1

Project: O H Randel 5

Collection Date: 8/21/2023 12:30:00 PM

Lab ID: 2308B45-001

Matrix: AIR

Received Date: 8/22/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: CCM
1,1-Dichloropropene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
Hexachlorobutadiene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
2-Hexanone	ND	5.0		µg/L	5	8/29/2023 4:42:00 PM
Isopropylbenzene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
4-Isopropyltoluene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
4-Methyl-2-pentanone	ND	5.0		µg/L	5	8/29/2023 4:42:00 PM
Methylene chloride	ND	1.5		µg/L	5	8/29/2023 4:42:00 PM
n-Butylbenzene	ND	1.5		µg/L	5	8/29/2023 4:42:00 PM
n-Propylbenzene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
sec-Butylbenzene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
Styrene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
tert-Butylbenzene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
Tetrachloroethene (PCE)	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
trans-1,2-DCE	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
Trichloroethene (TCE)	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
Trichlorofluoromethane	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
1,2,3-Trichloropropane	ND	1.0		µg/L	5	8/29/2023 4:42:00 PM
Vinyl chloride	ND	0.50		µg/L	5	8/29/2023 4:42:00 PM
Xylenes, Total	31	0.75		µg/L	5	8/29/2023 4:42:00 PM
Surr: Dibromofluoromethane	105	70-130		%Rec	5	8/29/2023 4:42:00 PM
Surr: 1,2-Dichloroethane-d4	99.6	70-130		%Rec	5	8/29/2023 4:42:00 PM
Surr: Toluene-d8	123	70-130		%Rec	5	8/29/2023 4:42:00 PM
Surr: 4-Bromofluorobenzene	122	70-130		%Rec	5	8/29/2023 4:42:00 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	1900	25		µg/L	5	8/29/2023 4:42:00 PM
Surr: BFB	97.5	70-130		%Rec	5	8/29/2023 4:42:00 PM

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

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

Analytical Report

Lab Order **2308B45**

Date Reported: **9/7/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: Skid 2

Project: O H Randel 5

Collection Date: 8/21/2023 12:30:00 PM

Lab ID: 2308B45-002

Matrix: AIR

Received Date: 8/22/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: CCM
Benzene	180	5.0		µg/L	50	8/29/2023 5:07:00 PM
Toluene	400	5.0		µg/L	50	8/29/2023 5:07:00 PM
Ethylbenzene	9.6	5.0		µg/L	50	8/29/2023 5:07:00 PM
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,2,4-Trimethylbenzene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,3,5-Trimethylbenzene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,2-Dichloroethane (EDC)	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,2-Dibromoethane (EDB)	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
Naphthalene	ND	10		µg/L	50	8/29/2023 5:07:00 PM
1-Methylnaphthalene	ND	20		µg/L	50	8/29/2023 5:07:00 PM
2-Methylnaphthalene	ND	20		µg/L	50	8/29/2023 5:07:00 PM
Acetone	ND	50		µg/L	50	8/29/2023 5:07:00 PM
Bromobenzene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
Bromodichloromethane	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
Bromoform	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
Bromomethane	ND	10		µg/L	50	8/29/2023 5:07:00 PM
2-Butanone	ND	50		µg/L	50	8/29/2023 5:07:00 PM
Carbon disulfide	ND	50		µg/L	50	8/29/2023 5:07:00 PM
Carbon tetrachloride	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
Chlorobenzene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
Chloroethane	ND	10		µg/L	50	8/29/2023 5:07:00 PM
Chloroform	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
Chloromethane	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
2-Chlorotoluene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
4-Chlorotoluene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
cis-1,2-DCE	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
cis-1,3-Dichloropropene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,2-Dibromo-3-chloropropane	ND	10		µg/L	50	8/29/2023 5:07:00 PM
Dibromochloromethane	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
Dibromomethane	ND	10		µg/L	50	8/29/2023 5:07:00 PM
1,2-Dichlorobenzene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,3-Dichlorobenzene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,4-Dichlorobenzene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
Dichlorodifluoromethane	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,1-Dichloroethane	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,1-Dichloroethene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,2-Dichloropropane	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,3-Dichloropropane	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
2,2-Dichloropropane	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM

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

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

Analytical Report

Lab Order **2308B45**

Date Reported: **9/7/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: Skid 2

Project: O H Randel 5

Collection Date: 8/21/2023 12:30:00 PM

Lab ID: 2308B45-002

Matrix: AIR

Received Date: 8/22/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: CCM
1,1-Dichloropropene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
Hexachlorobutadiene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
2-Hexanone	ND	50		µg/L	50	8/29/2023 5:07:00 PM
Isopropylbenzene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
4-Isopropyltoluene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
4-Methyl-2-pentanone	ND	50		µg/L	50	8/29/2023 5:07:00 PM
Methylene chloride	ND	15		µg/L	50	8/29/2023 5:07:00 PM
n-Butylbenzene	ND	15		µg/L	50	8/29/2023 5:07:00 PM
n-Propylbenzene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
sec-Butylbenzene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
Styrene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
tert-Butylbenzene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,1,1,2-Tetrachloroethane	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,1,1,2,2-Tetrachloroethane	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
Tetrachloroethene (PCE)	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
trans-1,2-DCE	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
trans-1,3-Dichloropropene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,2,3-Trichlorobenzene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,2,4-Trichlorobenzene	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,1,1-Trichloroethane	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,1,2-Trichloroethane	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
Trichloroethene (TCE)	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
Trichlorofluoromethane	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
1,2,3-Trichloropropane	ND	10		µg/L	50	8/29/2023 5:07:00 PM
Vinyl chloride	ND	5.0		µg/L	50	8/29/2023 5:07:00 PM
Xylenes, Total	78	7.5		µg/L	50	8/29/2023 5:07:00 PM
Surr: Dibromofluoromethane	105	70-130		%Rec	50	8/29/2023 5:07:00 PM
Surr: 1,2-Dichloroethane-d4	97.6	70-130		%Rec	50	8/29/2023 5:07:00 PM
Surr: Toluene-d8	129	70-130		%Rec	50	8/29/2023 5:07:00 PM
Surr: 4-Bromofluorobenzene	123	70-130		%Rec	50	8/29/2023 5:07:00 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	15000	250		µg/L	50	8/29/2023 5:07:00 PM
Surr: BFB	91.7	70-130		%Rec	50	8/29/2023 5:07:00 PM

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

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



ANALYTICAL SUMMARY REPORT

September 07, 2023

Hall Environmental

4901 Hawkins St NE Ste D
Albuquerque, NM 87109-4372

Work Order: B23082261 Quote ID: B15626

Project Name: Not Indicated

Energy Laboratories Inc Billings MT received the following 2 samples for Hall Environmental on 8/23/2023 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B23082261-001	2308B45-001B, Skid 1	08/21/23 12:30	08/23/23	Air	Air Correction Calculations Appearance and Comments Calculated Properties GPM @ std cond./1000 cu. ft., moist. Free Natural Gas Analysis Specific Gravity @ 60/60
B23082261-002	2308B45-002B, Skid 2	08/21/23 12:30	08/23/23	Air	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:



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Gillette, WY 307.686.7175 • Helena, MT 406.442.0711

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Project: Not Indicated
Lab ID: B23082261-001
Client Sample ID: 2308B45-001B, Skid 1

Report Date: 09/07/23
Collection Date: 08/21/23 12:30
Date Received: 08/23/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
GAS CHROMATOGRAPHY ANALYSIS REPORT							
Oxygen	21.54	Mol %		0.01		GPA 2261-95	08/24/23 09:58 / jrj
Nitrogen	78.33	Mol %		0.01		GPA 2261-95	08/24/23 09:58 / jrj
Carbon Dioxide	0.13	Mol %		0.01		GPA 2261-95	08/24/23 09:58 / jrj
Hydrogen Sulfide	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 09:58 / jrj
Methane	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 09:58 / jrj
Ethane	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 09:58 / jrj
Propane	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 09:58 / jrj
Isobutane	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 09:58 / jrj
n-Butane	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 09:58 / jrj
Isopentane	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 09:58 / jrj
n-Pentane	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 09:58 / jrj
Hexanes plus	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 09:58 / jrj
Propane	< 0.001	gpm		0.001		GPA 2261-95	08/24/23 09:58 / jrj
Isobutane	< 0.001	gpm		0.001		GPA 2261-95	08/24/23 09:58 / jrj
n-Butane	< 0.001	gpm		0.001		GPA 2261-95	08/24/23 09:58 / jrj
Isopentane	< 0.001	gpm		0.001		GPA 2261-95	08/24/23 09:58 / jrj
n-Pentane	< 0.001	gpm		0.001		GPA 2261-95	08/24/23 09:58 / jrj
Hexanes plus	< 0.001	gpm		0.001		GPA 2261-95	08/24/23 09:58 / jrj
GPM Total	< 0.001	gpm		0.001		GPA 2261-95	08/24/23 09:58 / jrj
GPM Pentanes plus	< 0.001	gpm		0.001		GPA 2261-95	08/24/23 09:58 / jrj

CALCULATED PROPERTIES

Gross BTU per cu ft @ Std Cond. (HHV)	ND			1		GPA 2261-95	08/24/23 09:58 / jrj
Net BTU per cu ft @ std cond. (LHV)	ND			1		GPA 2261-95	08/24/23 09:58 / jrj
Pseudo-critical Pressure, psia	545			1		GPA 2261-95	08/24/23 09:58 / jrj
Pseudo-critical Temperature, deg R	239			1		GPA 2261-95	08/24/23 09:58 / jrj
Specific Gravity @ 60/60F	0.998			0.001		D3588-81	08/24/23 09:58 / jrj
Air, %	98.41			0.01		GPA 2261-95	08/24/23 09:58 / jrj

- The analysis was not corrected for air.

COMMENTS

- 08/24/23 09:58 / jrj

- BTU, GPM, and specific gravity are corrected for deviation from ideal gas behavior.
- GPM = gallons of liquid at standard conditions per 1000 cu. ft. of moisture free gas @ standard conditions.
- To convert BTU to a water-saturated basis @ standard conditions, multiply by 0.9825.
- Standard conditions: 60 F & 14.73 psi on a dry basis.

Report Definitions: RL - Analyte Reporting Limit
QCL - Quality Control Limit

MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)



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Gillette, WY 307.686.7175 • Helena, MT 406.442.0711

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Project: Not Indicated
Lab ID: B23082261-002
Client Sample ID: 2308B45-002B, Skid 2

Report Date: 09/07/23
Collection Date: 08/21/23 12:30
Date Received: 08/23/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
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GAS CHROMATOGRAPHY ANALYSIS REPORT

Oxygen	21.00	Mol %		0.01		GPA 2261-95	08/24/23 10:23 / jrj
Nitrogen	77.92	Mol %		0.01		GPA 2261-95	08/24/23 10:23 / jrj
Carbon Dioxide	0.40	Mol %		0.01		GPA 2261-95	08/24/23 10:23 / jrj
Hydrogen Sulfide	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 10:23 / jrj
Methane	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 10:23 / jrj
Ethane	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 10:23 / jrj
Propane	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 10:23 / jrj
Isobutane	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 10:23 / jrj
n-Butane	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 10:23 / jrj
Isopentane	0.02	Mol %		0.01		GPA 2261-95	08/24/23 10:23 / jrj
n-Pentane	<0.01	Mol %		0.01		GPA 2261-95	08/24/23 10:23 / jrj
Hexanes plus	0.66	Mol %		0.01		GPA 2261-95	08/24/23 10:23 / jrj
Propane	< 0.001	gpm		0.001		GPA 2261-95	08/24/23 10:23 / jrj
Isobutane	< 0.001	gpm		0.001		GPA 2261-95	08/24/23 10:23 / jrj
n-Butane	< 0.001	gpm		0.001		GPA 2261-95	08/24/23 10:23 / jrj
Isopentane	0.007	gpm		0.001		GPA 2261-95	08/24/23 10:23 / jrj
n-Pentane	< 0.001	gpm		0.001		GPA 2261-95	08/24/23 10:23 / jrj
Hexanes plus	0.278	gpm		0.001		GPA 2261-95	08/24/23 10:23 / jrj
GPM Total	0.285	gpm		0.001		GPA 2261-95	08/24/23 10:23 / jrj
GPM Pentanes plus	0.285	gpm		0.001		GPA 2261-95	08/24/23 10:23 / jrj

CALCULATED PROPERTIES

Gross BTU per cu ft @ Std Cond. (HHV)	32			1		GPA 2261-95	08/24/23 10:23 / jrj
Net BTU per cu ft @ std cond. (LHV)	30			1		GPA 2261-95	08/24/23 10:23 / jrj
Pseudo-critical Pressure, psia	545			1		GPA 2261-95	08/24/23 10:23 / jrj
Pseudo-critical Temperature, deg R	244			1		GPA 2261-95	08/24/23 10:23 / jrj
Specific Gravity @ 60/60F	1.01			0.001		D3588-81	08/24/23 10:23 / jrj
Air, %	95.95			0.01		GPA 2261-95	08/24/23 10:23 / jrj

- The analysis was not corrected for air.

COMMENTS

-							08/24/23 10:23 / jrj
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- BTU, GPM, and specific gravity are corrected for deviation from ideal gas behavior.
- GPM = gallons of liquid at standard conditions per 1000 cu. ft. of moisture free gas @ standard conditions.
- To convert BTU to a water-saturated basis @ standard conditions, multiply by 0.9825.
- Standard conditions: 60 F & 14.73 psi on a dry basis.

Report Definitions: RL - Analyte Reporting Limit
QCL - Quality Control Limit

MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)



QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Hall Environmental

Work Order: B23082261

Report Date: 09/07/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
Method: GPA 2261-95											
Lab ID: B23082261-002ADUP											
12 Sample Duplicate			Run: GCNGA-B_230824A					Batch: R407634			
Oxygen		21.0	Mol %	0.01				0	20		
Nitrogen		77.9	Mol %	0.01				0.1	20		
Carbon Dioxide		0.40	Mol %	0.01				0.0	20		
Hydrogen Sulfide		<0.01	Mol %	0.01					20		
Methane		0.01	Mol %	0.01					20		
Ethane		<0.01	Mol %	0.01					20		
Propane		<0.01	Mol %	0.01					20		
Isobutane		<0.01	Mol %	0.01					20		
n-Butane		<0.01	Mol %	0.01					20		
Isopentane		0.02	Mol %	0.01				0.0	20		
n-Pentane		0.03	Mol %	0.01					20		
Hexanes plus		0.67	Mol %	0.01				1.5	20		
Lab ID: LCS082423											
11 Laboratory Control Sample			Run: GCNGA-B_230824A					08/24/23 11:23			
Oxygen		0.59	Mol %	0.01	118	70	130				
Nitrogen		6.02	Mol %	0.01	100	70	130				
Carbon Dioxide		1.00	Mol %	0.01	101	70	130				
Methane		74.5	Mol %	0.01	100	70	130				
Ethane		6.04	Mol %	0.01	101	70	130				
Propane		5.02	Mol %	0.01	102	70	130				
Isobutane		2.00	Mol %	0.01	100	70	130				
n-Butane		1.99	Mol %	0.01	99	70	130				
Isopentane		0.98	Mol %	0.01	98	70	130				
n-Pentane		1.05	Mol %	0.01	105	70	130				
Hexanes plus		0.80	Mol %	0.01	100	70	130				

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



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Work Order Receipt Checklist

Hall Environmental

B23082261

Login completed by: Richard L. Shular

Date Received: 8/23/2023

Reviewed by: ysmith

Received by: lel

Reviewed Date: 8/26/2023

Carrier name: FedEx

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes No Not Present
- Custody seals intact on all sample bottles? Yes No Not Present
- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time?
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes No Not Applicable
- Container/Temp Blank temperature: 24.2°C No Ice
- Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4"). Yes No No VOA vials submitted
- Water - pH acceptable upon receipt? Yes No Not Applicable

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

Form containing client information: Energy Labs -Billings, Energy Laboratories, 1120 South 27th Street, Billings, MT 59107. Includes a table for analytical comments with columns for item, sample ID, client sample ID, bottle type, matrix, collection date, and # containers.

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Form for chain of custody details including: Relinquished By (Cmc), Received By (Aydin Sebame), Date (8/22/2023), Time (8:35 AM), and Report Transmittal Desired options (Hardcopy, Fax, Email, Online).



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

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2308B45 RcptNo: 1

Received By: Juan Rojas 8/22/2023 7:00:00 AM *Juan Rojas*

Completed By: Cheyenne Cason 8/22/2023 8:31:35 AM *Cason*

Reviewed By: *m 8/22/23*

Chain of Custody

1. Is Chain of Custody complete? Yes No Not Present

2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes No NA

4. Were all samples received at a temperature of >0° C to 6.0°C Yes No NA

5. Sample(s) in proper container(s)? Yes No

6. Sufficient sample volume for indicated test(s)? Yes No

7. Are samples (except VOA and ONG) properly preserved? Yes No

8. Was preservative added to bottles? Yes No NA

9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes No NA

10. Were any sample containers received broken? Yes No

11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes No

12. Are matrices correctly identified on Chain of Custody? Yes No

13. Is it clear what analyses were requested? Yes No

14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes No

of preserved bottles checked for pH: _____
(≤2 or >12 unless noted)
Adjusted? _____
Checked by: *SCM 8/22/23*

Special Handling (if applicable)

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

Person Notified: _____ Date: _____
By Whom: _____ Via: eMail Phone Fax In Person
Regarding: _____
Client Instructions: No Client address, or phone on COC - CMC 8/22/23

16. Additional remarks:

17. Cooler Information

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



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

SUB CONTRACTOR: **Energy Labs -Billings** COMPANY: **Energy Laboratories** PHONE: (406) 869-0253 FAX: (406) 252-6069

ADDRESS: 1120 South 27th Street ACCOUNT #:

CITY, STATE, ZIP: Billings, MT 59107 EMAIL:

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	ANALYTICAL COMMENTS
1	2308B45-001B	Skid 1	TEDLAR	Air	8/21/2023 12:30:00 PM	1 Natural Gas Analysis
2	2308B45-002B	Skid 2	TEDLAR	Air	8/21/2023 12:30:00 PM	1 Natural Gas Analysis

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: <i>CMC</i>	Date: 8/22/2023	Time: 8:35 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard RUSH 2nd BD 3rd BD

REPORT TRANSMITTAL DESIRED:
 HARD COPY (extra cost) FAX EMAIL ONLINE

FOR LAB USE ONLY
 Temp of samples _____ °C Attempt to Cool? _____
 Comments: _____

District I
 1625 N. French Dr., Hobbs, NM 88240
 Phone:(575) 393-6161 Fax:(575) 393-0720

District II
 811 S. First St., Artesia, NM 88210
 Phone:(575) 748-1283 Fax:(575) 748-9720

District III
 1000 Rio Brazos Rd., Aztec, NM 87410
 Phone:(505) 334-6178 Fax:(505) 334-6170

District IV
 1220 S. St Francis Dr., Santa Fe, NM 87505
 Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS
 Action 275066

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 275066
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	1. Continue with O & M schedule. 2. Submit next quarterly report by January 15, 2024.	10/27/2023