

**ENSOLUM****REVIEWED**

By NVElez at 7:26 am, Oct 27, 2023

1. Continue with O & M & timeline schedule within recommendations.
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

Scott 4M
San Juan County, New Mexico
Hilcorp Energy Company
NMOCD Incident Number: NCE2003650476

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 Scott 4M natural gas production well (Site), located in Section 17, Township 31 North, and Range 10 West in San Juan County (Figure 1). The SVE system has operated since January 2021 to remediate subsurface soil impacts resulting from approximately 42 barrels (bbls) of natural gas condensate released from an aboveground storage tank. This report summarizes Site activities performed in July, August, and September of 2023.

SVE SYSTEM SPECIFICATIONS

An upgraded SVE system was installed at the Site at the end of September 2022 and consists of 3-phase, 3.4 horsepower Republic Model KVHRC500 blower capable of producing a flow of 221 standard cubic feet per minute (scfm) and a vacuum of 76 inches of water column (IWC). The system is powered by a permanent power drop and is intended to run 24 hours per day. Seven SVE wells are currently present at the Site (SVE01 through SVE07, shown on Figure 2). SVE wells SVE01 through SVE03 are screened at depth intervals ranging from 25 feet to 45 feet below ground surface (bgs) in order to remediate deep soil impacts located at the Site. SVE wells SVE04 and SVE05 are screened at depth intervals ranging from 5 feet to 25 feet bgs in order to remediate shallow soil impacts at the Site. SVE wells SVE06 and SVE07 were installed at the Site in order to complete the pilot test conducted in 2021; however, these wells are not located in impacted areas and are used as observation wells only.

THIRD QUARTER 2023 ACTIVITIES

During the third quarter of 2023, Ensolum and Hilcorp personnel performed bi-weekly operation and maintenance (O&M) visits to ensure 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, SVE wells SVE01 through SVE05 were operated in order to induce flow in impacted soil zones. Between June 22 and September 27, 2023, the SVE system operated for 2,323.3 hours for a runtime efficiency of 100 percent (%). Appendix B presents

photographs of the runtime meter for calculating the third quarter runtime efficiency. Table 1 presents the SVE system operational hours and calculated percent runtime.

A third quarter 2023 air sample was collected on August 23, 2023, from a sample port located between the SVE piping manifold and the SVE blower using a high vacuum air sampler. Prior to collection, the emission sample was field screened with a photoionization detector (PID) for organic vapor monitoring (OVM). The emission sample was 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 this sampling event and historical sampling events, with the full laboratory analytical report included in Appendix C.

Air sample data and measured stack flow rates are used to estimate total mass recovered and total emissions generated by the SVE system (Table 3). Based on these estimates, 7,926 pounds (4.0 tons) of TVPH have been removed by the system to date.

RECOMMENDATIONS

Bi-weekly O&M visits will continue to be performed by Ensolum and/or Hilcorp personnel to ensure the SVE system is 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.

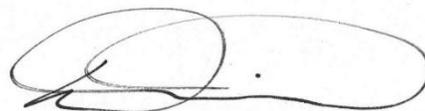
We appreciate the opportunity to provide this report to the NMOCD. If you should have any questions or comments regarding this report, please contact the undersigned.

Sincerely,

Ensolum, LLC



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



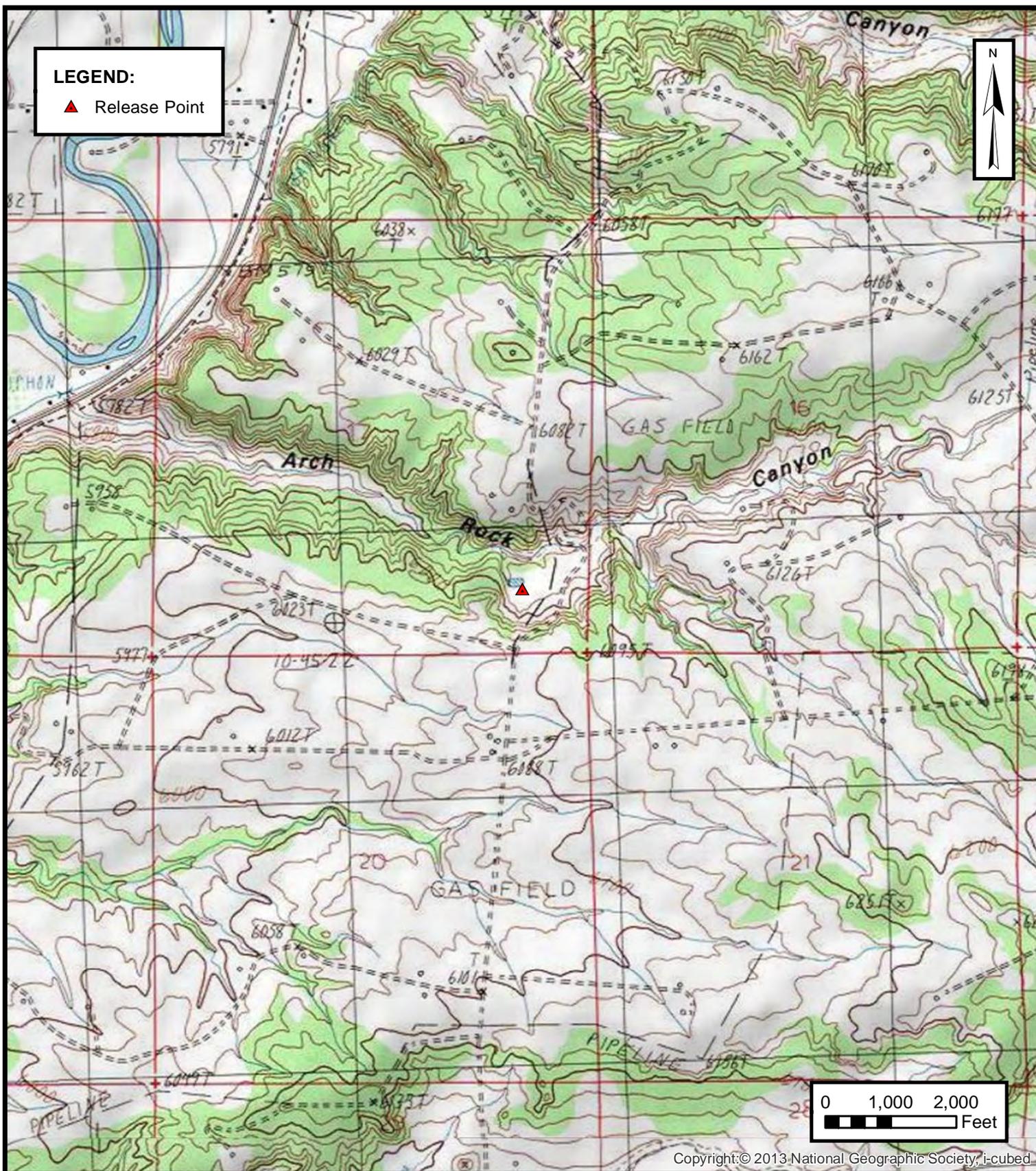
Daniel R. Moir, PG
Senior Managing Geologist
(303) 887-2946
dmoir@ensolum.com

Attachments:

Figure 1	Site Location
Figure 2	SVE System Configuration
Table 1	Soil Vapor Extraction System Runtime Calculations
Table 2	Soil Vapor Extraction System Air Analytical Results
Table 3	Soil Vapor Extraction System Mass Removal and Emissions
Appendix A	Field Notes
Appendix B	Project Photographs
Appendix C	Laboratory Analytical Reports



FIGURES



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ENSOLUM
 Environmental & Hydrogeologic Consultants

SITE LOCATION

HILCORP ENERGY COMPANY
 SCOTT 4M
 SESE SEC 17 T31N R10W, San Juan County, New Mexico
 36.893345° N, 107.899185° W

PROJECT NUMBER: 07A1988016

FIGURE
1



SVE SYSTEM CONFIGURATION

HILCORP ENERGY COMPANY
SCOTT 4M
SESE SEC 17 T31N R10W, San Juan County, New Mexico
36.893345° N, 107.899185° W

PROJECT NUMBER: 07A1988016

FIGURE
2



TABLES



TABLE 1
SOIL VAPOR EXTRACTION SYSTEM RUNTIME CALCULATIONS
Scott 4M
Hilcorp Energy Company
San Juan County, New Mexico

Date	Total Operational Hours	Delta Hours	Days	Percent Runtime
6/22/2023	12,728	--	--	--
9/27/2023	15,052	2,323.3	97.0	100%



TABLE 2
SOIL VAPOR EXTRACTION SYSTEM EMISSIONS ANALYTICAL RESULTS

Scott 4M
Hilcorp Energy Company
San Juan County, New Mexico

Date	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	TVPH/GRO (µg/L)	Oxygen (%)	Carbon Dioxide (%)
2/1/2021	118	85	240	10	64	18,000	--	--
9/7/2021	53	40	280	24	240	15,000	--	--
9/29/2021	316	210	1,800	240	2,200	85,000	--	--
12/2/2021	232	48	320	32	310	50,000	16.60%	1.03%
3/15/2022	402	38	430	63	660	18,000	20.80%	0.473%
6/16/2022	89	1.3	13	1.6	17	750	21.57%	0.15%
9/28/2022	476	9.6	120	19	220	5,900	20.73%	0.90%
12/12/2022	198	2.5	26	4.9	59	2,100	21.65%	0.27%
3/9/2023	274	1.0	19	4.0	50	1,500	21.64%	0.19%
6/22/2023	247	1.2	16	2.4	34	940	21.42%	0.29%
8/23/2023	186	1.0	12	2.0	29	930	21.49%	0.32%

Notes:

GRO: gasoline range organics

µg/L: microgram per liter

PID: photoionization detector

ppm: parts per million

TVPH: total volatile petroleum hydrocarbons

%: percent

--: not sampled



TABLE 3
SOIL VAPOR EXTRACTION SYSTEM MASS REMOVAL AND EMISSIONS
 Scott 4M
 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)
2/1/2021	118	85	240	10	64	18,000
9/7/2021	53	40	280	24	240	15,000
9/29/2021	316	210	1,800	240	2,200	85,000
12/2/2021	232	48	320	32	310	50,000
3/15/2022	402	38	430	63	660	18,000
6/16/2022	89	1.3	13	1.6	17	750
9/28/2022 (1)	476	9.6	120	19	220	5,900
12/12/2022 (2)	198	2.5	26	4.9	59	2,100
3/9/2023	274	1.0	19	4.0	50	1,500
6/22/2023	247	1.2	16	2.4	34	940
8/23/2023	186	1.0	12	2.0	29	930
Average	236	40	298	37	353	18,011

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)
2/1/2021	22	1,980	1,980	0.0070	0.020	0.00082	0.0053	1.5
9/7/2021	22	2,841,168	2,839,188	0.0051	0.021	0.0014	0.013	1.4
9/29/2021	10	2,979,528	138,360	0.0047	0.039	0.0049	0.046	1.9
12/2/2021	3.5	3,106,158	126,630	0.0017	0.014	0.0018	0.016	0.88
3/15/2022	8.0	3,519,486	413,328	0.0013	0.011	0.0014	0.015	1.0
6/16/2022	14	4,412,322	892,836	0.0010	0.012	0.0017	0.018	0.49
9/9/2022 (1)	12	5,218,146	805,824	0.00024	0.0030	0.00046	0.0053	0.15
12/10/2022 (2)	46	10,939,074	5,720,928	0.0010	0.013	0.0021	0.024	0.69
3/9/2023	31	14,846,376	3,907,302	0.00020	0.0026	0.00052	0.0063	0.21
6/22/2023 (3)	36	20,301,024	5,454,648	0.00015	0.0024	0.00043	0.0057	0.16
8/23/2023 (4)	38	23,648,084	3,347,060	0.00015	0.0020	0.00031	0.0044	0.13
Average				0.0021	0.013	0.0014	0.014	0.77

Flow and Laboratory Analysis

Date	Total SVE System Hours	Delta Hours	Benzene (pounds)	Toluene (pounds)	Ethylbenzene (pounds)	Total Xylenes (pounds)	TVPH (pounds)	TVPH (tons)
2/1/2021	1.5	1.5	0.010	0.030	0.0012	0.0079	2.2	0.0011
9/7/2021	2,152	2,151	11	46	3.0	27	2,920	1.5
9/29/2021	2,383	231	1.1	9.0	1.1	11	431	0.22
12/2/2021	2,986	603	1.0	8.4	1.1	9.9	533	0.27
3/15/2022	3,847	861	1.1	9.7	1.2	12	876	0.44
6/16/2022	4,910	1,063	1.1	12.3	1.8	19	522	0.26
9/9/2022 (1)	6,029	1,119	0.3	3.3	0.5	6.0	167	0.08
12/10/2022 (2)	8,102	2,073	2.2	26	4.3	50	1,426	0.71
3/9/2023	10,203	2,101	0.43	5.5	1.1	13	438	0.22
6/22/2023	12,728	2,525	0.37	6.0	1.1	14	415	0.21
8/23/2023	14,209	1,481	0.23	2.9	0.5	7	195	0.10
Total Mass Recovery to Date			19	129	16	168	7,926	4.0

Notes:

- (1): SVE system hours and flow rates were collected during operation and maintenance visit on 9/9/2022
- (2): PID measurement, SVE system hours, and flow rates were collected during operation and maintenance visit on 12/10/2022
- (3): SVE system rotameter was malfunctioning during site visit on 6/22/2023. Flow rate was estimated based on the average flow recorded during site visits between 4/13/2023 and 6/7/2023.
- (4): SVE system rotameter was oscillating during third quarter 2023 site visits. Flow rate was estimated based on average historical flow for the current system

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



APPENDIX A

Field Notes



SCOTT 4M SVE SYSTEM
BIWEEKLY O&M FORM

DATE: 7-10
TIME ONSITE: _____

O&M PERSONNEL: B Sinclair
TIME OFFSITE: _____

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: _____ KO TANK HIGH LEVEL _____

SVE SYSTEM	READING	TIME	TIMER SETTINGS	
Blower Hours (take photo)	13157.9	19.54	Month	Timer Setting
Voltage In			January	8 AM to 7 PM
Amperage In			February	8 AM to 7 PM
Voltage Out			March	8 AM to 8 PM
Amperage Out			April	8 AM to 9 PM
KiloWatts			May	7 AM to 9 PM
KiloWatt-Hours			June	6 AM to 9 PM
Solar Controller Status			July	6 AM to 9 PM
Post-Drum K/O Vacuum (IWC)	-59		August	7 AM to 9 PM
Inlet Rotameter Flow (scfm)	*		September	8 AM to 9 PM
Inlet PID	194.2		October	8 AM to 8 PM
Exhaust PID	211.8		November	9 AM to 8 PM
Solar Panel Angle			December	8 AM to 6 PM
K/O Tank Drum Level				
K/O Liquid Drained (gallons)				
Timer Setting				

SVE SYSTEM - QUARTERLY SAMPLING

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

Change in Well Operation: _____

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE01		378.1	
SVE02		76.4	
SVE03		129.2	
SVE04		101.9	
SVE05		168.6	
SVE06 (OBSERVATION WELL)	XXXXXXXXXX		
SVE07 (OBSERVATION WELL)	XXXXXXXXXX		

COMMENTS/OTHER MAINTENANCE:
*rotameter still oscillating

SAUNDERS
www.saunders-usa.com

SCOTT 4M SVE SYSTEM
BIWEEKLY O&M FORM

DATE: 7-27
TIME ONSITE: _____

O&M PERSONNEL: B Sinclair
TIME OFFSITE: _____

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: _____ KO TANK HIGH LEVEL _____

SVE SYSTEM		READING	TIME	TIMER SETTINGS	
Blower Hours (take photo)		<u>13562.6</u>	<u>1907</u>	Month	Timer Setting
Voltage In				January	8 AM to 7 PM
Amperage In				February	8 AM to 7 PM
Voltage Out				March	8 AM to 8 PM
Amperage Out				April	8 AM to 9 PM
KiloWatts				May	7 AM to 9 PM
KiloWatt-Hours				June	6 AM to 9 PM
Solar Controller Status				July	6 AM to 9 PM
Post Pre K/O Vacuum (IWC)		<u>-58</u>		August	7 AM to 9 PM
Inlet Rotameter Flow (scfm)		<u>X</u>		September	8 AM to 9 PM
Inlet PID		<u>248.7</u>		October	8 AM to 8 PM
Exhaust PID		<u>196.2</u>		November	9 AM to 8 PM
Solar Panel Angle				December	8 AM to 6 PM
K/O Tank Drum Level					
K/O Liquid Drained (gallons)					
Timer Setting					

SVE SYSTEM - QUARTERLY SAMPLING

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

Change in Well Operation: _____

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE01		<u>314.9</u>	
SVE02		<u>84.5</u>	
SVE03		<u>119.6</u>	
SVE04		<u>25.2</u>	
SVE05		<u>171.8</u>	
SVE06 (OBSERVATION WELL)	_____		
SVE07 (OBSERVATION WELL)	_____		

COMMENTS/OTHER MAINTENANCE:

* Rotameter still oscillating

SCOTT 4M SVE SYSTEM BIWEEKLY O&M FORM

DATE: 9-8
TIME ONSITE: _____

O&M PERSONNEL: B Sinclair
TIME OFFSITE: _____

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: _____ KO TANK HIGH LEVEL

SVE SYSTEM		READING	TIME	TIMER SETTINGS	
				Month	Timer Setting
Blower Hours (take photo)		14596.3	1546	January	8 AM to 7 PM
Voltage In				February	8 AM to 7 PM
Amperage In				March	8 AM to 8 PM
Voltage Out				April	8 AM to 9 PM
Amperage Out				May	7 AM to 9 PM
KiloWatts				June	6 AM to 9 PM
KiloWatt-Hours				July	6 AM to 9 PM
Solar Controller Status				August	7 AM to 9 PM
Pre Post K/O Vacuum (IWC)		-56		September	8 AM to 9 PM
Inlet Rotameter Flow (scfm)		42		October	8 AM to 8 PM
Inlet PID		167.4		November	9 AM to 8 PM
Exhaust PID		160.4		December	8 AM to 6 PM
Solar Panel Angle					
K/O Tank Drum Level					
K/O Liquid Drained (gallons)					
Timer Setting					

SVE SYSTEM - QUARTERLY SAMPLING

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

Change in Well Operation: _____

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE01		336.6	
SVE02		69.7	
SVE03		97	
SVE04		69.8	
SVE05		144.5	
SVE06 (OBSERVATION WELL)	 		
SVE07 (OBSERVATION WELL)	 		

COMMENTS/OTHER MAINTENANCE: _____

SCOTT 4M SVE SYSTEM BIWEEKLY O&M FORM

DATE: 9-27
TIME ONSITE: _____

O&M PERSONNEL: B Sinclair
TIME OFFSITE: _____

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: KO TANK HIGH LEVEL

SVE SYSTEM			TIMER SETTINGS	
	READING	TIME	Month	Timer Setting
Blower Hours (take photo)	15051.7	1508	January	8 AM to 7 PM
Voltage In			February	8 AM to 7 PM
Amperage In			March	8 AM to 8 PM
Voltage Out			April	8 AM to 9 PM
Amperage Out			May	7 AM to 9 PM
KiloWatts			June	6 AM to 9 PM
KiloWatt-Hours			July	6 AM to 9 PM
Solar Controller Status			August	7 AM to 9 PM
Pre K/O Vacuum (IWC)	-55		September	8 AM to 9 PM
Inlet Rotameter Flow (scfm)	48		October	8 AM to 8 PM
Inlet PID	132		November	9 AM to 8 PM
Exhaust PID	131.1		December	8 AM to 6 PM
Solar Panel Angle				
K/O Tank Drum Level				
K/O Liquid Drained (gallons)				
Timer Setting				

SVE SYSTEM - QUARTERLY SAMPLING

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

Change in Well Operation: _____

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE01		304.9	
SVE02		60.9	
SVE03		62.9	
SVE04		74.1	
SVE05		106.3	
SVE06 (OBSERVATION WELL)			
SVE07 (OBSERVATION WELL)			

COMMENTS/OTHER MAINTENANCE: _____



APPENDIX B

Project Photographs

PROJECT PHOTOGRAPHS
Scott 4M
San Juan County, New Mexico
Hilcorp Energy Company

<p>Photograph 1</p> <p>Runtime meter taken on June 22, 2023 at 5:23 PM Hours = 12,728.4</p>		
<p>Photograph 2</p> <p>Runtime meter taken on September 27, 2023 at 3:08 PM Hours = 15,051.7</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 06, 2023

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

RE: Scott 4M

OrderNo.: 2308E09

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 1 sample(s) on 8/25/2023 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 **2308E09**

Date Reported: **9/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: SVE-1

Project: Scott 4M

Collection Date: 8/23/2023 12:30:00 PM

Lab ID: 2308E09-001

Matrix: AIR

Received Date: 8/25/2023 7:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: CCM
Benzene	1.0	0.50		µg/L	5	8/30/2023 4:38:00 PM
Toluene	12	0.50		µg/L	5	8/30/2023 4:38:00 PM
Ethylbenzene	2.0	0.50		µg/L	5	8/30/2023 4:38:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,2,4-Trimethylbenzene	3.9	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,3,5-Trimethylbenzene	3.8	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
Naphthalene	ND	1.0		µg/L	5	8/30/2023 4:38:00 PM
1-Methylnaphthalene	ND	2.0		µg/L	5	8/30/2023 4:38:00 PM
2-Methylnaphthalene	ND	2.0		µg/L	5	8/30/2023 4:38:00 PM
Acetone	ND	5.0		µg/L	5	8/30/2023 4:38:00 PM
Bromobenzene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
Bromodichloromethane	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
Bromoform	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
Bromomethane	ND	1.0		µg/L	5	8/30/2023 4:38:00 PM
2-Butanone	ND	5.0		µg/L	5	8/30/2023 4:38:00 PM
Carbon disulfide	ND	5.0		µg/L	5	8/30/2023 4:38:00 PM
Carbon tetrachloride	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
Chlorobenzene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
Chloroethane	ND	1.0		µg/L	5	8/30/2023 4:38:00 PM
Chloroform	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
Chloromethane	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
2-Chlorotoluene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
4-Chlorotoluene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
cis-1,2-DCE	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,2-Dibromo-3-chloropropane	ND	1.0		µg/L	5	8/30/2023 4:38:00 PM
Dibromochloromethane	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
Dibromomethane	ND	1.0		µg/L	5	8/30/2023 4:38:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
Dichlorodifluoromethane	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,1-Dichloroethane	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,3-Dichloropropane	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
2,2-Dichloropropane	ND	0.50		µg/L	5	8/30/2023 4:38:00 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 **2308E09**

Date Reported: **9/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: SVE-1

Project: Scott 4M

Collection Date: 8/23/2023 12:30:00 PM

Lab ID: 2308E09-001

Matrix: AIR

Received Date: 8/25/2023 7:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: CCM
1,1-Dichloropropene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
Hexachlorobutadiene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
2-Hexanone	ND	5.0		µg/L	5	8/30/2023 4:38:00 PM
Isopropylbenzene	0.82	0.50		µg/L	5	8/30/2023 4:38:00 PM
4-Isopropyltoluene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
4-Methyl-2-pentanone	ND	5.0		µg/L	5	8/30/2023 4:38:00 PM
Methylene chloride	ND	1.5		µg/L	5	8/30/2023 4:38:00 PM
n-Butylbenzene	ND	1.5		µg/L	5	8/30/2023 4:38:00 PM
n-Propylbenzene	0.83	0.50		µg/L	5	8/30/2023 4:38:00 PM
sec-Butylbenzene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
Styrene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
tert-Butylbenzene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
Tetrachloroethene (PCE)	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
trans-1,2-DCE	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
Trichloroethene (TCE)	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
Trichlorofluoromethane	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
1,2,3-Trichloropropane	ND	1.0		µg/L	5	8/30/2023 4:38:00 PM
Vinyl chloride	ND	0.50		µg/L	5	8/30/2023 4:38:00 PM
Xylenes, Total	29	0.75		µg/L	5	8/30/2023 4:38:00 PM
Surr: Dibromofluoromethane	104	70-130		%Rec	5	8/30/2023 4:38:00 PM
Surr: 1,2-Dichloroethane-d4	99.9	70-130		%Rec	5	8/30/2023 4:38:00 PM
Surr: Toluene-d8	126	70-130		%Rec	5	8/30/2023 4:38:00 PM
Surr: 4-Bromofluorobenzene	130	70-130	S	%Rec	5	8/30/2023 4:38:00 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	930	25		µg/L	5	8/30/2023 4:38:00 PM
Surr: BFB	108	70-130		%Rec	5	8/30/2023 4:38:00 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 06, 2023

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

Work Order: B23082666 Quote ID: B15626

Project Name: Not Indicated

Energy Laboratories Inc Billings MT received the following 1 sample for Hall Environmental on 8/29/2023 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B23082666-001	2308E09-001B, SVE-1	08/23/23 12:30	08/29/23	Air	Air Correction Calculations Appearance and Comments Calculated Properties GPM @ std cond./1000 cu. ft., moist. Free Natural Gas Analysis Specific Gravity @ 60/60

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: B23082666-001
Client Sample ID: 2308E09-001B, SVE-1

Report Date: 09/06/23
Collection Date: 08/23/23 12:30
Date Received: 08/29/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
GAS CHROMATOGRAPHY ANALYSIS REPORT							
Oxygen	21.49	Mol %		0.01		GPA 2261-95	08/30/23 10:50 / jrj
Nitrogen	77.83	Mol %		0.01		GPA 2261-95	08/30/23 10:50 / jrj
Carbon Dioxide	0.32	Mol %		0.01		GPA 2261-95	08/30/23 10:50 / jrj
Hydrogen Sulfide	<0.01	Mol %		0.01		GPA 2261-95	08/30/23 10:50 / jrj
Methane	0.31	Mol %		0.01		GPA 2261-95	08/30/23 10:50 / jrj
Ethane	0.01	Mol %		0.01		GPA 2261-95	08/30/23 10:50 / jrj
Propane	<0.01	Mol %		0.01		GPA 2261-95	08/30/23 10:50 / jrj
Isobutane	<0.01	Mol %		0.01		GPA 2261-95	08/30/23 10:50 / jrj
n-Butane	<0.01	Mol %		0.01		GPA 2261-95	08/30/23 10:50 / jrj
Isopentane	<0.01	Mol %		0.01		GPA 2261-95	08/30/23 10:50 / jrj
n-Pentane	<0.01	Mol %		0.01		GPA 2261-95	08/30/23 10:50 / jrj
Hexanes plus	0.04	Mol %		0.01		GPA 2261-95	08/30/23 10:50 / jrj
Propane	< 0.001	gpm		0.001		GPA 2261-95	08/30/23 10:50 / jrj
Isobutane	< 0.001	gpm		0.001		GPA 2261-95	08/30/23 10:50 / jrj
n-Butane	< 0.001	gpm		0.001		GPA 2261-95	08/30/23 10:50 / jrj
Isopentane	< 0.001	gpm		0.001		GPA 2261-95	08/30/23 10:50 / jrj
n-Pentane	< 0.001	gpm		0.001		GPA 2261-95	08/30/23 10:50 / jrj
Hexanes plus	0.017	gpm		0.001		GPA 2261-95	08/30/23 10:50 / jrj
GPM Total	0.017	gpm		0.001		GPA 2261-95	08/30/23 10:50 / jrj
GPM Pentanes plus	0.017	gpm		0.001		GPA 2261-95	08/30/23 10:50 / jrj

CALCULATED PROPERTIES

Gross BTU per cu ft @ Std Cond. (HHV)	5			1		GPA 2261-95	08/30/23 10:50 / jrj
Net BTU per cu ft @ std cond. (LHV)	5			1		GPA 2261-95	08/30/23 10:50 / jrj
Pseudo-critical Pressure, psia	546			1		GPA 2261-95	08/30/23 10:50 / jrj
Pseudo-critical Temperature, deg R	240			1		GPA 2261-95	08/30/23 10:50 / jrj
Specific Gravity @ 60/60F	0.998			0.001		D3588-81	08/30/23 10:50 / jrj
Air, %	98.17			0.01		GPA 2261-95	08/30/23 10:50 / jrj

- The analysis was not corrected for air.

COMMENTS

- 08/30/23 10:50 / 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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QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Hall Environmental

Work Order: B23082666

Report Date: 09/06/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: GPA 2261-95										
Batch: R408000										
Lab ID: B23082662-001ADUP	12 Sample Duplicate									
Oxygen		21.4	Mol %	0.01				0.1	20	
Nitrogen		77.4	Mol %	0.01				0.1	20	
Carbon Dioxide		0.54	Mol %	0.01				1.8	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		<0.01	Mol %	0.01					20	
n-Pentane		<0.01	Mol %	0.01					20	
Hexanes plus		0.66	Mol %	0.01				11	20	
Lab ID: LCS083023										
	11 Laboratory Control Sample									
Oxygen		0.62	Mol %	0.01	124	70	130			
Nitrogen		6.05	Mol %	0.01	101	70	130			
Carbon Dioxide		1.00	Mol %	0.01	101	70	130			
Methane		74.2	Mol %	0.01	99	70	130			
Ethane		6.02	Mol %	0.01	100	70	130			
Propane		5.37	Mol %	0.01	109	70	130			
Isobutane		1.99	Mol %	0.01	99	70	130			
n-Butane		2.01	Mol %	0.01	100	70	130			
Isopentane		1.00	Mol %	0.01	100	70	130			
n-Pentane		1.00	Mol %	0.01	100	70	130			
Hexanes plus		0.76	Mol %	0.01	95	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



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Gillette, WY 307.686.7175 • Helena, MT 406.442.0711

Work Order Receipt Checklist

Hall Environmental

B23082666

Login completed by: Lyndsi E. LeProwse

Date Received: 8/29/2023

Reviewed by: gmccartney

Received by: dnh

Reviewed Date: 9/3/2023

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

SUB CONTRACTOR	Energy Labs -Billings	COMPANY	Energy Laboratories	PHONE:	(406) 869-6253	FAX:	(406) 252-6069
ADDRESS	1120 South 27th Street			ACCOUNT #			
CITY, STATE, ZIP	Billings, MT 59107						

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2308E09-001B	SVE-1	TEDLAR	Air	8/23/2023 12:30:00 PM	1	Natural Gas Analysis. 02+C02 B23082666

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:	Date:	Time:	8/25/2023	8:47 AM	Received By:	Date:	Time:	8/25/2023	8:47 AM
Relinquished By:	Date:	Time:			Received By:	Date:	Time:		
Relinquished By:	Date:	Time:			Received By:	Date:	Time:		
TAT:	Standard				RUSH				
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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: 2308E09 RcptNo: 1

Received By: Juan Rojas 8/25/2023 7:10:00 AM

Completed By: Tracy Casarrubias 8/25/2023 8:46:58 AM

Reviewed By: JA 8-25-23

Juan Rojas signature

Chain of Custody

- 1. Is Chain of Custody complete? Yes [] No [x] Not Present []
2. How was the sample delivered? Courier

Log In

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

of preserved bottles checked for pH: (<2 or >12 unless noted) Adjusted? Checked by: JTC 8/25/23

Special Handling (if applicable)

- 15. Was client notified of all discrepancies with this order? Yes [] No [] NA [x]

Person Notified: Date:
By Whom: Via: [] eMail [] Phone [] Fax [] In Person
Regarding:
Client Instructions: Mailing address and phone number are missing on COC- TMC 8/25/23

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, N/A, Good, Yes, [], [], []

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 275085

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 275085
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

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