

Accepted - 10/27/2023

NV



ENSOLUM

July 12, 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: Second 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 *Second 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 April, May, and June 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.

SECOND QUARTER 2023 ACTIVITIES

During the second 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 second quarter of 2023, SVE wells SVE01 through SVE05 were operated in order to induce flow in impacted soil zones. Between March 9 and June 22, 2023, the SVE system operated for 2,525.7 hours for a runtime efficiency of 100 percent (%). Appendix B presents

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

A second quarter 2023 air sample was collected on June 22, 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, 7,731 pounds (3.9 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.

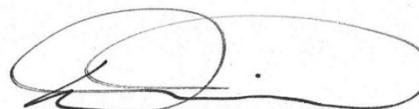
We appreciate the opportunity to provide this report to the NMOCD. If you should have any questions or comments regarding this report, please contact the undersigned.

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:

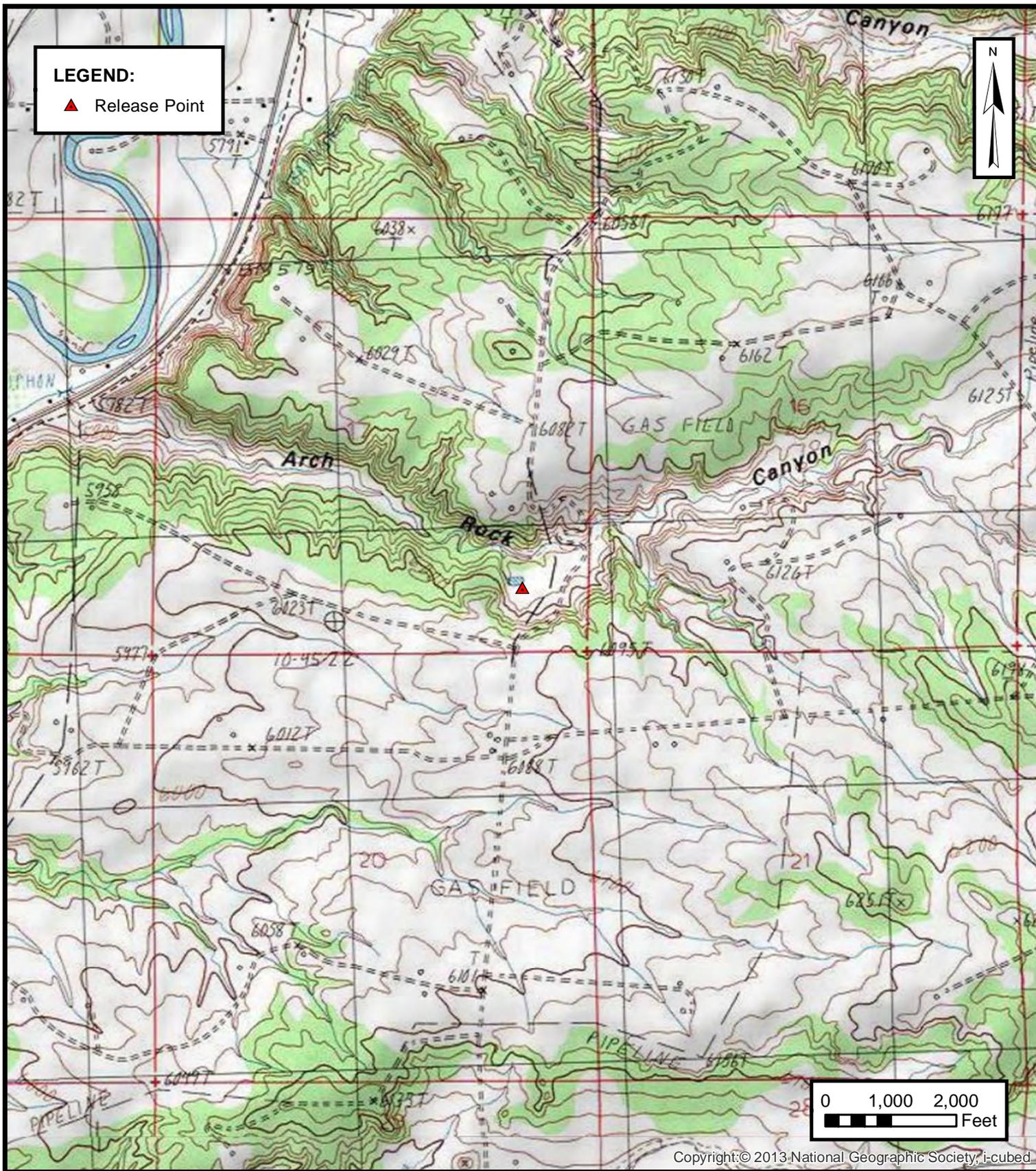
- Figure 1 Site Location
- Figure 2 SVE System Configuration

- 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



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
3/9/2023	10,203	--	--	--
6/22/2023	12,728	2,525.7	105.0	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%

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
Average	240	44	326	40	385	19,719

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	0.00236	0.00043	0.00566	0.16426
Average				0.0022	0.014	0.0016	0.015	0.83

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
Total Mass Recovery to Date			19	126	15	162	7,731	3.9

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.

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: 4-13
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)	11044.8	13.53	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
Pre K/O Vacuum (IWC)	-60		August	7 AM to 9 PM
Inlet Rotameter Flow (scfm)	3.5		September	8 AM to 9 PM
Inlet PID	162.2		October	8 AM to 8 PM
Exhaust PID	245.9		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		451	
SVE02		52.9	
SVE03		268.5	
SVE04		86.4	
SVE05		186	
SVE06 (OBSERVATION WELL)	 		
SVE07 (OBSERVATION WELL)	 		

COMMENTS/OTHER MAINTENANCE:

SCOTT 4M SVE SYSTEM BIWEEKLY O&M FORM

DATE: 4-25
 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)	11332.4		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 K/O Vacuum (IWC)	-59		August	7 AM to 9 PM
Inlet Rotameter Flow (scfm)	36		September	8 AM to 9 PM
Inlet PID	351.5		October	8 AM to 8 PM
Exhaust PID	205.8		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				

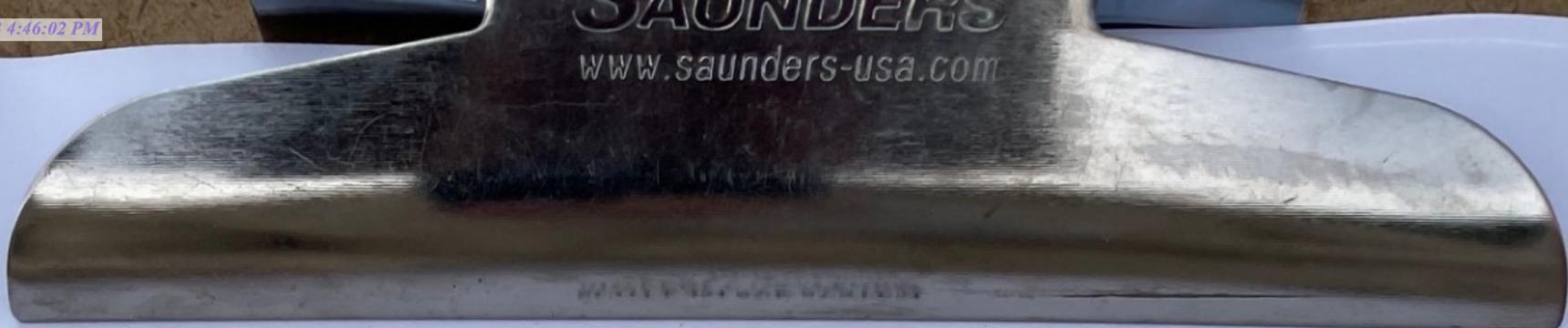
SVE SYSTEM - QUARTERLY SAMPLING

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		530.6	
SVE02		71.6	
SVE03		136.5	
SVE04		154.5	
SVE05		263.7	
SVE06 (OBSERVATION WELL)	 		
SVE07 (OBSERVATION WELL)	 		

COMMENTS/OTHER MAINTENANCE:



**SCOTT 4M SVE SYSTEM
BIWEEKLY O&M FORM**

DATE: 5-18
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)		11885.5	1432	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
Pre ^{Post} K/O Vacuum (IWC)		-56		August	7 AM to 9 PM
Inlet Rotameter Flow (scfm)		38		September	8 AM to 9 PM
Inlet PID		207.9		October	8 AM to 8 PM
Exhaust PID		200.9		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		445.8	
SVE02		63.2	
SVE03		128.9	
SVE04		97.3	
SVE05		169.8	
SVE06 (OBSERVATION WELL)	XXXXXXXXXX		
SVE07 (OBSERVATION WELL)	XXXXXXXXXX		

COMMENTS/OTHER MAINTENANCE:

SCOTT 4M SVE SYSTEM BIWEEKLY O&M FORM

DATE: 6-22
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)		12728.4	1723	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
<i>Post</i> Pre K/O Vacuum (IWC)		-58		August	7 AM to 9 PM
Inlet Rotameter Flow (scfm)		0-100		September	8 AM to 9 PM
Inlet PID		246.6		October	8 AM to 8 PM
Exhaust PID		200.9		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		399.4	
SVE02		70.5	
SVE03		131.7	
SVE04		126.7	
SVE05		201.2	
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 March 9, 2023 at 10:46 AM Hours = 10,202.7</p>	
<p>Photograph 2</p> <p>Runtime meter taken on June 22, 2023 at 5:23 PM Hours = 12,728.4</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

July 11, 2023

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

RE: Scott 4M

OrderNo.: 2306C74

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/24/2023 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued June 29, 2023.

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. 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. All samples are reported as received unless otherwise indicated.

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 in a cursive style.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order **2306C74**

Date Reported: **7/11/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: SVE-1

Project: Scott 4M

Collection Date: 6/22/2023 6:00:00 PM

Lab ID: 2306C74-001

Matrix: AIR

Received Date: 6/24/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	940	50		µg/L	10	6/26/2023 2:14:10 PM
Surr: BFB	344	15-412		%Rec	10	6/26/2023 2:14:10 PM
EPA METHOD 8260B: VOLATILES						Analyst: JR
Benzene	1.2	0.50		µg/L	5	7/5/2023 12:45:20 PM
Toluene	16	0.50		µg/L	5	7/5/2023 12:45:20 PM
Ethylbenzene	2.4	0.50		µg/L	5	7/5/2023 12:45:20 PM
Methyl tert-butyl ether (MTBE)	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,2,4-Trimethylbenzene	4.5	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,3,5-Trimethylbenzene	5.0	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
Naphthalene	ND	1.0		µg/L	5	7/5/2023 12:45:20 PM
1-Methylnaphthalene	ND	2.0		µg/L	5	7/5/2023 12:45:20 PM
2-Methylnaphthalene	ND	2.0		µg/L	5	7/5/2023 12:45:20 PM
Acetone	ND	5.0		µg/L	5	7/5/2023 12:45:20 PM
Bromobenzene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
Bromodichloromethane	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
Bromoform	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
Bromomethane	ND	1.0		µg/L	5	7/5/2023 12:45:20 PM
2-Butanone	ND	5.0		µg/L	5	7/5/2023 12:45:20 PM
Carbon disulfide	ND	5.0		µg/L	5	7/5/2023 12:45:20 PM
Carbon tetrachloride	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
Chlorobenzene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
Chloroethane	ND	1.0		µg/L	5	7/5/2023 12:45:20 PM
Chloroform	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
Chloromethane	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
2-Chlorotoluene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
4-Chlorotoluene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
cis-1,2-DCE	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,2-Dibromo-3-chloropropane	ND	1.0		µg/L	5	7/5/2023 12:45:20 PM
Dibromochloromethane	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
Dibromomethane	ND	1.0		µg/L	5	7/5/2023 12:45:20 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
Dichlorodifluoromethane	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,1-Dichloroethane	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,1-Dichloroethene	ND	0.50		µg/L	5	7/5/2023 12:45:20 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 **2306C74**

Date Reported: **7/11/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: SVE-1

Project: Scott 4M

Collection Date: 6/22/2023 6:00:00 PM

Lab ID: 2306C74-001

Matrix: AIR

Received Date: 6/24/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: JR
1,2-Dichloropropane	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,3-Dichloropropane	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
2,2-Dichloropropane	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,1-Dichloropropene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
Hexachlorobutadiene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
2-Hexanone	ND	5.0		µg/L	5	7/5/2023 12:45:20 PM
Isopropylbenzene	0.92	0.50		µg/L	5	7/5/2023 12:45:20 PM
4-Isopropyltoluene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
4-Methyl-2-pentanone	ND	5.0		µg/L	5	7/5/2023 12:45:20 PM
Methylene chloride	ND	1.5		µg/L	5	7/5/2023 12:45:20 PM
n-Butylbenzene	ND	1.5		µg/L	5	7/5/2023 12:45:20 PM
n-Propylbenzene	1.1	0.50		µg/L	5	7/5/2023 12:45:20 PM
sec-Butylbenzene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
Styrene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
tert-Butylbenzene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
Tetrachloroethene (PCE)	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
trans-1,2-DCE	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
Trichloroethene (TCE)	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
Trichlorofluoromethane	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
1,2,3-Trichloropropane	ND	1.0		µg/L	5	7/5/2023 12:45:20 PM
Vinyl chloride	ND	0.50		µg/L	5	7/5/2023 12:45:20 PM
Xylenes, Total	34	0.75		µg/L	5	7/5/2023 12:45:20 PM
Surr: Dibromofluoromethane	106	70-130		%Rec	5	7/5/2023 12:45:20 PM
Surr: 1,2-Dichloroethane-d4	108	70-130		%Rec	5	7/5/2023 12:45:20 PM
Surr: Toluene-d8	108	70-130		%Rec	5	7/5/2023 12:45:20 PM
Surr: 4-Bromofluorobenzene	133	70-130	S	%Rec	5	7/5/2023 12:45:20 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

June 28, 2023

Hall Environmental

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

Work Order: B23062213 Quote ID: B15626

Project Name: Not Indicated

Energy Laboratories Inc Billings MT received the following 1 sample for Hall Environmental on 6/27/2023 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B23062213-001	2306C74-001B, SVE-1	06/22/23 18:00	06/27/23	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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Billings, MT 406.252.6325 • Casper, WY 307.235.0515
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: B23062213-001
Client Sample ID: 2306C74-001B, SVE-1

Report Date: 06/28/23
Collection Date: 06/22/23 18:00
Date Received: 06/27/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
GAS CHROMATOGRAPHY ANALYSIS REPORT							
Oxygen	21.42	Mol %		0.01		GPA 2261-95	06/28/23 08:04 / ikc
Nitrogen	77.90	Mol %		0.01		GPA 2261-95	06/28/23 08:04 / ikc
Carbon Dioxide	0.29	Mol %		0.01		GPA 2261-95	06/28/23 08:04 / ikc
Hydrogen Sulfide	<0.01	Mol %		0.01		GPA 2261-95	06/28/23 08:04 / ikc
Methane	0.39	Mol %		0.01		GPA 2261-95	06/28/23 08:04 / ikc
Ethane	<0.01	Mol %		0.01		GPA 2261-95	06/28/23 08:04 / ikc
Propane	<0.01	Mol %		0.01		GPA 2261-95	06/28/23 08:04 / ikc
Isobutane	<0.01	Mol %		0.01		GPA 2261-95	06/28/23 08:04 / ikc
n-Butane	<0.01	Mol %		0.01		GPA 2261-95	06/28/23 08:04 / ikc
Isopentane	<0.01	Mol %		0.01		GPA 2261-95	06/28/23 08:04 / ikc
n-Pentane	<0.01	Mol %		0.01		GPA 2261-95	06/28/23 08:04 / ikc
Hexanes plus	<0.01	Mol %		0.01		GPA 2261-95	06/28/23 08:04 / ikc
Propane	< 0.001	gpm		0.001		GPA 2261-95	06/28/23 08:04 / ikc
Isobutane	< 0.001	gpm		0.001		GPA 2261-95	06/28/23 08:04 / ikc
n-Butane	< 0.001	gpm		0.001		GPA 2261-95	06/28/23 08:04 / ikc
Isopentane	< 0.001	gpm		0.001		GPA 2261-95	06/28/23 08:04 / ikc
n-Pentane	< 0.001	gpm		0.001		GPA 2261-95	06/28/23 08:04 / ikc
Hexanes plus	< 0.001	gpm		0.001		GPA 2261-95	06/28/23 08:04 / ikc
GPM Total	< 0.001	gpm		0.001		GPA 2261-95	06/28/23 08:04 / ikc
GPM Pentanes plus	< 0.001	gpm		0.001		GPA 2261-95	06/28/23 08:04 / ikc

CALCULATED PROPERTIES

Gross BTU per cu ft @ Std Cond. (HHV)	4			1		GPA 2261-95	06/28/23 08:04 / ikc
Net BTU per cu ft @ std cond. (LHV)	4			1		GPA 2261-95	06/28/23 08:04 / ikc
Pseudo-critical Pressure, psia	546			1		GPA 2261-95	06/28/23 08:04 / ikc
Pseudo-critical Temperature, deg R	240			1		GPA 2261-95	06/28/23 08:04 / ikc
Specific Gravity @ 60/60F	0.997			0.001		D3588-81	06/28/23 08:04 / ikc
Air, %	97.87			0.01		GPA 2261-95	06/28/23 08:04 / ikc

- The analysis was not corrected for air.

COMMENTS

-
- 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: B23062213

Report Date: 06/28/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: GPA 2261-95										
Batch: R404488										
Lab ID: LCS062723	11	Laboratory Control Sample			Run: GCNGA-B_230627A			06/27/23 11:57		
Oxygen		0.60	Mol %	0.01	120	70	130			
Nitrogen		5.92	Mol %	0.01	99	70	130			
Carbon Dioxide		0.99	Mol %	0.01	100	70	130			
Methane		74.4	Mol %	0.01	100	70	130			
Ethane		6.00	Mol %	0.01	100	70	130			
Propane		5.34	Mol %	0.01	108	70	130			
Isobutane		1.98	Mol %	0.01	99	70	130			
n-Butane		1.99	Mol %	0.01	99	70	130			
Isopentane		1.00	Mol %	0.01	100	70	130			
n-Pentane		1.00	Mol %	0.01	100	70	130			
Hexanes plus		0.78	Mol %	0.01	98	70	130			
Lab ID: B23062211-001ADUP	12	Sample Duplicate			Run: GCNGA-B_230627A			06/27/23 14:25		
Oxygen		17.0	Mol %	0.01				0.2	20	
Nitrogen		79.0	Mol %	0.01				0.0	20	
Carbon Dioxide		3.64	Mol %	0.01				0.3	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		0.39	Mol %	0.01				2.6	20	
Lab ID: LCS062823	11	Laboratory Control Sample			Run: GCNGA-B_230627A			06/28/23 09:16		
Oxygen		0.60	Mol %	0.01	120	70	130			
Nitrogen		5.94	Mol %	0.01	99	70	130			
Carbon Dioxide		0.99	Mol %	0.01	100	70	130			
Methane		74.4	Mol %	0.01	100	70	130			
Ethane		5.95	Mol %	0.01	99	70	130			
Propane		5.52	Mol %	0.01	112	70	130			
Isobutane		1.97	Mol %	0.01	98	70	130			
n-Butane		1.97	Mol %	0.01	98	70	130			
Isopentane		0.96	Mol %	0.01	96	70	130			
n-Pentane		0.97	Mol %	0.01	97	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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Work Order Receipt Checklist

Hall Environmental

B23062213

Login completed by: Yvonna E. Smith

Date Received: 6/27/2023

Reviewed by: darcy

Received by: lel

Reviewed Date: 6/28/2023

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: 17.8°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 #:		EMAIL:	
CITY, STATE, ZIP: Billings, MT 59107		# CONTAINERS: 1		ANALYTICAL COMMENTS: B3002213	
ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE
1	2306C74-001B SVE-1		TEDLAR	Air	6/22/2023 6:00:00 PM
<p>1 **3 DAY TAT** Natural Gas Analysis, O2, CO2 <i>Next Day call 6/26/23</i></p>					

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: 6/24/2023	Time: 8:52 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By: <i>Angelic Robane</i>	Date: 6/27/23	Time: 09:125
TAT:	Standard <input type="checkbox"/>	RUSH <input checked="" type="checkbox"/>	Next BD <input type="checkbox"/>	2nd BD <input type="checkbox"/>	3rd BD <input type="checkbox"/>
REPORT TRANSMITTAL DESIRED:			FOR LAB USE ONLY		
<input type="checkbox"/> HARD COPY (extra cost)			<input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE		
Temp of samples _____ °C			Attempt to Cool? _____		
Comments:					



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: 2306C74 RcptNo: 1

Received By: Tracy Casarrubias 6/24/2023 7:45:00 AM

Completed By: Tracy Casarrubias 6/24/2023 8:38:46 AM

Reviewed By: Jm 6/26/23

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 [] No [] NA [x]
4. Were all samples received at a temperature of >0° C to 6.0°C Yes [] No [] NA [x]
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: TMC 6/24/23

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 6/24/23

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 240054

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 240054
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Accepted for the record. See app ID 275085 for most updated status.	10/27/2023