



January 13, 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: Fourth Quarter 2022 – SVE System Update**

San Juan 28-6 #31  
Rio Arriba County, New Mexico  
Hilcorp Energy Company  
NMOCD Incident Number: NVF1816655680

To Whom it May Concern:

Ensolum, LLC (Ensolum), on behalf of Hilcorp Energy Company (Hilcorp), presents this *Fourth Quarter 2022 – SVE System Update* report summarizing the soil vapor extraction (SVE) system performance at the San Juan 28-6 #31 natural gas production well (Site) located in Unit M, Section 28, Township 28 North, Range 6 West in Rio Arriba County, New Mexico (Figure 1). Specifically, this report summarizes Site activities performed in October, November, and December of 2022 to the New Mexico Oil Conservation Division (NMOCD).

**SVE SYSTEM SPECIFICATIONS**

The current SVE system consists of a three-phase, 3 horsepower (HP) Ametek Rotron Model EN656 regenerative blower capable of producing 100 standard cubic feet per minute (scfm) of flow and 50 inches of water column (IWC). In total, 19 SVE wells are installed at the site at varying depth intervals in order to induce air flow through the impacted zones in the subsurface. SVE well locations are presented on Figure 2.

**FOURTH QUARTER 2022 ACTIVITIES**

During the fourth quarter of 2022, 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. Additionally, the power for the SVE system was converted from generator to a permanent power drop on April 20, 2022. Specifically, the voltage capacity of the power drop at the Site was increased in order to run the SVE system and negate the need for a generator to power the system. This was determined to be necessary based on reliability issues with the generators used at the Site.

Between September 19 and December 6, 2022, the SVE system operated for 1,864 hours for a runtime efficiency of 99.6 percent (%). Table 1 presents the SVE system operational hours and percent runtime. Appendix B presents photographs of the runtime meter for calculating the fourth quarter runtime efficiency. During the fourth quarter 2022, all zones were operating with 15 of the 20 wells operational. SVE wells SVE-6, SVE-7S, SVE-7D, SVE-9, and SVE-15 have been turned off based on the low photoionization detector (PID) readings collected during previous sampling events and in order to achieve higher flow and vacuum rates in the other operating wells.

An air sample for the fourth quarter 2022 was collected on December 6, 2022. The fourth quarter 2022 emissions sample was collected from the sample port located between the SVE piping manifold and the SVE blower using a high vacuum air sampler. Prior to collection, the emissions sample was field screened with a PID for organic vapor monitoring (OVM). The emissions sample was collected directly into two 1-Liter Tedlar® bags and submitted to Hall Environmental Analysis Laboratory (Hall), located in Albuquerque, New Mexico, for analysis of total volatile petroleum hydrocarbons (TVPH, also referred to 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 Processor Association (GPA) Method 2261. Table 2 presents a summary of analytical data collected during this and previous 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 (Table 3). Based on these estimates, a total of 15,004 pounds (7.5 tons) of TVPH have been removed by the system to date.

## RECOMMENDATIONS

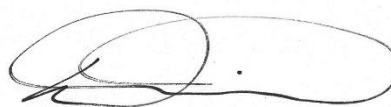
Bi-weekly O&M visits will continue to be performed by Ensolum and/or Hilcorp personnel to ensure that the SVE system is operating within normal working ranges (i.e., temperature, pressure, and vacuum). Deviations from regular operations will be noted on field logs and included in the following quarterly report. Hilcorp will continue operating the SVE 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 NMOCD. If you should have any questions or comments regarding this report, please contact the undersigned.

Sincerely,  
**Ensolum, LLC**



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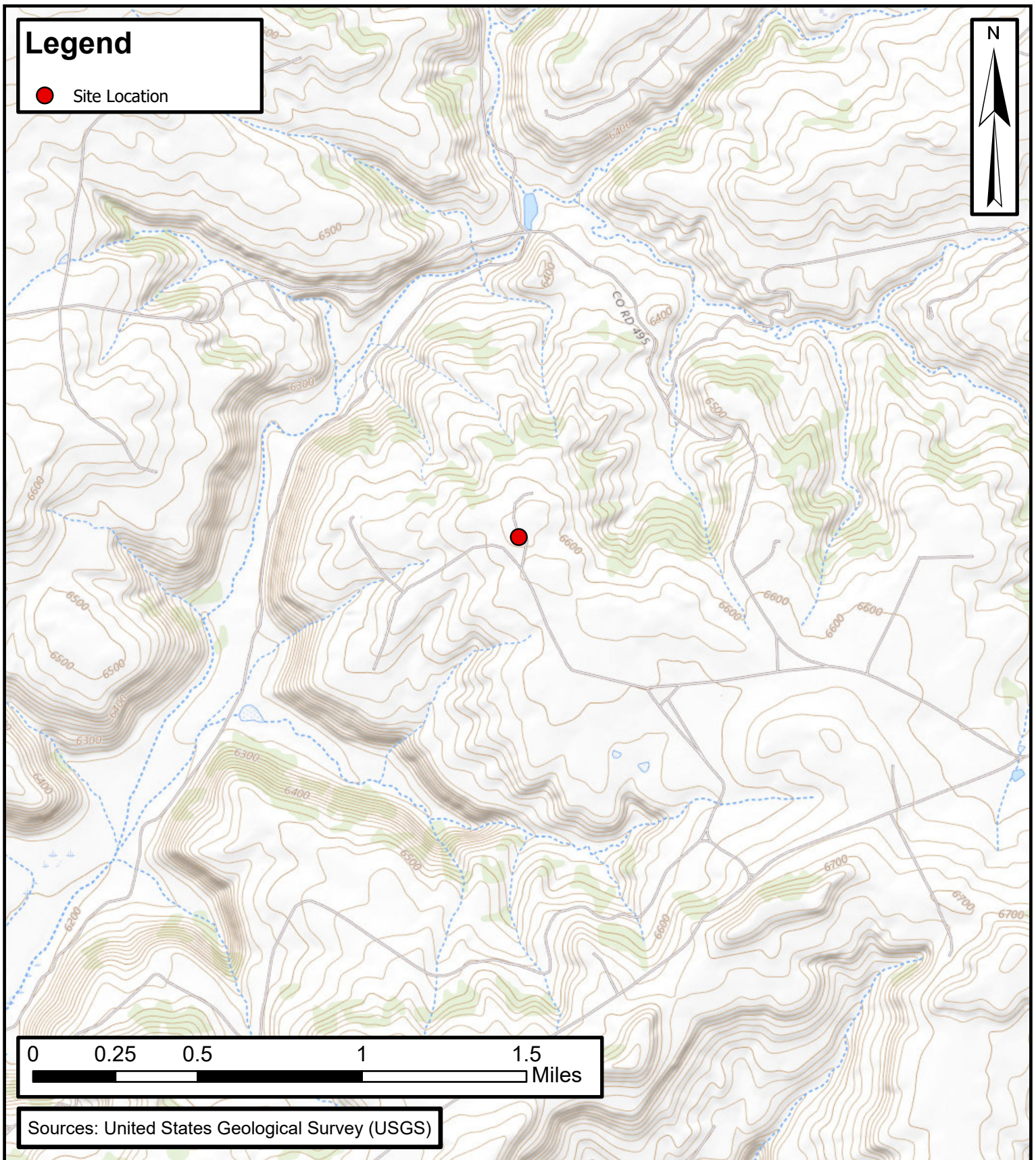
## Attachments:

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



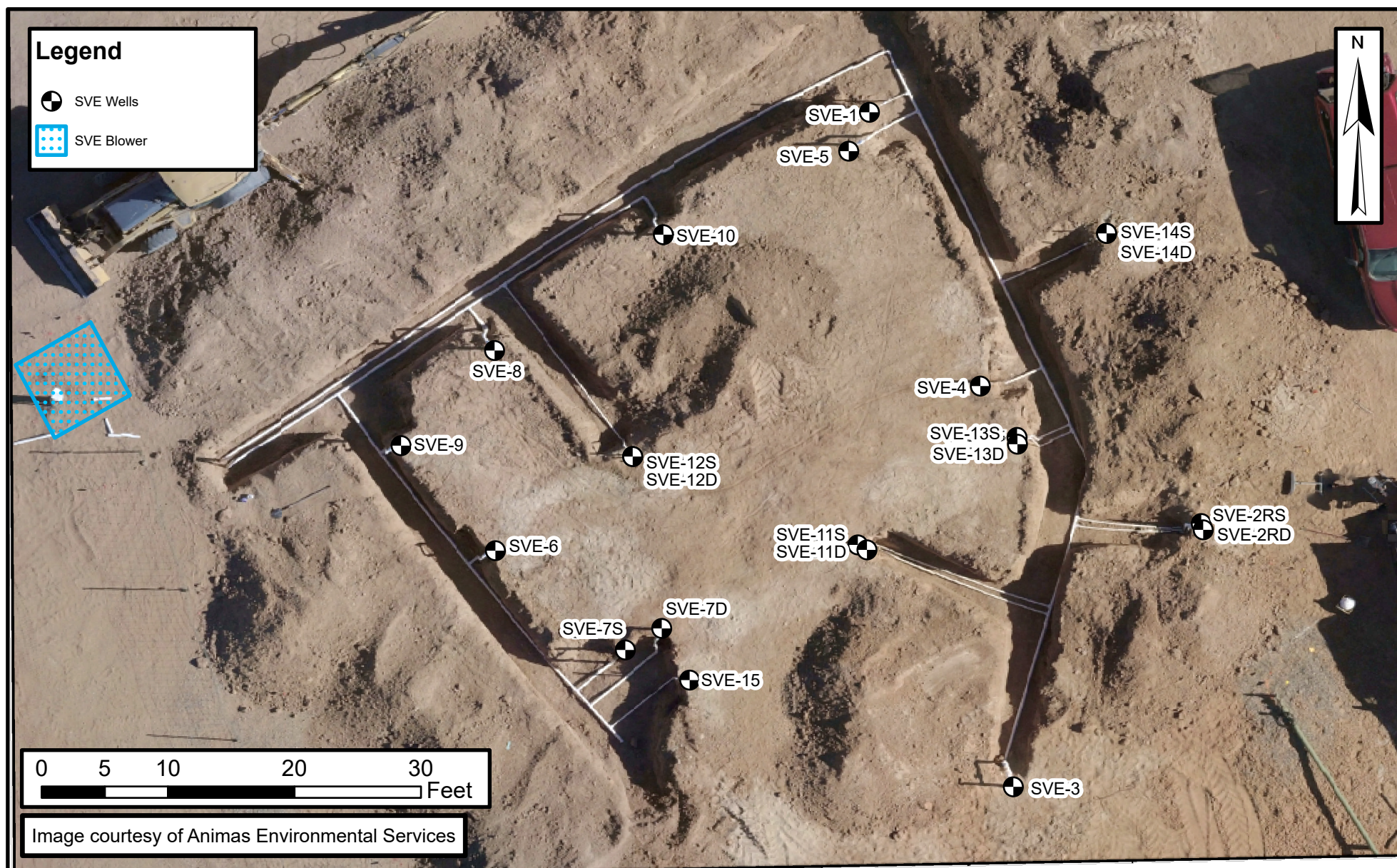


**Site Location Map**

San Juan 28-6 #31  
Hilcorp Energy Company  
36.6277°N, -107.4781°W  
Rio Arriba County, NM

**FIGURE**  
**1**





## SVE System Configuration

San Juan 28-6 #31  
Hilcorp Energy Company  
36.6277° N, -107.4781° W  
Rio Arriba County, NM

FIGURE  
**2**



TABLES



**TABLE 1**  
**SOIL VAPOR EXTRACTION SYSTEM RUNTIME CALCULATIONS**  
Hilcorp Energy Company - San Juan 28-6 #31  
Rio Arriba County, New Mexico

Ensolum Project No. 07A1988031

Date	SVE Runtime Hours (1)	Delta Hours	Days	% Runtime
9/19/2022	5,403	--	--	--
12/6/2022	7,267	1,864	78	99.6%





TABLE 2  
SOIL VAPOR EXTRACTION SYSTEM EMISSIONS ANALYTICAL RESULTS  
Hilcorp Energy Company - San Juan 28-6 #31  
Rio Arriba County, New Mexico  
Ensolum Project No. 07A1988031

Date	Sample Identification	Operating SVE Zones	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	TVPH/GRO (µg/L)	Oxygen (%)	Carbon Dioxide (%)
9/20/2021	Pilot Test	All Zones	1,287	720	1,600	15	320	250,000	17.87%	2.05%
9/28/2021	Influent A+B	All Zones	736	240	720	27	350	53,000	---	---
10/21/2021	Influent A+B	All Zones	615	60	170	6.7	74	13,000	---	---
11/5/2021	Leg A Deep	Leg A Deep	1,177	620	1,700	29	390	72,000	---	---
12/16/2021	Leg A Deep	Leg A Deep	1,398	470	950	11	190	96,000	21.00%	0.83%
12/16/2021	Leg A Shallow	Leg A Shallow	298	10	32	1.1	19	2,300	22.00%	0.12%
1/6/2022	Leg A Shallow	Leg A Shallow	283	12	34	1.2	15	2,500	22.13%	0.13%
1/6/2022	Leg B-1	Leg B-1	158	2.3	10	<0.50	6.7	1,100	21.97%	0.10%
3/24/2022	Influent All Wells	All Zones	604	48	92	1.2	19	6,300	22.10%	0.18%
6/13/2022	Influent All Wells	All Zones	414	30	89	<2.0	29	4,600	21.57%	0.25%
9/30/2022	Influent 9-30	All Zones	410	19	65	2.1	26	3,700	21.57%	0.28%
12/6/2022	SVE-1	All Zones	284	85	220	<5.0	58	22,000	21.69%	0.23%

Notes:

- GRO: gasoline range hydrocarbons
- µg/L: microgram per liter
- PID: photoionization detector
- ppm: parts per million
- TVPH: total volatile petroleum hydrocarbons
- %: percent
- : not sampled/analyzed
- <0.037: gray indicates result less than the stated laboratory reporting limit (RL)



TABLE 3  
SOIL VAPOR EXTRACTION SYSTEM MASS REMOVAL AND EMISSIONS  
Hilcorp Energy Company - San Juan 28-6 #31  
Rio Arriba County, New Mexico  
  
Ensolum Project No. 07A1988031

Flow and Laboratory Analysis

Date	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	TVPH (µg/L)
9/28/2021	736	240	720	27	350	53,000
10/21/2021	615	60	170	6.7	74	13,000
11/5/2021	1,177	620	1,700	29	390	72,000
12/16/2021	298	10	32	1.1	19	2,300
1/6/2022	158	2.3	10	0.50	6.7	1,100
3/24/2022	604	48	92	1.2	19	6,300
6/13/2022	414	30	89	2.0	29	4,600
9/30/2022 (1)	410	19	65	2.1	26	3,700
12/6/2022	284	85	220	5.0	58	22,000
Average	522	124	344	8.3	108	19,778

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)
9/28/2021	60	17,280	17,280	0.054	0.16	0.0061	0.079	12
10/21/2021	50	1,648,680	1,631,400	0.028	0.083	0.0032	0.040	6.2
11/5/2021	8	1,864,392	215,712	0.010	0.028	0.00053	0.0069	1.3
12/16/2021	12	2,496,696	632,304	0.014	0.039	0.00068	0.0092	1.7
1/6/2022	32	3,352,056	855,360	0.00072	0.0025	0.000096	0.0015	0.20
3/24/2022	12	4,610,688	1,258,632	0.0011	0.0023	0.000038	0.00058	0.17
6/13/2022	61	11,659,482	7,048,794	0.0089	0.021	0.00037	0.0055	1.2
9/19/2022 (1)	52	18,819,882	7,160,400	0.0048	0.015	0.00040	0.0053	0.81
12/6/2022	55	24,971,082	6,151,200	0.011	0.029	0.00073	0.0086	2.6
Average				0.015	0.042	0.0013	0.017	2.9

Flow and Laboratory Analysis

Date	Total Operational Hours (2)	Delta Hours	Benzene (pounds)	Toluene (pounds)	Ethylbenzene (pounds)	Total Xylenes (pounds)	TVPH (pounds)	TVPH (tons)
9/28/2021	5	5	0.26	0.78	0.029	0.4	57	0.029
10/21/2021	549	544	15	45	1.7	21.6	3,356	1.7
11/9/2021 (3)	998	449	4.6	13	0.24	3.1	571	0.29
12/16/2021	1,876	878	12	34	0.59	8.1	1,464	0.73
1/6/2022	2,322	446	0.32	1.1	0.043	0.7	91	0.045
3/24/2022	4,070	1,748	2.0	4.0	0.067	1.0	290	0.15
6/13/2022	5,996	1,926	17	40	0.70	11	2,395	1.2
9/19/2022 (1)	8,291	2,295	11	34	0.9	12	1,852	0.93
12/6/2022	10,155	1,864	20	55	1.4	16	4,927	2.5
Total Mass Recovery to Date			83	227	5.7	74	15,004	7.5

Notes:

(1): an emissions air sample was recollected on 9/30/2022 due to air-collection errors during the 9/19/2022 site visit. Flow rates collected during the 9/19/2022 visit are used for emissions calculations

(2): total operational hours are a summation of runtime hours collected from several generators and blower runtime meters used between 9/28/2021 and 9/19/2022

(3): runtime hours collected during a site visit on 11/9/2021

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



## APPENDIX A

### Field Notes



28-6 #31 SVE SYSTEM  
BIWEEKLY O&M FORMDATE: 10-7-22  
TIME ONSITE: \_\_\_\_\_O&M PERSONNEL: B Sinclair  
TIME OFFSITE: \_\_\_\_\_

## SVE SYSTEM - MONTHLY O&amp;M

SVE ALARMS: \_\_\_\_\_ KO TANK HIGH LEVEL

## GENERATOR

Hours (take photo) \_\_\_\_\_

Hertz \_\_\_\_\_

Voltage \_\_\_\_\_

Battery Voltage \_\_\_\_\_

Oil Pressure \_\_\_\_\_

Oil Temp \_\_\_\_\_

## SVE SYSTEM

Blower Hours (take photo) \_\_\_\_\_

Pre K/O Vacuum (IWC) \_\_\_\_\_

Post K/O Vacuum (IWC) \_\_\_\_\_

Pitot Tube 3" Flow (cfm) \_\_\_\_\_

Leg A Rotameter (scfm) \_\_\_\_\_

Leg B Rotameter (scfm) \_\_\_\_\_

Inlet PID \_\_\_\_\_

Exhaust Post GAC PID \_\_\_\_\_

Liquid in K/O Sight Tube (Y/N) \_\_\_\_\_

K/O Liquid Drained (gallons) \_\_\_\_\_

READING

TIME

5833.7

1320

-35

-32

60

27

27

443

948

## HOUSEKEEPING Check

Generator Lubrication \_\_\_\_\_

Inline Filter Clean \_\_\_\_\_

Clean Wye Strainer \_\_\_\_\_

## 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: \_\_\_\_\_

## LEG A DEEP

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-2RD		1786	
SVE-3		789	
SVE-5		1444	
SVE-11D		1944	
SVE-13D		2072	

## LEG A SHALLOW

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-1		205	
SVE-2RS		1435	
SVE-4		1645	
SVE-11S		1303	
SVE-13S		1147	
SVE-14S		2606	

## LEG B-1

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-7D			
SVE-10		348	
SVE-12S		1288	
SVE-15			

## LEG B-2

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7S			
SVE-8		21.8	
SVE-9			

COMMENTS/OTHER MAINTENANCE:



28-6 #31 SVE SYSTEM  
BIWEEKLY O&M FORMDATE: 10-18  
TIME ONSITE: \_\_\_\_\_O&M PERSONNEL: B Sinclair  
TIME OFFSITE: \_\_\_\_\_

## SVE SYSTEM - MONTHLY O&amp;M

SVE ALARMS: \_\_\_\_\_  
KO TANK HIGH LEVEL

## GENERATOR

Hours (take photo) \_\_\_\_\_  
Hertz \_\_\_\_\_  
Voltage \_\_\_\_\_  
Battery Voltage \_\_\_\_\_  
Oil Pressure \_\_\_\_\_  
Oil Temp \_\_\_\_\_

## SVE SYSTEM

Blower Hours (take photo) \_\_\_\_\_  
Pre K/O Vacuum (IWC) \_\_\_\_\_  
Post K/O Vacuum (IWC) \_\_\_\_\_  
Pitot Tube 3" Flow (cfm) \_\_\_\_\_  
Leg A Rotameter (scfm) \_\_\_\_\_  
Leg B Rotameter (scfm) \_\_\_\_\_  
Inlet PID \_\_\_\_\_  
Exhaust Post GAC PID \_\_\_\_\_  
Liquid in K/O Sight Tube (Y/N) \_\_\_\_\_  
K/O Liquid Drained (gallons) \_\_\_\_\_

## READING

## TIME

6094.6  
-38  
-32  
60  
27  
25  
431  
923

## HOUSEKEEPING Check

Generator Lubrication \_\_\_\_\_  
Inline Filter Clean \_\_\_\_\_  
Clean Wye Strainer \_\_\_\_\_

## 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: \_\_\_\_\_

## LEG A DEEP

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-2RD		<u>1783</u>	
SVE-3		<u>535</u>	
SVE-5		<u>1486</u>	
SVE-11D		<u>1891</u>	
SVE-13D		<u>1905</u>	

## LEG A SHALLOW

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-1		<u>168</u>	
SVE-2RS		<u>1214</u>	
SVE-4		<u>1503</u>	
SVE-11S		<u>1268</u>	
SVE-13S		<u>1152</u>	
SVE-14S		<u>1654</u>	

## LEG B-1

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-7D			
SVE-10		<u>369</u>	
SVE-12S		<u>1417</u>	
SVE-15			

## LEG B-2

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7S			
SVE-8			
SVE-9			

COMMENTS/OTHER MAINTENANCE:  
\_\_\_\_\_  
\_\_\_\_\_



**28-6 #31 SVE SYSTEM  
BIWEEKLY O&M FORM**DATE: 11-2-22  
TIME ONSITE: \_\_\_\_\_O&M PERSONNEL: B Sinclair  
TIME OFFSITE: \_\_\_\_\_**SVE SYSTEM - MONTHLY O&M**

SVE ALARMS: \_\_\_\_\_ KO TANK HIGH LEVEL

**GENERATOR**Hours (take photo) \_\_\_\_\_  
Hertz \_\_\_\_\_  
Voltage \_\_\_\_\_  
Battery Voltage \_\_\_\_\_  
Oil Pressure \_\_\_\_\_  
Oil Temp \_\_\_\_\_**SVE SYSTEM**

	READING	TIME
Blower Hours (take photo)	6456.4	1203
Pre K/O Vacuum (IWC)	-38	
Post K/O Vacuum (IWC)	-32	
Pitot Tube 3" Flow (cfm)	60	
Leg A Rotameter (scfm)	28	
Leg B Rotameter (scfm)	25	
Inlet PID	519	
Exhaust Post GAC PID	831	
Liquid in K/O Sight Tube (Y/N)		
K/O Liquid Drained (gallons)		

**HOUSEKEEPING** CheckGenerator Lubrication \_\_\_\_\_  
Inline Filter Clean \_\_\_\_\_  
Clean Wye Strainer \_\_\_\_\_**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: \_\_\_\_\_

**LEG A DEEP**

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-2RD		1957	
SVE-3		818	
SVE-5		1467	
SVE-11D		2064	
SVE-13D		2007	

**LEG A SHALLOW**

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-1		273	
SVE-2RS		1944	
SVE-4		1094	
SVE-11S		1706	
SVE-13S		1176	
SVE-14S		1944	

**LEG B-1**

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-7D			
SVE-10		354	
SVE-12S		1060	
SVE-15			

**LEG B-2**

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7S			
SVE-8		54.7	
SVE-9			

COMMENTS/OTHER MAINTENANCE:



28-6 #31 SVE SYSTEM  
BIWEEKLY O&M FORMDATE: 11-15-22  
TIME ONSITE: \_\_\_\_\_O&M PERSONNEL: B Sinclair  
TIME OFFSITE: \_\_\_\_\_

## SVE SYSTEM - MONTHLY O&amp;M

SVE ALARMS: \_\_\_\_\_ KO TANK HIGH LEVEL

**GENERATOR**  
Hours (take photo) \_\_\_\_\_  
Hertz \_\_\_\_\_  
Voltage \_\_\_\_\_  
Battery Voltage \_\_\_\_\_  
Oil Pressure \_\_\_\_\_  
Oil Temp \_\_\_\_\_

SVE SYSTEM	READING	TIME
Blower Hours (take photo)	6771.4	19016
Pre K/O Vacuum (IWC)	-36	
Post K/O Vacuum (IWC)	-30	
Pitot Tube 3" Flow (cfm)	60	
Leg A Rotameter (scfm)	34	
Leg B Rotameter (scfm)	24	
Inlet PID	269.6	
Exhaust Post GAC PID	362.4	
Liquid in K/O Sight Tube (Y/N)		
K/O Liquid Drained (gallons)		

**HOUSEKEEPING** CheckGenerator Lubrication \_\_\_\_\_  
Inline Filter Clean \_\_\_\_\_  
Clean Wye Strainer \_\_\_\_\_

## 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: \_\_\_\_\_

## LEG A DEEP

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	FLOW (CFM)	ADJUSTMENTS
SVE-2RD		1148		
SVE-3		575.4		
SVE-5		1051		
SVE-11D		1302		
SVE-13D		1278		

## LEG A SHALLOW

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	FLOW (CFM)	ADJUSTMENTS
SVE-1		278.7		
SVE-2RS		276.7		
SVE-4		382.3		
SVE-11S		632.6		
SVE-13S		942.9		
SVE-14S		1594		

## LEG B-1

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	FLOW (CFM)	ADJUSTMENTS
SVE-7D		223.3		
SVE-10		1087		
SVE-12S				
SVE-15				

## LEG B-2

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	FLOW (CFM)	ADJUSTMENTS
SVE-6				
SVE-7S		13.94		
SVE-8				
SVE-9				

COMMENTS/OTHER MAINTENANCE:

When I arrived this morning the system was off (cause unknown).  
No alarm from syghet.



28-6 #31 SVE SYSTEM  
BIWEEKLY O&M FORM

DATE: 12-6  
TIME ONSITE: \_\_\_\_\_

O&M PERSONNEL: B Sinclair  
TIME OFFSITE: \_\_\_\_\_

SVE SYSTEM - MONTHLY O&M			
SVE ALARMS:		<u>KO TANK HIGH LEVEL</u>	
<b>GENERATOR</b>	<b>SVE SYSTEM</b>	<b>READING</b>	<b>TIME</b>
Hours (take photo) _____	Blower Hours (take photo) _____	<u>7267.1</u>	<u>1147</u>
Hertz _____	Pre K/O Vacuum (IWC) _____	<u>-33</u>	
Voltage _____	Post K/O Vacuum (IWC) _____	<u>-27</u>	
Battery Voltage _____	Pitot Tube 3" Flow (cfm) _____	<u>55</u>	
Oil Pressure _____	Leg A Rotameter (scfm) _____	<u>31</u>	
Oil Temp _____	Leg B Rotameter (scfm) _____	<u>22</u>	
	Inlet PID _____	<u>284.2</u>	
	Exhaust Post GAC PID _____	<u>396.7</u>	
	Liquid in K/O Sight Tube (Y/N) _____	<u>N</u>	
	K/O Liquid Drained (gallons) _____		
<b>HOUSEKEEPING</b> Check			
Generator Lubrication	_____		
Inline Filter Clean	_____		
Clean Wye Strainer	_____		

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: \_\_\_\_\_

### LEG A DEEP

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-2RD		<u>1018</u>	
SVE-3		<u>833</u>	
SVE-5		<u>844.3</u>	
SVE-11D		<u>1049</u>	
SVE-13D		<u>1233</u>	

### LEG A SHALLOW

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-1		<u>234.7</u>	
SVE-2RS		<u>317.1</u>	
SVE-4		<u>244.3</u>	
SVE-11S		<u>891</u>	
SVE-13S		<u>1085</u>	
SVE-14S		<u>1223</u>	

### LEG B-1

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-7D			
SVE-10		<u>174.3</u>	
SVE-12S		<u>358.4</u>	
SVE-15			

### LEG B-2

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7S			
SVE-8		<u>40.83</u>	
SVE-9			

COMMENTS/OTHER MAINTENANCE:



28-6 #31 SVE SYSTEM  
BIWEEKLY O&M FORM

DATE: 12-20  
TIME ONSITE:

O&M PERSONNEL: B Sinclair  
TIME OFFSITE:

SVE SYSTEM - MONTHLY O&M			
SVE ALARMS:		KO TANK HIGH LEVEL	
<b>GENERATOR</b>		<b>SVE SYSTEM</b>	
Hours (take photo)		Blower Hours (take photo)	7602.3
Hertz		Pre K/O Vacuum (IWC)	-36
Voltage		Post K/O Vacuum (IWC)	-29
Battery Voltage		Pitot Tube 3" Flow (cfm)	60
Oil Pressure		Leg A Rotameter (scfm)	33
Oil Temp		Leg B Rotameter (scfm)	24
		Inlet PID	179.4
		Exhaust Post GAC PID	399.7
		Liquid in K/O Sight Tube (Y/N)	N
		K/O Liquird Drained (gallons)	
<b>HOUSEKEEPING</b>	Check		
Generator Lubrication			
Inline Filter Clean			
Clean Wye Strainer			

SVE SYSTEM - QUARTERLY SAMPLING	
<b>SAMPLE ID:</b>	<b>SAMPLE TIME:</b>
<b>Analytes:</b>	TVPH (8015), VOCs (8260), Fixed Gas (CO/CO2/O2)
<b>OPERATING WELLS</b>	

ZONES	
<b>Change in Well Operation:</b>	

LEG A DEEP			
LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-2RD		1038	
SVE-3		510.6	
SVE-5		1048	
SVE-11D		1283	
SVE-13D		1274	

LEG A SHALLOW			
LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-1		262.2	
SVE-2RS		740.1	
SVE-4		601.3	
SVE-11S		933.8	
SVE-13S		1225	
SVE-14S		1440	

LEG B-1			
LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-7D		131.7	
SVE-10		689.5	
SVE-12S			
SVE-15			

LEG B-2			
LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7S		10.42	
SVE-8			
SVE-9			

COMMENTS/OTHER MAINTENANCE:


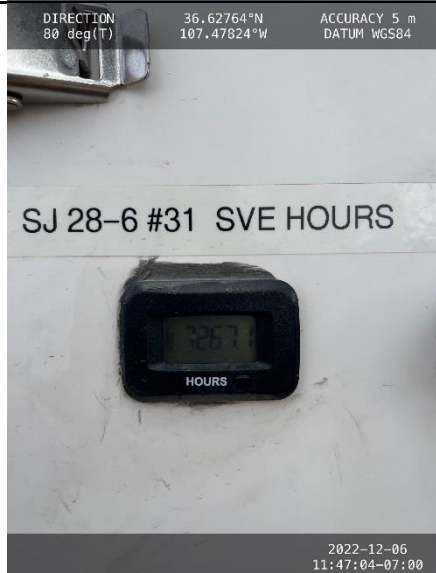




## APPENDIX B

### Project Photographs

**PROJECT PHOTOGRAPHS**  
San Juan 28-6 #31  
San Juan County, New Mexico  
Hilcorp Energy Company

<b>Photograph 1</b>  Runtime meter taken on September 19, 2022 at 2:54 PM Hours = 5403.3	
<b>Photograph 2</b>  Runtime meter taken on December 6, 2022 at 11:47 AM Hours = 7267.1	



## 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](http://www.hallenvironmental.com)

December 19, 2022

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

RE: SJ 28 6 Unit 31

OrderNo.: 2212335

Dear Samantha Grabert:

Hall Environmental Analysis Laboratory received 1 sample(s) on 12/7/2022 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](http://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 horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109



## Analytical Report

Lab Order 2212335

Date Reported: 12/19/2022

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: SVE-1

Project: SJ 28 6 Unit 31

Collection Date: 12/6/2022 12:30:00 PM

Lab ID: 2212335-001

Matrix: AIR

Received Date: 12/7/2022 7:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260B: VOLATILES</b>						Analyst: CCM
Benzene	85	5.0		µg/L	50	12/14/2022 4:17:00 PM
Toluene	220	5.0		µg/L	50	12/14/2022 4:17:00 PM
Ethylbenzene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,2,4-Trimethylbenzene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,3,5-Trimethylbenzene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,2-Dichloroethane (EDC)	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,2-Dibromoethane (EDB)	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Naphthalene	ND	10		µg/L	50	12/14/2022 4:17:00 PM
1-Methylnaphthalene	ND	20		µg/L	50	12/14/2022 4:17:00 PM
2-Methylnaphthalene	ND	20		µg/L	50	12/14/2022 4:17:00 PM
Acetone	ND	50		µg/L	50	12/14/2022 4:17:00 PM
Bromobenzene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Bromodichloromethane	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Bromoform	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Bromomethane	ND	10		µg/L	50	12/14/2022 4:17:00 PM
2-Butanone	ND	50		µg/L	50	12/14/2022 4:17:00 PM
Carbon disulfide	ND	50		µg/L	50	12/14/2022 4:17:00 PM
Carbon tetrachloride	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Chlorobenzene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Chloroethane	ND	10		µg/L	50	12/14/2022 4:17:00 PM
Chloroform	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Chloromethane	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
2-Chlorotoluene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
4-Chlorotoluene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
cis-1,2-DCE	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
cis-1,3-Dichloropropene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,2-Dibromo-3-chloropropane	ND	10		µg/L	50	12/14/2022 4:17:00 PM
Dibromochloromethane	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Dibromomethane	ND	10		µg/L	50	12/14/2022 4:17:00 PM
1,2-Dichlorobenzene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,3-Dichlorobenzene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,4-Dichlorobenzene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Dichlorodifluoromethane	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,1-Dichloroethane	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,1-Dichloroethene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,2-Dichloropropane	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,3-Dichloropropane	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
2,2-Dichloropropane	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.

B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Page 1 of 2

## Analytical Report

Lab Order 2212335

Date Reported: 12/19/2022

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: SVE-1

Project: SJ 28 6 Unit 31

Collection Date: 12/6/2022 12:30:00 PM

Lab ID: 2212335-001

Matrix: AIR

Received Date: 12/7/2022 7:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260B: VOLATILES</b>						Analyst: CCM
1,1-Dichloropropene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Hexachlorobutadiene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
2-Hexanone	ND	50		µg/L	50	12/14/2022 4:17:00 PM
Isopropylbenzene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
4-Isopropyltoluene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
4-Methyl-2-pentanone	ND	50		µg/L	50	12/14/2022 4:17:00 PM
Methylene chloride	ND	15		µg/L	50	12/14/2022 4:17:00 PM
n-Butylbenzene	ND	15		µg/L	50	12/14/2022 4:17:00 PM
n-Propylbenzene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
sec-Butylbenzene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Styrene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
tert-Butylbenzene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,1,1,2-Tetrachloroethane	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,1,2,2-Tetrachloroethane	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Tetrachloroethene (PCE)	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
trans-1,2-DCE	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
trans-1,3-Dichloropropene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,2,3-Trichlorobenzene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,2,4-Trichlorobenzene	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,1,1-Trichloroethane	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,1,2-Trichloroethane	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Trichloroethene (TCE)	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Trichlorofluoromethane	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
1,2,3-Trichloropropane	ND	10		µg/L	50	12/14/2022 4:17:00 PM
Vinyl chloride	ND	5.0		µg/L	50	12/14/2022 4:17:00 PM
Xylenes, Total	58	7.5		µg/L	50	12/14/2022 4:17:00 PM
Surr: Dibromofluoromethane	83.5	70-130		%Rec	50	12/14/2022 4:17:00 PM
Surr: 1,2-Dichloroethane-d4	70.9	70-130		%Rec	50	12/14/2022 4:17:00 PM
Surr: Toluene-d8	105	70-130		%Rec	50	12/14/2022 4:17:00 PM
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	50	12/14/2022 4:17:00 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: CCM
Gasoline Range Organics (GRO)	22000	250		µg/L	50	12/14/2022 4:17:00 PM
Surr: BFB	92.9	70-130		%Rec	50	12/14/2022 4:17:00 PM

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

<b>Qualifiers:</b>	*	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.		

Page 2 of 2



## ANALYTICAL SUMMARY REPORT

December 14, 2022

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

Work Order: B22120690 Quote ID: B15626

Project Name: Not Indicated

---

Energy Laboratories Inc Billings MT received the following 1 sample for Hall Environmental on 12/8/2022 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B22120690-001	2212335-001B, SVE-1	12/06/22 12:30	12/08/22	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 866.686.7175 • Helena, MT 877.472.0711

## LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental  
**Project:** Not Indicated  
**Lab ID:** B22120690-001  
**Client Sample ID:** 2212335-001B, SVE-1

**Report Date:** 12/14/22  
**Collection Date:** 12/06/22 12:30  
**Date Received:** 12/08/22  
**Matrix:** Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>GAS CHROMATOGRAPHY ANALYSIS REPORT</b>							
Oxygen	21.69	Mol %		0.01		GPA 2261-95	12/09/22 11:31 / jrj
Nitrogen	78.08	Mol %		0.01		GPA 2261-95	12/09/22 11:31 / jrj
Carbon Dioxide	0.23	Mol %		0.01		GPA 2261-95	12/09/22 11:31 / jrj
Hydrogen Sulfide	<0.01	Mol %		0.01		GPA 2261-95	12/09/22 11:31 / jrj
Methane	<0.01	Mol %		0.01		GPA 2261-95	12/09/22 11:31 / jrj
Ethane	<0.01	Mol %		0.01		GPA 2261-95	12/09/22 11:31 / jrj
Propane	<0.01	Mol %		0.01		GPA 2261-95	12/09/22 11:31 / jrj
Isobutane	<0.01	Mol %		0.01		GPA 2261-95	12/09/22 11:31 / jrj
n-Butane	<0.01	Mol %		0.01		GPA 2261-95	12/09/22 11:31 / jrj
Isopentane	<0.01	Mol %		0.01		GPA 2261-95	12/09/22 11:31 / jrj
n-Pentane	<0.01	Mol %		0.01		GPA 2261-95	12/09/22 11:31 / jrj
Hexanes plus	<0.01	Mol %		0.01		GPA 2261-95	12/09/22 11:31 / jrj
Propane	< 0.001	gpm		0.001		GPA 2261-95	12/09/22 11:31 / jrj
Isobutane	< 0.001	gpm		0.001		GPA 2261-95	12/09/22 11:31 / jrj
n-Butane	< 0.001	gpm		0.001		GPA 2261-95	12/09/22 11:31 / jrj
Isopentane	< 0.001	gpm		0.001		GPA 2261-95	12/09/22 11:31 / jrj
n-Pentane	< 0.001	gpm		0.001		GPA 2261-95	12/09/22 11:31 / jrj
Hexanes plus	< 0.001	gpm		0.001		GPA 2261-95	12/09/22 11:31 / jrj
GPM Total	< 0.001	gpm		0.001		GPA 2261-95	12/09/22 11:31 / jrj
GPM Pentanes plus	< 0.001	gpm		0.001		GPA 2261-95	12/09/22 11:31 / jrj

### CALCULATED PROPERTIES

Gross BTU per cu ft @ Std Cond. (HHV)	ND		1		GPA 2261-95	12/09/22 11:31 / jrj
Net BTU per cu ft @ std cond. (LHV)	ND		1		GPA 2261-95	12/09/22 11:31 / jrj
Pseudo-critical Pressure, psia	546		1		GPA 2261-95	12/09/22 11:31 / jrj
Pseudo-critical Temperature, deg R	239		1		GPA 2261-95	12/09/22 11:31 / jrj
Specific Gravity @ 60/60F	0.999		0.001		D3588-81	12/09/22 11:31 / jrj
Air, %	99.10		0.01		GPA 2261-95	12/09/22 11:31 / jrj

- The analysis was not corrected for air.

### COMMENTS

-	-	12/09/22 11:31 / 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 866.686.7175 • Helena, MT 877.472.0711

## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Hall Environmental

Work Order: B22120690

Report Date: 12/14/22

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: GPA 2261-95</b>									Batch: R392519	
<b>Lab ID: B22120688-001ADUP</b> 12 Sample Duplicate									Run: GCNGA-B_221209A 12/09/22 11:02	
Oxygen		16.3	Mol %	0.01				0.6	20	
Nitrogen		79.3	Mol %	0.01				0	20	
Carbon Dioxide		4.37	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		<0.01	Mol %	0.01					20	
<b>Lab ID: LCS120922</b> 11 Laboratory Control Sample									Run: GCNGA-B_221209A 12/09/22 12:27	
Oxygen		0.60	Mol %	0.01	120	70	130			
Nitrogen		6.09	Mol %	0.01	101	70	130			
Carbon Dioxide		1.00	Mol %	0.01	101	70	130			
Methane		74.4	Mol %	0.01	100	70	130			
Ethane		6.05	Mol %	0.01	101	70	130			
Propane		5.01	Mol %	0.01	101	70	130			
Isobutane		2.00	Mol %	0.01	100	70	130			
n-Butane		2.00	Mol %	0.01	100	70	130			
Isopentane		1.02	Mol %	0.01	102	70	130			
n-Pentane		1.02	Mol %	0.01	102	70	130			
Hexanes plus		0.82	Mol %	0.01	103	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

B22120690

Login completed by: Leslie S. Cadreau

Date Received: 12/8/2022

Reviewed by: tedwards

Received by: lel

Reviewed Date: 12/14/2022

Carrier name: UPS

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	11.0°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

## 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							
ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2212335-001B	SVE-1	TEDLAR	Air	12/6/2022 12:30:00 PM	1	Natural Gases O2 & CO2 322120690

## 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: 12/7/2022	Time: 1:35 PM	Received By:	Date: 12/8/22	Time: 8:25
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date: 12/8/22	Time: 8:25
TAT: <input type="checkbox"/> Standard <input type="checkbox"/> RUSH			Next BD <input type="checkbox"/> 2nd BD <input type="checkbox"/> 3rd BD <input type="checkbox"/>		
REPORT TRANSMITTAL DESIRED: <input type="checkbox"/> HARD COPY (extra cost) <input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE			FOR LAB USE ONLY		
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: 2212335

RcptNo: 1

Received By: Juan Rojas

12/7/2022 7:10:00 AM

*Juan Rojas*

Completed By: Tracy Casarrubias

12/7/2022 11:03:15 AM

Reviewed By: *JH 12-7-22*

### 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  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? 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: *Jon 12/7/22*

### Special Handling (if applicable)

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

Person Notified: \_\_\_\_\_

Date: \_\_\_\_\_

By Whom: \_\_\_\_\_

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: \_\_\_\_\_

Client Instructions: \_\_\_\_\_

16. Additional remarks:

### 17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
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 175951

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 175951
	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 May 1, 2023.	2/6/2023