



October 31, 2021

Mr. Cory Smith
New Mexico Oil Conservation Division
1000 Rio Brazos Road
Aztec, NM 87410

**Subject: Third Quarter 2021 - Quarterly SVE System Update
Hilcorp Energy Company
OH Randel #5
San Juan County, New Mexico
API # 30-045-05964
Incident # NVF1602039091**

Dear Mr. Smith:

WSP USA Inc. (WSP), on behalf of Hilcorp Energy Company (Hilcorp), presents the following third quarter 2021 summary report discussing the soil vapor extraction (SVE) system performance at the OH Randel #5 natural gas production well (Site). This report is being submitted as part of the proposed timeline of remediation events in the Pilot Test Results submitted to the New Mexico Oil Conservation Division (NMOCD) on August 6, 2019. The report documents air sampling results and system operations to monitor SVE remediation progress.

An SVE system was originally installed by XTO Energy in 2016 and expanded in 2019 by Hilcorp with the addition of new SVE wells and a larger SVE blower. SVE well configuration and screen intervals are presented in Figure 1. In total, the SVE system consists of a two-horsepower Atlantic AB-301 regenerative blower capable of producing 110 cubic feet per minute (cfm) at 72 inches of water column vacuum. The blower is connected to an adjustable manifold that allows control over which SVE wells are currently active.

The third quarter 2021 air sample was collected on September 29, 2021. The air sample was collected from the inlet side of the blower using a high-vacuum air sampler and directly into a 1-liter Tedlar® bag. The sample was submitted to Hall Environmental Analysis Laboratory (Hall) and analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency (EPA) Method 8021, and total volatile petroleum hydrocarbons (TVPH) via EPA Method 8015. Laboratory analytical results for these analytes are summarized in Table 1, with the analytical laboratory report attached as Enclosure A. Hilcorp personnel conducted bi-weekly operation and maintenance visits to ensure the system was operating, to maximize runtime efficiency, and conduct any required system maintenance.

RESULTS

The air sample data collected to date and measured stack flow rate were utilized to calculate total emissions for the system up to September 29, 2021 (Table 2). As of September 2021, the total operational time of the system was 28,209 hours with an estimated mass source removal via the SVE system of 645,510 pounds of TVPH. The operational runtime for the third quarter 2021 was 88%. Runtime was slightly lower than the required 90% due to several power outages at the Site that occurred prior to connecting the SVE system to Hilcorp's telemetry network. Telemetry was installed in September 2021 so that if the system experiences downtime, a Hilcorp environmental manager will be notified via email immediately. Immediate notification will allow for quick response in order to maximize system runtime in the future.

RECOMMENDATIONS

Currently, an additional SVE system is being designed and purchased to install at the Site. The new system will be engineered to operate with the current electrical service (100 amp, 240 volt) while also maximizing the flow and

WSP USA
848 EAST 2ND AVENUE
DURANGO CO 81301

Tel.: 970-385-1096
wsp.com



necessary vacuum on all SVE wells concurrently. Operating all wells concurrently will negate the need to rotate the SVE system between wells on a biweekly basis, as well as reduce the remediation timeframe for the Site. Hilcorp will continue to maintain, monitor, and sample the current SVE system until the new system is installed. After installation, a report will be prepared that outlines the specifications of the system and proposes a new remediation timeline for the Site.

WSP appreciates the opportunity to provide this report to the NMOCD. If you have any questions or comments regarding this work plan, do not hesitate to contact me at (970) 385-1096 or via email at stuart.hyde@wsp.com or Kate Kaufman at (346) 237-2275 or via email at kkaufman@hilcorp.com.

Kind regards,

A handwritten signature in black ink, appearing to read 'Stuart'.

Stuart Hyde, L.G.
Environmental Geologist

A handwritten signature in black ink, appearing to read 'Ashley L. Ager'.

Ashley Ager, M.S., P.G.
Senior Geologist

Enclosures:

Figure 1 – Site Location Map

Table 1 – Air Sample Results Summary

Table 2 – Soil Vapor Extraction System Recovery & Emissions Summary

Enclosure A – Analytical Laboratory Reports

FIGURES

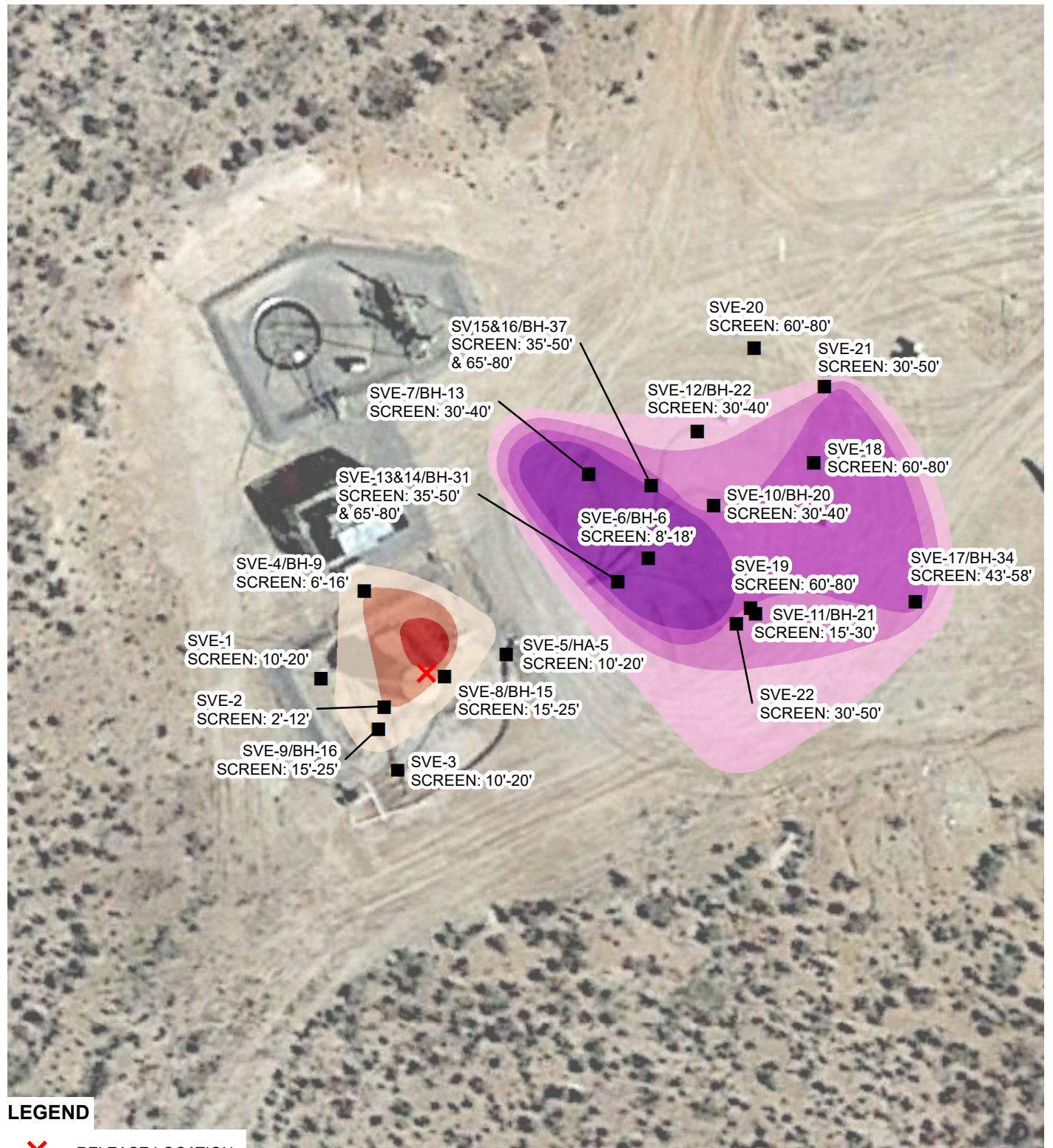


IMAGE COURTESY OF GOOGLE EARTH 2019

LEGEND

RELEASE LOCATION



SOIL VAPOR EXTRACTION (SVE) WELL

INFERRED BTEX ISOCONCENTRATION (PARTS PER MILLION)

50.00 - 200.00	50.00 - 100.00
200.01 - 400.00	100.01 - 200.00
400.01 - 600.00	200.01 - 300.00
> 600.00	

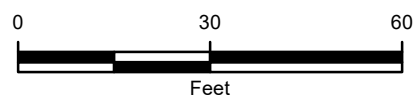


FIGURE 1
SVE SYSTEM LAYOUT
OH RANDEL #5
NWNW SEC 10 T26N R11W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY



P:\Hilcorp\GIS\MXD\17818016_OH RANDEL #5\17818016_OH RANDEL #5_FIG01_SVE_LAYOUT_2020.mxd

TABLES

TABLE 1
SOIL VAPOR EXTRACTION SYSTEM ANALYTICAL RESULTS

OH RANDEL #5
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TVPH (µg/L)	PID (ppm)
8/11/2016	160	1,700	61	500	46,000	4,072
8/17/2018	130	230	10	110	8,900	719
6/28/2019	7,200	15,000	360	3,000	460,000	1,257
12/16/2019	1,800	4,400	83	660	170,000	1,685
3/10/2020	1,700	3,300	89	700	130,000	897
4/30/2020 (1)	2,440	4,737	128	1,005	186,592	1,853
6/24/2020 (1)	NT	NT	NT	NT	NT	NT
11/10/2020	320	1,100	43	380	43,000	1,385
2/10/2021	360	950	35	250	32,000	865
6/11/2021	170	390	11	110	18,000	400
9/29/2021	99	190	7.0	55	8,200	505

Notes:

(1) - blower not operational for sampling from May to October 2020

µg/L - micrograms per Liter

PID - photoionization detector

ppm - parts per million

TVPH - total volatile petroleum hydrocarbons

NT - not tested

TABLE 2
SOIL VAPOR EXTRACTION SYSTEM RECOVERY & EMISSIONS SUMMARY

OH RANDEL #5
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Sample Information and Lab Analysis

Date	Total Flow (cf)	Delta Flow (cf)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TVPH (µg/L)	PID (ppm)
8/11/2016	31,185	31,185	160	1,700	61	500	46,000	4,072
8/17/2018	59,647,485	59,616,300	130	230	10	110	8,900	719
12/16/2019	109,635,885	49,988,400	1,800	4,400	83	660	170,000	1,902
3/10/2020	121,707,285	12,071,400	1,700	3,300	89	700	130,000	897
4/30/2020 (1)	130,917,885	9,210,600	2,440	4,737	128	1,005	186,592	1,853
6/24/2020	Blower Not Operational (2)							
11/10/2021	130,917,885	0	320	1,100	43	380	43,000	1,385
2/10/2021	143,580,765	12,662,880	360	950	35	250	32,000	865
6/11/2021	158,657,565	15,076,800	170	390	11	110	18,000	400
9/29/2021	168,251,932	9,594,367	99	190	7	55	8,200	505
Average			798	1,889	52	419	71,410	1,889

Vapor Extraction Calculations

Vapor Extraction Calculations						
Date	Flow Rate (cfm)	Benzene (lb/hr)	Toluene (lb/hr)	Ethylbenzene (lb/hr)	Xylenes (lb/hr)	TVPH (lb/hr)
8/11/2016	105	0.1	0.7	0.02	0.2	18.1
8/17/2018	100	0.1	0.4	0.01	0.1	10.3
12/16/2019	110	0.4	1.0	0.02	0.2	36.8
3/10/2020	110	0.7	1.6	0.04	0.3	61.7
4/30/2020 (1)	105	0.8	1.6	0.04	0.3	62.2
6/24/2020	Blower Not Operational (2)					
11/10/2021	105	0.0	0.0	0.00	0.0	0.0
2/10/2021	92	0.1	0.4	0.01	0.1	12.9
6/11/2021	90	0.1	0.2	0.01	0.1	8.4
9/29/2021	69	0.03	0.1	0.002	0.02	3.4
Average	98	0.3	0.6	0.02	0.1	23.7

Pounds Extracted Over Operating Time

Date	Total Operational Hours	Delta Hours	Benzene (lbs)	Toluene (lbs)	Ethylbenzene (lbs)	Xylenes (lbs)	TVPH (lbs)	TVPH (tons)
8/11/2016	Startup							
8/11/2016	5.0	5.0	0.3	3.3	0.1	1.0	89.4	0.0
8/17/2018	9,941	9,936	539	3,586	132	1,133	102,009	51
12/16/2019	17,515	7,574	3,007	7,214	145	1,200	278,728	139
3/10/2020	19,344	1,829	1,317	2,897	65	512	112,870	56
4/30/2020 (1)	20,806	1,462	1,188	2,307	62	489	90,884	45
6/24/2020	Blower Not Operational (2)							
11/10/2021	20,806	0	0	0	0	0	0	0
2/10/2021	23,100	2,294	268	809	31	249	29,600	15
6/11/2021	25,892	2,792	249	630	22	169	23,495	12
9/29/2021	28,209	2,317	80	173	5	49	7,835	4
Total Extracted to Date			6,649	17,619	462	3,802	645,510	323

NOTES:

(1) - data extrapolated from PID measurements

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

cf - cubic feet

cfm - cubic feet per minute

µg/l - micrograms per liter

lbs - pounds

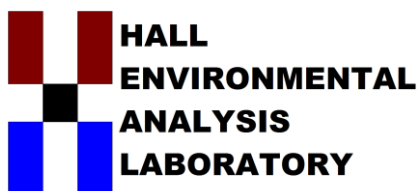
lb/hr - pounds per hour

PID - photo-ionization detector

ppm - part per million

TVPH - total volatile petroleum hydrocarbons

ENCLOSURE A –ANALYTICAL LABORATORY REPORTS



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

October 13, 2021

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

RE: OH Randel 5

OrderNo.: 2109H36

Dear Kate Kaufman:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/30/2021 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 2109H36

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: Influent 9-29-21

Project: OH Randel 5

Collection Date: 9/29/2021 4:20:00 PM

Lab ID: 2109H36-001

Matrix: AIR

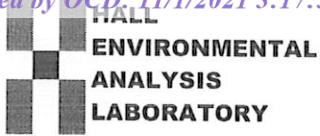
Received Date: 9/30/2021 7:10:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	8200	250		µg/L	50	10/6/2021 11:14:00 AM
Surr: BFB	133	37.3-213		%Rec	50	10/6/2021 11:14:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	99	5.0		µg/L	50	10/6/2021 11:14:00 AM
Toluene	190	5.0		µg/L	50	10/6/2021 11:14:00 AM
Ethylbenzene	7.0	5.0		µg/L	50	10/6/2021 11:14:00 AM
Xylenes, Total	55	10		µg/L	50	10/6/2021 11:14:00 AM
Surr: 4-Bromofluorobenzene	97.4	70-130		%Rec	50	10/6/2021 11:14:00 AM

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	Value above quantitation range
	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 range due to dilution or matrix		

Page 1 of 1



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

Sample Log-In Check List

Client Name: HILCORP ENERGY

Work Order Number: 2109H36

RcptNo: 1

Received By: Cheyenne Cason

9/30/2021 7:10:00 AM

Completed By: Sean Livingston

9/30/2021 10:09:36 AM

Reviewed By:

JR 9/30/21

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°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: WPA 9/30/21

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	NA	Good				

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 59037

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 59037
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Accepted for the record. See App ID 125248 for most updated status.	9/22/2022