



Accepted - 09/27/2022

NV

May 14, 2021

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

RE: 1st Quarter-2021 - Solar SVE System Update
Hilcorp Energy Company
Bell Federal GC B #1
San Juan County, New Mexico
API # 30-045-09772
Incident # NCS1729355513

Dear Mr. Smith:

Hilcorp Energy Company (Hilcorp) presents the following quarterly summary report discussing the solar soil vapor extraction (SVE) system performance at the Bell Federal GC B #1 natural gas production well (Site). The solar SVE system was installed on January 16, 2018, to remediate subsurface soil impacts following an act of vandalism, resulting in the release of approximately 58 barrels (bbl) of natural gas condensate. SVE installation, soil sampling, and delineation activities are summarized in earlier reports submitted to the New Mexico Oil Conservation Division (NMOCD) for each quarter of operation.

The solar SVE system consists of a 1/3 horsepower blower capable of producing 22 cubic feet per minute (cfm) at 29 inches of water column vacuum. The blower is powered by four (4) 12-volt deep cycle batteries that are charged throughout the day via three solar panels with a nominal maximum power output of 915 watts. The blower runs off a timer that is scheduled to maximize runtime that coincides with the seasonally available solar recharge, typically 10 hours in the winter and 13 hours in the summer for Farmington, New Mexico. Between startup, January 16, 2018, and the last site visit on March 23, 2021, there have been 1,159 days of operation, with an estimated 13,091 total hours of available nominal daylight in which the solar SVE system should be in operation. Of the available runtime of 13,091 hours since installation, the system has an actual runtime of 12,208.5 hours, for an overall runtime efficiency of 93.3 percent (%). Below is a table of SVE runtime in comparison with nominal available daylight hours, per month, according to the National Oceanic and Atmospheric Administration's National Weather Service.

Time Period	January 16, 2018 to December 8, 2020	December 9, 2020 to January 20, 2021	January 21, 2020 to February 17, 2021	February 18, 2021 to March 23, 2021
Days	1,057	42	27	33
Avg. Nominal Daylight Hrs	11.42	10	10	10
Available Runtime Hrs	12,070.94	420	270	330

Total Available Daylight Runtime Hours 13,090.94

Actual Runtime Hours 12,208.5

% Runtime 93.3%



An initial air sample was collected on January 24, 2018, from the solar SVE system discharge exhaust stack. Subsequent air samples have been collected quarterly (Table 1) with the last sample collected on March 23, 2021. No air sample was collected during the second quarter of 2018, due to a change in operator from XTO Energy to Hilcorp, and no air sample was collected during the fourth quarter 2018 due to additional delineation in January 2019.

Samples were collected in Tedlar® bags and submitted to Pace Analytical Laboratory of Mount Juliet, TN for analysis of Volatile Organic Compounds (MS) by Method TO-15. In addition, Organic Compounds (GC) were analyzed by Method D1946, which included oxygen, carbon monoxide, carbon dioxide, and methane. Laboratory analytical results are summarized in Table 1, with the complete laboratory report included in Attachments. Overall benzene concentrations have decreased since the solar SVE system installation from 280 micrograms per liter (µg/L) to 45.4 µg/L.

Since the solar SVE system installation, a total of approximately 56.9 gallons of liquid phase separated hydrocarbons (PSH) have been recovered from the SVE wells and liquid-vapor separator tank. Based on the air sample data collected to date, the estimated mass air emissions were calculated using air sample analytical results and exhaust flowrates (Table 2). The impacted mass source removal via the solar SVE system to date is an estimated 15,047 pounds of TVPH. Including the PSH and vapor phase hydrocarbons, an estimated total of 2,484 gallons (or 59 bbl) of PSH and air equivalent condensate has been recovered to date.

During the upcoming 1st quarter 2021 of operations, Site visits will resume on a bi-weekly basis by Hilcorp and WSP USA personnel to ensure our SVE system continues to meet the 90% runtime efficiency requirement and that any maintenance issues are addressed. An air sample will be collected in the 2nd quarter and analyzed for Volatile Organic Compounds (MS) by Method TO-15 and Organic Compounds (GC) by Method D1946. An updated quarterly report with sample results, runtime, and mass source removal will be submitted.

If you have any questions or comments regarding this work plan, do not hesitate to contact me at (713) 757-5247 or at mkillough@hilcorp.com.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Mitch Killough'.

Mitch Killough
Environmental Specialist
Hilcorp Energy Company – L48 West
mkillough@hilcorp.com
713-757-5247 – Office
281-851-2338 – Cell

Attachments:

Table 1 – Air Sample Analytical Results
Table 2 – Soil Vapor Extraction System Recovery & Emissions Summary
Attachment 1 – Analytical Laboratory Report

TABLE 1
AIR SAMPLE ANALYTICAL RESULTS

BELL FEDERAL GAS COM B 1
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Sample ID	Sample Date	Vapor (PPM)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	Oxygen	CO2	TVPH (µg/L)
Bell Fed GC B#1 SVE	1/24/2018	1,435	280	200	5.0	38	--	--	30,000
Stack Exhaust 01	8/17/2018	1,873	160	380	21	320	--	--	18,000
SVE Effluent	3/22/2019	1,607	490	920	24	480	--	--	NA
Influent 6/18	6/18/2019	1,026	72	270	27	290	--	--	NA
Bell Fed 9/25	9/25/2019	1,762	220	480	21	440	--	--	35,000
Influent 12/16	12/16/2019	1,902	130	840	21	220	--	--	22,000
Bell Fed 3/10/20	3/10/2020	1,171	120	380	19	330	--	--	31,000
Influent 6/25	6/25/2020	978	180	430	25	480	--	--	45,000
SVE Air Sample	9/16/2020	1,766	186	433	18	497	18.20%	3.29%	32,100
SVE Q4 Air Sample	12/8/2020	1,741	114	292	10.6	323.8	17.30%	4.45%	16,000
SVE	3/23/2021	1,252	45.4	86.3	2.33	95.4	20.2%	<0.500%	7,930
Percent Change (compared to previous quarter)		-28%	-60%	-70%	-78%	-71%	17%	-89%	-50%

Notes:

µg/L - micrograms per liter

NA - not analyzed

ppm - parts per million

TVPH - total volatile petroleum hydrocarbons

Italics denote that the laboratory method detection limit was used for calculations for a non-detected result

TABLE 2
SOIL VAPOR EXTRACTION SYSTEM RECOVERY & EMISSIONS SUMMARY

BELL FEDERAL GAS COM B 1
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Sample Information and Lab Analysis

Date	Total Flow (cf)	Delta Flow (cf)	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TVPH (µg/L)
1/24/2018	164,400	164,400	1,435	280	200	5.0	38	30,000
8/17/2018	2,010,120	1,845,720	1,873	160	380	21	320	18,000
3/22/2019	3,978,120	1,968,000	1,607	490	920	24	480	NA
6/18/2019	4,938,120	960,000	1,026	72	270	27	290	NA
9/25/2019	6,004,920	1,066,800	1,762	220	480	21	440	35,000
12/16/2019	6,956,280	951,360	1,902	130	840	21	220	22,000
3/10/2020	8,151,480	1,195,200	1,171	120	380	19	330	31,000
6/25/2020	9,446,280	1,294,800	978	180	430	25	480	45,000
9/16/2020	10,434,480	988,200	1,766	186	433	18	497	32,100
12/8/2020	11,229,024	794,544	1,741	114	292	10.6	323.8	16,000
3/23/2021	11,854,150	625,126	1,252	45.4	86.3	2.33	95.4	7,930
Average			1,501	182	428	18	319	26,337

Vapor Extraction Calculations

Vapor Extraction Calculations						
Date	Flow Rate (cfm)	Benzene (lb/hr)	Toluene (lb/hr)	Ethyl-benzene (lb/hr)	Total Xylenes (lb/hr)	TVPH (lb/hr)
1/24/2018	40	0.0419	0.0299	0.0007	0.0057	4.4921
8/17/2018	12	0.0072	0.0171	0.0009	0.0144	0.8086
3/22/2019	16	0.0293	0.0551	0.0014	0.0287	NA
6/18/2019	16	0.0043	0.0162	0.0016	0.0174	NA
9/25/2019	14	0.0115	0.0252	0.0011	0.0231	1.8343
12/16/2019	16	0.0078	0.0503	0.0013	0.0132	1.3177
3/10/2020	20	0.009	0.0284	0.0014	0.0247	2.3209
6/25/2020	20	0.0135	0.0322	0.0019	0.0359	3.369
9/16/2020	18	0.0125	0.0292	0.0012	0.0335	2.1643
12/8/2020	19	0.0083	0.0213	0.0008	0.0236	1.1664
3/23/2021	18	0.0030	0.0057	0.0002	0.0063	0.5200
Average	19	0.0135	0.0282	0.0011	0.0206	1.9993

Pounds Extracted Over Total Operating Time

Date	Total Operational Hours	Delta Hours	Benzene (lbs)	Toluene (lbs)	Ethyl-benzene (lbs)	Total Xylenes (lbs)	TVPH (lbs)	TVPH (tons)
1/24/2018	68.5	68.5	2.9	2.1	0.1	0.4	308	0.2
8/17/2018	2,632	2,563.5	18.4	43.8	2.4	36.9	2,073	1.0
3/22/2019	4,682	2,050.0	60.2	112.9	2.9	58.9	NA	NA
6/18/2019	5,682	1,000.0	4.3	16.2	1.6	17.4	NA	NA
9/25/2019	6,952	1,270	14.6	31.9	1.4	29.3	2,330	1.2
12/16/2019	7,943	991	7.7	49.9	1.2	13.1	1,306	0.7
3/10/2020	8,939	996	8.9	28.3	1.4	24.6	2,312	1.2
6/25/2020	10,018	1,079	14.5	34.7	2.0	38.8	3,635	1.8
9/16/2020	10,933	915	11.5	26.7	1.1	30.7	1,980	1.0
12/8/2020	11,613	680	5.7	14.5	0.5	16.1	793.6	0.4
3/23/2021	12,209	595	1.8	3.4	0.1	3.7	309.5	0.2
Avg. Mass Extracted Per Period			13.7	33.1	1.3	24.5	1671.9	0.8
Total Mass Extracted to Date			150.4	364.4	14.7	269.8	15047.4	7.6

NOTES

cf - cubic feet
 cfm - cubic feet per minute
 lbs - pounds
 lb/hr - pounds per hour
 µg/L - micrograms per hour
 NA - not analyzed
 PID - photoionization detector
 ppm - parts per million
 TVPH - total volatile petroleum hydrocarbons
 Italics denote the laboratory method detection limit was used for calculations for a non-detected result



ANALYTICAL REPORT

April 01, 2021

HilCorp-Farmington, NM

Sample Delivery Group: L1330495
Samples Received: 03/25/2021
Project Number:
Description: Bell Federal Gas Com B 1
Site: BELL FEDERAL GAS COM B 1
Report To: Jennifer Deal
382 Road 3100
Aztec, NM 87410

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Entire Report Reviewed By:

Olivia Studebaker
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

Cp: Cover Page	1	¹ Cp
Tc: Table of Contents	2	
Ss: Sample Summary	3	² Tc
Cn: Case Narrative	4	
Sr: Sample Results	5	³ Ss
SVE L1330495-01	5	
Qc: Quality Control Summary	7	⁴ Cn
Volatile Organic Compounds (MS) by Method TO-15	7	⁵ Sr
Organic Compounds (GC) by Method D1946	12	⁶ Qc
Gl: Glossary of Terms	13	⁷ Gl
Al: Accreditations & Locations	14	⁸ Al
Sc: Sample Chain of Custody	15	⁹ Sc

SAMPLE SUMMARY

SVE L1330495-01 Air

Collected by
K Hoekstra

Collected date/time
03/23/21 13:50

Received date/time
03/25/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1640301	2000	03/25/21 18:35	03/25/21 18:35	DAH	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG1641481	40000	03/27/21 16:46	03/27/21 16:46	FKG	Mt. Juliet, TN
Organic Compounds (GC) by Method D1946	WG1641976	1	03/30/21 11:32	03/30/21 11:32	DAH	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

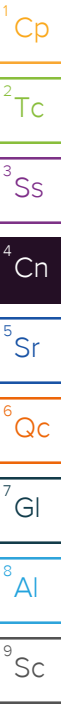


Olivia Studebaker
Project Manager

Sample Delivery Group (SDG) Narrative

Sample received in tedlar bag.

<u>Lab Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L1330495-01	SVE	TO-15

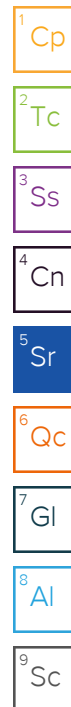


Collected date/time: 03/23/21 13:50

L1330495

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	2500	5940	ND	ND		2000	WG1640301
Allyl chloride	107-05-1	76.53	400	1250	ND	ND		2000	WG1640301
Benzene	71-43-2	78.10	400	1280	14200	45400		2000	WG1640301
Benzyl Chloride	100-44-7	127	400	2080	ND	ND		2000	WG1640301
Bromodichloromethane	75-27-4	164	400	2680	ND	ND		2000	WG1640301
Bromoform	75-25-2	253	1200	12400	ND	ND		2000	WG1640301
Bromomethane	74-83-9	94.90	400	1550	ND	ND		2000	WG1640301
1,3-Butadiene	106-99-0	54.10	4000	8850	ND	ND		2000	WG1640301
Carbon disulfide	75-15-0	76.10	400	1240	ND	ND		2000	WG1640301
Carbon tetrachloride	56-23-5	154	400	2520	ND	ND		2000	WG1640301
Chlorobenzene	108-90-7	113	400	1850	ND	ND		2000	WG1640301
Chloroethane	75-00-3	64.50	400	1060	ND	ND		2000	WG1640301
Chloroform	67-66-3	119	400	1950	ND	ND		2000	WG1640301
Chloromethane	74-87-3	50.50	400	826	ND	ND		2000	WG1640301
2-Chlorotoluene	95-49-8	126	400	2060	ND	ND		2000	WG1640301
Cyclohexane	110-82-7	84.20	8000	27600	186000	641000		40000	WG1641481
Dibromochloromethane	124-48-1	208	400	3400	ND	ND		2000	WG1640301
1,2-Dibromoethane	106-93-4	188	400	3080	ND	ND		2000	WG1640301
1,2-Dichlorobenzene	95-50-1	147	400	2400	ND	ND		2000	WG1640301
1,3-Dichlorobenzene	541-73-1	147	400	2400	ND	ND		2000	WG1640301
1,4-Dichlorobenzene	106-46-7	147	400	2400	ND	ND		2000	WG1640301
1,2-Dichloroethane	107-06-2	99	400	1620	ND	ND		2000	WG1640301
1,1-Dichloroethane	75-34-3	98	400	1600	ND	ND		2000	WG1640301
1,1-Dichloroethene	75-35-4	96.90	400	1590	ND	ND		2000	WG1640301
cis-1,2-Dichloroethene	156-59-2	96.90	400	1590	ND	ND		2000	WG1640301
trans-1,2-Dichloroethene	156-60-5	96.90	400	1590	ND	ND		2000	WG1640301
1,2-Dichloropropane	78-87-5	113	400	1850	ND	ND		2000	WG1640301
cis-1,3-Dichloropropene	10061-01-5	111	400	1820	ND	ND		2000	WG1640301
trans-1,3-Dichloropropene	10061-02-6	111	400	1820	ND	ND		2000	WG1640301
1,4-Dioxane	123-91-1	88.10	400	1440	ND	ND		2000	WG1640301
Ethanol	64-17-5	46.10	1260	2380	2740	5170		2000	WG1640301
Ethylbenzene	100-41-4	106	400	1730	537	2330		2000	WG1640301
4-Ethyltoluene	622-96-8	120	400	1960	1350	6630		2000	WG1640301
Trichlorofluoromethane	75-69-4	137.40	400	2250	ND	ND		2000	WG1640301
Dichlorodifluoromethane	75-71-8	120.92	400	1980	ND	ND		2000	WG1640301
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	400	3070	ND	ND		2000	WG1640301
1,2-Dichlorotetrafluoroethane	76-14-2	171	400	2800	ND	ND		2000	WG1640301
Heptane	142-82-5	100	400	1640	56300	230000		2000	WG1640301
Hexachloro-1,3-butadiene	87-68-3	261	1260	13500	ND	ND		2000	WG1640301
n-Hexane	110-54-3	86.20	1260	4440	107000	377000		2000	WG1640301
Isopropylbenzene	98-82-8	120.20	400	1970	ND	ND		2000	WG1640301
Methylene Chloride	75-09-2	84.90	400	1390	ND	ND		2000	WG1640301
Methyl Butyl Ketone	591-78-6	100	2500	10200	ND	ND		2000	WG1640301
2-Butanone (MEK)	78-93-3	72.10	2500	7370	ND	ND		2000	WG1640301
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	2500	10200	ND	ND		2000	WG1640301
Methyl methacrylate	80-62-6	100.12	400	1640	ND	ND		2000	WG1640301
MTBE	1634-04-4	88.10	400	1440	ND	ND		2000	WG1640301
Naphthalene	91-20-3	128	1260	6600	ND	ND		2000	WG1640301
2-Propanol	67-63-0	60.10	2500	6150	ND	ND		2000	WG1640301
Propene	115-07-1	42.10	800	1380	877	1510	B	2000	WG1640301
Styrene	100-42-5	104	400	1700	ND	ND		2000	WG1640301
1,1,2,2-Tetrachloroethane	79-34-5	168	400	2750	ND	ND		2000	WG1640301
Tetrachloroethylene	127-18-4	166	400	2720	ND	ND		2000	WG1640301
Tetrahydrofuran	109-99-9	72.10	400	1180	ND	ND		2000	WG1640301
Toluene	108-88-3	92.10	1000	3770	22900	86300		2000	WG1640301
1,2,4-Trichlorobenzene	120-82-1	181	1260	9330	ND	ND		2000	WG1640301



Collected date/time: 03/23/21 13:50

L1330495

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	400	2180	ND	ND		2000	WG1640301
1,1,2-Trichloroethane	79-00-5	133	400	2180	ND	ND		2000	WG1640301
Trichloroethylene	79-01-6	131	400	2140	ND	ND		2000	WG1640301
1,2,4-Trimethylbenzene	95-63-6	120	400	1960	1060	5200		2000	WG1640301
1,3,5-Trimethylbenzene	108-67-8	120	400	1960	1630	8000		2000	WG1640301
2,2,4-Trimethylpentane	540-84-1	114.22	400	1870	ND	ND		2000	WG1640301
Vinyl chloride	75-01-4	62.50	400	1020	ND	ND		2000	WG1640301
Vinyl Bromide	593-60-2	106.95	400	1750	ND	ND		2000	WG1640301
Vinyl acetate	108-05-4	86.10	400	1410	ND	ND		2000	WG1640301
m&p-Xylene	1330-20-7	106	800	3470	18100	78500		2000	WG1640301
o-Xylene	95-47-6	106	400	1730	3900	16900		2000	WG1640301
TPH (GC/MS) Low Fraction	8006-61-9	101	400000	1650000	1920000	7930000		2000	WG1640301
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		101				WG1640301
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		95.6				WG1641481

Organic Compounds (GC) by Method D1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Oxygen	7782-44-7	32	5.00	20.2		1	WG1641976
Carbon Monoxide	630-08-0	28	2.00	ND		1	WG1641976
Carbon Dioxide	124-38-9	44.01	0.500	ND		1	WG1641976
Methane	74-82-8	16	0.400	ND		1	WG1641976

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (MS) by Method TO-15

L1330495-01

Method Blank (MB)

(MB) R3635137-3 03/25/21 09:55

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Acetone	U		0.584	1.25
Allyl Chloride	U		0.114	0.200
Benzene	U		0.0715	0.200
Benzyl Chloride	0.0737	U	0.0598	0.200
Bromodichloromethane	U		0.0702	0.200
Bromoform	U		0.0732	0.600
Bromomethane	U		0.0982	0.200
1,3-Butadiene	U		0.104	2.00
Carbon disulfide	U		0.102	0.200
Carbon tetrachloride	U		0.0732	0.200
Chlorobenzene	U		0.0832	0.200
Chloroethane	U		0.0996	0.200
Chloroform	U		0.0717	0.200
Chloromethane	U		0.103	0.200
2-Chlorotoluene	U		0.0828	0.200
Dibromochloromethane	U		0.0727	0.200
1,2-Dibromoethane	U		0.0721	0.200
1,2-Dichlorobenzene	U		0.128	0.200
1,3-Dichlorobenzene	U		0.182	0.200
1,4-Dichlorobenzene	U		0.0557	0.200
1,2-Dichloroethane	U		0.0700	0.200
1,1-Dichloroethane	U		0.0723	0.200
1,1-Dichloroethene	U		0.0762	0.200
cis-1,2-Dichloroethene	U		0.0784	0.200
trans-1,2-Dichloroethene	U		0.0673	0.200
1,2-Dichloropropane	U		0.0760	0.200
cis-1,3-Dichloropropene	U		0.0689	0.200
trans-1,3-Dichloropropene	U		0.0728	0.200
1,4-Dioxane	U		0.0833	0.200
Ethylbenzene	U		0.0835	0.200
4-Ethyltoluene	U		0.0783	0.200
Trichlorofluoromethane	U		0.0819	0.200
Dichlorodifluoromethane	U		0.137	0.200
1,1,2-Trichlorotrifluoroethane	U		0.0793	0.200
1,2-Dichlorotetrafluoroethane	U		0.0890	0.200
Heptane	U		0.104	0.200
Hexachloro-1,3-butadiene	U		0.105	0.630
n-Hexane	U		0.206	0.630
Isopropylbenzene	U		0.0777	0.200
Methylene Chloride	U		0.0979	0.200

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Volatile Organic Compounds (MS) by Method TO-15

L1330495-01

Method Blank (MB)

(MB) R3635137-3 03/25/21 09:55

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Methyl Butyl Ketone	U		0.133	1.25
2-Butanone (MEK)	U		0.0814	1.25
4-Methyl-2-pentanone (MIBK)	U		0.0765	1.25
Methyl Methacrylate	U		0.0876	0.200
MTBE	U		0.0647	0.200
Naphthalene	U		0.350	0.630
2-Propanol	U		0.264	1.25
Propene	0.162	U	0.0932	0.400
Styrene	U		0.0788	0.200
1,1,2,2-Tetrachloroethane	U		0.0743	0.200
Tetrachloroethylene	U		0.0814	0.200
Tetrahydrofuran	U		0.0734	0.200
Toluene	U		0.0870	0.500
1,2,4-Trichlorobenzene	U		0.148	0.630
1,1,1-Trichloroethane	U		0.0736	0.200
1,1,2-Trichloroethane	U		0.0775	0.200
Trichloroethylene	U		0.0680	0.200
1,2,4-Trimethylbenzene	U		0.0764	0.200
1,3,5-Trimethylbenzene	U		0.0779	0.200
2,2,4-Trimethylpentane	U		0.133	0.200
Vinyl chloride	U		0.0949	0.200
Vinyl Bromide	U		0.0852	0.200
Vinyl acetate	U		0.116	0.200
m&p-Xylene	U		0.135	0.400
o-Xylene	U		0.0828	0.200
Ethanol	U		0.265	0.630
TPH (GC/MS) Low Fraction	U		39.7	200
(S) 1,4-Bromofluorobenzene	97.3			60.0-140

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3635137-1 03/25/21 08:35 • (LCSD) R3635137-2 03/25/21 09:16

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethanol	3.75	4.24	4.31	113	115	55.0-148			1.64	25
Propene	3.75	4.19	4.37	112	117	64.0-144			4.21	25
Dichlorodifluoromethane	3.75	3.82	3.86	102	103	64.0-139			1.04	25
1,2-Dichlorotetrafluoroethane	3.75	3.90	3.87	104	103	70.0-130			0.772	25
Chloromethane	3.75	4.15	4.15	111	111	70.0-130			0.000	25

Volatile Organic Compounds (MS) by Method TO-15

L1330495-01

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3635137-1 03/25/21 08:35 • (LCSD) R3635137-2 03/25/21 09:16

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Vinyl chloride	3.75	4.21	4.20	112	112	70.0-130			0.238	25
1,3-Butadiene	3.75	4.28	4.12	114	110	70.0-130			3.81	25
Bromomethane	3.75	3.99	3.92	106	105	70.0-130			1.77	25
Chloroethane	3.75	4.06	4.15	108	111	70.0-130			2.19	25
Trichlorofluoromethane	3.75	3.68	3.63	98.1	96.8	70.0-130			1.37	25
1,1,2-Trichlorotrifluoroethane	3.75	3.81	3.83	102	102	70.0-130			0.524	25
1,1-Dichloroethene	3.75	3.92	3.87	105	103	70.0-130			1.28	25
1,1-Dichloroethane	3.75	3.95	3.77	105	101	70.0-130			4.66	25
Acetone	3.75	4.04	4.10	108	109	70.0-130			1.47	25
2-Propanol	3.75	4.05	4.02	108	107	70.0-139			0.743	25
Carbon disulfide	3.75	3.73	3.83	99.5	102	70.0-130			2.65	25
Methylene Chloride	3.75	4.07	3.93	109	105	70.0-130			3.50	25
MTBE	3.75	3.77	3.84	101	102	70.0-130			1.84	25
trans-1,2-Dichloroethene	3.75	3.98	3.86	106	103	70.0-130			3.06	25
n-Hexane	3.75	3.96	3.77	106	101	70.0-130			4.92	25
Vinyl acetate	3.75	3.95	3.86	105	103	70.0-130			2.30	25
Methyl Ethyl Ketone	3.75	3.92	3.88	105	103	70.0-130			1.03	25
cis-1,2-Dichloroethene	3.75	3.96	3.93	106	105	70.0-130			0.760	25
Chloroform	3.75	3.75	3.73	100	99.5	70.0-130			0.535	25
1,1,1-Trichloroethane	3.75	3.76	3.63	100	96.8	70.0-130			3.52	25
Carbon tetrachloride	3.75	3.67	3.64	97.9	97.1	70.0-130			0.821	25
Benzene	3.75	3.82	3.77	102	101	70.0-130			1.32	25
1,2-Dichloroethane	3.75	3.87	3.88	103	103	70.0-130			0.258	25
Heptane	3.75	3.93	4.12	105	110	70.0-130			4.72	25
Trichloroethylene	3.75	3.69	3.84	98.4	102	70.0-130			3.98	25
1,2-Dichloropropane	3.75	4.02	3.91	107	104	70.0-130			2.77	25
1,4-Dioxane	3.75	3.62	3.60	96.5	96.0	70.0-140			0.554	25
Bromodichloromethane	3.75	3.73	3.86	99.5	103	70.0-130			3.43	25
cis-1,3-Dichloropropene	3.75	3.86	3.88	103	103	70.0-130			0.517	25
4-Methyl-2-pentanone (MIBK)	3.75	4.18	4.15	111	111	70.0-139			0.720	25
Toluene	3.75	3.85	3.82	103	102	70.0-130			0.782	25
trans-1,3-Dichloropropene	3.75	3.88	3.94	103	105	70.0-130			1.53	25
1,1,2-Trichloroethane	3.75	3.74	3.78	99.7	101	70.0-130			1.06	25
Tetrachloroethylene	3.75	3.62	3.67	96.5	97.9	70.0-130			1.37	25
Methyl Butyl Ketone	3.75	4.03	4.10	107	109	70.0-149			1.72	25
Dibromochloromethane	3.75	3.72	3.74	99.2	99.7	70.0-130			0.536	25
1,2-Dibromoethane	3.75	3.71	3.77	98.9	101	70.0-130			1.60	25
Chlorobenzene	3.75	3.78	3.83	101	102	70.0-130			1.31	25
Ethylbenzene	3.75	3.70	3.75	98.7	100	70.0-130			1.34	25
m&p-Xylene	7.50	7.44	7.43	99.2	99.1	70.0-130			0.135	25

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Volatile Organic Compounds (MS) by Method TO-15 L1330495-01

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3635137-1 03/25/21 08:35 • (LCSD) R3635137-2 03/25/21 09:16

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
o-Xylene	3.75	3.70	3.67	98.7	97.9	70.0-130			0.814	25
Styrene	3.75	3.70	3.74	98.7	99.7	70.0-130			1.08	25
Bromoform	3.75	3.63	3.66	96.8	97.6	70.0-130			0.823	25
1,1,2,2-Tetrachloroethane	3.75	3.75	3.78	100	101	70.0-130			0.797	25
4-Ethyltoluene	3.75	3.75	3.66	100	97.6	70.0-130			2.43	25
1,3,5-Trimethylbenzene	3.75	3.83	3.76	102	100	70.0-130			1.84	25
1,2,4-Trimethylbenzene	3.75	3.77	3.79	101	101	70.0-130			0.529	25
1,3-Dichlorobenzene	3.75	3.70	3.75	98.7	100	70.0-130			1.34	25
1,4-Dichlorobenzene	3.75	3.73	3.73	99.5	99.5	70.0-130			0.000	25
Benzyl Chloride	3.75	3.76	3.78	100	101	70.0-152			0.531	25
1,2-Dichlorobenzene	3.75	3.68	3.69	98.1	98.4	70.0-130			0.271	25
1,2,4-Trichlorobenzene	3.75	3.92	3.95	105	105	70.0-160			0.762	25
Hexachloro-1,3-butadiene	3.75	3.66	3.64	97.6	97.1	70.0-151			0.548	25
Naphthalene	3.75	3.80	3.81	101	102	70.0-159			0.263	25
TPH (GC/MS) Low Fraction	203	234	232	115	114	70.0-130			0.858	25
Allyl Chloride	3.75	4.42	3.89	118	104	70.0-130			12.8	25
2-Chlorotoluene	3.75	3.66	3.66	97.6	97.6	70.0-130			0.000	25
Methyl Methacrylate	3.75	3.65	3.73	97.3	99.5	70.0-130			2.17	25
Tetrahydrofuran	3.75	4.00	4.04	107	108	70.0-137			0.995	25
2,2,4-Trimethylpentane	3.75	3.93	3.90	105	104	70.0-130			0.766	25
Vinyl Bromide	3.75	3.76	3.77	100	101	70.0-130			0.266	25
Isopropylbenzene	3.75	3.71	3.72	98.9	99.2	70.0-130			0.269	25
(S) 1,4-Bromofluorobenzene				98.6	98.9	60.0-140				

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3635598-2 03/27/21 09:03

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
Cyclohexane	U		0.0753	0.200
(S) 1,4-Bromofluorobenzene	93.3			60.0-140

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3635598-1 03/27/21 08:20 • (LCSD) R3635598-3 03/27/21 09:46

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ppbv	ppbv	ppbv	%	%	%			%	%
Cyclohexane	3.75	3.96	4.02	106	107	70.0-130			1.50	25
(S) 1,4-Bromofluorobenzene				96.1	95.0	60.0-140				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Organic Compounds (GC) by Method D1946 [L1330495-01](#)

Method Blank (MB)

(MB) R3636275-3 03/30/21 11:25

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Oxygen	U		0.225	5.00
Carbon Monoxide	U		0.665	2.00
Carbon Dioxide	U		0.121	0.500
Methane	U		0.0584	0.400

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3636275-1 03/30/21 11:07 • (LCSD) R3636275-2 03/30/21 11:18

Analyte	Spike Amount %	LCS Result %	LCSD Result %	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Oxygen	20.0	22.8	21.8	114	109	70.0-130			4.48	20
Carbon Monoxide	2.50	2.83	2.69	113	108	70.0-130			5.07	20
Carbon Dioxide	2.50	2.43	2.33	97.2	93.2	70.0-130			4.20	20
Methane	2.00	2.13	2.08	107	104	70.0-130			2.38	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

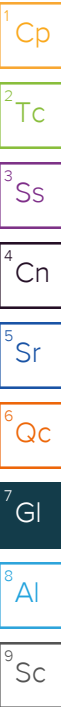
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.



Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

[illegible]

District I

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District IV

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

CONDITIONS

Action 28324

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 28324
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Accepted for the record. See App ID 124694 for most updated status.	9/27/2022