



March 19, 2021

Mr. Bradford Billings
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Review of 2020 Semi-Annual Monitoring and Remedial Activities Report:

Content satisfactory

1. Continued groundwater monitoring and sampling on a semi-annual basis
2. Continue to monitor the absorbent sock in VG-4 and replace as needed
3. Submit the Annual Monitoring Report to the OCD no later than March 31, 2022

**Re: 2020 Semi-Annual Monitoring and Remedial Activities Report
ConocoPhillips, Vacuum Glorietta East Unit
Lea County, New Mexico (1RP-744)**

Mr. Billings:

This report details the continuing groundwater monitoring and remedial activities at the ConocoPhillips Company ("COP") Vacuum Glorietta East Unit, Lea County, New Mexico (Site). The Site location is shown on Figure 1. The Site was assigned the identifier order No. 1RP-744 by the New Mexico Oil Conservation Division (NMOCD).

1.0 BACKGROUND AND PREVIOUS INVESTIGATIONS

Impacts to soil and groundwater are believed to be associated with a release that was reported to the NMOCD on October 28, 2002. Approximately 80 barrels of oil and 20 barrels of water were recovered after the release. The affected area was estimated to be approximately 80 feet by 150 feet in size.

An initial investigation was performed at the Site by B&H Environmental Services in November 2002. A total of seven shallow soil borings were advanced during the investigation. Soil samples collected from the borings indicated the presence of chlorides and petroleum hydrocarbons above NMOCD Recommended Remedial Action Limits (RRALs).

Approximately 3,240 cubic yards (yd³) of petroleum-impacted soil was excavated in August 2004, and another 1,000 yd³ of soil was removed in November and December 2008 after additional assessment. One monitoring well (VG-1) was installed during this time, but was abandoned because it was located within the footprint of the excavation.

Backfilling and reseedling of the excavation was approved and performed in June 2009, and three monitoring wells were subsequently installed: VG-2 was installed down gradient of the excavation, VG-3 was installed up gradient of the excavation, and VG-4 was installed within the footprint of the excavation. Three additional groundwater monitoring wells (VG-5, VG-6, and VG-7) were installed between December 4 and December 13, 2013 to further assess the northern, western, and southern extent of hydrocarbons and chlorides in the groundwater.

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Due to the presence of light non-aqueous phase liquid (LNAPL), mobile dual phase extraction (MDPE) was used as a remediation method at the Site. The first MDPE event at the Site took place on September 8 and 9, 2014. Approximately 1,636 gallons of total fluids were extracted from monitoring well VG-4, including approximately 6.06 gallons of hydrocarbons (liquid and vapor). The second MDPE event performed at the Site occurred from May 4 to 6, 2015. Approximately 6,349 gallons of total fluids were extracted from monitoring well VG-4, including approximately 14.51 gallons of hydrocarbons (liquid and vapor). A soil vapor extraction (SVE) event was conducted at the Site on June 11 through 13, 2019. A total of 9.78 gallons of vapor LNAPL were recovered during this event. MDPE and SVE events were performed by AcuVac Remediation, LLC (AcuVac) of Houston, Texas.

Trace amounts of LNAPL and exceedances of benzene, toluene, ethylbenzene, and total xylenes (collectively referred to as BTEX) and chlorides have historically been documented in VG-4, and an absorbent sock has been placed in this well.

3.0 HYDROLOGY/GROUNDWATER

The water bearing zone consists of the Pliocene-age Ogallala aquifer under unconfined conditions at the site. The Ogallala aquifer is located at the base of the Ogallala Formation. In general, the Ogallala Formation consists of quartz sand and gravel that is poorly to well-cemented with calcium carbonate and contains minor amounts of clay. The wells installed at the Site were drilled to depths of approximately 70 to 80 feet bgs with static groundwater water levels approximately 65 feet bgs.

4.0 2020 GROUNDWATER MONITORING

4.1 Groundwater Sampling and Analysis

Prior to purging the wells, each well was gauged to measure the depth to groundwater and phase separated hydrocarbons (PSH), if any. The water levels and the PSH measurements are summarized in Table 1, and well locations are shown on Figure 2. Monitoring wells containing PSH are gauged, but not sampled. Each monitoring well not containing PSH was sampled utilizing low flow sampling techniques. The semi-annual groundwater monitoring events occurred in May and November 2020. Groundwater samples were collected and analyzed for BTEX by United States Environmental Protection Agency (EPA) Method 8260 and chlorides by Method 300.0. Groundwater samples were transported to Pace Analytical Services, LLC, in Mount Juliet, Tennessee under chain-of-custody control for the 2020 sampling events. Table 2 presents a summary of the groundwater analyses. The analytical report and chain-of-custody is presented in Appendix A.

4.2 Groundwater Gradient

Groundwater gradient maps were generated for the May and November 2020 sampling events. The hydraulic gradient for the aquifer was generally to the southeast, and consistent with historical data. The May and November 2020 groundwater gradient maps are included as Figure 3 and Figure 4, respectively.



4.3 Phase Separated Hydrocarbon (PSH)

The monitoring wells were gauged for the presence of PSH during groundwater sampling events. Monitoring well VG-4 exhibited 0.04 feet of PSH during the November 2020 sampling event and was not sampled during this event.

5.0 GROUNDWATER ANALYTICAL RESULTS

5.1 June 2020 Sampling Event

During the May 2020 sampling event, monitoring wells VG-2, VG-3, VG-4, VG-5, VG-6, and VG-7 were sampled. The concentrations of benzene (1.59 mg/L), total xylenes (0.826 mg/L), and chlorides (581 mg/L) in the sample collected from monitoring well VG-4 exceeded the applicable NMWQCC Groundwater Quality Standards (0.01 mg/L, 0.62 mg/L, and 250 mg/L, respectively). Additionally, the concentration of chlorides in the sample collected from VG-5 (295 mg/L) exceeded the applicable standard. No additional exceedances of the applicable NMWQCC standards were found.

5.2 November 2020 Sampling Event

During the November 2020 monitoring event, monitoring wells VG-2, VG-3, VG-5, VG-6, and VG-7, were sampled. The concentration of chlorides in the sample collected from VG-5 (638 mg/L) exceeded the applicable standard. No additional exceedances of the applicable NMWQCC standards were found.

6.0 REMEDIAL ACTIVITIES

On May 4 through 6, 2020, Tetra Tech personnel mobilized to the Site to supervise remedial activities to enhance recovery of PSH in both liquid and vapor phases. AcuVac Remediation, LLC (AcuVac) of Houston, Texas performed three days of mobile dual phase extraction (MDPE)/soil vapor extraction (SVE) events on VG-4, which consisted of two 10-hour days of MDPE (events 4A and 4B) and one 8-hour day of SVE (event 4C). The first 10-hour day of MDPE on VG-4 resulted in the recovery of 4.18 gallons of LNAPL, the second 10-hour day of MDPE on VG-4 resulted in the recovery of 4.49 gallons of LNAPL, and the 8-hour day of SVE on VG-4 resulted in the recovery of 3.21 gallons of LNAPL. The AcuVac report of remedial activities performed at the Site is presented in Appendix B.

7.0 WORK PLAN

Groundwater monitoring and sampling of the monitoring wells will be continued on a semi-annual basis, with annual reporting to the NMOCD. Tetra Tech will continue to monitor the absorbent sock in VG-4 and replace as needed. Additional remedial activities will be evaluated for remediation at the Site, including additional MDPE events.



2020 Annual Groundwater Monitoring and Remedial Activities Report
ConocoPhillips - Vacuum Glorietta East Unit
Lea County, New Mexico (IRP-744)
March 19, 2021

If you have any questions, please call Julie Evans at (432) 258-3451.

Sincerely,
Tetra Tech, Inc.

A handwritten signature in blue ink that reads 'Julie Evans'.

Julie Evans
Project Manager

Reviewed By:

A handwritten signature in blue ink that appears to read 'Greg W. Pope'.

Greg W. Pope, P.G.
Program Manager

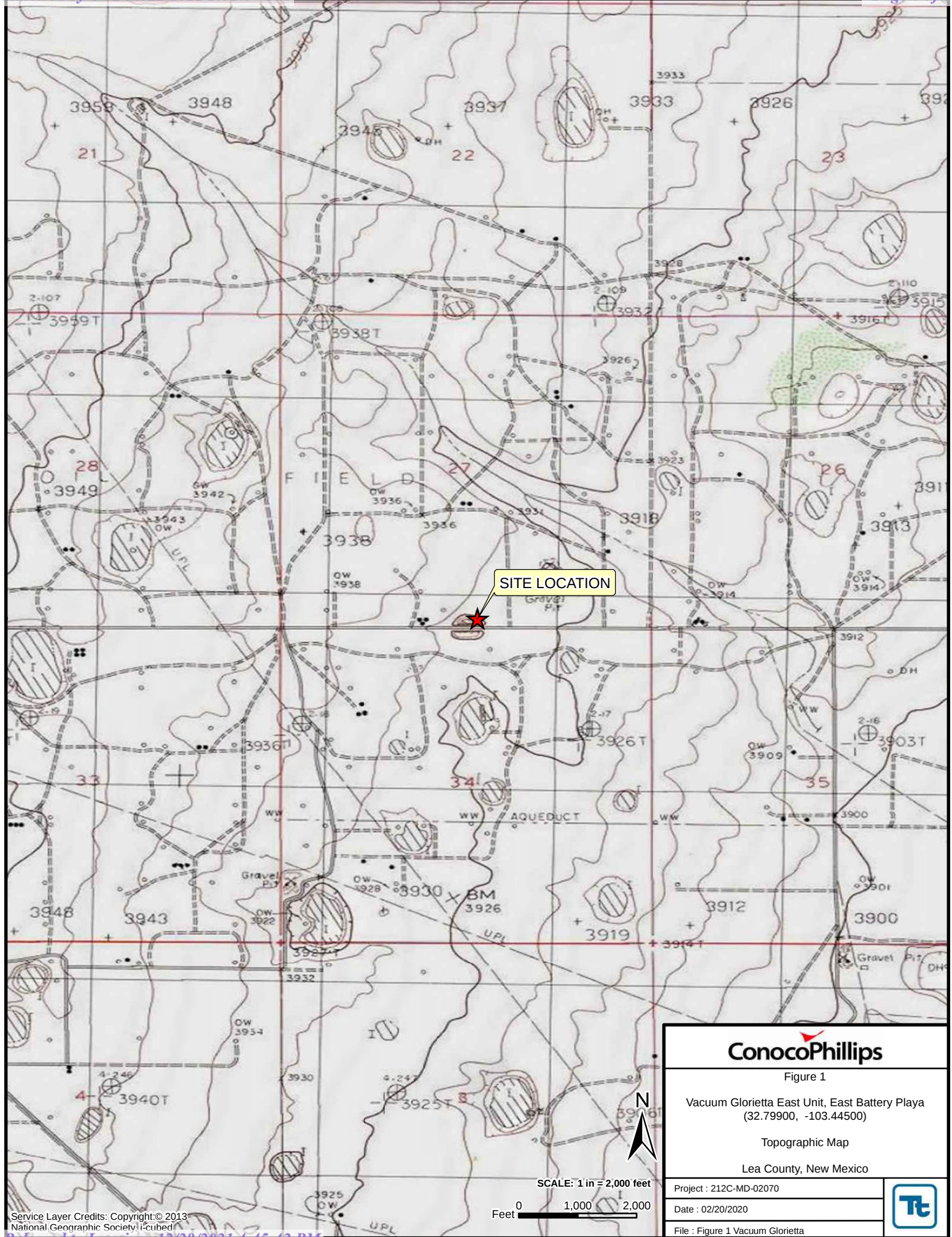
cc: Mr. Marvin Soriwei – ConocoPhillips

Attachments:

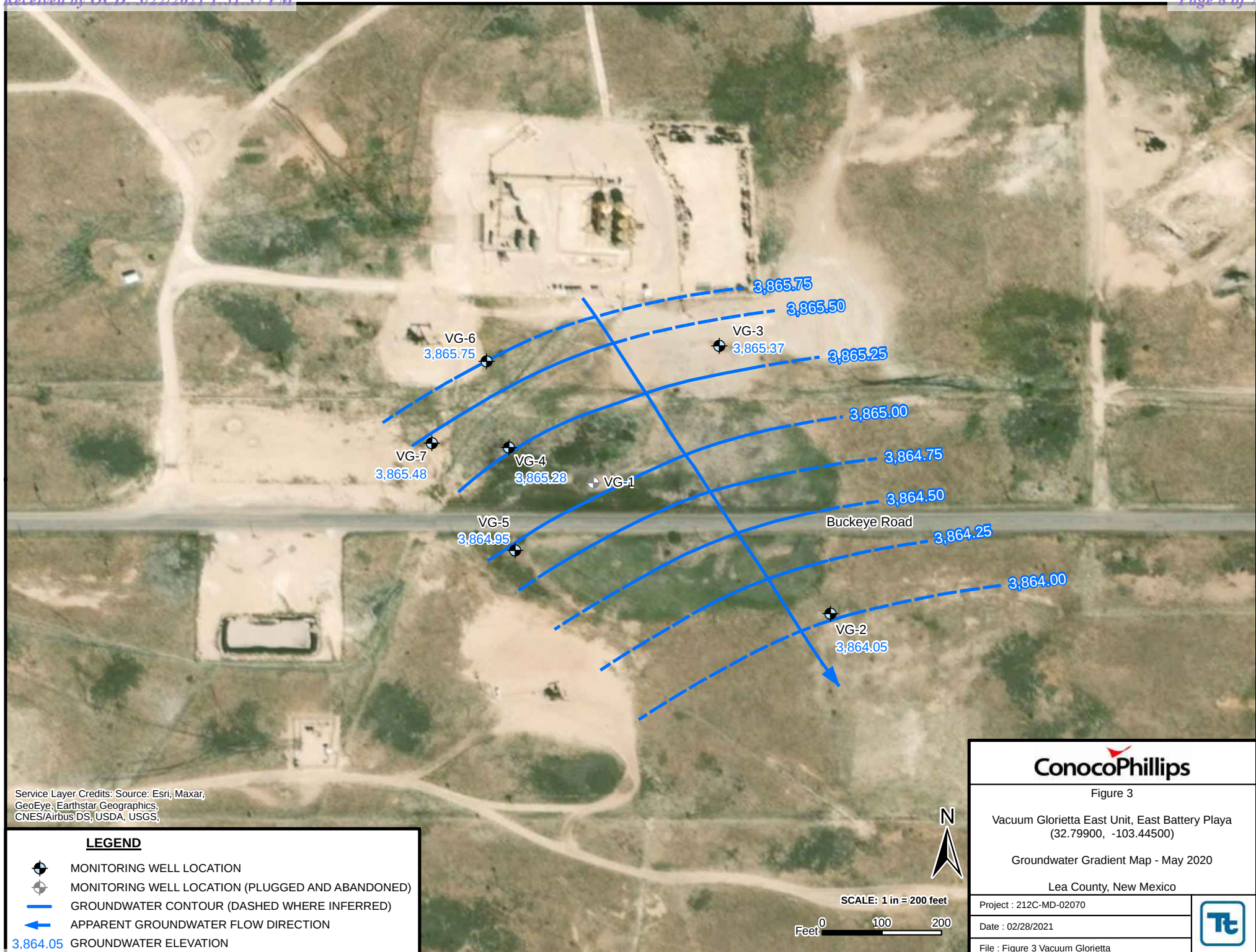
Figure 1 – Site Location Map
Figure 2 – Site Map
Figure 3 – Groundwater Gradient Map – May 2020
Figure 4 – Groundwater Gradient Map – November 2020
Table 1 – Summary of Groundwater Elevations and PSH Thickness
Table 2 – Summary of Groundwater Analytical Data
Appendix A – Laboratory Analytical Data Packages
Appendix B – AcuVac Remediation, LLC Mobile Dual Phase Extraction Report

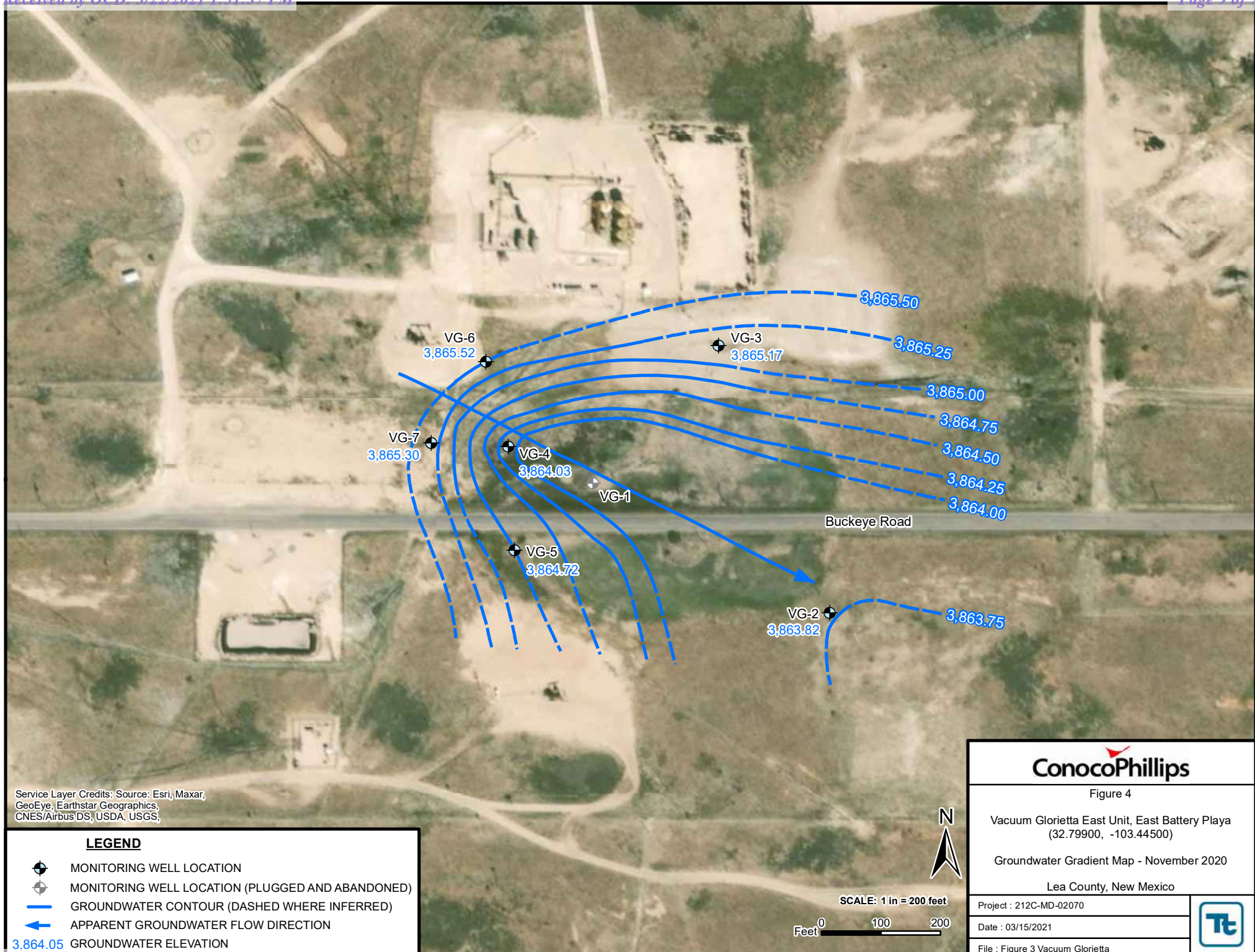


FIGURES











TABLES

Table 1
ConocoPhillips
Vacuum Glorietta
Lea County, New Mexico
Summary of Groundwater Elevations and PSH Thickness

Well Identification	Date Measured	Well Total Depth (ft)	Product (ft) (TOC)	Water level (ft) (TOC)	PSH Thickness (ft)	Product Elevation, feet AMSL	Top of Casing Elevation, feet AMSL	Groundwater Elevation (ft)
VG-2	1/27/2014	70	-	65.41	-	-	3,930.56	3,865.15
	4/16/2014	70	-	65.38	-	-	3,930.56	3,865.18
	7/22/2014	70	-	65.32	-	-	3,930.56	3,865.24
	10/9/2014	70	-	64.03	-	-	3,930.56	3,866.53
	1/14/2015	70	-	64.3	-	-	3,930.56	3,866.26
	4/16/2015	70	-	64.37	-	-	3,930.56	3,866.19
	7/8/2015	70	-	64.85	-	-	3,930.56	3,865.71
	10/9/2015	70	-	65.15	-	-	3,930.56	3,865.41
	1/7/2016	70	-	65.25	-	-	3,930.56	3,865.31
	4/6/2016	70	-	65.29	-	-	3,930.56	3,865.27
	6/10/2016	70	-	65.35	-	-	3,930.56	3,865.21
	8/16/2017	70	-	65.58	-	-	3,930.56	3,864.98
	11/30/2017	70	-	65.57	-	-	3,930.56	3,864.99
	7/24/2018	-	-	65.79	-	-	3,930.56	3,864.77
	11/14/2018	67.7	-	65.9	-	-	3,930.56	3,864.66
	6/17/2019	67.89	-	66.44	-	-	3,930.56	3,864.12
	11/20/2019	67.89	-	66.42	-	-	3,930.56	3,864.14
	5/13/2020	67.7	-	66.51	-	-	3,930.56	3,864.05
	11/19/2020	67.7	-	66.74	-	-	3,930.56	3,863.82
VG-3	1/27/2014	70	-	64.71	-	-	3,931.15	3,866.44
	4/16/2014	70	-	64.66	-	-	3,931.15	3,866.49
	7/22/2014	70	-	64.59	-	-	3,931.15	3,866.56
	9/10/2014	70	-	63.3	-	-	3,931.15	3,867.85
	1/14/2015	70	-	63.58	-	-	3,931.15	3,867.57
	4/16/2015	70	-	63.63	-	-	3,931.15	3,867.52
	8/7/2015	70	-	64.11	-	-	3,931.15	3,867.04
	9/10/2015	70	-	64.38	-	-	3,931.15	3,866.77
	7/1/2016	70	-	64.48	-	-	3,931.15	3,866.67
	6/4/2016	70	-	64.54	-	-	3,931.15	3,866.61
	6/10/2016	70	-	64.61	-	-	3,931.15	3,866.54
	8/16/2017	70	-	64.86	-	-	3,931.15	3,866.29
	11/30/2017	70	-	64.87	-	-	3,931.15	3,866.28
	7/24/2018	-	-	65.02	-	-	3,931.15	3,866.13
	11/14/2018	68.48	-	65.21	-	-	3,931.15	3,865.94
	6/17/2019	68.61	-	65.56	-	-	3,931.15	3,865.59
	11/19/2019	68.61	-	65.66	-	-	3,931.15	3,865.49
	5/12/2020	68.3	-	65.78	-	-	3,931.15	3,865.37
	11/19/2020	68.3	-	65.98	-	-	3,931.15	3,865.17
VG-4	1/27/2014	78	65.52	65.56	0.04	3,866.41	3,931.93	3,866.40
	4/16/2014	78	65.48	65.49	0.01	3,866.45	3,931.93	3,866.45
	7/22/2014	78	65.44	65.45	0.01	3,866.49	3,931.93	3,866.49
	10/9/2014	78	-	63.93	-	-	3,931.93	3,868.00
	1/14/2015	78	-	64.48	-	-	3,931.93	3,867.45
	4/16/2015	78	-	64.53	-	-	3,931.93	3,867.40
	7/8/2015	78	-	65.02	-	-	3,931.93	3,866.91
	10/9/2015	78	-	65.25	-	-	3,931.93	3,866.68
	1/7/2016	78	-	65.33	-	-	3,931.93	3,866.60

Table 1
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Vacuum Glorietta
Lea County, New Mexico
Summary of Groundwater Elevations and PSH Thickness

Well Identification	Date Measured	Well Total Depth (ft)	Product (ft) (TOC)	Water level (ft) (TOC)	PSH Thickness (ft)	Product Elevation, feet AMSL	Top of Casing Elevation, feet AMSL	Groundwater Elevation (ft)
VG-4 continued	4/6/2016	78	65.35	65.36	0.01	3,866.58	3,931.93	3,866.58
	10/6/2016	78	-	65.46	-	-	3,931.93	3,866.47
	8/16/2017	78	-	65.75	-	-	3,931.93	3,866.18
	11/30/2017	78	-	68.42	-	-	3,931.93	3,863.51
	7/24/2018	-	65.13	65.92	0.79	3,866.80	3,931.93	3,866.64
	11/14/2018	-	66.06	67.14	1.08	3,865.87	3,931.93	3,865.65
	6/17/2019	-	66.35	66.38	0.03	3,865.58	3,931.93	3,865.57
	11/19/2019	-	66.57	66.68	0.11	3,865.36	3,931.93	3,865.34
	5/13/2020	72.1	-	66.65	-	-	3,931.93	3,865.28
	11/18/2020	-	67.89	67.93	0.04	3,864.04	3,931.93	3,864.03
VG-5	1/27/2014	74	-	64.51	-	-	3,930.52	3,866.01
	4/16/2014	74	-	64.8	-	-	3,930.52	3,865.72
	7/22/2014	74	-	64.38	-	-	3,930.52	3,866.14
	10/9/2014	74	-	63.16	-	-	3,930.52	3,867.36
	1/14/2015	74	-	63.42	-	-	3,930.52	3,867.10
	4/16/2015	74	-	63.46	-	-	3,930.52	3,867.06
	7/8/2015	74	-	63.99	-	-	3,930.52	3,866.53
	10/9/2015	74	-	64.25	-	-	3,930.52	3,866.27
	1/7/2016	74	-	64.32	-	-	3,930.52	3,866.20
	4/6/2016	74	-	64.36	-	-	3,930.52	3,866.16
	10/6/2016	74	-	64.43	-	-	3,930.52	3,866.09
	8/16/2017	74	-	64.68	-	-	3,930.52	3,865.84
	11/30/2017	74	-	64.77	-	-	3,930.52	3,865.75
	7/24/2018	-	-	64.84	-	-	3,930.52	3,865.68
	11/14/2018	75.3	-	64.98	-	-	3,930.52	3,865.54
	6/17/2019	75.31	-	65.46	-	-	3,930.52	3,865.06
	11/20/2019	75.31	-	65.49	-	-	3,930.52	3,865.03
	5/13/2020	75.15	-	65.57	-	-	3,930.52	3,864.95
	11/19/2020	75.15	-	65.8	-	-	3,930.52	3,864.72
VG-6	1/27/2014	80	-	68.38	-	-	3,935.16	3,866.78
	4/16/2014	80	-	68.32	-	-	3,935.16	3,866.84
	7/22/2014	80	-	68.26	-	-	3,935.16	3,866.90
	10/9/2014	80	-	67.06	-	-	3,935.16	3,868.10
	1/14/2015	80	-	67.27	-	-	3,935.16	3,867.89
	4/16/2015	80	-	67.3	-	-	3,935.16	3,867.86
	7/8/2015	80	-	67.86	-	-	3,935.16	3,867.30
	10/9/2015	80	-	68.12	-	-	3,935.16	3,867.04
	1/7/2016	80	-	68.16	-	-	3,935.16	3,867.00
	4/6/2016	80	-	68.21	-	-	3,935.16	3,866.95
	10/6/2016	80	-	68.27	-	-	3,935.16	3,866.89
	8/16/2017	80	-	68.53	-	-	3,935.16	3,866.63
	11/30/2017	80	-	68.57	-	-	3,935.16	3,866.59
	7/24/2018	-	-	68.69	-	-	3,935.16	3,866.47
	11/14/2018	80	-	68.86	-	-	3,935.16	3,866.30
	6/17/2019	80.16	-	69.35	-	-	3,935.16	3,865.81
	11/19/2019	80.16	-	69.31	-	-	3,935.16	3,865.85
	5/12/2020	79.72	-	69.41	-	-	3,935.16	3,865.75

Table 1
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Lea County, New Mexico
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VG-6 continued	11/18/2020	79.72	-	69.64	-	-	3,935.16	3,865.52
VG-7	1/27/2014	80	-	68.23	-	-	3,934.78	3,866.55
	4/16/2014	80	-	68.19	-	-	3,934.78	3,866.59
	7/22/2014	80	-	68.1	-	-	3,934.78	3,866.68
	10/9/2014	80	-	66.93	-	-	3,934.78	3,867.85
	1/14/2015	80	-	67.12	-	-	3,934.78	3,867.66
	4/16/2015	80	-	67.16	-	-	3,934.78	3,867.62
	7/8/2015	80	-	67.7	-	-	3,934.78	3,867.08
	10/9/2015	80	-	67.98	-	-	3,934.78	3,866.80
	1/7/2016	80	-	68.01	-	-	3,934.78	3,866.77
	4/6/2016	80	-	68.07	-	-	3,934.78	3,866.71
	10/6/2016	80	-	68.13	-	-	3,934.78	3,866.65
	8/16/2017	80	-	68.38	-	-	3,934.78	3,866.40
	11/30/2017	80	-	68.36	-	-	3,934.78	3,866.42
	7/24/2018	-	-	68.58	-	-	3,934.78	3,866.20
	11/14/2018	79.8	-	68.65	-	-	3,934.78	3,866.13
	6/17/2019	80.09	-	69.15	-	-	3,934.78	3,865.63
	11/19/2019	80.09	-	69.17	-	-	3,934.78	3,865.61
	5/12/2020	79.87	-	69.30	-	-	3,934.78	3,865.48
	11/18/2020	79.86	-	69.48	-	-	3,934.78	3,865.30

Notes:

PSH phase separated hydrocarbons
 - no measurement
 ft feet
 TOC top of casing
 AMSL above mean sea level

Table 2
ConocoPhillips
Vacuum Glorietta
Lea County, New Mexico
Summary of Groundwater Analytical Data

Sample Identification	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)	Chlorides (mg/L)
NMWQCC Groundwater Quality Standards (mg/L)		0.01	0.750	0.75	0.62	250
VG-2	1/28/2014	<0.001	<0.001	<0.001	<0.003	125
	4/16/2014	<0.001	<0.001	<0.001	<0.003	134
	7/22/2014	<0.001	<0.001	<0.001	<0.003	146
	10/9/2014	<0.001	<0.001	<0.001	<0.003	111
	10/9/2014	<0.001	<0.001	<0.001	<0.003	139
	1/14/2015	<0.001	<0.001	<0.001	<0.003	106
	4/16/2015	<0.001	<0.001	<0.001	<0.003	88.4
	7/8/2015	<0.001	<0.001	<0.001	<0.003	73.8
	10/9/2015	<0.001	<0.001	<0.001	<0.003	106
	1/7/2016	<0.001	<0.001	<0.001	<0.003	183
	4/6/2016	<0.001	<0.001	<0.001	<0.003	174
	10/6/2016	<0.001	<0.001	<0.001	<0.003	200
	8/16/2017	<0.0020	<0.0050	<0.0020	<0.0060	200
	11/30/2017	<0.0020	<0.0050	<0.0020	<0.0060	195
	7/25/2018	<0.00100	<0.00100	<0.00100	<0.00300	173
	7/25/2018	<0.00100	<0.00100	<0.00100	<0.00300	169
	11/14/2018	<0.00100	<0.00100	<0.00100	<0.00300	175
	6/17/2019	<0.00100	<0.00100	<0.00100	<0.00300	193
	11/20/2019	<0.00100	<0.00100	<0.00100	<0.00300	192
	5/13/2020	<0.00100	<0.00100	<0.00100	<0.00300	176
	11/19/2020	<0.00100	<0.00100	<0.00100	<0.00300	117
VG-3	1/18/2014	<0.001	<0.001	<0.001	<0.003	45.2
	4/16/2014	<0.001	<0.001	<0.001	<0.003	46.7
	7/22/2014	<0.001	<0.001	<0.001	<0.003	44.4
	9/10/2014	<0.001	<0.001	<0.001	<0.003	38.2
	1/14/2015	<0.001	<0.001	<0.001	<0.003	50
	4/16/2015	<0.001	<0.001	<0.001	<0.003	45.7
	7/8/2015	<0.001	<0.001	<0.001	<0.003	44.2
	10/9/2015	<0.001	<0.001	<0.001	<0.003	41.6
	1/7/2016	<0.001	<0.001	<0.001	<0.003	40.4
	4/6/2016	<0.001	<0.001	<0.001	<0.003	40.9
	10/6/2016	<0.001	<0.001	<0.001	<0.003	40.3
	8/16/2017	<0.0020	<0.0050	<0.0020	<0.0060	40.4
	11/30/2017	<0.0020	<0.0050	<0.0020	<0.0060	38.1
	7/25/2018	<0.00100	<0.00100	<0.00100	<0.00300	44.8
	11/14/2018	<0.00100	<0.00100	<0.00100	<0.00300	46.6
	6/17/2019	<0.00100	<0.00100	<0.00100	<0.00300	49.6
	11/19/2019	<0.00100	<0.00100	<0.00100	<0.00300	55.1
	5/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	56.8

Table 2
ConocoPhillips
Vacuum Glorietta
Lea County, New Mexico
Summary of Groundwater Analytical Data

Sample Identification	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethlybenzene (mg/L)	Xylene (mg/L)	Chlorides (mg/L)
NMWQCC Groundwater Quality Standards (mg/L)		0.01	0.750	0.75	0.62	250
VG-3 continued	11/19/2020	<0.00100	<0.00100	<0.00100	<0.00300	59.8
VG-4	10/28/2014	1.80	<0.05	0.82	0.20	4,140
	1/14/2015	2.70	0.030	1.10	0.78	5,640
DUP	4/16/2015	5.60	0.037	1.70	0.80	3,080
	4/16/2015	5.00	0.030	1.30	0.31	-
	7/8/2015	4.94	<0.05	1.57	<0.15	2,240
DUP	7/8/2015	4.21	0.002	1.27	0.13	-
	10/9/2015	4.18	<0.05	1.50	0.31	1,480
	1/7/2016	4.12	<0.05	2.10	0.27	1,360
DUP	1/7/2016	4.08	0.022	2.01	0.18	-
	4/6/2016	3.61	<0.05	5.47	2.13	1,190
	4/6/2016	3.17	<0.05	2.95	0.99	-
DUP	10/6/2016	1.51	<0.05	0.54	0.26	1,490
	10/6/2016	1.58	<0.05	0.57	0.27	-
	8/16/2017	0.77	<0.0050	0.12	0.04	1,180
DUP 1	11/30/2017	0.96	0.007	0.25	0.11	1,060
	11/30/2017	1.50	0.007	0.39	0.11	1,090
	7/25/2018	NS				
	11/14/2018	NS				
	6/17/2019	NS				
	11/19/2019	NS				
	5/13/2020	1.59	0.0837	0.551	0.826	581
	11/18/2020	NS				
VG-5	1/28/2014	<0.001	<0.001	<0.001	<0.003	304
	4/16/2014	<0.001	<0.001	<0.001	<0.003	342
DUP	4/16/2014	<0.001	<0.001	<0.001	<0.003	328
	7/22/2014	<0.001	<0.001	<0.001	<0.003	140
	10/9/2014	<0.001	<0.001	<0.001	<0.003	278
DUP	1/14/2015	<0.001	<0.001	<0.001	<0.003	228
	1/14/2015	<0.001	<0.001	<0.001	<0.003	200
	4/16/2015	<0.001	<0.001	<0.001	<0.003	200
DUP	7/8/2015	<0.001	<0.001	<0.001	<0.003	232
	10/9/2015	<0.001	<0.001	<0.001	<0.003	204
	10/9/2015	<0.001	<0.001	<0.001	<0.003	187
	1/7/2016	<0.001	<0.001	<0.001	<0.003	158
	4/6/2016	<0.001	<0.001	<0.001	<0.003	224
	10/6/2016	<0.001	<0.001	<0.001	<0.003	283
	8/16/2017	<0.0020	<0.0050	<0.0020	<0.0060	298
	11/30/2017	<0.0020	<0.0050	<0.0020	<0.0060	417

Table 2
ConocoPhillips
Vacuum Glorietta
Lea County, New Mexico
Summary of Groundwater Analytical Data

Sample Identification	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethlybenzene (mg/L)	Xylene (mg/L)	Chlorides (mg/L)
NMWQCC Groundwater Quality Standards (mg/L)		0.01	0.750	0.75	0.62	250
VG-5 continued	7/25/2018	<0.00100	<0.00100	<0.00100	<0.00300	225
DUP	11/14/2018	<0.00100	<0.00100	<0.00100	<0.00300	180
	11/14/2018	<0.00100	<0.00100	<0.00100	<0.00300	177
	6/17/2019	0.000862 J	0.00439	0.000526 J	0.00244 J	188
	11/20/2019	<0.00100	<0.00100	<0.00100	<0.00300	176
	5/13/2020	<0.00100	<0.00100	<0.00100	<0.00300	295
	11/19/2020	<0.00100	<0.00100	<0.00100	<0.00300	368
VG-6	1/28/2014	<0.001	<0.001	<0.001	<0.003	88.3
	4/16/2014	<0.001	<0.001	<0.001	<0.003	78.1
	7/22/2014	<0.001	<0.001	<0.001	<0.003	95.3
	10/9/2014	<0.001	<0.001	<0.001	<0.003	113
	1/14/2015	<0.001	<0.001	<0.001	<0.003	88.4
	4/16/2015	<0.001	<0.001	<0.001	<0.003	82.3
	7/8/2015	<0.001	<0.001	<0.001	<0.003	99.9
	10/9/2015	<0.001	<0.001	<0.001	<0.003	134
	1/7/2016	<0.001	<0.001	<0.001	<0.003	111
	4/6/2016	<0.001	<0.001	<0.001	<0.003	86
	10/6/2016	<0.001	<0.001	<0.001	<0.003	139
	8/16/2017	<0.0020	<0.0050	<0.0020	<0.0060	140
	11/30/2017	<0.0020	<0.0050	<0.0020	<0.0060	84.4
	7/25/2018	<0.00100	<0.00100	<0.00100	<0.00300	117
	11/14/2018	<0.00100	<0.00100	<0.00100	<0.00300	134
	6/17/2019	<0.00100	0.001	<0.00100	<0.00300	138
	11/19/2019	<0.00100	<0.00100	<0.00100	<0.00300	143
	5/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	135
	11/18/2020	<0.00100	<0.00100	<0.00100	<0.00300	115
VG-7	1/28/2014	<0.001	<0.001	<0.001	<0.003	191
	1/28/2014	<0.001	<0.001	<0.001	<0.003	201
	4/16/2014	<0.001	<0.001	<0.001	<0.003	211
	7/22/2014	<0.001	<0.001	<0.001	<0.003	201
	7/22/2014	-	-	-	-	203
	10/9/2014	<0.001	<0.001	<0.001	<0.003	189
	1/14/2015	<0.001	<0.001	<0.001	<0.003	246
	4/16/2015	<0.001	<0.001	<0.001	<0.003	270
	7/8/2015	<0.001	<0.001	<0.001	<0.003	203
	10/9/2015	<0.001	<0.001	<0.001	<0.003	154
	1/7/2016	<0.001	<0.001	<0.001	<0.003	121
	4/6/2016	<0.001	<0.001	<0.001	<0.003	148
	10/6/2016	<0.001	<0.001	<0.001	<0.003	172

Table 2
ConocoPhillips
Vacuum Glorietta
Lea County, New Mexico
Summary of Groundwater Analytical Data

Sample Identification	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethlybenzene (mg/L)	Xylene (mg/L)	Chlorides (mg/L)
NMWQCC Groundwater Quality Standards (mg/L)		0.01	0.750	0.75	0.62	250
VG-7 continued DUP DUP DUP DUP	8/16/2017	<0.0020	<0.0050	<0.0020	<0.0060	134
	11/30/2017	<0.0020	<0.0050	<0.0020	<0.0060	164
	7/25/2018	<0.00100	<0.00100	<0.00100	<0.00300	254
	11/14/2018	<0.00100	<0.00100	<0.00100	<0.00300	229
	6/17/2019	<0.00100	<0.00100	<0.00100	<0.00300	207
	6/17/2019	<0.00100	<0.00100	<0.00100	<0.00300	207
	11/19/2019	<0.00100	<0.00100	<0.00100	<0.00300	149
	11/19/2019	<0.00100	<0.00100	<0.00100	<0.00300	145
	5/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	129
	5/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	129
	11/18/2020	<0.00100	<0.00100	<0.00100	<0.00300	122
	11/18/2020	<0.00100	<0.00100	<0.00100	<0.00300	125

Notes:

mg/L milligrams per liter

bold Exceeds NMWQCC groundwater quality standards

DUP duplicate sample

NS not sampled

J The reported value is an estimate

-- not analyzed



APPENDIX A



ANALYTICAL REPORT

May 28, 2020

ConocoPhillips - Tetra Tech

Sample Delivery Group: L1220144
Samples Received: 05/19/2020
Project Number: 212C-MD-02070
Description: COP- Vacuum Glorietta

Report To: Julie Evans
901 West Wall
Suite 100
Midland, TX 79701

¹Cp²Tc³Ss⁴Cn⁵Sr⁶Qc⁷Gl⁸Al⁹Sc

Entire Report Reviewed By:

Chris McCord
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.

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Tc: Table of Contents 2

Ss: Sample Summary 3

Cn: Case Narrative 4

Sr: Sample Results 5

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 VG-7 L1220144-03 7

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Qc: Quality Control Summary 12

 Wet Chemistry by Method 9056A 12

 Volatile Organic Compounds (GC/MS) by Method 8260B 13

Gl: Glossary of Terms 14

Al: Accreditations & Locations 15

Sc: Sample Chain of Custody 16

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

VG-3 L1220144-01 GW

				Collected by Preston Poitevint	Collected date/time 05/12/20 11:05	Received date/time 05/19/20 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1480013	1	05/22/20 16:58	05/22/20 16:58	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1479805	1	05/21/20 04:57	05/21/20 04:57	ADM	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

VG-6 L1220144-02 GW

				Collected by Preston Poitevint	Collected date/time 05/12/20 12:15	Received date/time 05/19/20 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1480013	5	05/22/20 17:11	05/22/20 17:11	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1479805	1	05/21/20 05:17	05/21/20 05:17	ADM	Mt. Juliet, TN

4 Cn

5 Sr

6 Qc

VG-7 L1220144-03 GW

				Collected by Preston Poitevint	Collected date/time 05/12/20 14:00	Received date/time 05/19/20 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1480013	5	05/22/20 17:24	05/22/20 17:24	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1479805	1	05/21/20 05:37	05/21/20 05:37	ADM	Mt. Juliet, TN

7 Gl

8 Al

9 Sc

VG-2 L1220144-04 GW

				Collected by Preston Poitevint	Collected date/time 05/13/20 11:35	Received date/time 05/19/20 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1480013	5	05/22/20 17:37	05/22/20 17:37	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1479805	1	05/21/20 05:56	05/21/20 05:56	ADM	Mt. Juliet, TN

VG-5 L1220144-05 GW

				Collected by Preston Poitevint	Collected date/time 05/13/20 12:50	Received date/time 05/19/20 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1480013	5	05/22/20 17:50	05/22/20 17:50	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1479805	1	05/21/20 06:16	05/21/20 06:16	ADM	Mt. Juliet, TN

VG-4 L1220144-06 GW

				Collected by Preston Poitevint	Collected date/time 05/13/20 13:45	Received date/time 05/19/20 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1480013	20	05/22/20 18:04	05/22/20 18:04	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1479805	50	05/21/20 06:35	05/21/20 06:35	ADM	Mt. Juliet, TN

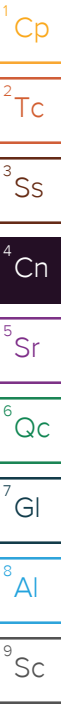
DUP L1220144-07 GW

				Collected by Preston Poitevint	Collected date/time 05/12/20 00:00	Received date/time 05/19/20 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1480013	5	05/22/20 18:43	05/22/20 18:43	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1479805	1	05/21/20 06:55	05/21/20 06:55	ADM	Mt. Juliet, TN

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.



Chris McCord
Project Manager



Collected date/time: 05/12/20 11:05

L1220144

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chloride	56.8		0.379	1.00	1	05/22/2020 16:58	WG1480013

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	05/21/2020 04:57	WG1479805
Toluene	U		0.000278	0.00100	1	05/21/2020 04:57	WG1479805
Ethylbenzene	U		0.000137	0.00100	1	05/21/2020 04:57	WG1479805
Total Xylenes	U		0.000174	0.00300	1	05/21/2020 04:57	WG1479805
(S) Toluene-d8	110			80.0-120		05/21/2020 04:57	WG1479805
(S) 4-Bromofluorobenzene	108			77.0-126		05/21/2020 04:57	WG1479805
(S) 1,2-Dichloroethane-d4	106			70.0-130		05/21/2020 04:57	WG1479805

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 05/12/20 12:15

L1220144

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chloride	135		1.90	5.00	5	05/22/2020 17:11	WG1480013

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	05/21/2020 05:17	WG1479805
Toluene	U		0.000278	0.00100	1	05/21/2020 05:17	WG1479805
Ethylbenzene	U		0.000137	0.00100	1	05/21/2020 05:17	WG1479805
Total Xylenes	U		0.000174	0.00300	1	05/21/2020 05:17	WG1479805
(S) Toluene-d8	110			80.0-120		05/21/2020 05:17	WG1479805
(S) 4-Bromofluorobenzene	100			77.0-126		05/21/2020 05:17	WG1479805
(S) 1,2-Dichloroethane-d4	112			70.0-130		05/21/2020 05:17	WG1479805

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 05/12/20 14:00

L1220144

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chloride	129		1.90	5.00	5	05/22/2020 17:24	WG1480013

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	05/21/2020 05:37	WG1479805
Toluene	U		0.000278	0.00100	1	05/21/2020 05:37	WG1479805
Ethylbenzene	U		0.000137	0.00100	1	05/21/2020 05:37	WG1479805
Total Xylenes	U		0.000174	0.00300	1	05/21/2020 05:37	WG1479805
(S) Toluene-d8	112			80.0-120		05/21/2020 05:37	WG1479805
(S) 4-Bromofluorobenzene	106			77.0-126		05/21/2020 05:37	WG1479805
(S) 1,2-Dichloroethane-d4	106			70.0-130		05/21/2020 05:37	WG1479805

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 05/13/20 11:35

L1220144

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chloride	176		1.90	5.00	5	05/22/2020 17:37	WG1480013

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	05/21/2020 05:56	WG1479805
Toluene	U		0.000278	0.00100	1	05/21/2020 05:56	WG1479805
Ethylbenzene	U		0.000137	0.00100	1	05/21/2020 05:56	WG1479805
Total Xylenes	U		0.000174	0.00300	1	05/21/2020 05:56	WG1479805
(S) Toluene-d8	114			80.0-120		05/21/2020 05:56	WG1479805
(S) 4-Bromofluorobenzene	104			77.0-126		05/21/2020 05:56	WG1479805
(S) 1,2-Dichloroethane-d4	107			70.0-130		05/21/2020 05:56	WG1479805

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 05/13/20 12:50

L1220144

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chloride	295		1.90	5.00	5	05/22/2020 17:50	WG1480013

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	05/21/2020 06:16	WG1479805
Toluene	U		0.000278	0.00100	1	05/21/2020 06:16	WG1479805
Ethylbenzene	U		0.000137	0.00100	1	05/21/2020 06:16	WG1479805
Total Xylenes	U		0.000174	0.00300	1	05/21/2020 06:16	WG1479805
(S) Toluene-d8	110			80.0-120		05/21/2020 06:16	WG1479805
(S) 4-Bromofluorobenzene	100			77.0-126		05/21/2020 06:16	WG1479805
(S) 1,2-Dichloroethane-d4	106			70.0-130		05/21/2020 06:16	WG1479805

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 05/13/20 13:45

L1220144

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chloride	581		7.58	20.0	20	05/22/2020 18:04	WG1480013

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	1.59		0.00471	0.0500	50	05/21/2020 06:35	WG1479805
Toluene	0.0837		0.0139	0.0500	50	05/21/2020 06:35	WG1479805
Ethylbenzene	0.551		0.00685	0.0500	50	05/21/2020 06:35	WG1479805
Total Xylenes	0.826		0.00870	0.150	50	05/21/2020 06:35	WG1479805
(S) Toluene-d8	110			80.0-120		05/21/2020 06:35	WG1479805
(S) 4-Bromofluorobenzene	108			77.0-126		05/21/2020 06:35	WG1479805
(S) 1,2-Dichloroethane-d4	102			70.0-130		05/21/2020 06:35	WG1479805

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 05/12/20 00:00

L1220144

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chloride	129		1.90	5.00	5	05/22/2020 18:43	WG1480013

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	05/21/2020 06:55	WG1479805
Toluene	U		0.000278	0.00100	1	05/21/2020 06:55	WG1479805
Ethylbenzene	U		0.000137	0.00100	1	05/21/2020 06:55	WG1479805
Total Xylenes	U		0.000174	0.00300	1	05/21/2020 06:55	WG1479805
(S) Toluene-d8	111			80.0-120		05/21/2020 06:55	WG1479805
(S) 4-Bromofluorobenzene	104			77.0-126		05/21/2020 06:55	WG1479805
(S) 1,2-Dichloroethane-d4	106			70.0-130		05/21/2020 06:55	WG1479805

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 9056A

[L1220144-01,02,03,04,05,06,07](#)

Method Blank (MB)

(MB) R3532114-1 05/22/20 15:42

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3532114-3 05/22/20 16:45

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Chloride	42.4		1	0.975		15

Laboratory Control Sample (LCS)

(LCS) R3532114-2 05/22/20 15:55

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Chloride	40.0	40.1	100	80.0-120	

L1220295-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1220295-05 05/23/20 14:08 • (MS) R3532114-9 05/23/20 14:22

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Chloride	50.0	0.573	51.5	102	1	80.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

[L1220144-01,02,03,04,05,06,07](#)

Method Blank (MB)

(MB) R3531464-3 05/21/20 00:25

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Ethylbenzene	U		0.000137	0.00100
Toluene	U		0.000278	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	113			80.0-120
(S) 4-Bromofluorobenzene	102			77.0-126
(S) 1,2-Dichloroethane-d4	108			70.0-130

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

(LCS) R3531464-1 05/20/20 23:26 • (LCSD) R3531464-2 05/20/20 23:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00485	0.00499	97.0	99.8	70.0-123			2.85	20
Ethylbenzene	0.00500	0.00517	0.00481	103	96.2	79.0-123			7.21	20
Toluene	0.00500	0.00505	0.00506	101	101	79.0-120			0.198	20
Xylenes, Total	0.0150	0.0147	0.0148	98.0	98.7	79.0-123			0.678	20
(S) Toluene-d8				110	110	80.0-120				
(S) 4-Bromofluorobenzene				107	106	77.0-126				
(S) 1,2-Dichloroethane-d4				107	106	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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.

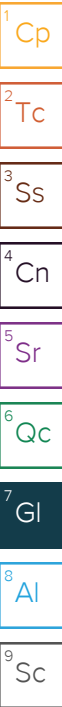
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

MDL	Method Detection Limit.
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.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
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

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* 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 National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
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}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

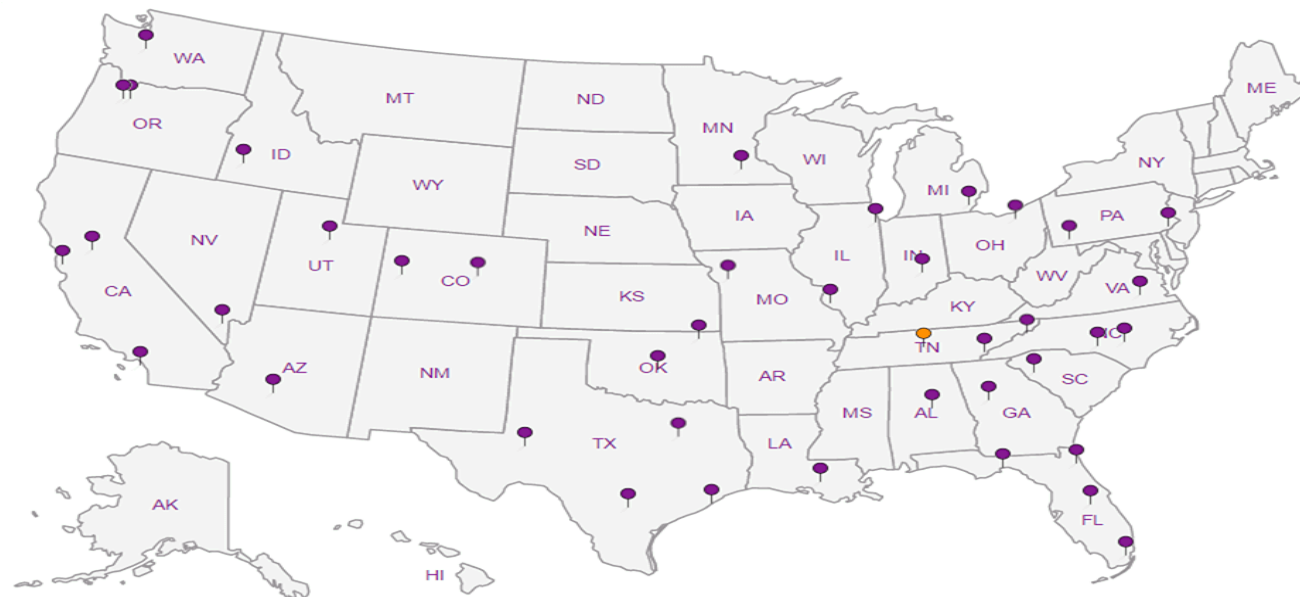
Third Party Federal Accreditations

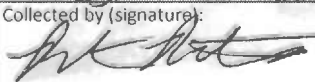
A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



ConocoPhillips - Tetra Tech				Billing Information:				Analysis / Container / Preservative				Chain of Custody Page 1 of 1			
901 West Wall Suite 100 Midland, TX 79701				Accounts Payable 901 West Wall Suite 100 Midland, TX 79701				Pres Chk				 12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859			
Report to: Julie Evans				Email To: julie.evans@tetrattech.com											
Project Description: COP- Vacuum Glorietta				City/State Collected:											
Phone: 432-687-8137				Client Project #				Lab Project #							
Fax:				212G-MD-C2070				COPTETRA-VACUUM							
Collected by (print): Preston Portenit				Site/Facility ID #				P.O. #							
Collected by (signature): 				Rush? (Lab MUST Be Notified)				Quote #							
Immediately				Same Day Five Day				Date Results Needed				No. of			
Packed on Ice N Y ☒				Next Day 5 Day (Rad Only)											
Three Day															
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs									
VG-3		GW		5-12-20	1105	4	X	X							
VG-6		GW		5-12-20	1245	4	X	X							
VG-7		GW		5-12-20	1400	4	X	X							
VG-2		GW		5-13-20	1135	4	X	X							
VG-5		GW		5-13-20	1250	4	X	X							
VG-4		GW		5-13-20	1345	4	X	X							
DUP		GW				4	X	X							
		GW				4	X	X							
		GW				4	X	X							

* Matrix:

SS - Soil AIR - Air F - Filter

GW - Groundwater B - Bioassay

WW - Waste Water

DW - Drinking Water

OT - Other

Remarks:

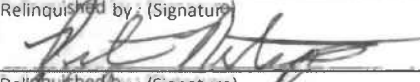
Samples returned via:

☐ UPS ☐ FedEx ☐ Courier

pH _____ Temp _____

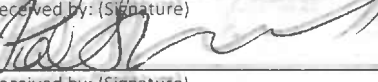
Flow _____ Other _____

Tracking # 44303427 2108

Relinquished by: (Signature) 

Date: 5-18-20 Time: 14:00

5-15-20 1200

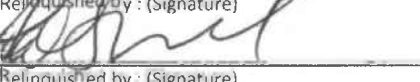
Received by: (Signature) 

Trip Blank Received: Yes/No

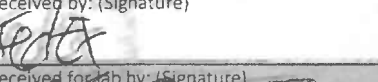
HCL/MeOH TBR

Temp: 7-2-5

Bottles Received: 28

Relinquished by: (Signature) 

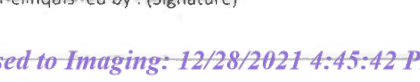
Date: 5-18-20 Time: 16:00

Received by: (Signature) 

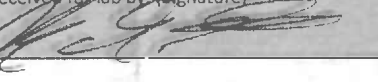
Temp: 7-2-5

Bottles Received: 28

If preservation required by Login: Date/Time

Relinquished by: (Signature) 

Date: _____ Time: _____

Received for lab by: (Signature) 

Date: 05/19/20 Time: 0845

Hold: _____ Condition: NCF / OK



ANALYTICAL REPORT

December 07, 2020

ConocoPhillips - Tetra Tech

Sample Delivery Group: L1289139
Samples Received: 11/21/2020
Project Number: 212C-MD-02070
Description: COP- Vacuum Glorietta

Report To: Julie Evans
901 West Wall
Suite 100
Midland, TX 79701

Entire Report Reviewed By:

Chris McCord
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.



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
VG-6 L1289139-01	5	
VG-7 L1289139-02	6	⁴ Cn
VG-3 L1289139-03	7	⁵ Sr
VG-2 L1289139-04	8	
VG-5 L1289139-05	9	⁶ Qc
DUP L1289139-06	10	
Qc: Quality Control Summary	11	⁷ Gl
Wet Chemistry by Method 9056A	11	⁸ Al
Volatile Organic Compounds (GC/MS) by Method 8260B	12	
Gl: Glossary of Terms	13	⁹ Sc
Al: Accreditations & Locations	14	
Sc: Sample Chain of Custody	15	

VG-6 L1289139-01 GW

				Collected by Preston Poitevint	Collected date/time 11/18/20 13:10	Received date/time 11/21/20 09:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1586295	5	12/07/20 00:48	12/07/20 00:48	MCG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1583926	1	11/30/20 04:11	11/30/20 04:11	JAH	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

VG-7 L1289139-02 GW

				Collected by Preston Poitevint	Collected date/time 11/18/20 14:30	Received date/time 11/21/20 09:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1586295	5	12/07/20 01:19	12/07/20 01:19	MCG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1583926	1	11/30/20 04:33	11/30/20 04:33	JAH	Mt. Juliet, TN

4 Cn

5 Sr

6 Qc

VG-3 L1289139-03 GW

				Collected by Preston Poitevint	Collected date/time 11/19/20 11:15	Received date/time 11/21/20 09:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1586295	1	12/07/20 01:34	12/07/20 01:34	MCG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1583926	1	11/30/20 04:54	11/30/20 04:54	JAH	Mt. Juliet, TN

7 Gl

8 Al

9 Sc

VG-2 L1289139-04 GW

				Collected by Preston Poitevint	Collected date/time 11/19/20 12:35	Received date/time 11/21/20 09:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1586295	5	12/07/20 02:52	12/07/20 02:52	MCG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1583926	1	11/30/20 05:16	11/30/20 05:16	JAH	Mt. Juliet, TN

VG-5 L1289139-05 GW

				Collected by Preston Poitevint	Collected date/time 11/19/20 14:05	Received date/time 11/21/20 09:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1586295	10	12/07/20 03:07	12/07/20 03:07	MCG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1583926	1	11/30/20 05:38	11/30/20 05:38	JAH	Mt. Juliet, TN

DUP L1289139-06 GW

				Collected by Preston Poitevint	Collected date/time 11/18/20 00:00	Received date/time 11/21/20 09:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1586295	5	12/07/20 03:22	12/07/20 03:22	MCG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1583926	1	11/30/20 05:59	11/30/20 05:59	JAH	Mt. Juliet, TN

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.

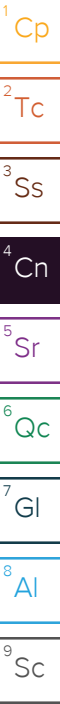


Chris McCord
Project Manager

Sample Delivery Group (SDG) Narrative

pH outside of method requirement.

<u>Lab Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L1289139-03	VG-3	8260B
L1289139-04	VG-2	8260B



Collected date/time: 11/18/20 13:10

L1289139

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chloride	115		1.90	5.00	5	12/07/2020 00:48	WG1586295

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	11/30/2020 04:11	WG1583926
Toluene	U		0.000278	0.00100	1	11/30/2020 04:11	WG1583926
Ethylbenzene	U		0.000137	0.00100	1	11/30/2020 04:11	WG1583926
Total Xylenes	U		0.000174	0.00300	1	11/30/2020 04:11	WG1583926
(S) Toluene-d8	106			80.0-120		11/30/2020 04:11	WG1583926
(S) 4-Bromofluorobenzene	97.7			77.0-126		11/30/2020 04:11	WG1583926
(S) 1,2-Dichloroethane-d4	91.7			70.0-130		11/30/2020 04:11	WG1583926

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 11/18/20 14:30

L1289139

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chloride	122		1.90	5.00	5	12/07/2020 01:19	WG1586295

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	11/30/2020 04:33	WG1583926
Toluene	U		0.000278	0.00100	1	11/30/2020 04:33	WG1583926
Ethylbenzene	U		0.000137	0.00100	1	11/30/2020 04:33	WG1583926
Total Xylenes	U		0.000174	0.00300	1	11/30/2020 04:33	WG1583926
(S) Toluene-d8	106			80.0-120		11/30/2020 04:33	WG1583926
(S) 4-Bromofluorobenzene	99.1			77.0-126		11/30/2020 04:33	WG1583926
(S) 1,2-Dichloroethane-d4	92.6			70.0-130		11/30/2020 04:33	WG1583926

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 11/19/20 11:15

L1289139

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chloride	59.8		0.379	1.00	1	12/07/2020 01:34	WG1586295

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	11/30/2020 04:54	WG1583926
Toluene	U		0.000278	0.00100	1	11/30/2020 04:54	WG1583926
Ethylbenzene	U		0.000137	0.00100	1	11/30/2020 04:54	WG1583926
Total Xylenes	U		0.000174	0.00300	1	11/30/2020 04:54	WG1583926
(S) Toluene-d8	105			80.0-120		11/30/2020 04:54	WG1583926
(S) 4-Bromofluorobenzene	95.8			77.0-126		11/30/2020 04:54	WG1583926
(S) 1,2-Dichloroethane-d4	92.8			70.0-130		11/30/2020 04:54	WG1583926

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 11/19/20 12:35

L1289139

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chloride	117		1.90	5.00	5	12/07/2020 02:52	WG1586295

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	11/30/2020 05:16	WG1583926
Toluene	U		0.000278	0.00100	1	11/30/2020 05:16	WG1583926
Ethylbenzene	U		0.000137	0.00100	1	11/30/2020 05:16	WG1583926
Total Xylenes	U		0.000174	0.00300	1	11/30/2020 05:16	WG1583926
(S) Toluene-d8	105			80.0-120		11/30/2020 05:16	WG1583926
(S) 4-Bromofluorobenzene	99.1			77.0-126		11/30/2020 05:16	WG1583926
(S) 1,2-Dichloroethane-d4	93.1			70.0-130		11/30/2020 05:16	WG1583926

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 11/19/20 14:05

L1289139

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chloride	368		3.79	10.0	10	12/07/2020 03:07	WG1586295

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	11/30/2020 05:38	WG1583926
Toluene	U		0.000278	0.00100	1	11/30/2020 05:38	WG1583926
Ethylbenzene	U		0.000137	0.00100	1	11/30/2020 05:38	WG1583926
Total Xylenes	U		0.000174	0.00300	1	11/30/2020 05:38	WG1583926
(S) Toluene-d8	104			80.0-120		11/30/2020 05:38	WG1583926
(S) 4-Bromofluorobenzene	95.4			77.0-126		11/30/2020 05:38	WG1583926
(S) 1,2-Dichloroethane-d4	94.0			70.0-130		11/30/2020 05:38	WG1583926

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 11/18/20 00:00

L1289139

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chloride	125		1.90	5.00	5	12/07/2020 03:22	WG1586295

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	11/30/2020 05:59	WG1583926
Toluene	U		0.000278	0.00100	1	11/30/2020 05:59	WG1583926
Ethylbenzene	U		0.000137	0.00100	1	11/30/2020 05:59	WG1583926
Total Xylenes	U		0.000174	0.00300	1	11/30/2020 05:59	WG1583926
(S) Toluene-d8	105			80.0-120		11/30/2020 05:59	WG1583926
(S) 4-Bromofluorobenzene	94.3			77.0-126		11/30/2020 05:59	WG1583926
(S) 1,2-Dichloroethane-d4	93.8			70.0-130		11/30/2020 05:59	WG1583926

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 9056A

[L1289139-01,02,03,04,05,06](#)

Method Blank (MB)

(MB) R3601016-1 12/06/20 17:24

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Chloride	U		0.379	1.00

L1289139-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1289139-01 12/07/20 00:48 • (DUP) R3601016-3 12/07/20 01:04

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	115	115	5	0.471		15

L1289730-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1289730-02 12/07/20 11:08 • (DUP) R3601016-6 12/07/20 11:23

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	0.659	0.622	1	5.78	<u>J</u>	15

Laboratory Control Sample (LCS)

(LCS) R3601016-2 12/06/20 17:40

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Chloride	40.0	38.8	97.0	80.0-120	

L1289139-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1289139-03 12/07/20 01:34 • (MS) R3601016-4 12/07/20 01:50 • (MSD) R3601016-5 12/07/20 02:05

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Chloride	50.0	59.8	102	102	83.8	84.5	1	80.0-120	<u>E</u>	<u>E</u>	0.310	15

L1289730-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1289730-02 12/07/20 11:08 • (MS) R3601016-7 12/07/20 11:38

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Chloride	50.0	0.659	49.7	98.1	1	80.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Method Blank (MB)

(MB) R3599024-2 11/30/20 00:29

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Ethylbenzene	U		0.000137	0.00100
Toluene	U		0.000278	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	105			80.0-120
(S) 4-Bromofluorobenzene	95.8			77.0-126
(S) 1,2-Dichloroethane-d4	92.8			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3599024-1 11/29/20 23:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00514	103	70.0-123	
Ethylbenzene	0.00500	0.00584	117	79.0-123	
Toluene	0.00500	0.00521	104	79.0-120	
Xylenes, Total	0.0150	0.0177	118	79.0-123	
(S) Toluene-d8			103	80.0-120	
(S) 4-Bromofluorobenzene			102	77.0-126	
(S) 1,2-Dichloroethane-d4			94.7	70.0-130	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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.
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.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
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
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.

1	Cp
2	Tc
3	Ss
4	Cn
5	Sr
6	Qc
7	GI
8	AI
9	Sc

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* 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 National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
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}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

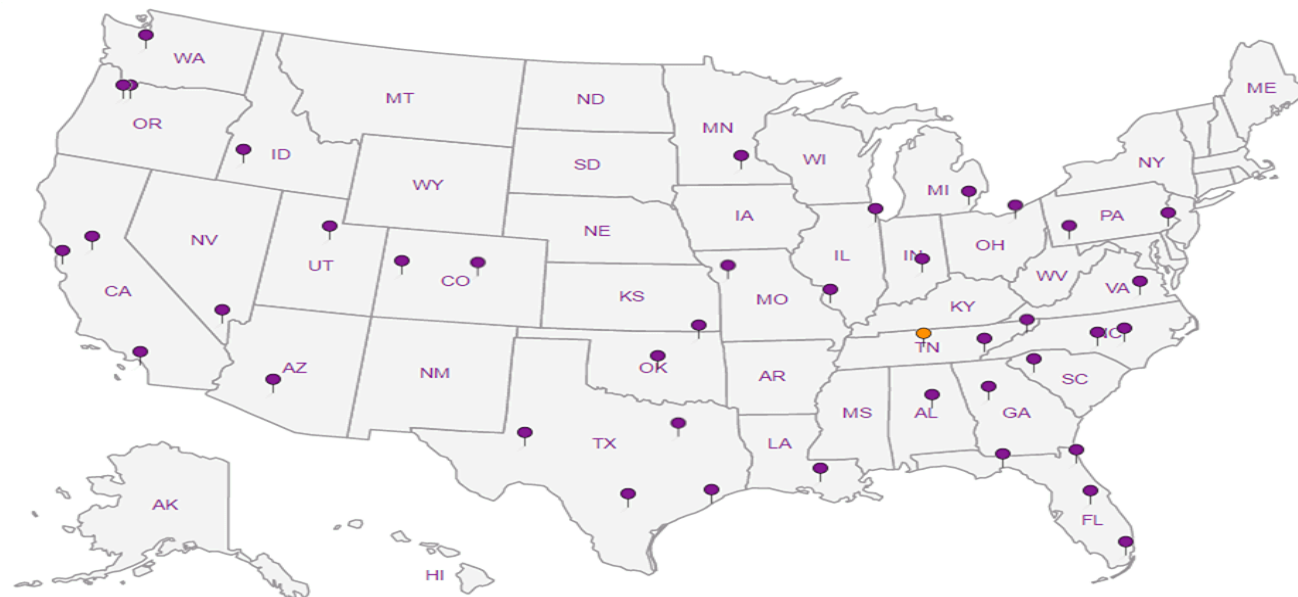
Third Party Federal Accreditations

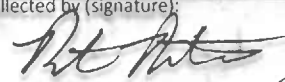
A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



ConocoPhillips - Tetra Tech 901 West Wall Suite 100 Midland TX 79701 Report to: Julie Evans		Billing Information: Accounts Payable 901 West Wall Suite 100 Midland, TX 79701 Email To: julie.evans@tetrattech.com		Pres Chk		Analysis / Container / Preservative										Chain of Custody Page 4 of 4				
Project Description: COP- Vacuum Glorietta		City/State Collected: NM				CHLORIDE 125mlHDPE-NoPres V8260BTEX 40mlAmb-HCl										 12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859				
Phone: 432-687-8137 Fax:		Client Project # 2126-MO-02070		Lab Project # COPTETRA-VACUUM												L # 1289739 H229				
Collected by (print): Preston R. Pate		Site/Facility ID #		P.O. #												Acctnum: COPTETRA Template: T151596 Prelogin: P714613 TSR: 526 - Chris McCord PB:				
Collected by (signature): 		Rush? (Lab MUST Be Notified) ☐ Same Day ☐ Five Day ☐ Next Day ☐ 5 Day (Rad Only) ☐ Two Day ☐ 10 Day (Rad Only) ☐ Three Day		Quote #												Date Results Needed				
Immediately Packed on Ice N ☐ Y ☒				No. of Cntrs												Shipped Via:				
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time															
VG-6		GW		11-18-20	1310	43	X	X												-01
VG-7		GW		11-18-20	1430	43	X	X												-02
VG-3		GW		11-19-20	1115	4	X	X												-03
VG-2		GW		11-19-20	1235	4	X	X												-04
VG-5		GW		11-19-20	1405	4	X	X												-05
DUP		GW				4	X	X												-06
		GW				4	X	X												
		GW				4	X	X												
		GW				4	X	X												

* Matrix:

SS - Soil AIR - Air F - Filter

GW - Groundwater B - Bioassay

WW - WasteWater

DW - Drinking Water

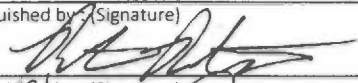
OT - Other

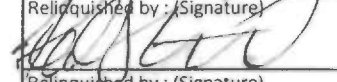
Remarks:

Samples returned via:
☐ UPS ☐ FedEx ☐ Courier

Tracking #

SWT

Relinquished by: (Signature)


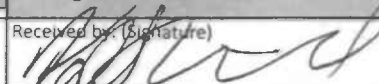
Relinquished by: (Signature)


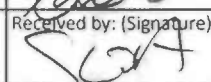
Relinquished by: (Signature)

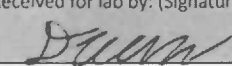
Date: 11-20-20 Time: 1030

Date: 11-20-20 Time: 14:30

Date: Time:

Received by: (Signature)


Received by: (Signature)


Received by: (Signature)


Trip Blank Received: Yes / No
 HCL / MeOH
 TBR

Temp: °C Bottles Received: 18

Date: 11/24/20 Time: 0930

Sample Receipt Checklist

COC Seal Present/Intact: ☒ Y ☐ N

COC Signed/Accurate: ☒ Y ☐ N

Bottles arrive intact: ☒ Y ☐ N

Correct bottles used: ☒ Y ☐ N

Sufficient volume sent: ☒ Y ☐ N

If Applicable

VOA Zero Headspace: ☒ Y ☐ N

Preservation Correct/Checked: ☒ Y ☐ N

RAD SCREEN: <0.5 mR/hr

If preservation required by Login: Date/Time

Hold:

Condition:
 NCF / OK



APPENDIX B



May 7, 2020

Ms. Julie Evans
 Hydrogeologist/Environmental Project Manager
 Tetra Tech
 1500 City West Boulevard, Suite 1000
 Houston, TX 77042

Dear Julie:

Re: Vacuum Glorietta Site, Lea County, NM, (Event #4)

At your request, AcuVac Remediation, LLC (AcuVac) performed two Mobile Dual Phase Extraction (MDPE) Events (#4A and #4B) and one Soil Vapor Extraction with Enhanced Vapor Recovery (SVE/EVR), Event #4C as outlined in the table below at the above referenced site (Site). The following is the report and a copy of the operating data collected during Event #4. Additionally, the attached Table #1 contains the Summary Well Data, and Table #2 contains the Summary Recovery Data.

Event Number	Well Number	Event Type	Event Duration (hrs)	Date
#4A	VG-4	MDPE	10.0	05/05/2020
#4B	VG-4	MDPE	10.0	05/06/2020
#4C	VG-4	SVE/EVR	8.0	05/07/2020

The purpose of the events was to enhance recovery of phase separated hydrocarbons (PSH) present at the Site through the removal of petroleum hydrocarbons in both liquid and vapor phases. PSH is referred to as petroleum hydrocarbons and Light Non-Aqueous Phase Liquids (LNAPL). The source of the PSH is a historical pipeline release. The two different methodologies were employed to determine the most cost effective manner to remove the dissolved phase LNAPL from the groundwater.

OBJECTIVES

The objectives of the MDPE Events:

- Evaluate the potential for removing liquid and vapor phase NAPL from the groundwater and soils in the subsurface formations.
- Expose the capillary fringe area and below to the extraction well induced vacuums.
- Increase the groundwater and contaminant specific yields with high induced vacuums.
- Provide an induced hydraulic gradient to gain hydraulic control of the area during the Event period.

The objectives of the SVE event:

- Maximize liquid and vapor phase petroleum hydrocarbon removal from groundwater and soils in the subsurface formations within the influence of the extraction well.
- Expose the capillary fringe area and below to the extraction well induced vacuums.
- Increase the liquid and vapor phase petroleum hydrocarbon specific yields with high induced vacuums.

METHODS AND EQUIPMENT

AcuVac owns and maintains an inventory of equipment to perform MDPE and SVE events and uses no third party equipment. The events at the Site were conducted using the AcuVac I-6 System (System) with a Roots RAI-33 blower, used as a vacuum pump, and a Roots RAI-22 positive displacement blower. The table below lists additional equipment and instrumentation employed, and the data element captured by each.

Equipment and Instrumentation Employed by AcuVac	
Measurement Equipment	Data Element
Extraction Well Induced Vacuum and Flow	
Dwyer Magnehelic Gauges	Extraction Well Vacuum
Dwyer Averaging Pitot Tubes / Magnehelic Gauges	Extraction Well Vapor Flow
Observation Wells	
Dwyer Digital Manometer	Vacuum / Pressure Influence
Extraction Well Vapor Monitoring	
V-1 Vacuum Box	Extraction Well Non-Diluted Vapor Sample Collection
HORIBA® Analyzer	Extraction Well Vapor TPH Concentration
QRAe Mini II O ₂ Monitor	Extraction Well Vapor Oxygen Content
NAPL Thickness (if present)	
Solinst Interface Probes Model 122	Depth to LNAPL and Depth to Groundwater
Groundwater Depression / Upwelling	
In-Situ Level Troll 700 Data Logger	Liquid Column in Extraction and Observation Wells
In-Situ Vented Cable with Chamber	Equalize Well Vacuum/Pressure
In-Situ Rugged Reader Data Logger Interface	Capture Readings from Data Logger Trolls
Atmospheric Conditions	
Testo Model 511	Relative and Absolute Barometric Pressure

The vacuum extraction portion of the System consists of a vacuum pump driven by an internal combustion engine (IC engine). The vacuum pump connects to the extraction well, and the vacuum created on the extraction well causes light hydrocarbons in the soil and on the groundwater to volatilize and flow through a moisture knockout tank to the vacuum pump and the IC engine where they burn as part of the normal combustion process. Auxiliary propane powers the engine if the well vapors do not provide the required energy.

The IC engine provides the power necessary to achieve and maintain high induced vacuums and/or high well vapor flows needed to maximize the vacuum radius of influence.

Emissions from the engine pass through two of three catalytic converters to maximize destruction of effluent hydrocarbon vapors. The engine's fuel-to-air ratio is adjusted to maintain efficient combustion. Because the engine powers all equipment, the System stops when the engine stops preventing an uncontrolled release of hydrocarbons. Since the System operates entirely under vacuum, any leaks in the seals or connections leak into the System and not the atmosphere. Vacuum loss, low oil pressure, over-speed, or overheating automatically shut down the engine.

The design of the AcuVac System enables independent control of both the induced well vacuum and the groundwater pumping functions such that the AcuVac team controls the induced hydraulic gradient to increase exposure of the formation to soil vapor extraction (SVE). The ability to separate the vapor and liquid flows within the extraction well improve the LNAPL recovery rates and enabled the AcuVac team to record data specific to each media.

RECOVERY SUMMARY FOR MDPE AND SVE EVENT #4

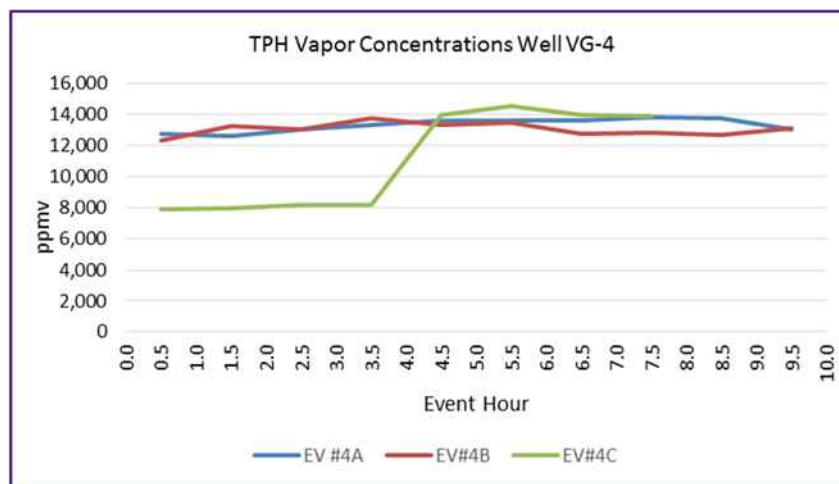
The Recovery Summary table below lists the groundwater and LNAPL recovery data for Event #4 (MDPE/SVE) and compares the results with Events #3 (SVE) and #2 (MDPE) performed on the dates shown. Event #1 was omitted from this report due to the elapsed time since the event.

Recovery Summary Well VG-4							
		Event #4C 05/07/2020	Event #4B 05/06/2020	Event #4A 05/05/2020	Event #4 Total	Event #3 06/13/2019	Event #2 05/06/2015
Event Hours	hrs	8.0	10.0	10.0	28.0	28.0	24.0
Groundwater Recovery	gals	0	2,503	2,562	5,065	0	6,349
LNAPL Recovery							
Liquid	gals	0	0	0	0	0	6.35
Vapor	gals	3.21	4.49	4.18	11.88	9.78	8.16
Total	gals	3.21	4.49	4.18	11.88	9.78	14.51
Gallons/Hour	gpm	0.40	0.45	0.42	0.42	0.35	0.60

- Total vapor hydrocarbons burned as IC engine fuel in the Recovery Table above are based on the HORIBA® data recorded. The HORIBA® analytical data from the influent vapor samples are compared with previous events in the Influent Vapor Data Table on the following page:

Influent Vapor Data Well VG-4						
Event Number		Event #4C	Event #4B	Event #4A	Event #3C	Event #2C
Event Date		05/07/2020	05/06/2020	05/05/2020	06/13/2019	05/06/2015
Event Hours		8.0	10.0	10.0	8.0	8.0
Data Element						
TPH- Maximum	ppmv	14,560	13,740	13,850	11,140	10,630
TPH- Average	ppmv	11,068	13,061	13,334	9,749	9,990
TPH- Minimum	ppmv	7,850	12,340	12,640	4,970	9,310
TPH- Initial	ppmv	7,850	12,340	12,750	4,970	10,570
TPH- Ending	ppmv	13,890	13,110	13,070	10,940	9,310
CO ₂	%	9.51	11.01	11.49	8.90	4.92
CO	%	0.02	0.02	0.02	0.01	0.01
O ₂	%	2.48	4.81	4.69	3.0	8.2
H ₂ S	ppm	2.94	8.41	7.60	3.10	78.00

- The TPH vapor concentrations from the influent vapor samples for Event #4 are presented in the graph below:



- The extraction well induced vacuum and well vapor flow for Event #4 is compared with previous events in the table below.

Well Vacuum and Well Vapor Flow Well VG-4						
Event Number		Event #4C	Event #4B	Event #4A	Event #3	Event #2
Event Date		05/07/2020	05/06/2020	05/05/2020	06/13/2019	05/06/2015
Event Hours		8.0	10.0	10.0	8.0	8.0
Data Element						
Well Vacuum- Maximum	"H ₂ O	90.00	68.00	60.00	75.00	80.00
Well Vacuum- Average	"H ₂ O	82.94	65.14	60.00	70.59	79.41
Well Vacuum- Minimum	"H ₂ O	80.00	65.00	60.00	65.00	70.00
Well Vapor Flow- Maximum	scfm	17.13	15.92	14.57	16.67	17.22
Well Vapor Flow- Average	scfm	16.75	15.91	14.51	16.33	17.14
Well Vapor Flow- Minimum	scfm	16.17	15.83	14.36	16.01	15.86

- The groundwater pump rates for Event #2 through Event #4 are contained in the table below.

Groundwater Pump Data Well MW-2A						
		Event #4C	Event #4B	Event #4A	Event #3C	Event #2C
		05/07/2020	05/06/2020	05/05/2020	06/13/2019	05/06/2015
Event Hours	hrs	8.0	10.0	10.0	8.0	8.0
Data Element						
Maximum Groundwater Pump Rate	gpm	-	4.53	5.27	-	4.50
Average Groundwater Pump Rate	gpm	-	4.17	4.40	-	4.33

- The LNAPL thickness recorded at the start and conclusion of each event is contained in the table below.

LNAPL Thickness Data Well MW-2A						
		Event #4C	Event #4B	Event #4A	Event #3C	Event #2C
		05/07/2020	05/06/2020	05/05/2020	06/13/2019	05/06/2015
Event Hours	hrs	10.0	10.0	28.0	8.0	8.0
Event Start						
Depth to Groundwater	Ft BTOC	66.67	66.67	66.76	66.34	64.63
Depth to LNAPL	Ft BTOC	-	66.64	66.61	66.33	-
LNAPL Thickness	ft	-	0.03	0.15	0.01	-
Hydro Equivalent	Ft BTOC	66.67	66.65	66.65	66.33	64.63
Event Conclusion						
Depth to Groundwater	Ft BTOC	67.35	66.23	67.32	65.95	64.91
Depth to LNAPL	Ft BTOC	-	-	67.26	-	-
LNAPL Thickness	ft	-	-	0.06	-	-
Hydro Equivalent	Ft BTOC	67.35	66.23	67.28	65.95	64.91

ADDITIONAL INFORMATION

- All LNAPL volume recovered, 11.88 gals, was burned as IC engine fuel.
- For Event #4C, SVE with Enhanced Vapor Recovery was employed to determine if the injected air would volatilize a sufficient amount of the dissolved LNAPL to increase the TPH concentration in the well vapors. While the EVR was running, the TPH concentrations decreased and the oxygen concentrations increased as the oxygen displaced the THP vapors. The EVR was then suspended, and the TPH concentrations increased to the highest level recorded during all of Event #4.
- Overall, the TPH vapor concentrations were higher in Event #4 than either Event #3 or Event #2.

CONCLUSION AND RECOMMENDATION FOR FUTURE EVENTS

AcuVac recommends that future events be conducted as a combination of MDPE and SVE/EVR. The MDPE events will remove groundwater containing dissolved phase LNAPL, and the EVR will remove the dissolved phase through volatilization. In future events, the EVR will be cycled on and off to volatilize the dissolved phase and then remove the vapors through SVE. A further benefit of EVR is that it will create an oxygen rich environment in the area surrounding well VG-4 to assist with natural bio-degradation.

SVE proved to be a more cost effective method to remediate the Site over MDPE. While the hourly rate of recovery for vapor phase LNAPL, as shown in the Recovery Summary Table on page 3, was slightly less for Event #4C, than Event #4A or #4B, there was no groundwater produced in Event #4C, and thus no cost associated with its disposal.

METHOD OF CALIBRATION AND CALCULATIONS

The HORIBA[®] Analytical instrument is calibrated with Hexane, CO and CO₂.

The formula used to calculate the emission rate is:

$$ER = HC \text{ (ppmv)} \times MW \text{ (Hexane)} \times \text{Flow Rate (scfm)} \times 1.58E^{-7} \frac{(\text{min})(\text{lb mole})}{(\text{hr})(\text{ppmv})(\text{ft}^3)} = \text{lbs/hr}$$

INFORMATION INCLUDED WITH REPORT

- Table #1 Summary Well Data
- Table #2 Summary Recovery Data
- Description of the Enhanced Vapor Recovery Process
- Recorded Data
- Photographs of the AcuVac System and well VG-4.

After you have reviewed the report and if you have any questions, please contact me. We appreciate you selecting AcuVac to provide these services.

Sincerely,
ACUVAC REMEDIATION, LLC



Paul D. Faucher
President

**Summary Well Data
Table #1**

Event		4A	4B	4C
WELL NO.		VG-4	VG-4	VG-4
Current Event Hours		10.0	10.0	8.0
Total Event Hours		70.0	80.0	88.0
TD (estimated)	ft BGS	70.0	70.0	70.0
Well Screen	ft BGS	unknown	unknown	unknown
Well Size	in	4.0	4.0	4.0
Well Data				
Depth to Groundwater - Static - Start Event	ft BTOC	66.67	66.67	66.76
Depth To LNAPL - Static - Start Event	ft BTOC	-	66.64	66.61
LNAPL Thickness	ft	-	0.03	0.15
Hydro-Equivalent- Beginning	ft BTOC	66.67	66.65	66.65
Depth to Groundwater - End Event	ft BTOC	67.35	66.23	67.32
Depth To LNAPL - End Event	ft BTOC	-	-	67.26
LNAPL Thickness	ft	-	-	0.06
Hydro-Equivalent- Ending	ft BTOC	67.35	66.23	67.28
Extraction Data				
Maximum Extraction Well Vacuum	"H ₂ O	90.00	68.00	60.00
Average Extraction Well Vacuum	"H ₂ O	82.94	65.14	60.00
Minimum Extraction Well Vacuum	"H ₂ O	80.00	65.00	60.00
Maximum Extraction Well Vapor Flow	scfm	17.13	15.92	14.57
Average Extraction Well Vapor Flow	scfm	16.75	15.91	14.51
Minimum Extraction Well Vapor Flow	scfm	16.17	15.83	14.36
Influent Data				
Maximum TPH	ppmv	14,560	13,740	13,850
Average TPH	ppmv	11,068	13,061	13,334
Maximum TPH	ppmv	7,850	12,340	12,640
Initial TPH	ppmv	7,850	12,340	12,750
Final TPH	ppmv	13,890	13,110	13,070
Average CO ₂	%	9.51	11.01	11.49
Average CO	%	0.02	0.02	0.02
Average O ₂	%	2.48	4.81	4.69
Average H ₂ S	ppm	2.94	8.74	7.60

**Summary Recovery Data
Table #2**

Event		4A	4B	4C
WELL NO.		VG-4	VG-4	VG-4
Recovery Data- Current Event				
Total Liquid Volume Recovered	gals	2,562	2,503	-
Total Liquid LNAPL Recovered	gals	-	-	-
Total Liquid LNAPL Recovered / Total Liquid	%	-	-	-
Total Liquid LNAPL Recovered / Total LNAPL	%	-	-	-
Total Vapor LNAPL Recovered	gals	4.18	4.49	3.21
Total Vapor LNAPL Recovered / Total LNAPL	%	100.00	100.00	100.00
Total Vapor and Liquid LNAPL Recovered	gals	4.18	4.49	3.21
Average LNAPL Recovery	gals/hr	0.42	0.45	0.40
Total LNAPL Recovered	lbs	29.27	31.44	22.44
Total Volume of Well Vapors	cu. ft	8,706	9,546	8,040
Recovery Data- Cumulative				
Total Liquid Volume Recovered	gals	10,546	13,049	13,049
Total Liquid LNAPL Recovered	gals	7.99	7.99	7.99
Total Vapor LNAPL Recovered	gals	26.55	31.04	34.2 4
Total Vapor and Liquid LNAPL Recovered	gals	34.53	39.02	42.23
Average LNAPL Recovery	gals/hr	0.49	0.49	0.48
Total LNAPL Recovered	lbs	1,079	1,111	1,133
Total Volume of Well Vapors	cu. ft	69,455	79,001	87,041



OPERATING DATA - EVENT #

4A

PAGE #

1

ACUVAC MDPE SYSTEM

Location: Vacuum Glorietta Site, Lea County, NM			Project Managers: Hendley/George				
Well #	Date	5-5-20					
	Time	0630	0700	0730	0800	0830	0900
	Hr Meter						
ENGINE / BLOWER	Engine Speed	RPM	1900	1900	1900	1900	1900
	Oil Pressure	psi	50	50	50	50	50
	Water Temp	°F	130	140	145	145	145
	Alternator	Volts	13	13	13	13	13
	Intake Vacuum	"Hg	15	15	15	15	15
	Gas Flow Fuel/Propane	cfh	130	130	130	130	130
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H ₂ O	60	60	60	60	60
	Extraction Well Flow	scfm	14.36	14.36	14.36	14.36	14.36
	Influent Vapor Temp.	°F	67	67	67	67	67
	Air Temp	°F	54	56	58	61	61
	Barometric Pressure	"Hg	30.10	30.11	30.11	30.12	30.13
VAPOR / INFLUENT	TPH	ppmv	—	12,750	—	12,640	—
	CO ₂	%	—	11.46	—	11.10	—
	CO	%	—	0.02	—	0.02	—
	O ₂	%	—	4.5	—	5.0	—
	H ₂ S	ppm	—	3.4	—	4.2	—
NOTES	Arrived at site 0610. Tanker truck arrived at same time. Connected to tanker. Event start at 0630. Pump rate ↑ to over 5 gpm then maintained at 4.50 gpm. TPH ↑ slightly during the morning.						
RECOVERY	Totalizer	gals	19521	19586	19741	19899	20014
	Pump Rate	gals/min	2.17	5.17	5.27	3.83	4.50
	Total Volume	gals	0	65	220	378	493
	NAPL	% Vol	Shoen	Shoen	Shoen	Shoen	Shoen
	NAPL	Gals	—	—	—	—	—
EW	Data Logger Head	ft	1.89	2.06	1.89	1.85	1.30
	GW Depression	ft	1.22	1.07	1.10	1.14	0.69
	Extraction Well	DTNAPL	66.61				
	Extraction Well	DTGW	66.76				



OPERATING DATA - EVENT #

4A

PAGE #

2

ACUVAC MDPE SYSTEM

Location: Vacuum Glorietta Site, Lea County, NM			Project Managers: Hendley/George				
Well #	Date	5-5-20					
	Time	0930	1000	1030	1100	1130	1200
	Hr Meter						
ENGINE / BLOWER	Engine Speed	RPM	1900	1900	1900	1900	1900
	Oil Pressure	psi	50	50	50	50	50
	Water Temp	°F	145	145	145	145	145
	Alternator	Volts	13	13	13	13	13
	Intake Vacuum	"Hg	15	15	15	15	15
	Gas Flow Fuel/Propane	cfh	125	125	125	125	120
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H ₂ O	60	60	60	60	60
	Extraction Well Flow	scfm	14.57	14.57	14.57	14.57	14.57
	Influent Vapor Temp.	°F	67	67	67	67	67
	Air Temp	°F	63	66	68	68	70
	Barometric Pressure	"Hg	30.15	30.15	30.15	30.14	30.14
VAPOR / INFLUENT	TPH	ppmv	-	13,370	-	13,630	-
	CO ₂	%	-	11.48	-	13.80	-
	CO	%	-	.02	-	.03	-
	O ₂	%	-	4.5	-	4.7	-
	H ₂ S	ppm	-	7.4	-	8.6	-
NOTES	Approx 1130 at 5 hr mark top propane tank empty. Switch to lower tank. Readings and recovery rate remained constant						
RECOVERY	Totalizer	gals	20283	20418	20554	20690	20825
	Pump Rate	gals/min	4.50	4.53	4.53	4.50	4.50
	Total Volume	gals	762	897	1033	1169	1304
	NAPL	% Vol	sheen	sheen	sheen	sheen	sheen
	NAPL	Gals	-	-	-	-	-
EW	Data Logger Head	1.99 ft	1.13	1.00	.91	.79	.75
	GW Depression	ft	<0.86	<0.99	<1.08	<1.20	<1.24
	Extraction Well	DTNAPL					
	Extraction Well	DTGW					



OPERATING DATA - EVENT #

4A

PAGE #

3

ACUVAC MDPE SYSTEM

Location: Vacuum Glorietta Site, Lea County, NM			Project Managers: Hendley/George				
Well #	Date	5-5-20					
	Time	1230	1300	1330	1400	1430	1500
	Hr Meter						
ENGINE / BLOWER	Engine Speed	RPM	1900	1900	1900	1900	1900
	Oil Pressure	psi	50	50	50	50	50
	Water Temp	°F	145	145	145	145	145
	Alternator	Volts	13	13	13	13	13
	Intake Vacuum	"Hg	15	15	15	15	15
	Gas Flow Fuel/Propane	cfh	120	120	120	120	120
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H ₂ O	60	60	60	60	60
	Extraction Well Flow	scfm	14.57	14.57	14.57	14.57	14.57
	Influent Vapor Temp.	°F	67	67	67	67	67
	Air Temp	°F	72	73	73	74	75
	Barometric Pressure	"Hg	30.11	30.10	30.09	30.07	30.06
VAPOR / INFLUENT	TPH	ppmv	-	13,620	-	13,850	-
	CO ₂	%	-	11.24	-	11.36	-
	CO	%	-	.02	-	.02	-
	O ₂	%	-	4.8	-	4.5	-
	H ₂ S	ppm	-	9.1	-	9.2	-
NOTES							
RECOVERY	Totalizer	gals	21096	21231	21367	21500	21633
	Pump Rate	gals/min	4.50	4.53	4.43	4.43	4.47
	Total Volume	gals	1575	1710	1846	1979	2112
	NAPL	% Vol	sheen	sheen	sheen	sheen	sheen
	NAPL	Gals	-	-	-	-	-
EW	Data Logger Head	ft	1.99	.75	.76	.75	.71
	GW Depression	ft	1.24	1.23	1.24	1.28	1.31
	Extraction Well	DTNAPL					
	Extraction Well	DTGW					



OPERATING DATA - EVENT #

4A

PAGE #

4

ACUVAC MDPE SYSTEM

Location: Vacuum Glorietta Site, Lea County, NM			Project Managers: Hendley/George			
Well #	Date	5-5-20				
	Time	1530	1600	1630		
	Hr Meter					
ENGINE / BLOWER	Engine Speed	RPM	1900	1900	1900	
	Oil Pressure	psi	50	50	50	
	Water Temp	°F	145	145	145	
	Alternator	Volts	13	13	13	
	Intake Vacuum	"Hg	15	15	15	
	Gas Flow Fuel/Propane	cfh	120	120	120	
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H ₂ O	60	60	60	
	Extraction Well Flow	scfm	14.57	14.57	14.57	
	Influent Vapor Temp.	°F	67	67	67	
	Air Temp	°F	75	75	75	
	Barometric Pressure	"Hg	30.02	30.01	30.01	
VAPOR / INFLUENT	TPH	ppmv	-	13,070	-	
	CO ₂	%	-	10.96	-	
	CO	%	-	10.2	-	
	O ₂	%	-	5.0	-	
	H ₂ S	ppm	-	9.4	-	
NOTES						
RECOVERY	Totalizer	gals	21900	22034	22083	
	Pump Rate	gals/min	4.47	1.63	-	
	Total Volume	gals	2379	2513	2562	
	NAPL	% Vol	Shen	Shen	Shen	
	NAPL	Gals	-	-	-	
EW	Data Logger Head	1.99 ft	1.62	1.62	1.63	
	GW Depression	ft	1.37	1.37	1.36	
	Extraction Well	DTNAPL			67.26	
	Extraction Well	DTGW			67.32	



OPERATING DATA - EVENT #

4B

PAGE #

1

ACUVAC MDPE SYSTEM

Location: Vacuum Glorietta Site, Lea County, NM			Project Managers: Hendley/George				
Well #	Date	5-6-20					
	Time	0600	0630	0700	0730	0800	0830
	Hr Meter						
ENGINE / BLOWER	Engine Speed	RPM	1900	1900	1900	1900	1900
	Oil Pressure	psi	50	50	50	50	50
	Water Temp	°F	140	140	140	140	145
	Alternator	Volts	13	13	13	13	13
	Intake Vacuum	"Hg	14	14	14	14	14
	Gas Flow Fuel/Propane	cfh	120	120	120	110	110
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H ₂ O	68	65	65	65	65
	Extraction Well Flow	scfm	15.83	15.92	15.92	15.92	15.92
	Influent Vapor Temp.	°F	67	67	67	67	67
	Air Temp	°F	52	52	55	57	59
	Barometric Pressure	"Hg	30.14	30.15	30.16	30.16	30.16
VAPOR / INFLUENT	TPH	ppmv	—	12,340	—	13,250	—
	CO ₂	%	—	10.82	—	11.28	—
	CO	%	—	.01	—	.02	—
	O ₂	%	—	5.2	—	4.5	—
	H ₂ S	ppm	—	5.8	—	5.9	—
NOTES	Arrived at site 0545. Gauged well. Connected to tanks. Event start @ 0600. Pump rate steady. TPH remained constant.						
RECOVERY	Totalizer	gals	22,083	22,214	22,352	22,485	22,614
	Pump Rate	gals/min	4.53	4.43	4.43	4.30	4.40
	Total Volume	gals	0	136	269	402	531
	NAPL	% Vol	Shoen	Shoen	Shoen	Shoen	Shoen
	NAPL	Gals	—	—	—	—	—
EW	Data Logger Head	ft	2.05	2.26	2.06	1.84	1.76
	GW Depression	ft	—	.21	.01	<.27>	<.29>
	Extraction Well	DTNAPL	66.64				
	Extraction Well	DTGW	66.67				



OPERATING DATA - EVENT #

4B

PAGE #

2

ACUVAC MDPE SYSTEM

Location: Vacuum Glorietta Site, Lea County, NM			Project Managers: Hendley/George				
Well #	Date	5-6-20					
	Time	0900	0930	1000	1030	1100	1130
	Hr Meter						
ENGINE / BLOWER	Engine Speed	RPM	1900	1800	1800	1800	1800
	Oil Pressure	psi	50	50	50	50	50
	Water Temp	°F	145	150	150	150	150
	Alternator	Volts	13	13	13	13	130
	Intake Vacuum	"Hg	14	14	14	14	14
	Gas Flow Fuel/Propane	cfh	110	110	110	110	110
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H ₂ O	65	65	65	65	65
	Extraction Well Flow	scfm	15.92	15.92	15.92	15.92	15.92
	Influent Vapor Temp.	°F	67	67	67	67	67
	Air Temp	°F	67	68	68	72	74
	Barometric Pressure	"Hg	30.15	30.14	30.14	30.12	30.11
VAPOR / INFLUENT	TPH	ppmv	—	13,740	—	13,310	—
	CO ₂	%	—	11.42	—	11.78	—
	CO	%	—	.02	—	.02	—
	O ₂	%	—	4.7	—	4.8	—
	H ₂ S	ppm	—	8.4	—	10.1	—
NOTES	At 0930 unit was temporarily stopped to disconnect air compressor. Pumping re started @ 0940 (10 minutes duration). Quickly back to same well vac + well flow.						
RECOVERY	Totalizer	gals	22876	23004	23084	23209	23338
	Pump Rate	gals/min	4.27	2.80	4.03	4.20	4.33
	Total Volume	gals	793	921	1,005	1,126	1,255
	NAPL	% Vol	Sheen	Sheen	Sheen	Sheen	Sheen
	NAPL	Gals					
EW	Data Logger Head	ft	2.05	1.66	1.60	2.05	1.95
	GW Depression	ft	1.39	1.45	0.0	1.10	1.34
	Extraction Well	DTNAPL					
	Extraction Well	DTGW					



OPERATING DATA - EVENT #

4B

PAGE #

3

ACUVAC MDPE SYSTEM

Location: Vacuum Glorietta Site, Lea County, NM			Project Managers: Hendley/George				
Well #	Date	5-6-20					
	Time	1200	1230	1300	1330	1400	1430
	Hr Meter						
ENGINE / BLOWER	Engine Speed	RPM	1800	1800	1800	1800	1800
	Oil Pressure	psi	50	50	50	50	50
	Water Temp	°F	155	155	155	155	155
	Alternator	Volts	13	13	13	13	13
	Intake Vacuum	"Hg	14	14	14	14	14
	Gas Flow Fuel/Propane	cfh	110	110	110	110	110
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H ₂ O	65	65	65	65	65
	Extraction Well Flow	scfm	15.92	15.92	15.92	15.92	15.92
	Influent Vapor Temp.	°F	67	67	67	67	67
	Air Temp	°F	75	77	78	79	81
	Barometric Pressure	"Hg	30.08	30.06	30.05	30.03	30.01
VAPOR / INFLUENT	TPH	ppmv	—	12,790	—	12,850	—
	CO ₂	%	—	10.66	—	10.64	—
	CO	%	—	1.02	—	1.02	—
	O ₂	%	—	4.8	—	5.0	—
	H ₂ S	ppm	—	10.3	—	9.9	—
NOTES							
RECOVERY	Totalizer	gals	23597	23727	23855	23982	24110
	Pump Rate	gals/min	4.33	4.27	4.23	4.27	4.23
	Total Volume	gals	1514	1644	1722	1899	2,027
	NAPL	% Vol	sheen	sheen	sheen	sheen	sheen
	NAPL	Gals					
EW	Data Logger Head	2.05 ft	1.77	1.77	1.73	1.74	1.64
	GW Depression	ft	<.38>	<.28>	<.32>	<.31>	<.41>
	Extraction Well	DTNAPL					
	Extraction Well	DTGW					



OPERATING DATA - EVENT #

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4

ACUVAC MDPE SYSTEM

Location: Vacuum Glorietta Site, Lea County, NM			Project Managers: Hendley/George			
Well #	Date	5-6-20				
	Time	1500	1530	1600		
	Hr Meter					
ENGINE / BLOWER	Engine Speed	RPM	1800	1800	1800	
	Oil Pressure	psi	50	50	50	
	Water Temp	°F	150	150	150	
	Alternator	Volts	13	13	13	
	Intake Vacuum	"Hg	14	14	14	
	Gas Flow Fuel/Propane	cfh	110	110	110	
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H ₂ O	65	65	65	
	Extraction Well Flow	scfm	15.92	15.92	15.92	
	Influent Vapor Temp.	°F	67	67	67	
	Air Temp	°F	82	83	83	
	Barometric Pressure	"Hg	29.97	29.97	29.97	
VAPOR / INFLUENT	TPH	ppmv	—	13/10	—	
	CO ₂	%	—	10.68	—	
	CO	%	—	1.02	—	
	O ₂	%	—	4.7	—	
	H ₂ S	ppm	—	8.8	—	
NOTES						
RECOVERY	Totalizer	gals	24365	24493	24586	
	Pump Rate	gals/min	4.27	3.10	—	
	Total Volume	gals	2282	2410	2503	
	NAPL	% Vol	sheen	sheen	sheen	
	NAPL	Gals				
EW	Data Logger Head	ft	1.60	1.57	1.57	
	GW Depression	ft	<.45	<.48	<.48	
	Extraction Well	DTNAPL				68.23
	Extraction Well	DTGW				68.23



OPERATING DATA - EVENT #

4C

PAGE #

1

ACUVAC MDPE SYSTEM

Location: Vacuum Glorietta Site, Lea County, NM			Project Managers: Hendley/George				
Well #	Date	5-7-20					
	Time	0600	0630	0700	0730	0800	0830
	Hr Meter						
ENGINE / BLOWER	Engine Speed	RPM	1800	1800	1800	1800	1800
	Oil Pressure	psi	50	50	50	50	50
	Water Temp	°F	140	140	140	140	140
	Alternator	Volts	13	13	13	13	13
	Intake Vacuum	"Hg	15	15	15	15	15
	Gas Flow Fuel/Propane	cfh	120	120	120	120	120
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H ₂ O	85	85	85	85	85
	Extraction Well Flow	scfm	16.17	16.17	16.17	16.17	16.17
	Influent Vapor Temp.	°F	67	67	67	67	67
	Air Temp	°F	61	62	62	63	66
	Barometric Pressure	"Hg	29.91	29.91	29.90	29.90	29.88
VAPOR / INFLUENT	TPH	ppmv	-	7850	-	7990	-
	CO ₂	%	-	7.34	-	7.78	-
	CO	%	-	.01	-	.01	-
	O ₂	%	-	19.8	-	20.0	-
	H ₂ S	ppm	-	0.9	-	1.5	-
NOTES	Arrived at site 0545. Event start @ 0600 Gaged well.						
	EUR start 0615. TPH ↓ for previous 2 days, CO ₂ ↓.						
RECOVERY	Totalizer	gals					
	Pump Rate	gals/min					
	Total Volume	gals					
	NAPL	% Vol					
	NAPL	Gals					
EW	Data Logger Head	ft					
	GW Depression	ft					
	Extraction Well	DTNAPL	66.67				
	Extraction Well	DTGW	66.67				



OPERATING DATA - EVENT #

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PAGE #

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ACUVAC MDPE SYSTEM

Location: Vacuum Glorietta Site, Lea County, NM			Project Managers: Hendley/George				
Well #	Date	5-7-20					
	Time	0900	0930	1000	1030	1100	1130
	Hr Meter						
ENGINE / BLOWER	Engine Speed	RPM	1800	1800	1800	1800	1800
	Oil Pressure	psi	50	50	50	50	50
	Water Temp	°F	140	140	140	140	140
	Alternator	Volts	13	13	13	13	13
	Intake Vacuum	"Hg	15	15	15	15	15
	Gas Flow Fuel/Propane	cfh	120	120	120	120	120
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H ₂ O	90	90	80	80	80
	Extraction Well Flow	scfm	16.82	16.82	17.13	17.13	17.13
	Influent Vapor Temp.	°F	67	67	67	67	67
	Air Temp	°F	72	73	79	80	84
	Barometric Pressure	"Hg	29.86	29.84	29.82	29.80	29.78
VAPOR / INFLUENT	TPH	ppmv	-	8150	-	13950	-
	CO ₂	%	-	7.78	-	11.30	-
	CO	%	-	.01	-	.02	-
	O ₂	%	-	19.9	-	5.1	-
	H ₂ S	ppm	-	2.7	-	4.9	-
NOTES	At 10:00 blower turned off. TPH @ 1030 ↑ 13,950. Decision to turn off EUR for remainder of the event. H2O replaced TPH.						
RECOVERY	Totalizer	gals					
	Pump Rate	gals/min					
	Total Volume	gals					
	NAPL	% Vol					
	NAPL	Gals					
EW	Data Logger Head	ft					
	GW Depression	ft					
	Extraction Well	DTNAPL					
	Extraction Well	DTGW					



OPERATING DATA – EVENT #

4C

PAGE #

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ACUVAC MDPE SYSTEM

Location: Vacuum Glorietta Site, Lea County, NM			Project Managers: Hendley/George				
Well #	Date	5-7-20					
	Time	1200	1230	1300	1330	1400	
	Hr Meter						
ENGINE / BLOWER	Engine Speed	RPM	1800	1800	1800	1800	1800
	Oil Pressure	psi	50	50	50	50	50
	Water Temp	°F	140	140	140	140	140
	Alternator	Volts	13	13	13	13	13
	Intake Vacuum	"Hg	15	15	15	15	15
	Gas Flow Fuel/Propane	cfh	120	120	120	120	120
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H ₂ O	80	80	80	80	80
	Extraction Well Flow	scfm	17.13	17.13	17.13	17.13	17.13
	Influent Vapor Temp.	°F	67	67	67	67	67
	Air Temp	°F	-				
	Barometric Pressure	"Hg					
VAPOR / INFLUENT	TPH	ppmv	-	14,010	-	13,890	-
	CO ₂	%	-	11.42	-	11.13	-
	CO	%	-	.02	-	.02	-
	O ₂	%	-	4.9	-	5.0	-
	H ₂ S	ppm	-	5.3	-	5.6	-
NOTES							
RECOVERY	Totalizer	gals					
	Pump Rate	gals/min					
	Total Volume	gals					
	NAPL	% Vol					
	NAPL	Gals					
EW	Data Logger Head	ft					
	GW Depression	ft					
	Extraction Well	DTNAPL					
	Extraction Well	DTGW					

OPERATING DATA – MDPE/EVR EVENT # 4CPAGE # 1

ACUVAC EVR SYSTEM

Location: Vacuum Glorietta Site, Lea County, NM				Project Managers: Hendley/George			
Date <u>5-7-20</u>							
Time		<u>0600</u>	<u>0630</u>	<u>0700</u>	<u>0730</u>	<u>0800</u>	<u>0830</u>
Well Number <u>V6-4</u>							
EW	EW Vac. "H ₂ O	<u>85</u>	<u>85</u>	<u>85</u>	<u>85</u>	<u>85</u>	<u>85</u>
	EW Flow scfm	<u>16.17</u>	<u>16.17</u>	<u>16.17</u>	<u>16.17</u>	<u>16.17</u>	<u>16.17</u>
VAPOR / INFLUENT	Instrument	HORIBA	HORIBA	HORIBA	HORIBA	HORIBA	HORIBA
	Well No.	<u>V6-4</u>					
	HC ppmv						
	CO ₂ %						
	CO %						
	O ₂ %						
	H ₂ S %						
EVR MAN	EVR Flow cfm	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>300</u>	<u>300</u>
	EVR Flow cfm						
	EVR Pressure psi	<u>5</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>8</u>	<u>8</u>
EVR Well	Vac (Press) "H ₂ O						

OPERATING NOTES



ACUVAC EVR SYSTEM

Released to Imaging: 12/28/2021 4:45:42 PM

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District III

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District IV

1220 S. St Francis Dr., Santa Fe, NM 87505
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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 21588

CONDITIONS

Operator: CONOCOPHILLIPS COMPANY 600 W. Illinois Avenue Midland, TX 79701	OGRID: 217817
	Action Number: 21588
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Review of 2020 Semi-Annual Monitoring and Remedial Activities Report: Content satisfactory 1. Continued groundwater monitoring and sampling on a semi-annual basis 2. Continue to monitor the absorbent sock in VG-4 and replace as needed 3. Submit the Annual Monitoring Report to the OCD no later than March 31, 2022	12/28/2021