REVIEWED
By Mike Buchanan at 3:25 pm, Aug 28, 2024

August 22,

2023

nRM1926352539 / 1RP-5677
2023 2nd Quarter (April-June) Groundwater Monitoring
North Monument G/SA Unit #2102
Lea County, New Mexico

Prepared for:

Apache

Apache Corporation
2350 West Marland Blvd.
Hobbs, New Mexico 88240

Prepared by:

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LAI Project No: 19-0112-51

Review of the 2023 Annual Groundwater, 2nd Quarter Report: content satisfactory
1. Frequency for groundwater monitoring schedule to reduce sampling to semi-annual from quarterly is approved.
2. Reporting may occur on an annual schedule, or semi-annually.
3 Once all wells demonstrate below the WQCC constituents of concern, prepare for closure by sampling quarterly and achieving eight consecutive events below the human health standard (unless that has already been achieved).
4. Submit the next report to OCD by April 2025, unless closure report has been submitted.

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1.0 EXECUTIVE SUMMARY

Larson & Associates, Inc. (LAI) has prepared this 2023 second (2nd) quarter (April-June) groundwater monitoring report on behalf of Apache Corporation (Apache) for submittal to the New Mexico Oil Conservation Division (NMOCD) in Santa Fe and Hobbs, New Mexico. This report presents the 2023 second (2nd) quarter laboratory analysis of groundwater samples collected from three (3) monitoring wells (MW-2, TMW-1, and TMW-2) at the North Monument Grayburg San Andres Unit (NM G/SAU) #2102 (Site) located in Unit O (SW/4, SE/4), Section 32, Township 19 South, Range 37 East, in Lea County, New Mexico. The geodetic position is North 32.61233° and West -103.27262°.

The following activities occurred on June 06, 2023:

- Gauged three (3) monitoring wells (MW-2, TMW-1, and TMW-2) for light nonaqueous phase liquid (LNAPL) and depth to groundwater.
- Purged and sampled groundwater from three (3) monitor wells (MW-2, TMW-1, and TMW-2), and a duplicate sample from TMW-2 (DUP-1/TMW-2) for quality assurance and quality control (QA/QC).
- Analyzed groundwater samples for benzene, toluene, ethylbenzene, xylenes (BTEX) and chloride.

The following observations are documented in this report for June 06, 2023:

- June 06, 2023, depth to groundwater was 10.97 feet bgs (MW-2), 21.76 feet bgs (TMW-1), and 23.47 feet bgs (TMW-2).
- The groundwater elevation ranged from 3,555.67 feet above mean sea level (MSL) at MW-2 (upgradient) to 3,537.96 feet above MSL at TMW-1 (downgradient).
- The groundwater flow direction was from northwest (MW-2) to southeast (TMW-2) at a gradient of about 0.03 feet per foot.
- BTEX concentrations were below the analytical method reporting limits (RL) and NMWQCC human health standards in all samples on June 06, 2023.
- The chloride concentration in the sample from well MW-2 (236 mg/L) located hydraulically up-gradient and representative of background conditions was below the New Mexico Water Quality Control Commission (NMWQCC) domestic water quality standard of 250 mg/L.
- Chloride in groundwater samples from TMW-1 (355 mg/L) and TMW-2 (393 mg/L) exceeded the NMWQCC domestic water quality standard of 250 mg/L.
- No significant changes in depth to groundwater, groundwater flow conditions and analyte concentrations were observed during the second 2023 quarterly monitoring events on June 6, 2023.

Recommendations:

- Apache will continue to notify NMOCD at seven (7) working in days in advance of each quarterly groundwater monitoring event and immediately for any significant changes in analyte concentrations in groundwater samples. Apache requests approval to reduce groundwater

monitoring frequency from quarterly (4 time per year) to semi-annual (2 times per year) and submit reports to NMOCD after each semi-annual monitoring event.

2.0 INTRODUCTION

Larson & Associates, Inc. (LAI) has prepared this 2023 second (2nd) quarter (April-June) groundwater monitoring report on behalf of Apache Corporation (Apache) for submittal to the New Mexico Oil Conservation Division (NMOCD) in Santa Fe and Hobbs, New Mexico. This report presents the June 06, 2023, second (2nd) quarter laboratory analysis of groundwater samples from three (3) monitoring wells (MW-2, TMW-1, and TMW-2) at the North Monument Grayburg San Andres Unit (NMS/SAU Well #2102 (Site) located in Unit O (SW/4, SE/4), Section 32, Township 19 South, Range 37 East, in Lea County, New Mexico. The geodetic position is North 32.61233° and West -103.27262°. Figure 1 presents a topographic map.

2.1 Background

A crude oil and produced water release occurred on August 16, 2019, due to corrosion and failure of a buried 3-inch steel flowline. The failure allowed for an unknown volume of crude oil and produced water to be released. Approximately 2.5 barrels (bbls) of crude oil and produced water were recovered. The fluid pooled in the pasture south of the well pad and west of the lease road. Immediate notice was given to Mr. Dylan Rose-Cross (NMOCD) by Mr. Jeffery Broom (Apache Environmental Tech) via email on August 16, 2019. The surface ownership is private. The initial C-141 was submitted on August 29, 2019, and assigned remediation permit number of 1RP-5677. Appendix A presents the initial C-141.

An Apache contractor remediated the spill area. On October 10, 2019, Apache applied for a variance to backfill the excavation due to TPH and chloride concentrations remaining above the NMOCD limits in soil below the excavation at approximately 12 feet bgs and groundwater between approximately 21 to 23 feet bgs with. The request stated that Apache would backfill the excavation with clean caliche to about 6 feet bgs, install a 20-mil polyethylene synthetic liner, and complete backfilling with clean topsoil containing chloride less than 600 mg/Kg.

On October 16, 2019, NMOCD conditionally approved the variance request with the condition that Apache install two (2) monitor wells, with TMW-1 installed as close as possible to the source of the release and TMW-2 installed hydraulically down gradient approximately 150 feet southeast of the excavation. NMOCD requested one (1) monitor well be installed hydraulically upgradient to monitor background groundwater quality. Apache proposed to use an existing monitoring well (NMGSAU #1631, MW-2) located approximately 375 feet northwest for the up-gradient monitoring well.

On November 14, 2019, Apache backfilled the excavation with clean caliche to about 6 feet bgs prior to installing the 20-mil polyethylene synthetic liner and completed backfilling above the liner with clean topsoil to the surface. The backfilled area measures approximately 16,024 square feet and was seeded with BLM Mix #2.

On March 11, 2020, Scarborough Drilling, Inc. (SDI) under supervision from LAI installed the monitoring wells (TMW-1 and TMW-2) utilizing an air rotary rig. The wells were drilled to depths of approximately 30 feet bgs. The wells were completed with 2-inch schedule 40 threaded PVC casing. Twenty (20) feet of

0.010-inch factory slotted screen was installed above and below the groundwater observed at the time of drilling. The well screen is surrounded with graded silica sand to about 2 feet above the well screen. The annular space above the sand was filled with bentonite chips to about 1-foot bgs. The wells were secured with locking steel protectors anchored in concrete. West Company, a State of New Mexico licensed professional land surveyor (License Number 23263) surveyed the monitoring wells for position and elevation including top of casing and natural ground surface. The wells were logged according to the Unified Soil Classification System (ASTM D 2487-06). The wells were installed at the locations presented in Figure 3.

On December 21, 2020, LAI issued a report titled "1RP-5677 Closure Report North Monument G/SA Unit #2102 Produced Water and Crude Oil Release" documenting the excavation closure and monitoring well installations. The report was submitted to the NMOCD in Santa Fe and Hobbs, New Mexico. No response has been received from the NMOCD regarding this closure report and the incident remains open on the NMOCD web portal. Appendix B presents the well logs and completion records.

2.2 Physical Setting

The physical setting is as follows:

- The surface elevation is approximately 3,564 feet above mean sea level (msl).
- The topography slopes gently towards the southeast.
- There are no surface water features within 1,000 feet of the Site.
- Karst data provided by the USGS describes this site as "Low Risk Potential".
- The soils are designated Berino-Cacique fine sandy loams association, 0 to 3 percent slopes, consisting of 8 inches of fine sandy loam and 52 inches of sandy clay loam in descending order.
- The surface geology consists of Eolian and piedmont deposits (Holocene to middle Pleistocene) interlayered eolian sands and piedmont-slop deposits.
- Groundwater occurs in the Ogallala Formation between about 21 to 23 feet below ground surface (bgs) based on depth to groundwater from two (2) monitoring wells installed near the excavation.

Appendix C presents the Karst Potential Map

3.0 GROUNDWATER MONITORING

3.1 Depth to Groundwater and Groundwater Potentiometric Elevation

On June 06, 2023, LAI personnel gauged monitor wells MW-2, TMW-1, and TMW-2 for light nonaqueous phase liquid (LNAPL) and depth to groundwater. LNAPL was not detected in the monitoring wells. Groundwater was gauged at 13.85 (MW-2), 24.66 (TMW-1), and 26.51 (TMW-2) feet below top of casing (TOC) or about 10.97 (MW-2), 21.76 (TMW-1) and 23.47 (TMW-2) feet below ground surface (bgs). The groundwater potentiometric surface elevation ranged from 3,555.67 feet above mean sea level (MSL) at

well MW-2 (up gradient) to 3,537.96 feet above MSL at well TMW-2 (down gradient). The groundwater flow was from northwest to southeast at a gradient of about 0.0308 feet/foot. No significant changes in groundwater flow direction or gradient were observed on June 06, 2023, compared to the previous monitoring event on March 09, 2023. Figure 4 presents the groundwater potentiometric surface map for June 06, 2023.

3.2 Groundwater Samples and Laboratory Analysis

On June 06, 2023, LAI personnel collected groundwater samples from monitoring wells MW-2, TMW-1, and TMW-2 using the low stress or low flow method according to EPA protocol (EQASOP-GW4, Revision 4, September 19, 2017) where an environmental pump is submerged near the middle of the water column and the well is pumped at a low rate until environmental parameters stabilize.

Groundwater samples were collected from the discharge of the dedicated disposable Tygon® tubing. The tubing was discarded after each use and the pump was thoroughly cleaned with a solution of potable water and laboratory grade detergent (Alconox®) and rinsed with distilled water. Quality assurance and quality control (duplicate) samples were collected from MW-2 (DUP-1/TMW-2). The samples were carefully transferred to laboratory containers that were labeled, packed in an ice filled chest affixed with custody seals, and delivered under chain of custody control to Xenco-Eurofins Laboratories (Xenco-Eurofins), a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory, located in Midland, Texas. Xenco-Eurofins analyzed the samples for benzene, toluene, ethylbenzene, xylene (BTEX) according to EPA SW-846 Method SW-8021B and chloride by EPA Method 300, respectively. Table 2 presents the laboratory analytical data summary. Appendix D presents the laboratory report.

3.2.1 Organic Analysis

Xenco reported BTEX concentrations below the laboratory analytical reporting limit (RL) and New Mexico Water Quality Control Commission (WQCC) human health standards in groundwater samples collected from MW-2, TMW-1, TMW-2, and DUP-1/(TMW-1). No data quality exceptions were noted in the Xenco case narratives. The results are consistent with the results from all previous groundwater monitoring events. Figure 5 presents the benzene concentrations in groundwater map.

3.2.2 Inorganic Analysis

The chloride concentrations were 236 milligrams per liter (mg/L) in MW-2, 355 mg/L (TMW-1) and 401 mg/L (TMW-2). Chloride concentrations in groundwater samples from wells TMW-1 and TMW-2 exceeded the WQCC domestic water quality standard (250 mg/L). The chloride concentration in the groundwater sample from MW-2 (upgradient) was below the WQCC domestic water quality standard and appears representative of background conditions. The duplicate (QA/QC) sample (Dup-1) collected from TMW-2 (241 mg/L) is 38.7 percent of the original chloride value (393 mg/L) for TMW-2. The chloride concentrations in samples collected on June 06, 2023, are consistent with the chloride concentrations reported in samples collected on March 09, 2023. No data quality exceptions were noted in the Eurofins-

Xenco case narratives. Figure 6 presents the groundwater chloride concentration map. Figure 7 presents the chloride concentration control chart.

4.0 CONCLUSIONS

The following observations are documented in this report:

- Monitoring well MW-2 remains hydraulically up gradient and representative of background chloride in groundwater.
- BTEX was reported below the analytical method RL and NMWQCC human health standards in wells MW-2, TMW-1, and TMW-2.
- Chloride concentrations in groundwater samples from TMW-1 (355 mg/L) and TMW-2 (393 mg/L) exceeded the NMWQCC domestic water quality standard of 250 mg/L.
- Chloride concentrations in groundwater samples from MW-2 (236 mg/L) are reported below the WQCC domestic water quality standard.

5.0 RECOMMENDATIONS

Apache proposes the following modifications to the groundwater monitoring program:

- Reduce frequency of groundwater monitoring from quarterly (4 times per year) to semi-annually (2 times per year).
- Collect depth to groundwater and groundwater samples from all monitoring wells during each semi-annual event.
- Report the laboratory results to NMOCD in semi-annual reports, unless significant changes in analyte concentrations are detected, at which time Apache will immediately report the results to NMOCD.

Apache will provide notice to the NMOCD in Hobbs and Santa Fe, New Mexico, at least 7 working days prior to each monitoring event.

Tables

Table 1
Monitor Well Completion and Gauging Summary
Apache Corporation, NMGSAU 2102
Lea County, New Mexico

Well Information									Groundwater Data				
Well No.	Date Drilled	Well Depth (Feet TOC)	Drilled Depth (Feet BGS)	Well Diameter (inches)	Surface Elevation (Feet AMSL)	Screen Interval (Feet BGS)	Casing Stickup (Feet)	TOC Elevation (Feet AMSL)	Date Gauged	Depth to Water (feet TOC)	Depth to Water (feet BGS)	Water Column Height (feet)	Groundwater Elevation (feet AMSL)
MW-2	Unknown	62.91	60.03	2	3566.64	Unknown	2.88	3,569.52	03/12/2020	13.59	10.71	49.32	3,555.93
									07/20/2020	13.75	10.87	49.16	3,555.77
									10/01/2020	13.90	11.02	49.01	3,555.62
									12/08/2020	13.81	10.93	49.10	3,555.71
									03/10/2021	13.80	10.92	49.11	3,555.72
									06/11/2021	13.80	10.92	49.11	3,555.72
									10/12/2021	13.81	10.93	49.10	3,555.71
									12/21/2021	13.76	10.88	49.15	3,555.76
									08/15/2022	13.95	11.07	48.96	3,555.57
									12/12/2022	13.81	10.93	49.10	3,555.71
									03/09/2023	13.80	10.92	49.11	3,555.72
									06/06/2023	13.85	10.97	49.06	3,555.67
TMW-1	3/11/2020	36.23	33.33	2	3561.92	9.83 - 29.49	2.90	3,564.82	03/12/2020	24.37	21.47	11.86	3,540.45
									07/20/2020	24.95	22.05	11.28	3,539.87
									10/01/2020	24.90	22.00	11.33	3,539.92
									12/08/2020	24.65	21.75	11.58	3,540.17
									03/10/2021	24.60	21.70	11.63	3,540.22
									06/11/2021	24.80	21.9	11.43	3,540.02
									10/12/2021	24.96	22.06	11.27	3,539.86
									12/21/2021	24.64	21.74	11.59	3,540.18
									08/15/2022	25.45	22.55	10.78	3,539.37
									12/12/2022	24.64	21.74	11.59	3,540.18
									03/09/2023	24.56	21.66	11.67	3,540.26
									06/06/2023	24.66	21.76	11.57	3,540.16
TWM-2	3/11/2020	37.07	34.03	2	3561.43	10.05 - 29.30	3.04	3,564.47	03/12/2020	26.38	23.34	10.69	3,538.09
									07/20/2020	26.70	23.66	10.37	3,537.77
									10/01/2020	26.70	23.66	10.37	3,537.77
									12/08/2020	26.51	23.47	10.56	3,537.96

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Apache Corporation, NMGSAU 2102
Lea County, New Mexico

Well Information									Groundwater Data				
Well No.	Date Drilled	Well Depth (Feet TOC)	Drilled Depth (Feet BGS)	Well Diameter (inches)	Surface Elevation (Feet AMSL)	Screen Interval (Feet BGS)	Casing Stickup (Feet)	TOC Elevation (Feet AMSL)	Date Gauged	Depth to Water (feet TOC)	Depth to Water (feet BGS)	Water Column Height (feet)	Groundwater Elevation (feet AMSL)
									03/10/2021	26.40	23.36	10.67	3,538.07
									06/11/2021	26.57	23.53	10.50	3,537.90
									10/12/2021	26.72	23.68	10.35	3,537.75
									12/21/2021	26.49	23.45	10.58	3,537.98
									08/15/2022	27.01	23.97	10.06	3,537.46
									12/12/2022	26.53	23.49	10.54	3,537.94
									03/09/2023	26.43	23.39	10.64	3,538.04
									06/06/2023	26.51	23.47	10.56	3,537.96

Notes: MW-2 is hydraulically upgradient. TMW-1 is near release source. TMW-2 is hydraulically down gradient.
bgs: below ground surface
TOC: top of casing
AMSL: elevation above mean sea level

Table 2
Groundwater Sample Analytical Data Summary
Apache Corporation, NMGSAU 2102
Lea County, New Mexico

Sample	Collection Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Chloride (mg/L)
WQCC Standard:		*0.005	* 1	*0.7	*0.62	**250
MW-2	03/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	230
	07/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	231
	10/01/2020	<0.00200	<0.00200	<0.00200	<0.00200	241
	12/08/2020	<0.00200	<0.00200	<0.00200	<0.00200	227
	03/10/2021	<0.00200	<0.00200	<0.00200	<0.00200	235
	06/11/2021	<0.00200	<0.00200	<0.00200	<0.00400	212
	10/12/2021	<0.00200	<0.00200	<0.00200	<0.00400	207
	12/21/2021	<0.00200	<0.00200	<0.00200	<0.00400	222
	08/15/2022	<0.00200	<0.00200	<0.00200	<0.00400	232
	12/12/2022	<0.00200	<0.00200	<0.00200	<0.00400	223
	03/09/2023	<0.00200	<0.00200	<0.00200	<0.00400	254
	06/06/2023	<0.00200	<0.00200	<0.00200	<0.00400	236
TMW-1	03/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	360
	07/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	432
	10/01/2020	<0.00200	<0.00200	<0.00200	<0.00200	452
	12/08/2020	<0.00200	<0.00200	<0.00200	<0.00200	449
	03/10/2021	<0.00200	<0.00200	<0.00200	<0.00200	418
	06/11/2021	<0.00200	<0.00200	<0.00200	<0.00400	361
	10/12/2021	<0.00200	<0.00200	<0.00200	<0.00400	291
	12/21/2021	<0.00200	<0.00200	<0.00200	<0.00400	406
	08/15/2022	<0.00200	<0.00200	<0.00200	<0.00400	306
	12/12/2022	<0.00200	<0.00200	<0.00200	<0.00400	358
	03/09/2023	<0.00200	<0.00200	<0.00200	<0.00400	378
	06/06/2023	<0.00200	<0.00200	<0.00200	<0.00400	355
TMW-2	03/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	423
	07/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	664
	10/01/2020	<0.00200	<0.00200	<0.00200	<0.00200	591
	12/08/2020	<0.00200	<0.00200	<0.00200	<0.00200	473
	03/10/2021	<0.00200	<0.00200	<0.00200	<0.00200	428
	06/11/2021	<0.00200	<0.00200	<0.00200	<0.00400	402
	10/12/2021	<0.00200	<0.00200	<0.00200	<0.00400	325
	12/21/2021	<0.00200	<0.00200	<0.00200	<0.00400	388

Table 2
Groundwater Sample Analytical Data Summary
Apache Corporation, NMGSAU 2102
Lea County, New Mexico

	08/15/2022	<0.00200	<0.00200	<0.00200	<0.00400	362
	12/12/2022	<0.00200	<0.00200	<0.00200	<0.00400	338
	03/09/2023	<0.00200	<0.00200	<0.00200	<0.00400	401
	06/06/2023	<0.00200	<0.00200	<0.00200	<0.00400	393
QA/QC (Duplicate) Samples						
DUP-1 (MW-2)	03/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	223
DUP-1 (MW-2)	07/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	242
DUP-1 (MW-2)	10/01/2020	<0.00200	<0.00200	<0.00200	<0.00200	245
DUP-1 (MW-2)	12/08/2020	<0.00200	<0.00200	<0.00200	<0.00200	226
DUP-1 (MW-2)	03/10/2021	<0.00200	<0.00200	<0.00200	<0.00200	237
DUP-1 (MW-2)	06/11/2021	<0.00200	<0.00200	<0.00200	<0.00400	213
DUP-1 (MW-2)	10/12/2021	<0.00200	<0.00200	<0.00200	<0.00400	305
DUP-1 (MW-2)	12/21/2021	<0.00200	<0.00200	<0.00200	<0.00400	226
DUP-1 (MW-2)	08/15/2022	<0.00200	<0.00200	<0.00200	<0.00400	254
DUP-1 (MW-2)	12/12/2022	<0.00200	<0.00200	<0.00200	<0.00400	221
DUP-1 (TMW-2)	03/09/2023	<0.00200	<0.00200	<0.00200	<0.00400	412
DUP-1 (TMW-2)	06/06/2023	<0.00200	<0.00200	<0.00200	<0.00400	241

Notes:
analysis performed by Xenco Laboratories, Midland, Texas by EPA SW-846 Method 8021B (BTEX) and Method 300 (chloride)
All values reported in milligrams per liter (mg/L) equivalent to parts per million (ppm)
< values - denotes concentration is less than method reporting limit (RL).
* - NMWQCC human health standard
** - NMWQCC domestic water quality standard
BGS - below ground surface

Figures

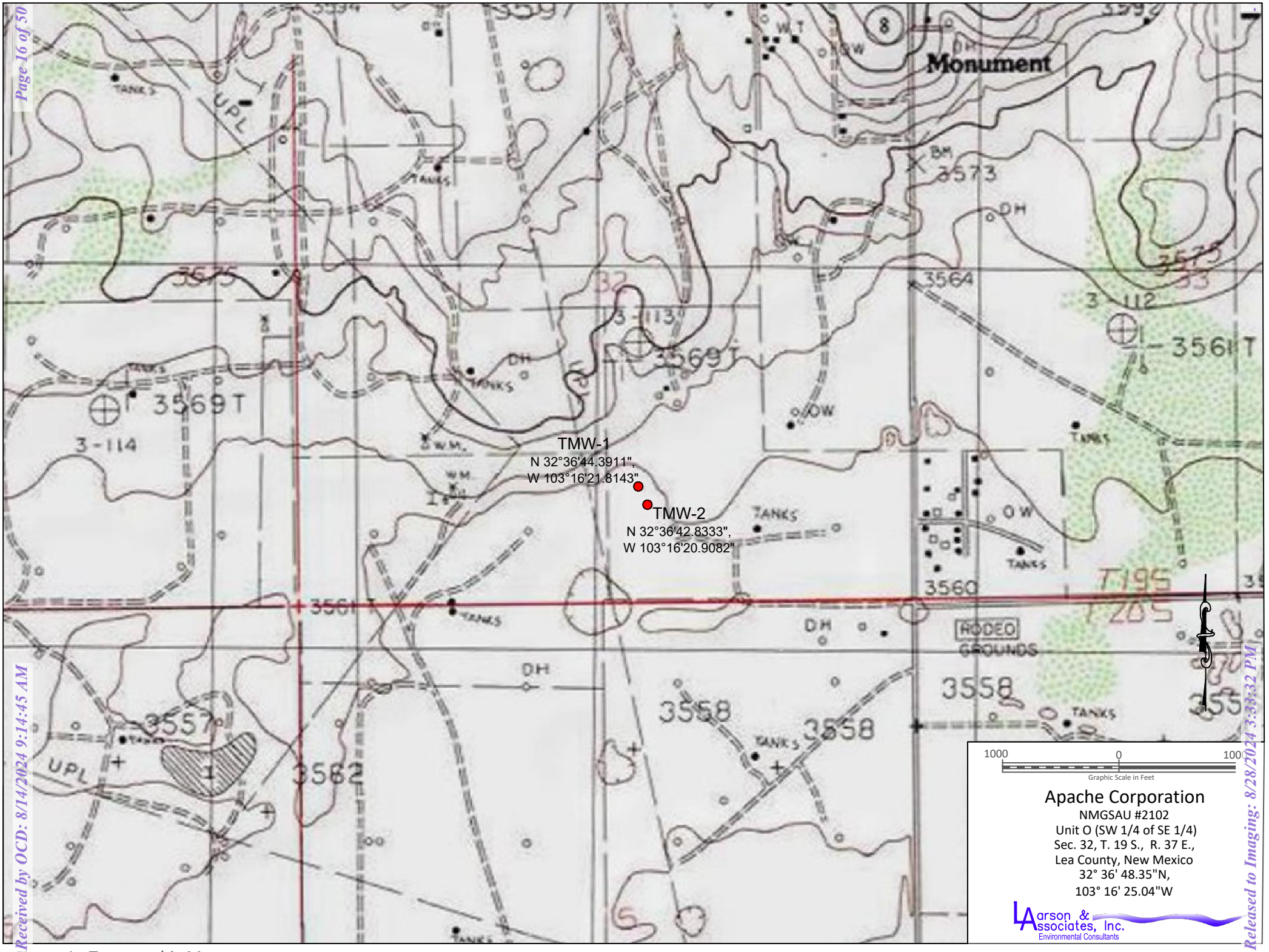


Figure 1 - Topographic Map

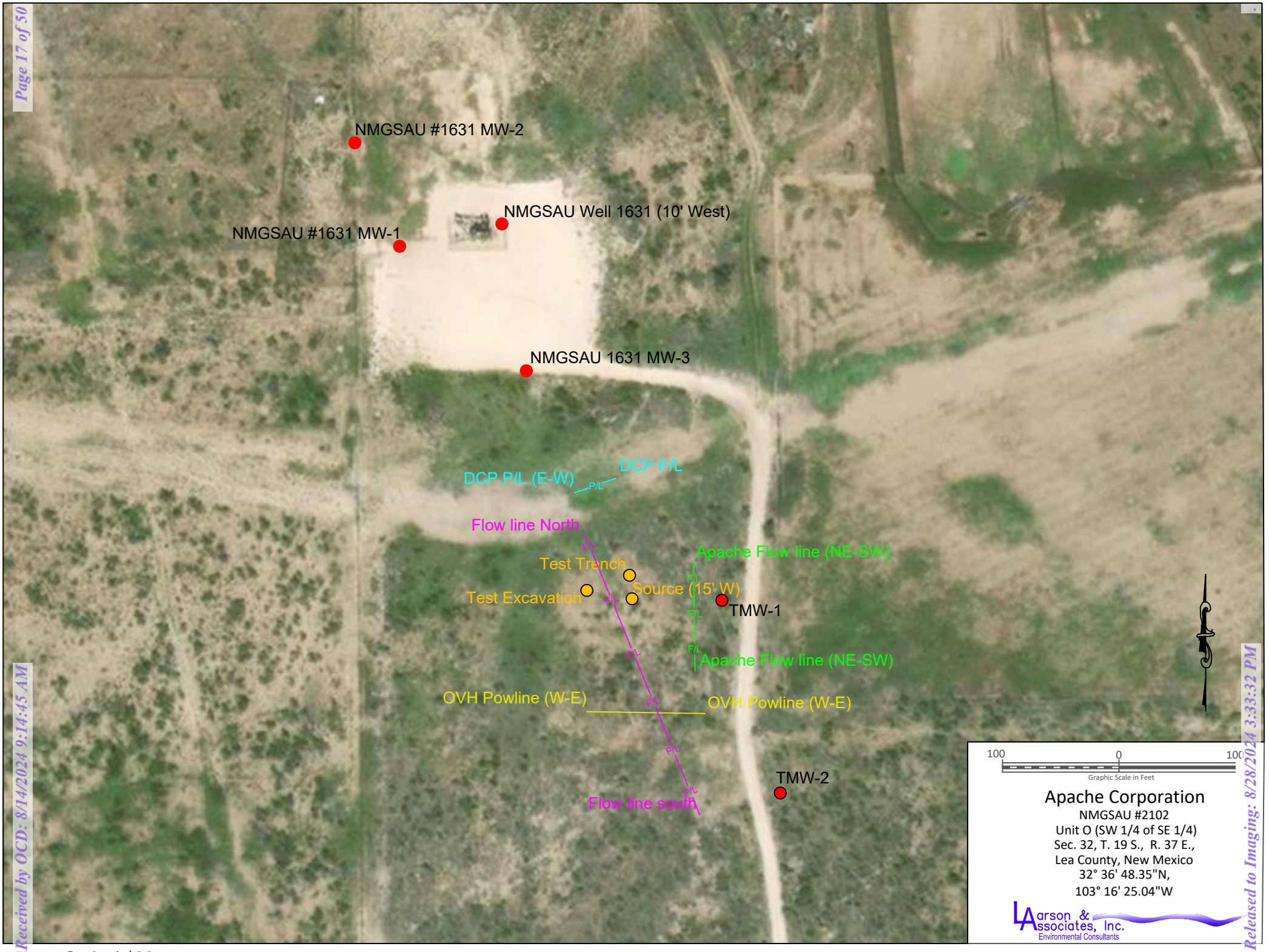
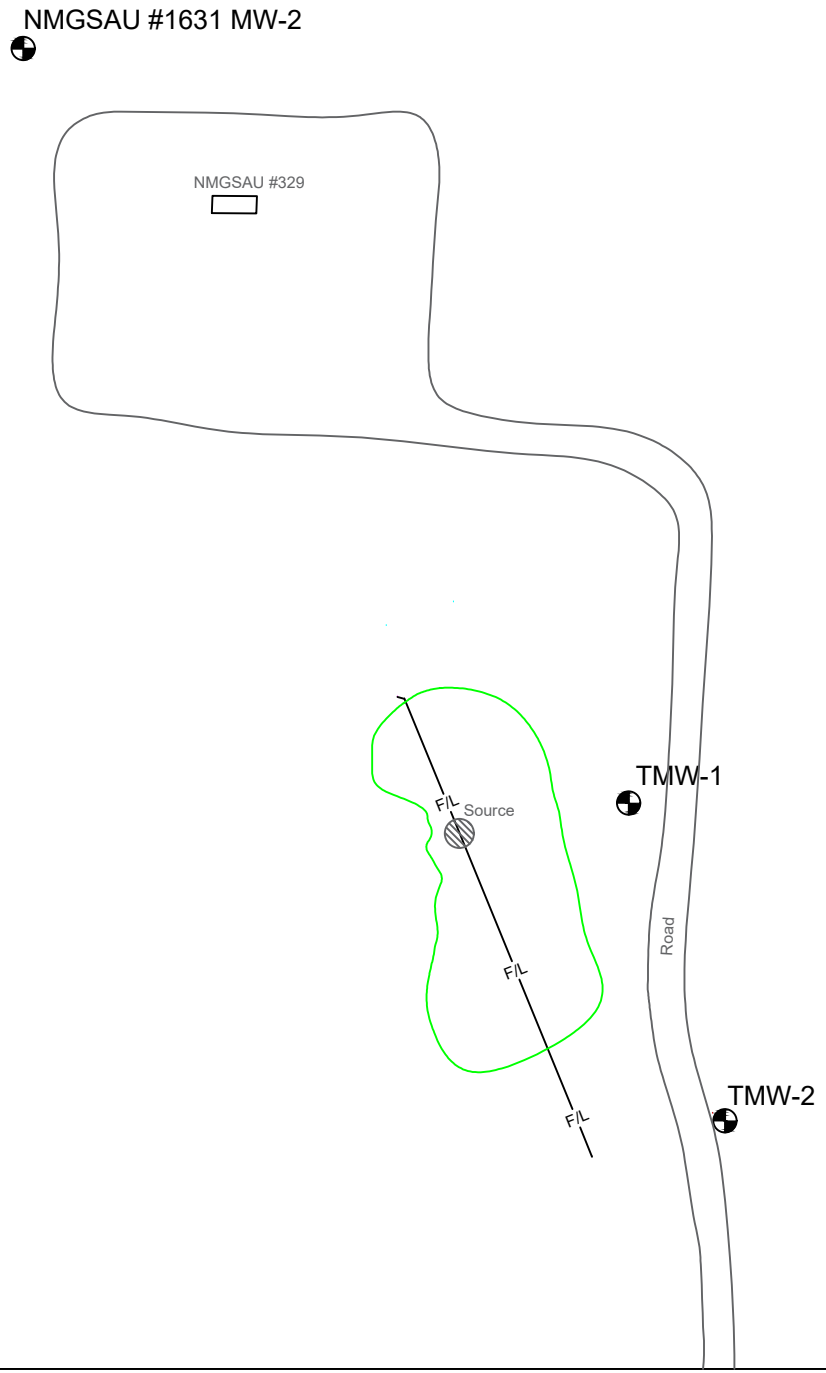


Figure 2 - Aerial Map



100 0 100
Graphic Scale in Feet

Apache Corporation
NMGSAU #2102
Unit O (SW 1/4 of SE 1/4)
Sec. 32, T. 19 S., R. 37 E.,
Lea County, New Mexico
32° 36' 48.35"N,
103° 16' 25.04"W

Larson & Associates, Inc.
Environmental Consultants

Figure 3 - Base Map

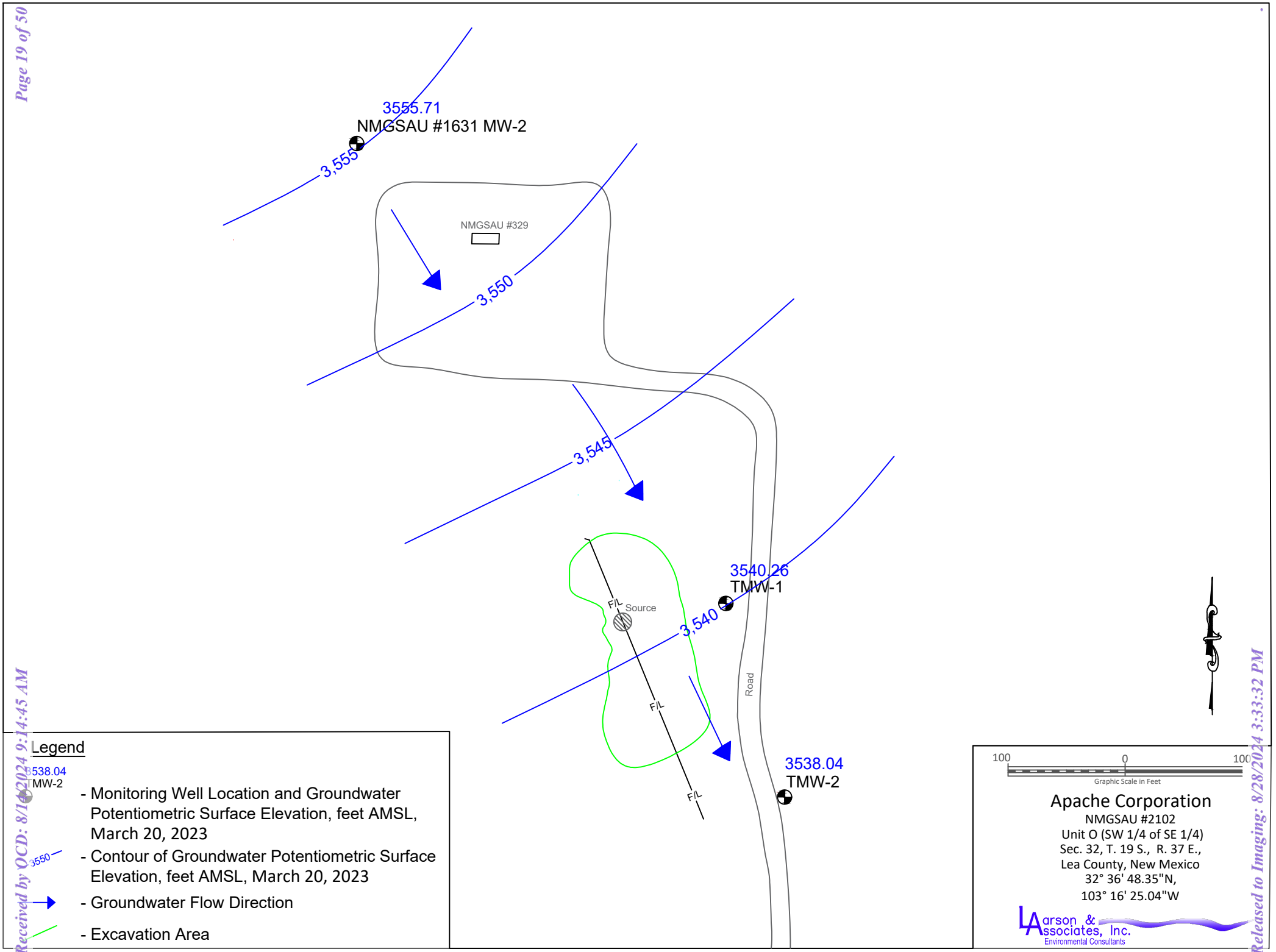


Figure 3a - Groundwater Potentiometric Surface Map, March 20, 2023

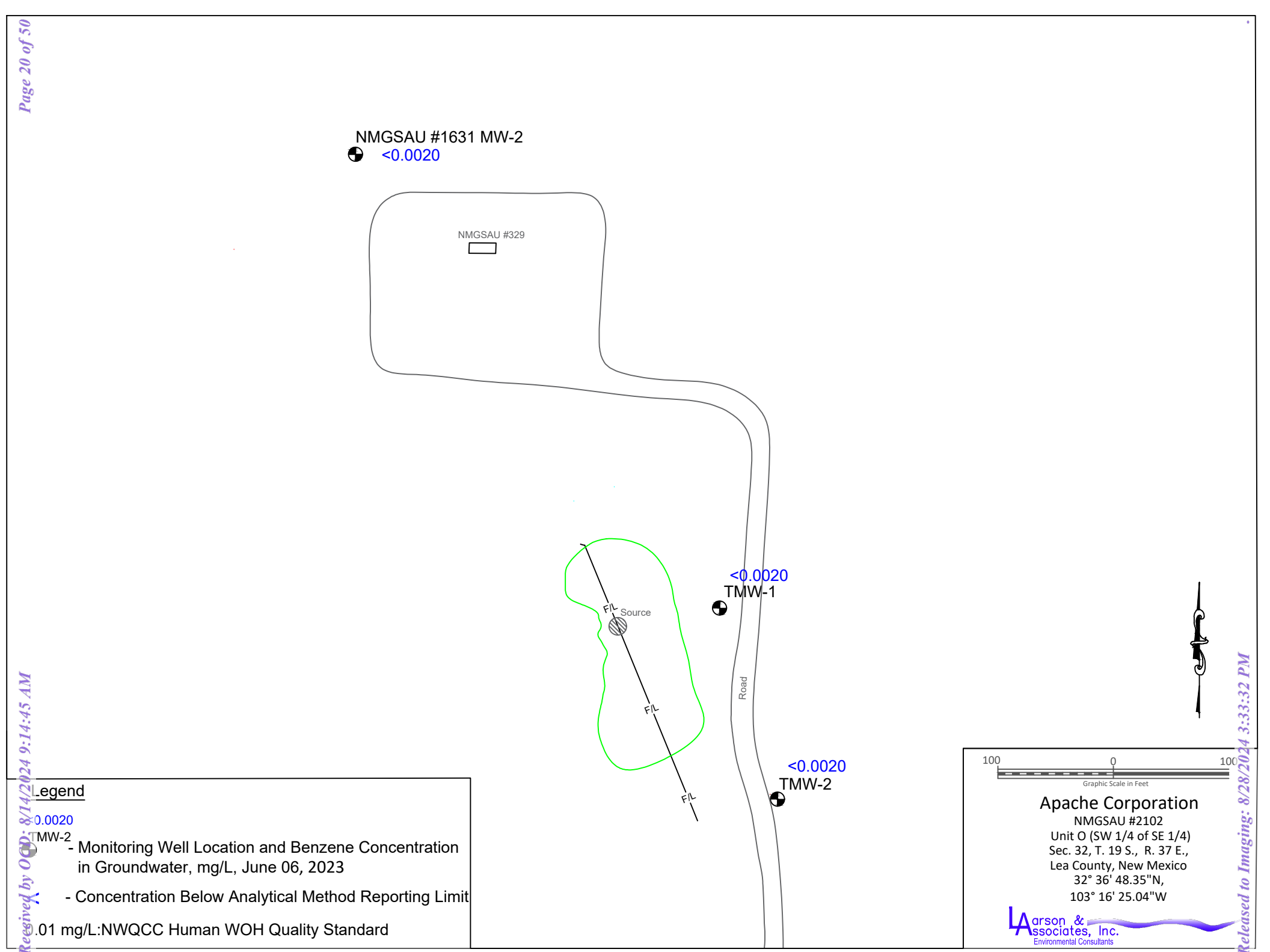
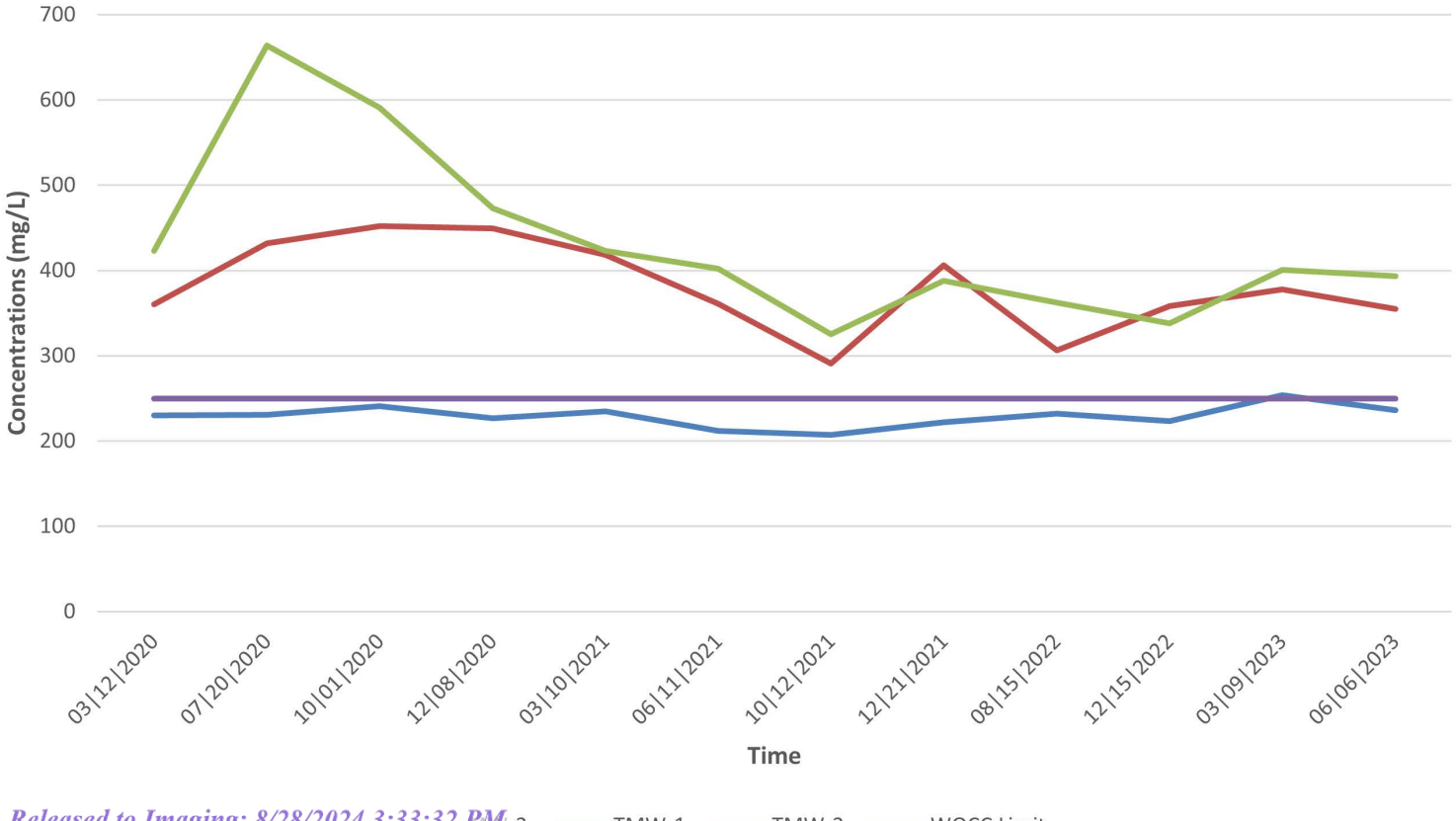


Figure 5b - Benzene Concentration in Groundwater Map, June 06, 2023

Chloride Concentrations



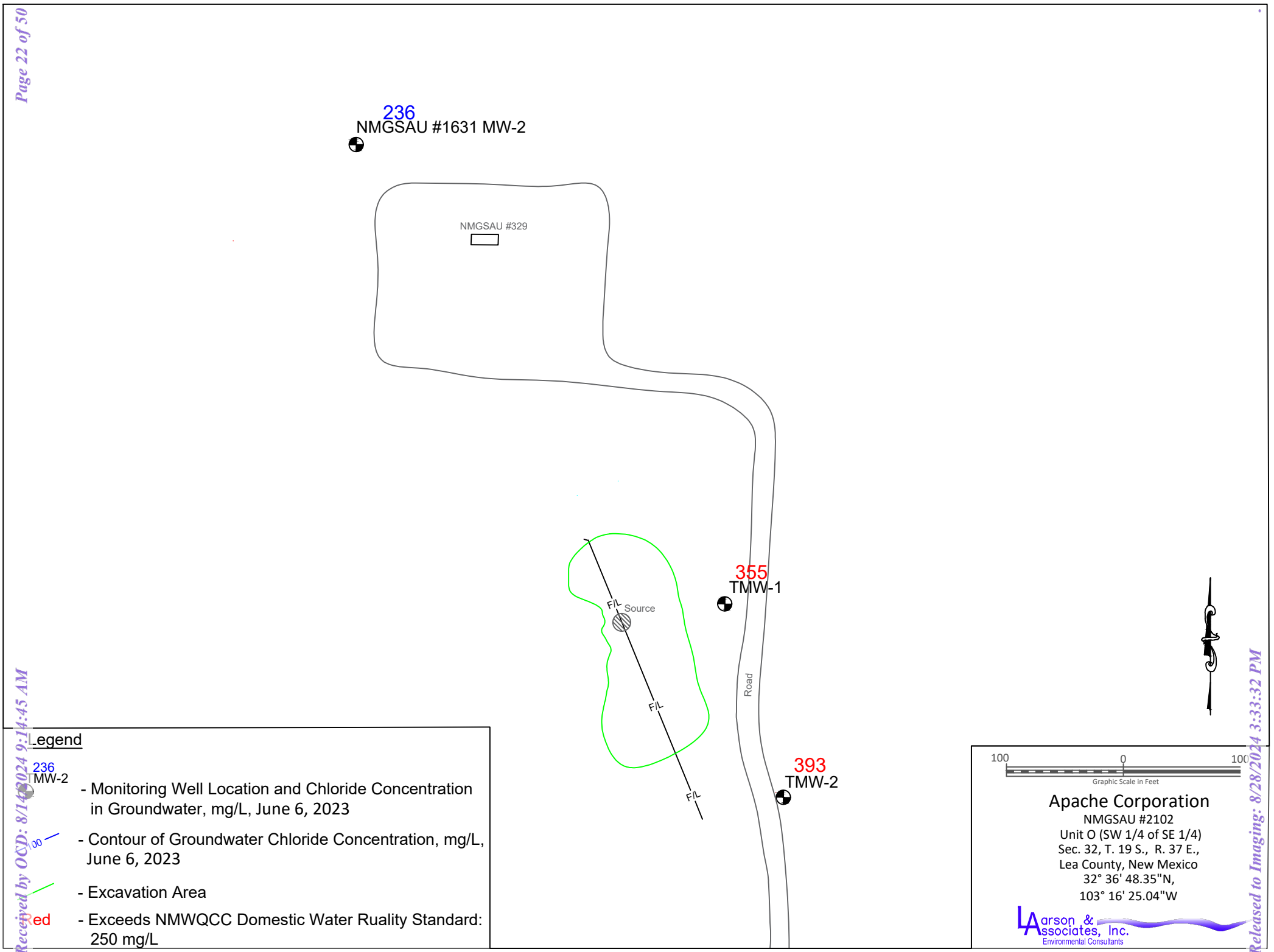


Figure 4b - Chloride Concentration in Groundwater Map, June 6, 2023

Appendix A

Initial C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	NRM1926352539
District RP	1RP-5677
Facility ID	
Application ID	pRM1926352024

Release Notification

Responsible Party

Responsible Party	Apache Corporation	OGRID	873
Contact Name	Bruce Baker	Contact Telephone	432-631-6982
Contact email	larry.baker@apachecorp.com	Incident # *(assigned by OCD)*	
Contact mailing address	2350 W. Marland BLVD Hobbs, NM 88240		

Location of Release Source

Latitude 32.61233 Longitude -103.27262
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	North Monument G/SA Unit # 002	Site Type	Oil Well
Date Release Discovered	8/16/19	API# *(if applicable)*	30-025-05919

Unit Letter	Section	Township	Range	County
O	32	19S	37E	Lea

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☑ Private (*Name:* Johnston)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☑ Crude Oil	Volume Released (bbls) Unknown	Volume Recovered (bbls) 2.5 barrels
☑ Produced Water	Volume Released (bbls) Unknown	Volume Recovered (bbls) 2.5 barrels
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☑ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release: Buried flanged 3 inch steel pipe failed due to internal corrosion. The release occurred on the flowline in the pasture so the GPS corrdinates for the actual release will not match the actual well location.

Form C-141
Page 2

State of New Mexico
Oil Conservation Division

Incident ID	NRM1926352539
District RP	1RP-5677
Facility ID	
Application ID	pRM1926352024

Was this a major release as defined by 19.15.29.7(A) NMAC? ☑ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? Release is greater than 25 barrels

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?
Via email on 8/16/2019 given to NMOCD Rep. Dylan Rose-Coss by Jeff Broom, Environmental Tech, Apache Corporation

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☑ The source of the release has been stopped.
☑ The impacted area has been secured to protect human health and the environment.
☑ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☑ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Bruce Baker Title: Environmental Tech. SR.

Signature: Bruce Baker Date: 8/29/19

email: larry.baker@apachecorp.com Telephone: 432-631-6982

OCD Only

Received by: Ramona Marcus Date: 09/20/2019

Appendix B

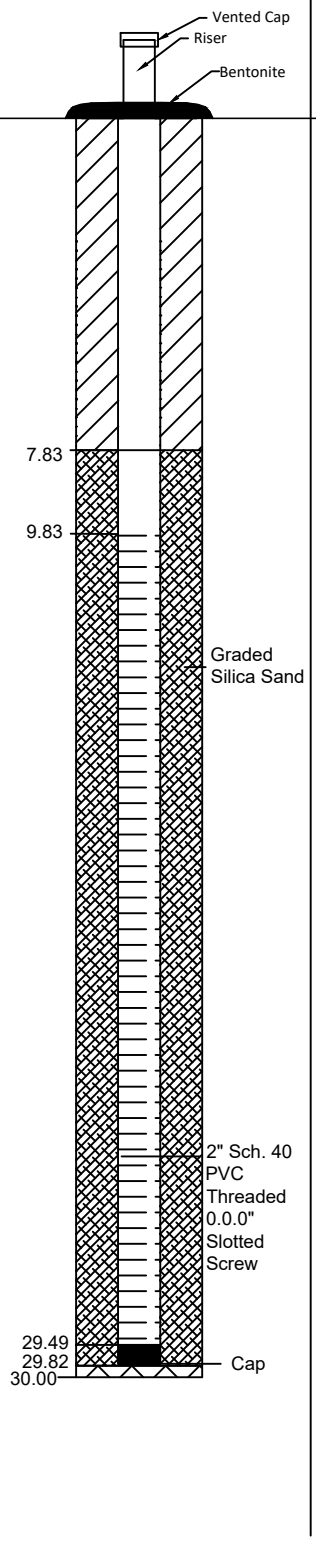
Boring Logs

BORING RECORD

Start: 10:29
Finish: 11:45

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG
	0	Sand, 7.5YR, 6/5 to 6/4, Well Sorted, Very Fine Grained Quartz Sand, Light Brown	ML	
	5	Caliche, 7.5YR, 8/3, Pink, 2-10mm Subangular Clast Inclusions, Fine Grained	Caliche	
	10	Silty Sand, 7.5YR, 8/4, Pink, Moderately Sorted with Subangular 1-6mm Clast Inclusions		
	15	7.5YR, 8/6, Reddish Yellow, Moderately Sorted with Subangular 2-6mm Clast Inclusions	ML	
	20			
	25			
	30	TD: 30'		

Surface Elevation:
TOC Elecation:



NUMBER	RECOVERY	DEPTH

REMARKS

BACKGROUND PID READING
SOIL : _____ PPM
SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : 19-0112-51 / Apache Corp.
HOLE DIAMETER : 2"
LOCATION : NMGSAU 2102
LAI GEOLOGIST : R. Nelson
DRILLING CONTRACTOR : SDI
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 03-11-2020

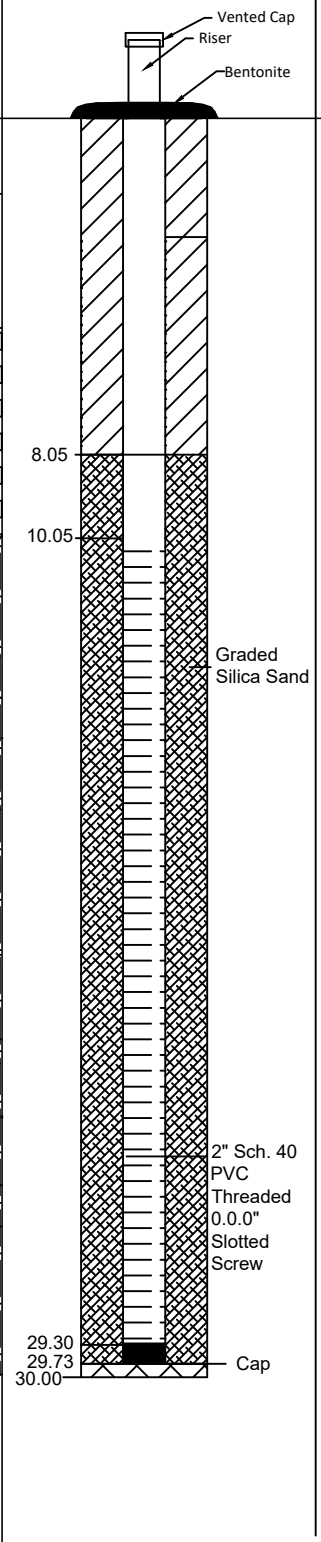
BORING NUMBER : TMW-1

BORING RECORD

Start: 12:36
Finish: 1:09

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG
	0	Sand, 7.5YR, 6/5 to 6/4, Well Sorted, Very Fine Quartz Grained Sand, Light Brown	ML	
	5	Caliche, 7.5YR, 8/3, Pink, 2-10mm Subangular Clast Inclusions, Fine Grained	Caliche	
	10	Silty Sand, 7.5YR, 8/4, Pink, Moderately Sorted with Subangular 1-6mm Clast Inclusions		
	15	7.5YR, 8/6, Reddish Yellow, Moderately Sorted with Subangular 2-6mm Clast Inclusions	ML	
	20			
	25			
	30	TD: 30'		

Surface Elevation:
TOC Elecation:



NUMBER	RECOVERY	DEPTH

REMARKS

BACKGROUND PID READING
SOIL : _____ PPM
SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : 19-0112-51 / Apache Corp.
HOLE DIAMETER : 2"
LOCATION : NMGSAU 2102
LAI GEOLOGIST : R. Nelson
DRILLING CONTRACTOR : SDI
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 03-11-2020

BORING NUMBER : TMW-2

Appendix C

Karst Potential Map

*New Mexico Kart or No Karst - QGIS

Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help

Browser

- Favorites
- Spatial Bookmarks
- Project Home
- Home
- C:\
- D:\
- L:\
- Z:\
- GeoPackage
- SpatiaLite
- PostGIS
- MSSQL
- Oracle
- DB2
- WMS/WMTS
- XYZ Tiles
- WCS
- WFS / OGC API - Features
- OWS
- ArcGisMapServer
- ArcGisFeatureServer
- GeoNode

Layers

- Added geom info
- carlsbad_west
- Karst_or_No_Karst
  - High
  - Low
  - Medium
  -
- Bing Satellite

Low

Type to locate (Ctrl+K)

Coordinate 662471,3609979 Scale 1:4407 Magnifier 100% Rotation 0.0 ° Render EPSG:26913

Appendix D

Laboratory Reports

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Mark J Larson
Larson & Associates, Inc.
507 N Marienfeld
Suite 202
Midland, Texas 79701

Generated 6/15/2023 1:39:45 PM

JOB DESCRIPTION

NMGSAU 2102
SDG NUMBER 19-0112-51

JOB NUMBER

880-29215-1

Eurofins Midland
1211 W. Florida Ave
Midland TX 79701

See page two for job notes and contact information.

my EOL

Eurofins Midland

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization

Holly Taylor

Generated
6/15/2023 1:39:45 PM

Authorized for release by
Holly Taylor, Project Manager
Holly.Taylor@et.eurofinsus.com
(806)794-1296

Client: Larson & Associates, Inc.
Project/Site: NMGSAU 2102

Laboratory Job ID: 880-29215-1
SDG: 19-0112-51

Table of Contents

Definitions/Glossary

Client: Larson & Associates, Inc. Job ID: 880-29215-1
Project/Site: NMGSAU 2102 SDG: 19-0112-51

Qualifiers

GC VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Larson & Associates, Inc.
Project/Site: NMGSAU 2102

Job ID: 880-29215-1
SDG: 19-0112-51

Job ID: 880-29215-1

Laboratory: Eurofins Midland

Narrative

Job Narrative
880-29215-1

Receipt
The samples were received on 6/7/2023 8:34 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.0°C

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Larson & Associates, Inc.
Project/Site: NMGSAU 2102

Job ID: 880-29215-1
SDG: 19-0112-51

Client Sample ID: MW-2

Lab Sample ID: 880-29215-1
Matrix: Water
Date Collected: 06/06/23 09:28
Date Received: 06/07/23 08:34

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/L			06/14/23 15:09	1
Toluene	<0.00200	U	0.00200		mg/L			06/14/23 15:09	1
Ethylbenzene	<0.00200	U	0.00200		mg/L			06/14/23 15:09	1
m,p-Xylenes	<0.00400	U	0.00400		mg/L			06/14/23 15:09	1
o-Xylene	<0.00200	U	0.00200		mg/L			06/14/23 15:09	1
Xylenes, Total	<0.00400	U	0.00400		mg/L			06/14/23 15:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*70 - 130*		*06/14/23 15:09*	*1*
1,4-Difluorobenzene (Surr)	*104*		*70 - 130*		*06/14/23 15:09*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00400	U	0.00400		mg/L			06/15/23 10:36	1

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**236**		2.50		mg/L			06/08/23 16:53	5

Client Sample ID: TMW-1

Lab Sample ID: 880-29215-2
Matrix: Water
Date Collected: 06/06/23 10:05
Date Received: 06/07/23 08:34

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/L			06/14/23 15:29	1
Toluene	<0.00200	U	0.00200		mg/L			06/14/23 15:29	1
Ethylbenzene	<0.00200	U	0.00200		mg/L			06/14/23 15:29	1
m,p-Xylenes	<0.00400	U	0.00400		mg/L			06/14/23 15:29	1
o-Xylene	<0.00200	U	0.00200		mg/L			06/14/23 15:29	1
Xylenes, Total	<0.00400	U	0.00400		mg/L			06/14/23 15:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*70 - 130*		*06/14/23 15:29*	*1*
1,4-Difluorobenzene (Surr)	*101*		*70 - 130*		*06/14/23 15:29*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00400	U	0.00400		mg/L			06/15/23 10:36	1

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**355**		5.00		mg/L			06/08/23 17:01	10

Client Sample ID: TMW-2

Lab Sample ID: 880-29215-3
Matrix: Water
Date Collected: 06/06/23 10:22
Date Received: 06/07/23 08:34

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/L			06/14/23 17:44	1
Toluene	<0.00200	U	0.00200		mg/L			06/14/23 17:44	1

Client Sample Results

Client: Larson & Associates, Inc.
Project/Site: NMGSAU 2102

Job ID: 880-29215-1
SDG: 19-0112-51

Client Sample ID: TMW-2

Date Collected: 06/06/23 10:22
Date Received: 06/07/23 08:34

Lab Sample ID: 880-29215-3

Matrix: Water

Method: SW846 8021B - Volatile Organic Compounds (GC) (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	<0.00200	U	0.00200		mg/L			06/14/23 17:44	1
m,p-Xylenes	<0.00400	U	0.00400		mg/L			06/14/23 17:44	1
o-Xylene	<0.00200	U	0.00200		mg/L			06/14/23 17:44	1
Xylenes, Total	<0.00400	U	0.00400		mg/L			06/14/23 17:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*70 - 130*		*06/14/23 17:44*	*1*
1,4-Difluorobenzene (Surr)	*93*		*70 - 130*		*06/14/23 17:44*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00400	U	0.00400		mg/L			06/15/23 10:36	1

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**393**		5.00		mg/L			06/08/23 17:08	10

Client Sample ID: Dup-1

Date Collected: 06/06/23 00:00
Date Received: 06/07/23 08:34

Lab Sample ID: 880-29215-4

Matrix: Water

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/L			06/14/23 18:04	1
Toluene	<0.00200	U	0.00200		mg/L			06/14/23 18:04	1
Ethylbenzene	<0.00200	U	0.00200		mg/L			06/14/23 18:04	1
m,p-Xylenes	<0.00400	U	0.00400		mg/L			06/14/23 18:04	1
o-Xylene	<0.00200	U	0.00200		mg/L			06/14/23 18:04	1
Xylenes, Total	<0.00400	U	0.00400		mg/L			06/14/23 18:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*82*		*70 - 130*		*06/14/23 18:04*	*1*
1,4-Difluorobenzene (Surr)	*101*		*70 - 130*		*06/14/23 18:04*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00400	U	0.00400		mg/L			06/15/23 10:36	1

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**241**		2.50		mg/L			06/08/23 17:16	5

Surrogate Summary

Client: Larson & Associates, Inc.
Project/Site: NMGSAU 2102

Job ID: 880-29215-1
SDG: 19-0112-51

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)											
		BFB1	DFBZ1										
Lab Sample ID	Client Sample ID	(70-130)	(70-130)										
880-29213-B-1 MS	Matrix Spike	104	103										
880-29213-B-1 MSD	Matrix Spike Duplicate	93	99										
880-29215-1	MW-2	94	104										
880-29215-2	TMW-1	94	101										
880-29215-3	TMW-2	85	93										
880-29215-4	Dup-1	82	101										
LCS 880-55462/3	Lab Control Sample	97	100										
LCSD 880-55462/4	Lab Control Sample Dup	95	104										
MB 880-55462/8	Method Blank	89	123										

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DFBZ = 1,4-Difluorobenzene (Surr)

QC Sample Results

Client: Larson & Associates, Inc.
Project/Site: NMGSAU 2102

Job ID: 880-29215-1
SDG: 19-0112-51

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-55462/8
Matrix: Water
Analysis Batch: 55462

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/L			06/14/23 11:56	1
Toluene	<0.00200	U	0.00200		mg/L			06/14/23 11:56	1
Ethylbenzene	<0.00200	U	0.00200		mg/L			06/14/23 11:56	1
m,p-Xylenes	<0.00400	U	0.00400		mg/L			06/14/23 11:56	1
o-Xylene	<0.00200	U	0.00200		mg/L			06/14/23 11:56	1
Xylenes, Total	<0.00400	U	0.00400		mg/L			06/14/23 11:56	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*70 - 130*		*06/14/23 11:56*	*1*
1,4-Difluorobenzene (Surr)	*123*		*70 - 130*		*06/14/23 11:56*	*1*

Lab Sample ID: LCS 880-55462/3
Matrix: Water
Analysis Batch: 55462

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.1098		mg/L		110	70 - 130		
Toluene			0.100	0.1217		mg/L		122	70 - 130		
Ethylbenzene			0.100	0.09921		mg/L		99	70 - 130		
m,p-Xylenes			0.200	0.1883		mg/L		94	70 - 130		
o-Xylene			0.100	0.09012		mg/L		90	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*
1,4-Difluorobenzene (Surr)	*100*		*70 - 130*

Lab Sample ID: LCSD 880-55462/4
Matrix: Water
Analysis Batch: 55462

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.1222		mg/L		122	70 - 130	11	20
Toluene			0.100	0.1153		mg/L		115	70 - 130	5	20
Ethylbenzene			0.100	0.09768		mg/L		98	70 - 130	2	20
m,p-Xylenes			0.200	0.1857		mg/L		93	70 - 130	1	20
o-Xylene			0.100	0.08447		mg/L		84	70 - 130	6	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*
1,4-Difluorobenzene (Surr)	*104*		*70 - 130*

Lab Sample ID: 880-29213-B-1 MS
Matrix: Water
Analysis Batch: 55462

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00200	U	0.100	0.1255		mg/L		126	70 - 130		
Toluene	<0.00200	U	0.100	0.1240		mg/L		124	70 - 130		

Eurofins Midland

QC Sample Results

Client: Larson & Associates, Inc.
Project/Site: NMGSAU 2102

Job ID: 880-29215-1
SDG: 19-0112-51

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: 880-29213-B-1 MS
Matrix: Water
Analysis Batch: 55462

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00200	U	0.100	0.1087		mg/L		109	70 - 130
m,p-Xylenes	<0.00400	U	0.200	0.2148		mg/L		107	70 - 130
o-Xylene	<0.00200	U	0.100	0.1037		mg/L		104	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*
1,4-Difluorobenzene (Surr)	*103*		*70 - 130*

Lab Sample ID: 880-29213-B-1 MSD
Matrix: Water
Analysis Batch: 55462

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00200	U	0.100	0.1261		mg/L		126	70 - 130	0	25
Toluene	<0.00200	U	0.100	0.1247		mg/L		125	70 - 130	1	25
Ethylbenzene	<0.00200	U	0.100	0.1040		mg/L		104	70 - 130	4	25
m,p-Xylenes	<0.00400	U	0.200	0.2013		mg/L		101	70 - 130	6	25
o-Xylene	<0.00200	U	0.100	0.09634		mg/L		96	70 - 130	7	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*
1,4-Difluorobenzene (Surr)	*99*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-55042/3
Matrix: Water
Analysis Batch: 55042

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.500	U	0.500		mg/L			06/08/23 13:49	1

Lab Sample ID: LCS 880-55042/4
Matrix: Water
Analysis Batch: 55042

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride			25.0	24.81		mg/L		99	90 - 110

Lab Sample ID: LCSD 880-55042/5
Matrix: Water
Analysis Batch: 55042

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			25.0	24.88		mg/L		100	90 - 110	0	20

QC Sample Results

Client: Larson & Associates, Inc.
Project/Site: NMGSAU 2102

Job ID: 880-29215-1
SDG: 19-0112-51

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 880-29260-A-1 MS
Matrix: Water
Analysis Batch: 55042

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	159		125	286.2		mg/L		102	90 - 110		

Lab Sample ID: 880-29260-A-1 MSD
Matrix: Water
Analysis Batch: 55042

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	159		125	284.3		mg/L		100	90 - 110	1	20

Lab Sample ID: 880-29261-A-1 MS
Matrix: Water
Analysis Batch: 55042

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	25.5		25.0	48.72		mg/L		93	90 - 110		

Lab Sample ID: 880-29261-A-1 MSD
Matrix: Water
Analysis Batch: 55042

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	25.5		25.0	48.60		mg/L		92	90 - 110	0	20

QC Association Summary

Client: Larson & Associates, Inc.
Project/Site: NMGSAU 2102

Job ID: 880-29215-1
SDG: 19-0112-51

GC VOA

Analysis Batch: 55462

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-29215-1	MW-2	Total/NA	Water	8021B	
880-29215-2	TMW-1	Total/NA	Water	8021B	
880-29215-3	TMW-2	Total/NA	Water	8021B	
880-29215-4	Dup-1	Total/NA	Water	8021B	
MB 880-55462/8	Method Blank	Total/NA	Water	8021B	
LCS 880-55462/3	Lab Control Sample	Total/NA	Water	8021B	
LCSD 880-55462/4	Lab Control Sample Dup	Total/NA	Water	8021B	
880-29213-B-1 MS	Matrix Spike	Total/NA	Water	8021B	
880-29213-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8021B	

Analysis Batch: 55568

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-29215-1	MW-2	Total/NA	Water	Total BTEX	
880-29215-2	TMW-1	Total/NA	Water	Total BTEX	
880-29215-3	TMW-2	Total/NA	Water	Total BTEX	
880-29215-4	Dup-1	Total/NA	Water	Total BTEX	

HPLC/IC

Analysis Batch: 55042

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-29215-1	MW-2	Total/NA	Water	300.0	
880-29215-2	TMW-1	Total/NA	Water	300.0	
880-29215-3	TMW-2	Total/NA	Water	300.0	
880-29215-4	Dup-1	Total/NA	Water	300.0	
MB 880-55042/3	Method Blank	Total/NA	Water	300.0	
LCS 880-55042/4	Lab Control Sample	Total/NA	Water	300.0	
LCSD 880-55042/5	Lab Control Sample Dup	Total/NA	Water	300.0	
880-29260-A-1 MS	Matrix Spike	Total/NA	Water	300.0	
880-29260-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	
880-29261-A-1 MS	Matrix Spike	Total/NA	Water	300.0	
880-29261-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Lab Chronicle

Client: Larson & Associates, Inc.
Project/Site: NMGSAU 2102

Job ID: 880-29215-1
SDG: 19-0112-51

Client Sample ID: MW-2

Lab Sample ID: 880-29215-1

Date Collected: 06/06/23 09:28

Matrix: Water

Date Received: 06/07/23 08:34

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	55462	06/14/23 15:09	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			55568	06/15/23 10:36	AJ	EET MID
Total/NA	Analysis	300.0		5			55042	06/08/23 16:53	CH	EET MID

Client Sample ID: TMW-1

Lab Sample ID: 880-29215-2

Date Collected: 06/06/23 10:05

Matrix: Water

Date Received: 06/07/23 08:34

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	55462	06/14/23 15:29	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			55568	06/15/23 10:36	AJ	EET MID
Total/NA	Analysis	300.0		10			55042	06/08/23 17:01	CH	EET MID

Client Sample ID: TMW-2

Lab Sample ID: 880-29215-3

Date Collected: 06/06/23 10:22

Matrix: Water

Date Received: 06/07/23 08:34

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	55462	06/14/23 17:44	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			55568	06/15/23 10:36	AJ	EET MID
Total/NA	Analysis	300.0		10			55042	06/08/23 17:08	CH	EET MID

Client Sample ID: Dup-1

Lab Sample ID: 880-29215-4

Date Collected: 06/06/23 00:00

Matrix: Water

Date Received: 06/07/23 08:34

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	55462	06/14/23 18:04	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			55568	06/15/23 10:36	AJ	EET MID
Total/NA	Analysis	300.0		5			55042	06/08/23 17:16	CH	EET MID

Laboratory References:

EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Accreditation/Certification Summary

Client: Larson & Associates, Inc.
Project/Site: NMGSAU 2102

Job ID: 880-29215-1
SDG: 19-0112-51

Laboratory: Eurofins Midland

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-22-25	06-30-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Total BTEX		Water	Total BTEX

Method Summary

Client: Larson & Associates, Inc.
Project/Site: NMGSAU 2102

Job ID: 880-29215-1
SDG: 19-0112-51

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	EET MID
Total BTEX	Total BTEX Calculation	TAL SOP	EET MID
300.0	Anions, Ion Chromatography	EPA	EET MID
5030B	Purge and Trap	SW846	EET MID

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Sample Summary

Client: Larson & Associates, Inc.
Project/Site: NMGSAU 2102

Job ID: 880-29215-1
SDG: 19-0112-51

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
880-29215-1	MW-2	Water	06/06/23 09:28	06/07/23 08:34
880-29215-2	TMW-1	Water	06/06/23 10:05	06/07/23 08:34
880-29215-3	TMW-2	Water	06/06/23 10:22	06/07/23 08:34
880-29215-4	Dup-1	Water	06/06/23 00:00	06/07/23 08:34

29215

No. 2916

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 202
Midland, TX 79701
432-687-0901

Data Reported to

DATE. 6/7/2023 PAGE 1 OF 1

PO# _____ LAB WORK ORDER#. _____

PROJECT LOCATION OR NAME. NMGSAU 202

LAI PROJECT # 19-0112-51 COLLECTOR: RN/RC

TRRP report? ☐ Yes ☒ No

TIME ZONE Time zone/State: MST/MM

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

Field Sample I D	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl x3	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE x1	UNPRESSERVED	ANALYSES: BTEX ☒ MTBE ☐	TRPH 418.1 ☐	TPH 1005 ☐	TPH 1006 ☐	GASOLINE MOD 8015 ☐	DIESEL - MOD 8015 ☐	OIL - MOD 8015 ☐	VOC 8260 ☐	SVOC 8270 ☐	PAH 8270 ☐	HOLDPAH ☐	8081 PESTICIDES ☐	8151 HERBICIDES ☐	8082 PCBS ☐	TCLP - METALS (RCRA) ☐	TCLP VOC ☐	TCLP - PEST ☐	HERB ☐	Semi-VOC ☐	TOTAL METALS (RCRA) ☐	OTHER LIST ☐	LEAD - TOTAL ☐	D W 200.8 ☐	TCLP ☐	RCI ☐	TOX ☐	FLASHPOINT ☐	TDS ☐	TSS ☐	% MOISTURE ☐	pH ☐	CYANIDE ☐	HEXAVALENT CHROMIUM ☐	EXPLOSIVES ☐	PECHLORATE ☐	CHLORIDE ☒	ANIONS ☐	ALKALINITY ☐	FIELD NOTES
MW-2		6/6/23	0928	W	4	X			X		X																														X			Bill Direct to Apache, Report to LAI
TMW-1		"	1005	"	"	"			"		"																													"			
TMW-2		"	1022	"	"	"			"		"																														"			
Dup-1		"	—	"	"	"			"		"																														"			

880-29215 Chain of Custody

TOTAL

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)
[signature]	6/7/23 0834	[signature]
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)

LABORATORY Xeno

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐
_____

LABORATORY USE ONLY:
RECEIVING TEMP 5.3/5.0 THERM# IR2 -30
CUSTODY SEALS - ☐ BROKEN ☑ INTACT ☐ NOT USED
☐ CARRIER BILL # _____
☑ HAND DELIVERED

Login Sample Receipt Checklist

Client: Larson & Associates, Inc.

Job Number: 880-29215-1
SDG Number: 19-0112-51

Login Number: 29215
List Number: 1
Creator: Rodriguez, Leticia

List Source: Eurofins Midland

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 373728

CONDITIONS

Operator: APACHE CORPORATION 303 Veterans Airpark Ln Midland, TX 79705	OGRID: 873
	Action Number: 373728
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	Review of the 2023 Annual Groundwater, 2nd Quarter Report: content satisfactory 1. Frequency for groundwater monitoring schedule to reduce sampling to semi-annual from quarterly is approved. 2. Reporting may occur on an annual schedule, or semi-annually. 3 Once all wells demonstrate below the WQCC constituents of concern, prepare for closure by sampling quarterly and achieving eight consecutive events below the human health standard (unless that has already been achieved). 4. Submit the next report to OCD by April 2025, unless closure report has been submitted.	8/28/2024