

August 24,
2022

Tracking Number: nRM1926352539 / 1RP-5677
2022 3rd Quarter (July - September) Groundwater Monitoring Report
North Monument G/SA Unit #2102
Lea County, New Mexico

REVIEWED

By Mike Buchanan at 9:41 am, Sep 06, 2024

Review of the 2022 3rd Quarter Groundwater
Monitoring Report for Apache Corporations' North
Monument G/SA Unit 2101 site
1. Accepted for the record
2. A closure report for the incident is currently
under review.

Prepared for:



Apache Corporation
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Prepared by:



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A handwritten signature in black ink, appearing to read "Mark J. Larson", written over a horizontal line.

Mark J. Larson

Certified Professional Geologist #10490



A handwritten signature in blue ink, appearing to read "Robert Nelson", written over a horizontal line.

Robert Nelson
Sr. Geologist

LAI Project No: 19-0112-51

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Table of Contents

1.0	EXECUTIVE SUMMARY	2
2.0	INTRODUCTION	3
2.1	Background.....	3
2.2	Physical Setting	4
3.0	GROUNDWATER MONITORING.....	5
3.1	Depth to Groundwater and Groundwater Potentiometric Elevation.....	5
3.2	Groundwater Samples and Laboratory Analysis.....	5
3.2.1	Organic Analysis	5
3.2.2	Inorganic Analysis.....	6
4.0	CONCLUSIONS	6
5.0	CLOSURE.....	6

List of Tables

Table 1	Monitor Well Completion and Gauging Summary
Table 2	Groundwater Analytical Data Summary

List of Figures

Figure 1	Topographic Map
Figure 2	Aerial Photograph
Figure 3	Site Map
Figure 4	Groundwater Potentiometric Map, August 15, 2022
Figure 5	Benzene Concentration in Groundwater, August 15, 2022
Figure 6	Chloride Concentration in Groundwater, August 15, 2022
Figure 7	Chloride Concentration Control Chart

List of Appendices

Appendix A	Karst Risk Potential Map
Appendix B	Boring Logs
Appendix C	Laboratory Reports

3rd Quarter Groundwater Monitoring Report
(July through September 2022)
North Monument G/SA Unit #002
Lea County, New Mexico
August 24, 2022

1.0 EXECUTIVE SUMMARY

Larson & Associates, Inc. (LAI) has prepared this 2022 third quarter (July – September) 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 2022 third (3rd) quarter laboratory analysis of groundwater samples from three (3) monitoring wells (MW-2, TMW-1, and TMW-2) at the North Monument G 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°. Figure 1 presents a topographic map. Figure 2 presents an aerial map.

The following activities occurred August 15, 2022:

- Gauge three (3) monitoring wells (MW-2, TMW-1, and TMW-2) for depth to groundwater.
- Purged and sample groundwater from three (2) monitor wells (MW-2, TMW-1, and TMW-2) utilizing the low stress (low flow) method.
- Analyzed groundwater samples for benzene, toluene, ethylbenzene, and xylenes (BTEX) and chloride.

The following Observations are documented in this report:

- Depth to groundwater ranged from 11.07 feet beneath ground surface (bgs) in monitor well MW-2 to 23.97 feet bgs in monitor well TMW-2.
- Groundwater flows from northwest to southeast at a gradient of about 0.0267 feet per foot (ft/ft). No significant changes in groundwater flow direction or gradient were observed on August 15, 2021.
- Monitoring well MW-2 remains hydraulically up-gradient and representative of background conditions with a chloride concentration of 232 mg/L, and below the New Mexico Water Quality Control Commission (NMWQCC) domestic water quality standard of 250 mg/L.
- BTEX was below the analytical method reporting limits (RL) and WQCC human health standards in all monitor wells on August 15, 2022.
- The chloride concentrations in wells TMW-1 (306 mg/L) and TMW-2 (362 mg/L) exceeded the New Mexico Water Quality Control Commission (NMWQCC) domestic water quality standard of 250 mg/L. These current chloride concentrations represent a significant decrease from maximum chloride concentrations of 452 mg/L and 664 mg/L, respectively, reported during the previous monitoring event on December 21, 2021.

3rd Quarter Groundwater Monitoring Report
(July through September 2022)
North Monument G/SA Unit #002
Lea County, New Mexico
August 24, 2022

Apache proposes the following:

- A reported titled “1RP-5677, Excavation Closure and Groundwater Report, North Monument G/SA Unit #002, Produced Water and Crude Oil Release, Lea County, June 3, 2022” was submitted to the NMOCD and requested the following:
 - Apache requests closure/no further action for monitoring groundwater in all wells (MW-2, TMW-1, and TMW-2).
 - The monitoring wells will be plugged according to State of New Mexico Office of the State Engineer requirements.

2.0 INTRODUCTION

Larson & Associates, Inc. (LAI) has prepared this 2022 third (3rd) quarter (July – September) 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 third quarter (August 15, 2022) laboratory analysis of groundwater samples from 3 monitoring wells (MW-2, TMW-1, and TMW-2) at the North Monument G 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.

On October 10, 2019, Apache applied for a variance to backfill the excavation due to the presence of groundwater at approximately 21 to 23 feet bgs and TPH and chloride contamination remaining in soil below the excavation at approximately 12 feet bgs. 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. The conditions of the request required Apache to 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. Additional, NMOCD requested one (1) monitor well be installed hydraulically upgradient to monitor

3rd Quarter Groundwater Monitoring Report
(July through September 2022)
North Monument G/SA Unit #002
Lea County, New Mexico
August 24, 2022

background groundwater quality. Apache used an existing monitoring well (NMGSAU #1631, MW-2) located approximately 375 feet northwest for 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 monitoring wells TMW-1 and TMW-2 utilizing an air rotary rig. The wells were drilled to depths of approximately 30 feet bgs. TMW-1 installed near the east side of the excavation and TMW-2 installed southeast of the excavation, as close as possible to the source of the release. TMW-2 is positioned hydraulically down gradient and approximately 150 feet southeast of the excavation. The wells were completed with 2-inch schedule 40 threaded 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. On December 21, 2020, 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 was submitted to the OCD in Santa Fe and Hobbs, New Mexico. No response has been received from the NMOCD regarding this closure report and the release 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.

3rd Quarter Groundwater Monitoring Report
(July through September 2022)
North Monument G/SA Unit #002
Lea County, New Mexico
August 24, 2022

Appendix C presents the Karst Potential Map

3.0 GROUNDWATER MONITORING

3.1 *Depth to Groundwater and Groundwater Potentiometric Elevation*

On August 15, 2022, LAI personnel gauged monitor wells MW-2, TMW-1, and TMW-2 for depth to groundwater. Groundwater was gauged at 13.95 (MW-2), 25.45 (TMW-1), and 27.01 (TMW-2) feet below top of casing (TOC). Groundwater potentiometric surface elevations ranged from 3,555.57 feet above mean sea level (MSL) at MW-2 (up gradient) to 3,537.46 feet above MSL at TMW-2 (down gradient). Groundwater flow was from northwest to southeast at a gradient of about 0.0267 feet per foot (ft/ft). No significant changes in groundwater flow direction or gradient were observed on August 15, 2022 compared to the previous monitoring event on December 21, 2021. Figure 4 presents the potentiometric surface map for August 15, 2022.

3.2 *Groundwater Samples and Laboratory Analysis*

On August 15, 2022, 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 monitoring well MW-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*

All BTEX values were below the SW-846 – 8021B analytical method reporting limits (RL) and New Mexico Water Quality Control Commission (WQCC) human health standards. No data quality exceptions were noted in the Xenco case narratives. The results are consistent with the results from previous groundwater monitoring events. Figure 5 presents the benzene concentration in groundwater map.

3rd Quarter Groundwater Monitoring Report
(July through September 2022)
North Monument G/SA Unit #002
Lea County, New Mexico
August 24, 2022

3.2.2 Inorganic Analysis

Chloride concentrations remain above the WQCC domestic water quality standard (250 mg/L) in samples collected from downgradient wells TMW-1 (306 mg/L) and TMW-2 (362 mg/L). Chloride concentrations remain below the WQCC domestic water quality standard in up gradient well MW-2 (232 mg/L). The duplicate (QA/QC) sample (Dup-1) collected from MW-2 is within ten (10) percent (254 mg/L) of the original chloride value (232 mg/L) for MW-2. No data quality exceptions were noted in the Xenco-Eurofins case narratives. Figure 6 presents the chloride concentration in groundwater map. Figure 7 presents the chloride concentration control chart.

4.0 CONCLUSIONS

During the past two (2) years (2020 and 2021) and during the third (3rd) quarter 2022, all BTEX values were below the EPA SW-846 – 8021B method reporting limits (RL) and WQCC human health standards. The current chloride concentrations from TMW-1 (306 mg/L) and TMW-2 (362 mg/L) represent a decrease from the maximum chloride concentrations in 2020 from TMW-1 (452 mg/L) and TMW-2 (664 mg/L). The nearest groundwater well hydraulically downgradient utilized for domestic or household consumption is approximately 0.46 miles or 2,428.8 feet from the Site.

5.0 CLOSURE

Laboratory analysis has demonstrated that BTEX concentrations have historically been less than the EPA SW-846 – 8021B method RL and chloride has decreased to 306 mg/L and 362 mg/L in monitoring wells TMW-1 and TMW-2, respectively. Apache requests approval to discontinue monitoring groundwater and be relieved from future groundwater monitoring. The wells will be plugged according to the New Mexico Office of the State Engineer (NMOSE) requirements.

Tables

Table 2
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
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	3540.02
									10/12/2021	24.96	22.06	11.27	3539.86
									12/21/2021	24.64	21.74	11.59	3540.18
									08/15/2022	25.45	22.55	10.78	3,539.37
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
									03/10/2021	26.40	23.36	10.67	3,538.07
									06/11/2021	26.57	23.53	10.50	3537.9
									10/12/2021	26.72	23.68	10.35	3537.75
									12/21/2021	26.49	23.45	10.58	3537.98
									08/15/2022	27.01	23.97	10.06	3,537.46

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

Table 2
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)

AMSL: elevation above mean sea level

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	3/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	230
	7/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	231
	10/1/2020	<0.00200	<0.00200	<0.00200	<0.00200	241
	12/8/2020	<0.00200	<0.00200	<0.00200	<0.00200	227
	3/10/2021	<0.00200	<0.00200	<0.00200	<0.00200	235
	6/11/2021	<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
	8/15/2022	<0.00200	<0.00200	<0.00200	<0.00400	232
TMW-1	3/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	360
	7/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	432
	10/1/2020	<0.00200	<0.00200	<0.00200	<0.00200	452
	12/8/2020	<0.00200	<0.00200	<0.00200	<0.00200	449
	3/10/2021	<0.00200	<0.00200	<0.00200	<0.00200	418
	6/11/2021	<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
	8/15/2022	<0.00200	<0.00200	<0.00200	<0.00400	306
TMW-2	3/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	423
	7/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	664
	10/1/2020	<0.00200	<0.00200	<0.00200	<0.00200	591
	12/8/2020	<0.00200	<0.00200	<0.00200	<0.00200	473
	3/10/2021	<0.00200	<0.00200	<0.00200	<0.00200	428
	6/11/2021	<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
	8/15/2022	<0.00200	<0.00200	<0.00200	<0.00400	362
(QA/QC (Duplicate) Samples						
MW-2	3/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	223
	7/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	242
	10/1/2020	<0.00200	<0.00200	<0.00200	<0.00200	245
	12/8/2020	<0.00200	<0.00200	<0.00200	<0.00200	226
	3/10/2021	<0.00200	<0.00200	<0.00200	<0.00200	237
TMW-2	6/11/2021	<0.00200	<0.00200	<0.00200	<0.00400	213
	10/12/2021	<0.00200	<0.00200	<0.00200	<0.00400	305
	12/21/2021	<0.00200	<0.00200	<0.00200	<0.00400	226
MW-2	8/15/2022	<0.00200	<0.00200	<0.00200	<0.00400	254

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)

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

< values - denotes concentration is less than method reporting limit (RL).

* - NMWQCC human health standard

** - NMWQCC domestic water quality standard

BGS - below ground surface

Figures

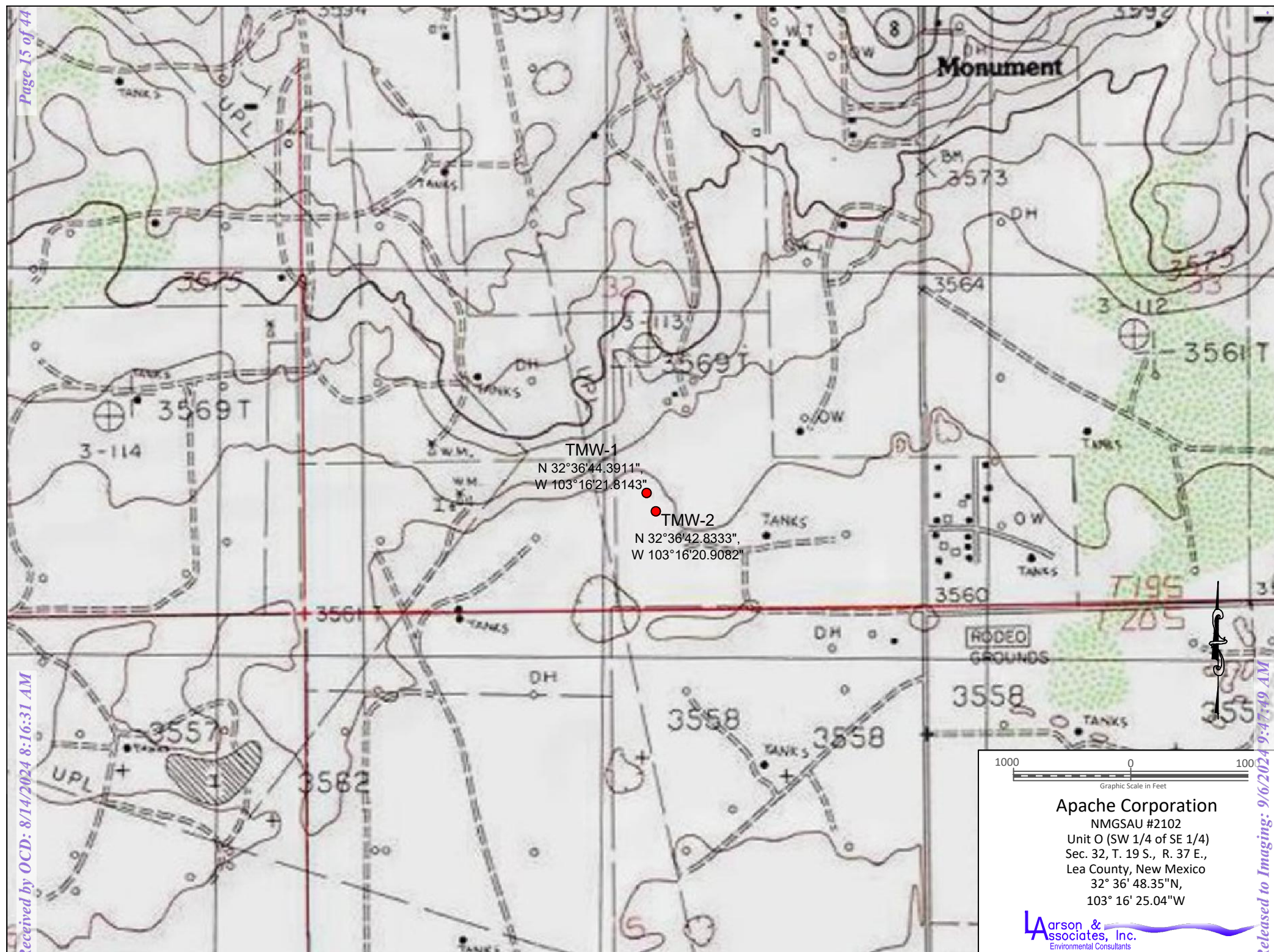
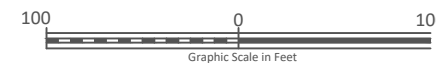
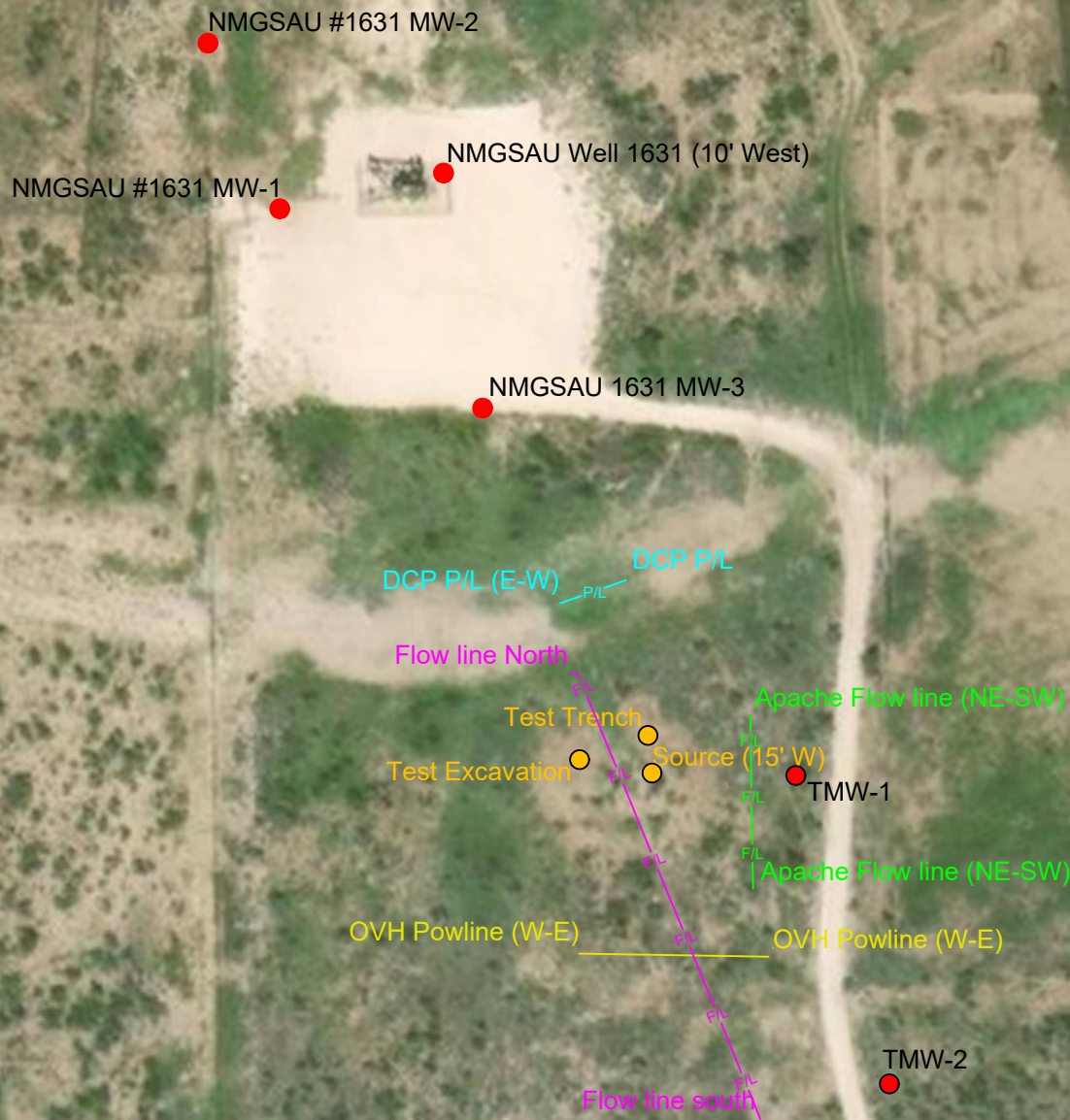


Figure 1 - Topographic Map



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 2 - Aerial Map

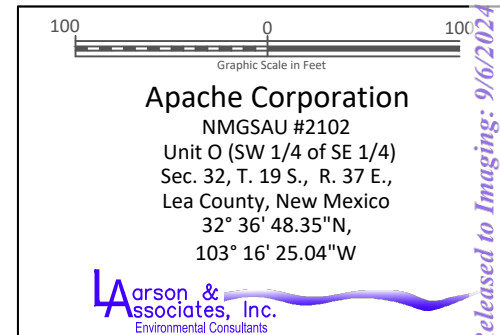
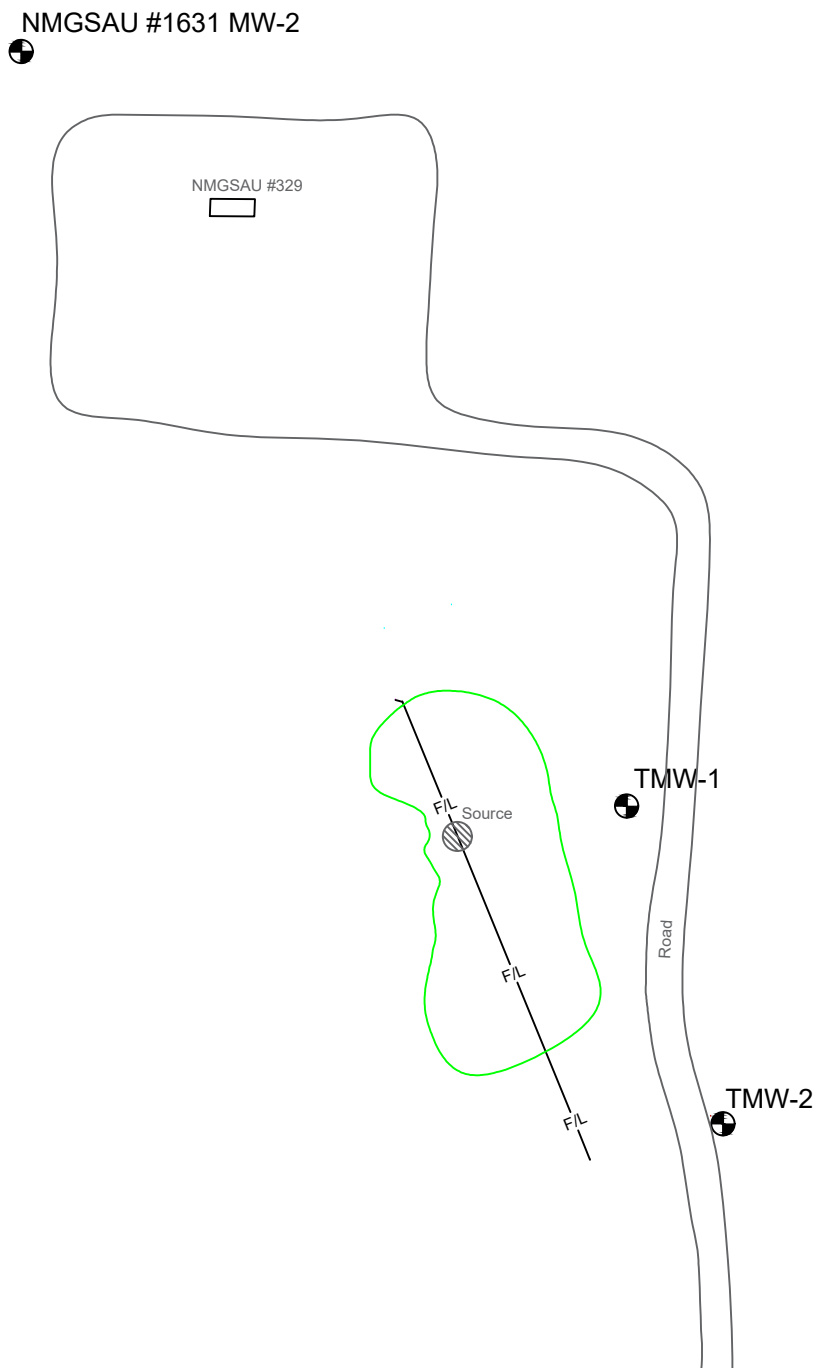
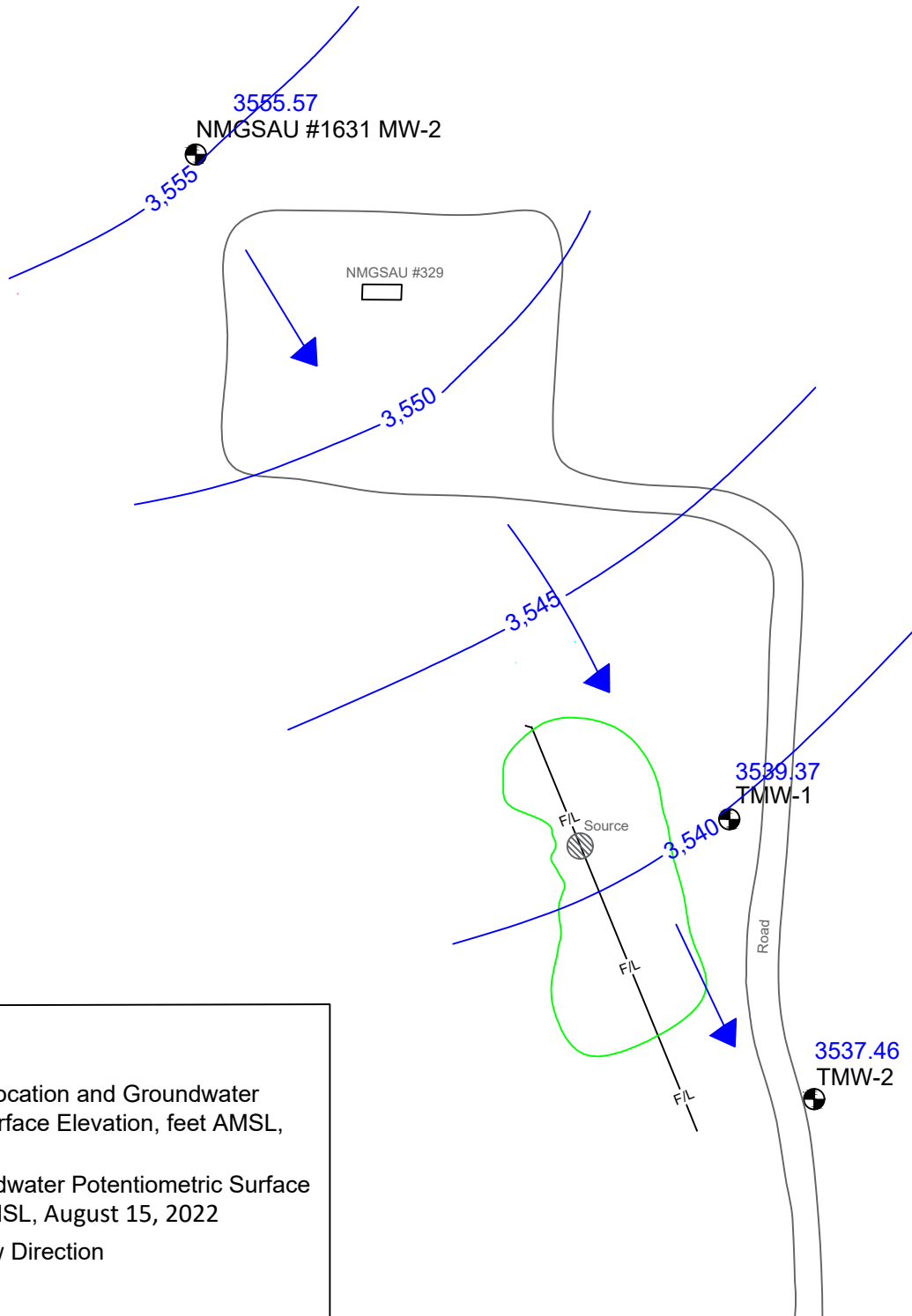
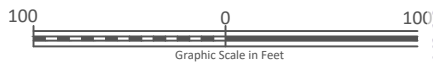


Figure 3 - Base Map



Legend

- 3537.46 MW-2 - Monitoring Well Location and Groundwater Potentiometric Surface Elevation, feet AMSL, August 15, 2022
- 3550 - Contour of Groundwater Potentiometric Surface Elevation, feet AMSL, August 15, 2022
- - Groundwater Flow Direction
- - Excavation Area



Apache Corporation
 NMGS AU #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



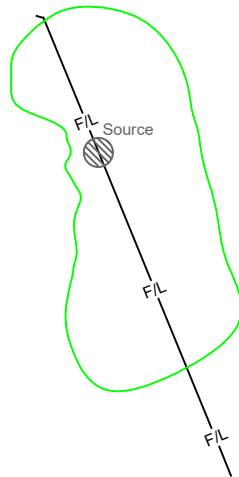
Figure 4 - Groundwater Potentiometric Surface Map, August 15, 2022

Legend

- <0.0020
TMW-2 - Monitoring Well Location and Benzene Concentration in Groundwater, mg/L, August 15, 2022
- Concentration Below Analytical Method Reporting Limit
- 0.01 mg/L: NWQCC Human WOH Quality Standard

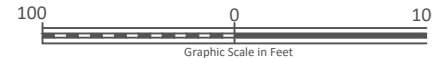
NMGS AU #1631 MW-2
<0.0020

NMGS AU #329



<0.0020
TMW-1

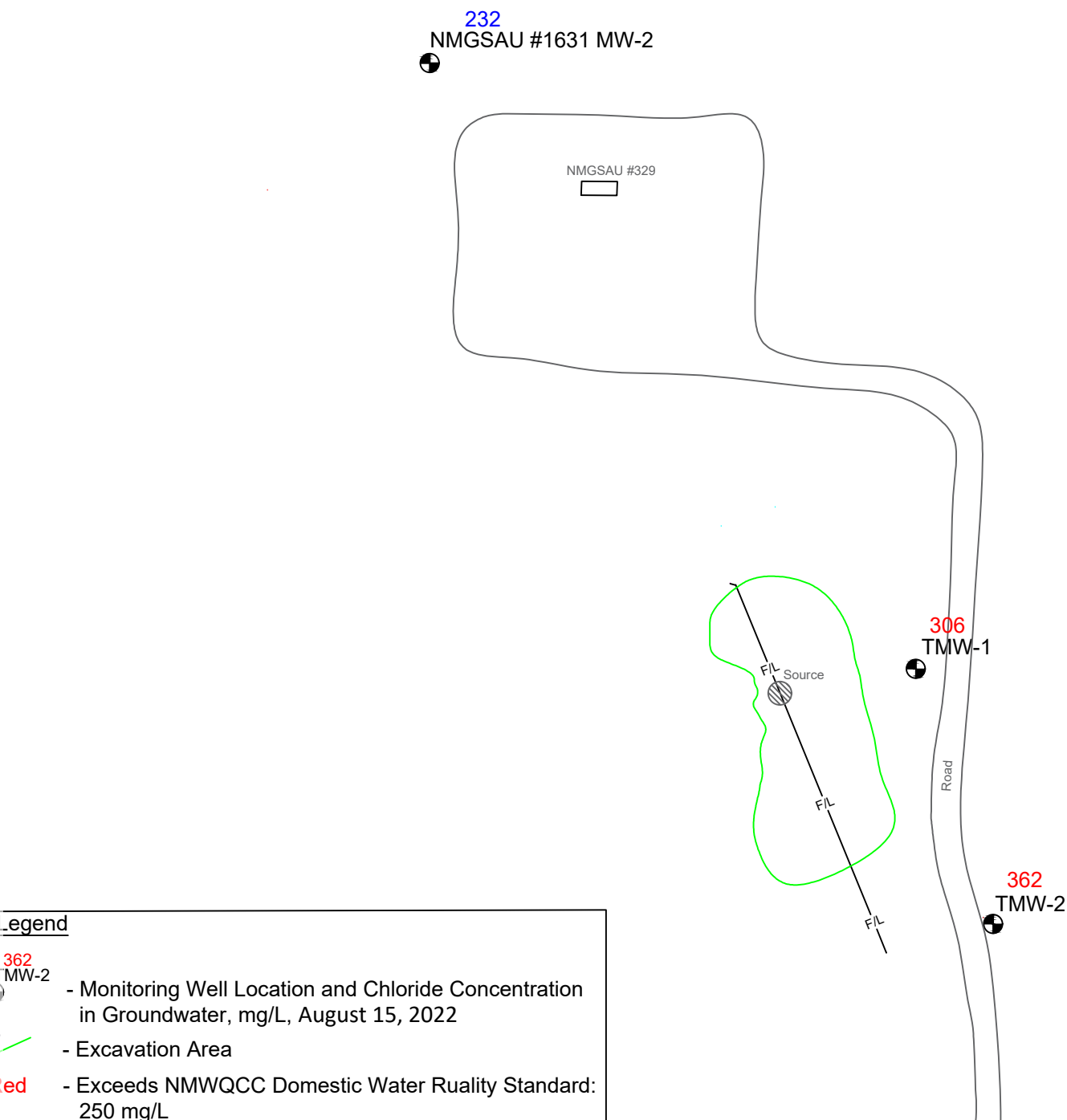
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TMW-2



Apache Corporation
 NMGS AU #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 5 - Benzene Concentration in Groundwater Map, August 15, 2022



100 0 100
Graphic Scale in Feet

Apache Corporation
 NMGS AU #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 6 - Chloride Concentration in Groundwater Map, August 15, 2022

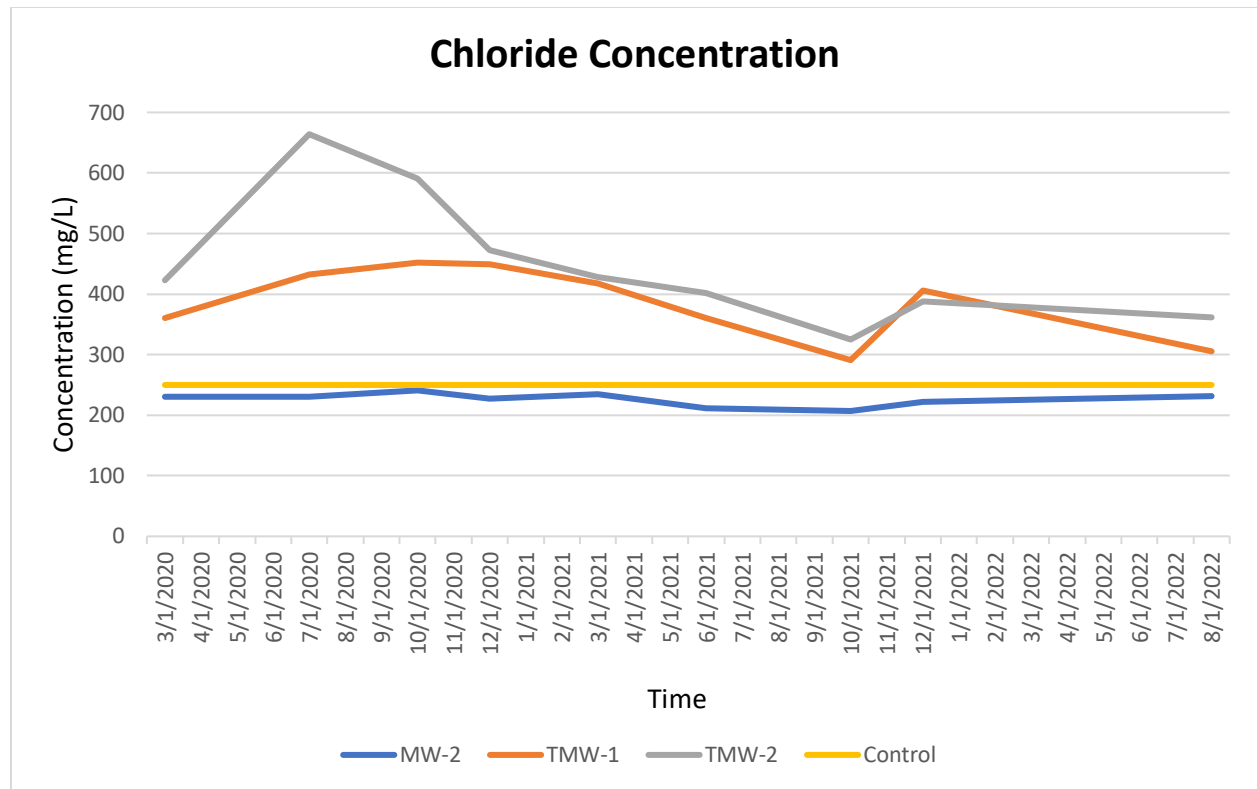


Figure 7 – Chloride Concentration Control Chart

Appendix A
Laboratory Reports



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📁 D:\

📁 L:\

📁 Z:\

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📁 SpatiaLite

📁 PostgreSQL

📁 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**



Appendix B
Photographs

BORING RECORD

GEOLOGIC UNIT	DEPTH	Start: 10:29 Finish: 11:45 DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	Surface Elevation: TOC Elevation:		NUMBER	RECOVERY	DEPTH	REMARKS
										BACKGROUND PID READING
	0	Sand, 7.5YR, 6/5 to 6/4, Well Sorted, Very Fine Grained Quartz Sand, Light Brown	ML							SOIL : _____ PPM SOIL : _____ PPM
	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'								

☐ 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

GEOLOGIC UNIT	DEPTH	Start: 12:36 Finish: 1:09 DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	Surface Elevation: TOC Elevation:			REMARKS	
					NUMBER	RECOVERY	DEPTH	BACKGROUND PID READING SOIL: _____ PPM SOIL: _____ PPM	
	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'							

☐ 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)
☐ 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

Photographs



Environment Testing America

ANALYTICAL REPORT

Eurofins Midland
1211 W. Florida Ave
Midland, TX 79701
Tel: (432)704-5440

Laboratory Job ID: 880-18232-1

Laboratory Sample Delivery Group: 19-0112-51

Client Project/Site: NMGSAU 2102

Revision: 1

For:

Larson & Associates, Inc.
507 N Marienfeld
Suite 202
Midland, Texas 79701

Attn: Mr. Mark J Larson

A handwritten signature in cursive script that reads "Holly Taylor".

Authorized for release by:

8/24/2022 11:19:59 AM

Holly Taylor, Project Manager

(806)794-1296

Holly.Taylor@et.eurofinsus.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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

Laboratory Job ID: 880-18232-1
SDG: 19-0112-51

Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Client Sample Results	5
Surrogate Summary	7
QC Sample Results	8
QC Association Summary	10
Lab Chronicle	11
Certification Summary	12
Method Summary	13
Sample Summary	14
Chain of Custody	15
Receipt Checklists	16

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Definitions/Glossary

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

Job ID: 880-18232-1
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: 880-18232-1
SDG: 19-0112-51

Job ID: 880-18232-1

Laboratory: Eurofins Midland

Narrative

Job Narrative 880-18232-1

Revision

The report being provided is a revision of the original report sent on 8/23/2022. The report (revision 1) is being revised to report BTEX in ppm instead of ppb per Robert Nelson (phone).

Receipt

The samples were received on 8/17/2022 9:00 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 was 0.6° C.

GC VOA

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 880-32573 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 8021B: The continuing calibration verification (CCV) associated with batch 880-32573 recovered above the upper control limit for o-Xylene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

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

General Chemistry

Method 300.0: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for analytical batch 880-32670 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

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

VOA Prep

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

Client Sample Results

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

Job ID: 880-18232-1
SDG: 19-0112-51

Client Sample ID: MW-1

Lab Sample ID: 880-18232-1

Date Collected: 08/15/22 10:26

Matrix: Water

Date Received: 08/17/22 09:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/L			08/22/22 03:55	1
Toluene	<0.00200	U	0.00200	mg/L			08/22/22 03:55	1
Ethylbenzene	<0.00200	U	0.00200	mg/L			08/22/22 03:55	1
m,p-Xylenes	<0.00400	U	0.00400	mg/L			08/22/22 03:55	1
o-Xylene	<0.00200	U	0.00200	mg/L			08/22/22 03:55	1
Xylenes, Total	<0.00400	U	0.00400	mg/L			08/22/22 03:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		70 - 130		08/22/22 03:55	1
1,4-Difluorobenzene (Surr)	96		70 - 130		08/22/22 03:55	1

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00400	U	0.00400	mg/L			08/22/22 16:27	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	232		2.50	mg/L			08/19/22 11:37	5

Client Sample ID: TMW-1

Lab Sample ID: 880-18232-2

Date Collected: 08/15/22 11:40

Matrix: Water

Date Received: 08/17/22 09:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/L			08/22/22 04:21	1
Toluene	<0.00200	U	0.00200	mg/L			08/22/22 04:21	1
Ethylbenzene	<0.00200	U	0.00200	mg/L			08/22/22 04:21	1
m,p-Xylenes	<0.00400	U	0.00400	mg/L			08/22/22 04:21	1
o-Xylene	<0.00200	U	0.00200	mg/L			08/22/22 04:21	1
Xylenes, Total	<0.00400	U	0.00400	mg/L			08/22/22 04:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		70 - 130		08/22/22 04:21	1
1,4-Difluorobenzene (Surr)	90		70 - 130		08/22/22 04:21	1

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00400	U	0.00400	mg/L			08/22/22 16:27	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	306		5.00	mg/L			08/19/22 11:45	10

Client Sample ID: TMW-2

Lab Sample ID: 880-18232-3

Date Collected: 08/15/22 10:57

Matrix: Water

Date Received: 08/17/22 09:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/L			08/22/22 04:47	1
Toluene	<0.00200	U	0.00200	mg/L			08/22/22 04:47	1

Eurofins Midland

Client Sample Results

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

Job ID: 880-18232-1
SDG: 19-0112-51

Client Sample ID: TMW-2

Lab Sample ID: 880-18232-3

Date Collected: 08/15/22 10:57

Matrix: Water

Date Received: 08/17/22 09:00

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	<0.00200	U	0.00200	mg/L			08/22/22 04:47	1
m,p-Xylenes	<0.00400	U	0.00400	mg/L			08/22/22 04:47	1
o-Xylene	<0.00200	U	0.00200	mg/L			08/22/22 04:47	1
Xylenes, Total	<0.00400	U	0.00400	mg/L			08/22/22 04:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		70 - 130		08/22/22 04:47	1
1,4-Difluorobenzene (Surr)	87		70 - 130		08/22/22 04:47	1

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00400	U	0.00400	mg/L			08/22/22 16:27	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	362		5.00	mg/L			08/19/22 11:53	10

Client Sample ID: Dup-1

Lab Sample ID: 880-18232-4

Date Collected: 08/15/22 00:00

Matrix: Water

Date Received: 08/17/22 09:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/L			08/22/22 08:28	1
Toluene	<0.00200	U	0.00200	mg/L			08/22/22 08:28	1
Ethylbenzene	<0.00200	U	0.00200	mg/L			08/22/22 08:28	1
m,p-Xylenes	<0.00400	U	0.00400	mg/L			08/22/22 08:28	1
o-Xylene	<0.00200	U	0.00200	mg/L			08/22/22 08:28	1
Xylenes, Total	<0.00400	U	0.00400	mg/L			08/22/22 08:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		70 - 130		08/22/22 08:28	1
1,4-Difluorobenzene (Surr)	97		70 - 130		08/22/22 08:28	1

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00400	U	0.00400	mg/L			08/22/22 16:27	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	254		2.50	mg/L			08/23/22 00:37	5

Eurofins Midland

Surrogate Summary

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

Job ID: 880-18232-1
SDG: 19-0112-51

Method: 8021B - Volatile Organic Compounds (GC)
Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	BFB1	DFBZ1
		(70-130)	(70-130)
880-18232-1	MW-1	104	96
880-18232-2	TMW-1	107	90
880-18232-3	TMW-2	99	87
880-18232-4	Dup-1	99	97
LCS 880-32573/3	Lab Control Sample	100	101
LCSD 880-32573/4	Lab Control Sample Dup	94	104
MB 880-32573/8	Method Blank	76	87

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DFBZ = 1,4-Difluorobenzene (Surr)

QC Sample Results

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

Job ID: 880-18232-1
SDG: 19-0112-51

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-32573/8

Matrix: Water

Analysis Batch: 32573

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			08/21/22 19:09	1
Toluene	<0.00200	U	0.00200	mg/L			08/21/22 19:09	1
Ethylbenzene	<0.00200	U	0.00200	mg/L			08/21/22 19:09	1
m,p-Xylenes	<0.00400	U	0.00400	mg/L			08/21/22 19:09	1
o-Xylene	<0.00200	U	0.00200	mg/L			08/21/22 19:09	1
Xylenes, Total	<0.00400	U	0.00400	mg/L			08/21/22 19:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	76		70 - 130		08/21/22 19:09	1
1,4-Difluorobenzene (Surr)	87		70 - 130		08/21/22 19:09	1

Lab Sample ID: LCS 880-32573/3

Matrix: Water

Analysis Batch: 32573

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	0.1016		mg/L		102	70 - 130
Toluene	0.100	0.09976		mg/L		100	70 - 130
Ethylbenzene	0.100	0.09695		mg/L		97	70 - 130
m,p-Xylenes	0.200	0.1994		mg/L		100	70 - 130
o-Xylene	0.100	0.1084		mg/L		108	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	100		70 - 130
1,4-Difluorobenzene (Surr)	101		70 - 130

Lab Sample ID: LCSD 880-32573/4

Matrix: Water

Analysis Batch: 32573

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	0.1077		mg/L		108	70 - 130	6	20
Toluene	0.100	0.1024		mg/L		102	70 - 130	3	20
Ethylbenzene	0.100	0.09739		mg/L		97	70 - 130	0	20
m,p-Xylenes	0.200	0.2007		mg/L		100	70 - 130	1	20
o-Xylene	0.100	0.1110		mg/L		111	70 - 130	2	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	94		70 - 130
1,4-Difluorobenzene (Surr)	104		70 - 130

Eurofins Midland

QC Sample Results

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

Job ID: 880-18232-1
SDG: 19-0112-51

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-32441/3
Matrix: Water
Analysis Batch: 32441

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			08/19/22 07:08	1

Lab Sample ID: LCS 880-32441/4
Matrix: Water
Analysis Batch: 32441

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	24.34		mg/L		97	90 - 110

Lab Sample ID: LCSD 880-32441/5
Matrix: Water
Analysis Batch: 32441

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	24.37		mg/L		97	90 - 110	0	20

Lab Sample ID: MB 880-32670/3
Matrix: Water
Analysis Batch: 32670

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			08/22/22 17:24	1

Lab Sample ID: LCS 880-32670/4
Matrix: Water
Analysis Batch: 32670

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	23.79		mg/L		95	90 - 110

Lab Sample ID: LCSD 880-32670/5
Matrix: Water
Analysis Batch: 32670

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	23.82		mg/L		95	90 - 110	0	20

Eurofins Midland

QC Association Summary

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

Job ID: 880-18232-1
SDG: 19-0112-51

GC VOA

Analysis Batch: 32573

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-18232-1	MW-1	Total/NA	Water	8021B	
880-18232-2	TMW-1	Total/NA	Water	8021B	
880-18232-3	TMW-2	Total/NA	Water	8021B	
880-18232-4	Dup-1	Total/NA	Water	8021B	
MB 880-32573/8	Method Blank	Total/NA	Water	8021B	
LCS 880-32573/3	Lab Control Sample	Total/NA	Water	8021B	
LCSD 880-32573/4	Lab Control Sample Dup	Total/NA	Water	8021B	

Analysis Batch: 32711

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-18232-1	MW-1	Total/NA	Water	Total BTEX	
880-18232-2	TMW-1	Total/NA	Water	Total BTEX	
880-18232-3	TMW-2	Total/NA	Water	Total BTEX	
880-18232-4	Dup-1	Total/NA	Water	Total BTEX	

HPLC/IC

Analysis Batch: 32441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-18232-1	MW-1	Total/NA	Water	300.0	
880-18232-2	TMW-1	Total/NA	Water	300.0	
880-18232-3	TMW-2	Total/NA	Water	300.0	
MB 880-32441/3	Method Blank	Total/NA	Water	300.0	
LCS 880-32441/4	Lab Control Sample	Total/NA	Water	300.0	
LCSD 880-32441/5	Lab Control Sample Dup	Total/NA	Water	300.0	

Analysis Batch: 32670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-18232-4	Dup-1	Total/NA	Water	300.0	
MB 880-32670/3	Method Blank	Total/NA	Water	300.0	
LCS 880-32670/4	Lab Control Sample	Total/NA	Water	300.0	
LCSD 880-32670/5	Lab Control Sample Dup	Total/NA	Water	300.0	

Lab Chronicle

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

Job ID: 880-18232-1
SDG: 19-0112-51

Client Sample ID: MW-1

Date Collected: 08/15/22 10:26

Date Received: 08/17/22 09:00

Lab Sample ID: 880-18232-1

Matrix: Water

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			32573	08/22/22 03:55	MR	EET MID
Total/NA	Analysis	Total BTEX		1			32711	08/22/22 16:27	SM	EET MID
Total/NA	Analysis	300.0		5			32441	08/19/22 11:37	CH	EET MID

Client Sample ID: TMW-1

Date Collected: 08/15/22 11:40

Date Received: 08/17/22 09:00

Lab Sample ID: 880-18232-2

Matrix: Water

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			32573	08/22/22 04:21	MR	EET MID
Total/NA	Analysis	Total BTEX		1			32711	08/22/22 16:27	SM	EET MID
Total/NA	Analysis	300.0		10			32441	08/19/22 11:45	CH	EET MID

Client Sample ID: TMW-2

Date Collected: 08/15/22 10:57

Date Received: 08/17/22 09:00

Lab Sample ID: 880-18232-3

Matrix: Water

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			32573	08/22/22 04:47	MR	EET MID
Total/NA	Analysis	Total BTEX		1			32711	08/22/22 16:27	SM	EET MID
Total/NA	Analysis	300.0		10			32441	08/19/22 11:53	CH	EET MID

Client Sample ID: Dup-1

Date Collected: 08/15/22 00:00

Date Received: 08/17/22 09:00

Lab Sample ID: 880-18232-4

Matrix: Water

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			32573	08/22/22 08:28	MR	EET MID
Total/NA	Analysis	Total BTEX		1			32711	08/22/22 16:27	SM	EET MID
Total/NA	Analysis	300.0		5			32670	08/23/22 00:37	CH	EET MID

Laboratory References:

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

Eurofins Midland

Accreditation/Certification Summary

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

Job ID: 880-18232-1
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	T104704400-22-24	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: 880-18232-1
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	MCAWW	EET MID
5030B	Purge and Trap	SW846	EET MID

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

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: 880-18232-1
SDG: 19-0112-51

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
880-18232-1	MW-1	Water	08/15/22 10:26	08/17/22 09:00
880-18232-2	TMW-1	Water	08/15/22 11:40	08/17/22 09:00
880-18232-3	TMW-2	Water	08/15/22 10:57	08/17/22 09:00
880-18232-4	Dup-1	Water	08/15/22 00:00	08/17/22 09:00

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

[illegible]

Login Sample Receipt Checklist

Client: Larson & Associates, Inc.

Job Number: 880-18232-1

SDG Number: 19-0112-51

Login Number: 18232

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 370743

CONDITIONS

Operator: APACHE CORPORATION 303 Veterans Airpark Ln Midland, TX 79705	OGRID: 873
	Action Number: 370743
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	Review of the 2022 3rd Quarter Groundwater Monitoring Report for Apache Corporations' North Monument G/SA Unit 2101 site 1. Accepted for the record 2. A closure report for the incident is currently under review.	9/6/2024