



2023 Annual Report

Maljamar E&P
Groundwater Abatement Plan AP-115-1
Administrative/Environmental Order 1RP-959
Incident nPAC0619940049
Lea County, New Mexico

REVIEWED

By Mike Buchanan at 11:49 am, Jun 12, 2024

Review of the 2023 Annual Report for Maljamar E&P: Content Satisfactory

1. Continue to sample groundwater monitoring network until eight consecutive quarterly sampling events demonstrate below the WQCC human health standards.
2. Evaluate annual groundwater analytical results as planned in report and provide recommendation on continued extraction at the site for abatement.
3. Submit the 2024 Annual Groundwater Monitoring Site to OCD by April 1, 2025.

#212C-HN-02231
November 17, 2024



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Maljamar E&P
Groundwater Abatement Plan AP-115-1
Administrative/Environmental Order 1RP-959
Incident ID nPAC0619940049
Lea County, New Mexico

#212C-HN-02231
November 17, 2023

PRESENTED TO

Maverick Natural Resources, LLC

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PRESENTED BY

Tetra Tech, Inc.

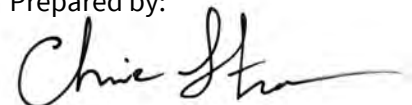
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1.0 INTRODUCTION

On behalf of Maverick Natural Resources, LLC (Maverick) This report details the continuing groundwater monitoring and remedial activities at the Maverick Maljamar Exploration & Production (E&P) Site in Lea County, New Mexico (Site). The Site is located approximately 3.5 miles south-southwest of Maljamar, New Mexico, and adjacent to the north of the Maljamar Gas Plant as shown in **Figure 1**. Groundwater monitoring and remediation at the Site are conducted under New Mexico Oil Conservation District (NMOCD) Abatement Plan AP-115-1 and Administrative/Environmental Order 1RP-959 under NMOCD incident ID nPAC0619940049. The Site and surrounding areas are rural grasslands used primarily for oil and gas production.

Prior to 2007, the Maljamar Gas Plant was a single site owned by ConocoPhillips Company (ConocoPhillips) with a single monitoring well network spread across two present-day sites, the Maverick E&P Site and the Phillips 66 Maljamar Gas Plant. The initial unplanned release that triggered compliance occurred on February 13, 2000, at the Maljamar Gas Plant, when a release of approximately 15 barrels of condensate occurred. Between 2007 and 2009, Conestoga-Rovers & Associates took over environmental consulting oversight from Tetra Tech for which data gaps in historical documentation exist. During this period, the Maljamar Gas Plant was split into two sites: the Maljamar E&P site to the north of the Maljamar Gas Plant, which was the subject of elevated chloride and total dissolved solids (TDS) concentrations in groundwater, and the Maljamar Gas Plant Site which was the subject of condensate and produced water releases and remediation. Both sites were owned by ConocoPhillips when the sites were initially separated.

In 2012, ConocoPhillips and Phillips 66 separated. During the separation, Phillips 66 took ownership of the Maljamar Gas Plant Site along with responsibility for the 2000 condensate release and the 2006 produced water release from MCA Unit Battery #2. ConocoPhillips maintained ownership of the Maljamar E&P site and responsibility for the chloride-impacted groundwater at the Maljamar E&P Site discovered during the condensate release investigations. When ownership of the sites was divided, the monitor well network and remediation systems were also divided between ConocoPhillips and Phillips 66, and access was lost to the southern portion of the original monitoring well network currently owned by Phillips 66.

In accordance with the NMOCD-approved 2022 Workplan presented in the 2021 Annual Report approved by NMOCD, Tetra Tech shut down the groundwater extraction system on March 4, 2022.

In 2022 Maverick purchased the Site from ConocoPhillips and in June 2022, Maverick took over operations of the Site from ConocoPhillips.

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2.0 BACKGROUND AND PREVIOUS INVESTIGATIONS

Between 2000 and 2005, the NMOCD conducted soil, groundwater, and geophysical investigations at the Maljamar Gas Plant associated with a condensate release on the current Phillips 66 Maljamar Gas Plant. On July 6, 2006, a release of approximately 23 barrels of produced water was discovered at the Site. The release flowed into a drainage way west of the MCA Battery 2 and affected an area approximately 750 feet long and 30 feet wide. Groundwater samples and water level data were collected, surface and borehole geophysical surveys were performed, and an aquifer pumping test was performed.

On October 17, 2014, a letter was submitted to the NMOCD listing wells that would be managed by COP following the split of ConocoPhillips upstream and downstream assets. Groundwater monitoring wells managed as part of this Site included MW-11, MW-12, MW-13, MW-14, and MW-19, and extraction well EW-1. Based on the distance from the Site, MW-18 and MW-20 were considered to be unrelated and would no longer be monitored. A map of the extraction and monitor wells is shown in **Figure 2**.

In June 2007, the groundwater extraction well EW-1 was installed adjacent to monitor well MW-12. An additional extraction well (EW-2) was installed in September 2017 but was offline intermittently between 2018 and 2020 due to power and maintenance issues. The pump was replaced, and the system was back in full operation by May 2021. The extracted groundwater is pumped into a flowline connected to an off-site 210-barrel storage tank and transported to the MCA Unit Battery #2 for disposal by injection. In accordance with the 2022 work plan for the Site and NMOCD approval, Tetra Tech shut down the groundwater extraction system at the Site on March 14, 2022.

Phase-separated hydrocarbons (PSH) have not been historically observed at the Site. Historical groundwater analytical results have documented concentrations of chloride, nitrate, sulfate, and total dissolved solids (TDS) above applicable New Mexico Water Quality Control Commission (NMWQCC) Water Quality Standards in samples collected from EW-1, EW-2, MW-11, MW-12, MW-13, and MW-14. From 2009 through 2011, concentrations of benzene exceeded the applicable NMWQCC standard in MW-11.

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3.0 HYDROGEOLOGY

3.1 GEOLOGY

The Site is located in the Pecos Valley section of the Great Plains physiographic province. Generally, at the Site, overlying deposits consist of approximately 50 to 60 feet of sands and sandy silts with occasional caliche interbeds, shale stringers, and intermittent gravels representative of Quaternary age alluvium/Bolsun fill which are underlain by approximately 30 to 50 feet of green to grayish-green interbedded silty shales, sandy shales, and sands of the Triassic period Chinle Shale below which is the Tertiary period Ogallala Formation. The Ogallala formation outcrops approximately four miles northeast of the Site as Mescalero Ridge, the most prominent topographic feature in Lea County, where the Ogallala unconformably overlies the Chinle shales. The interbedded Chinle shale units overlie and presumably confine the groundwater contained in the underlying water-bearing Santa Rosa sand and sandstone units. Undifferentiated redbeds underlie the Santa Rosa sandstone consisting of red siltstones, shales, and sandstones. In the region, the Ogalla Formation provides the principal aquifer, however, in the vicinity of the site it is unsaturated. (Nicholson and Clebsch, 1961)

3.2 SITE HYDROGEOLOGY

Geological boring data indicates the presence of a saturated zone within the Ogallala Formation comprised primarily of sand, the upper surface of which is generally located between approximately 75 to 110 feet below ground surface (bgs). The saturated zone contains groundwater ranging in thickness from a few feet to up to 15 feet and greater than 25 feet at MW-12 where groundwater has historically been potentiometrically mounded. Historical groundwater mounding has been shown in historical Maxim Technologies, Inc. (Maxim) reports provided which appears to be related to unconfined conditions around MW-11, MW-12, and MW-14 acting as a recharge zone. The currently reported apparent groundwater flow direction appears to be affected by pumping at EW-1 and EW-2, near MW-12, and does not include groundwater elevations from monitoring wells south of the Site under the control of Phillips 66 as part of the Maljamar Gas Plant.

The groundwater-bearing zone at the Site appears to pinch out completely to the northwest due to a stratigraphic pinch-out observed at deep soil boring B-1-C and appears to pinch out to the northeast at MW-19 where the groundwater-bearing zone thins. Apparent groundwater flow at the Site appears to be affected by groundwater extraction near EW-1 and EW-2 locally drawing down the groundwater table in the unconfined recharge zone near MW-12, and the pinch out of the groundwater bearing zone to the northeast and northwest associated with the stratigraphic dip of lithology in the region. Groundwater appears to become semi-confined to confined to the northeast of the Site as the water-bearing zone pinches out toward the Mescalero Ridge. To the south and southeast, the water-bearing zone becomes confined beginning beneath the vicinity of the Maljamar Gas Plant.

Historical groundwater flow included monitoring wells that are currently part of the Phillips 66 Maljamar Gas Plant that have not been accessible for gauging and sampling since Phillips 66 took possession of the Maljamar

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Gas Plant in 2012. When these wells were previously included in the groundwater gauging program prior to groundwater extraction at EW-1 and EW-2, groundwater potentiometric surface maps showed an apparent mound around the unconfined groundwater bearing zone in the vicinity of MW-11, MW-12, and MW-14, with apparent radial groundwater flow away from the mound. As discussed above the apparent groundwater flow to the northeast appears to be related to the pinch out of the groundwater-bearing zone toward Mescalero Ridge, but the regional groundwater flow in the area appears to be to the south based on site observations south of the Maljamar Gas Plant. Southern groundwater flow in the general area has been confirmed to flow due south by groundwater investigations conducted at the unrelated Maverick MCA 357 release site located approximately 0.6 miles south, on the south side of the Maljamar Gas Plant.

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4.0 GROUNDWATER MONITORING

The Site is currently the subject of annual groundwater monitoring under the NMOCDA-approved abatement plan. Tetra Tech contracted Hydrologic Monitoring, LLC (HMI) to conduct the groundwater sampling at the Site in 2023. HMI conducted the 2023 annual groundwater monitoring event on September 13, 2023.

4.1 GROUNDWATER LEVEL MEASUREMENTS

Prior to purging and sampling the monitor well network, HMI personnel gauged each well to measure the depth to groundwater and the presence of PSH, if any. PSH was not identified in any of the Site wells in 2023, **Table 1** presents 2023 groundwater level measurements with calculated groundwater elevations. **Figure 2** presents the site details map showing the current monitoring well network. All seven of the wells in the Site monitoring well network were gauged during the 2023 annual groundwater monitoring event.

In 2023, groundwater elevations ranged from 3,921.27 feet above mean sea level (AMSL) in MW-19 to 3,931.57 feet AMSL in MW-14. Groundwater elevations and the groundwater potentiometric surface map are presented in **Figure 3**. Groundwater flow at the Site was shown to flow to the northeast with an approximate hydraulic gradient of 0.00624 feet per foot in 2023, generally consistent with historical groundwater flow direction and gradient.

As discussed above in **Section 3**, Apparent groundwater flow at the Site appears to historically have been affected by groundwater extraction from EW-1 and EW-2 in combination with the pinch out of the groundwater-bearing zone to the northeast and northwest. Based on the COC concentration distributions and groundwater investigations conducted at the unrelated Maverick MCA 357 site approximately 0.6 miles south the true groundwater flow direction at the site is anticipated as to the south.

4.2 GROUNDWATER SAMPLING

During the 2023 monitoring event, wells MW-11, MW-12, MW-13, MW-14, MW-19, EW-1, and EW-2 were sampled. Low-flow sampling methodology was utilized to purge and sample each well using a bladder pump with dedicated disposable tubing and bladders in accordance with United States Environmental Protection Agency (EPA) guidance. The bladder pump intake was set to the approximate center of the screened interval for each monitor well prior to purging. **Table 2** presents a summary of the groundwater field analytical parameters that were tested during the sampling of the wells and **Appendix E** provides well construction details.

Groundwater quality parameters including temperature, pH, Specific Conductivity (SC), Dissolved Oxygen (DO), Oxygen Reduction Potential (ORP), and turbidity were recorded during purging in addition to well drawdown and flow rate to document monitor well stabilization.

Once field parameters stabilized at each well, samples were collected into laboratory-provided pre-preserved sample containers, immediately placed on ice, and submitted for analysis of the following constituents of concern (COCs):

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-
- Bromide by EPA Method 300.0;
 - Chloride by EPA Method 300.0;
 - Sulfate by EPA Method 300.0; and
 - Total dissolved solids (TDS) by SM Method 2540C.

Groundwater samples were then transported to Pace Analytical National laboratory, in Mount Juliet, Tennessee (Pace) under chain-of-custody documentation.

4.3 GROUNDWATER ANALYTICAL RESULTS

During the September 2023 monitoring event, wells EW-1, EW-2, MW-11, MW-12, MW-13, MW-14, and MW-19 were sampled. The concentrations of COCs in the following wells were reported at concentrations greater than NMWQCC standards:

- Chloride was reported in EW-1 (21,400 mg/L), EW-2 (21,700 mg/L), MW-11 (1,010 mg/L), and MW-12 (39,300 mg/L) at concentrations greater than the NMWQCC standard of 250 mg/L;
- Sulfate was reported in MW-12 (1,380 mg/L) and MW-14 (792 mg/L) at concentrations greater than the NMWQCC standard of 600 mg/L; and
- TDS was reported in EW-1 (42,300 mg/L), EW-2 (47,800 mg/L), MW-11 (2,090 mg/L), MW-12 (93,500 mg/L), MW-13 (1,020 mg/L), and MW-14 (1,470mg/L) at concentrations greater than the NMWQCC standard of 1,000 mg/L.

Table 3 presents a summary of the groundwater analytical results screened against NMWQCC Groundwater Quality Standards. The laboratory analytical report and chain-of-custody documentation are provided in **Appendix A**, chloride, sulfate, and TDS concentration maps are provided in **Figures 4** through **6**, and chloride concentration trend graphs are presented in **Appendix B**.

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5.0 QUALITY ASSURANCE/QUALITY CONTROL

A total of seven primary groundwater samples and one field duplicate groundwater sample were collected and analyzed during the annual groundwater monitoring events in 2023.

5.1 FIELD AND LABORATORY PRECISION

The project measurement quality objectives are 30 percent for relative percent differences (RPDs) between primary and duplicate sample results for inorganic analytes including bromide, chloride, sulfate, and TDS. **Table 4** presents primary and duplicate sample results and RPD calculations. The one primary-duplicate sample pair RPD calculations were less than the project data quality objectives of 30 percent with the exception of TDS for which a 44.6 percent RPD was calculated.

5.2 LABORATORY DATA QUALIFICATION

The Monitoring Well MW-19 laboratory analytical result for chloride and sulfate was flagged for the associated batch quality control as outside the established quality control range for precision for analysis.

5.3 DATA USABILITY

Groundwater analytical data are deemed useable for the purpose of determining groundwater COC concentrations at the Site. MW-19 chloride results were flagged as outside of the established quality control range for precision and the field duplicate sample reported results within Data quality objectives with the exception of TDS. Based on professional judgment and review of historical Site data, the integrity of analytical data was not significantly affected for samples for batch quality control precision of chloride or the RPD of TDS in the primary duplicate sample pair.

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6.0 2023 CONCLUSIONS

Since the groundwater extraction system shutdown in March 2022, groundwater elevations in the former extraction wells have rebounded back to anticipated levels in relation to the surrounding monitoring well network. The water level in nearby MW-12 has remained stable since the system shutdown.

Generally, COC concentrations in the monitoring well network have remained stable as compared to historical concentration data since the shutdown of the groundwater extraction system in March of 2022. The only exception to this appears to be the TDS concentrations reported in EW-2 and MW-12 which increased significantly in 2023 as compared to previous years. The TDS concentration in MW-12 is within historical concentrations and the EW-2 TDS concentration has risen above historical levels. The changes in TDS concentration data are limited to EW-2 and MW-12 in the source zone which were subject to previous extraction, these changes observed during 2023 are attributed to the re-equalization of the aquifer subsequent to the cessation of extraction activities.

Groundwater monitoring and sampling of the on-site wells are proposed to continue on an annual basis with annual reporting to the New Mexico Oil Conservation Division. Tetra Tech will continue to evaluate annual groundwater analytical results to assess whether groundwater extraction should be re-implemented at the Site in the future.

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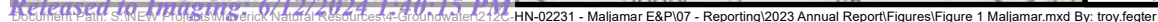
7.0 REFERENCES

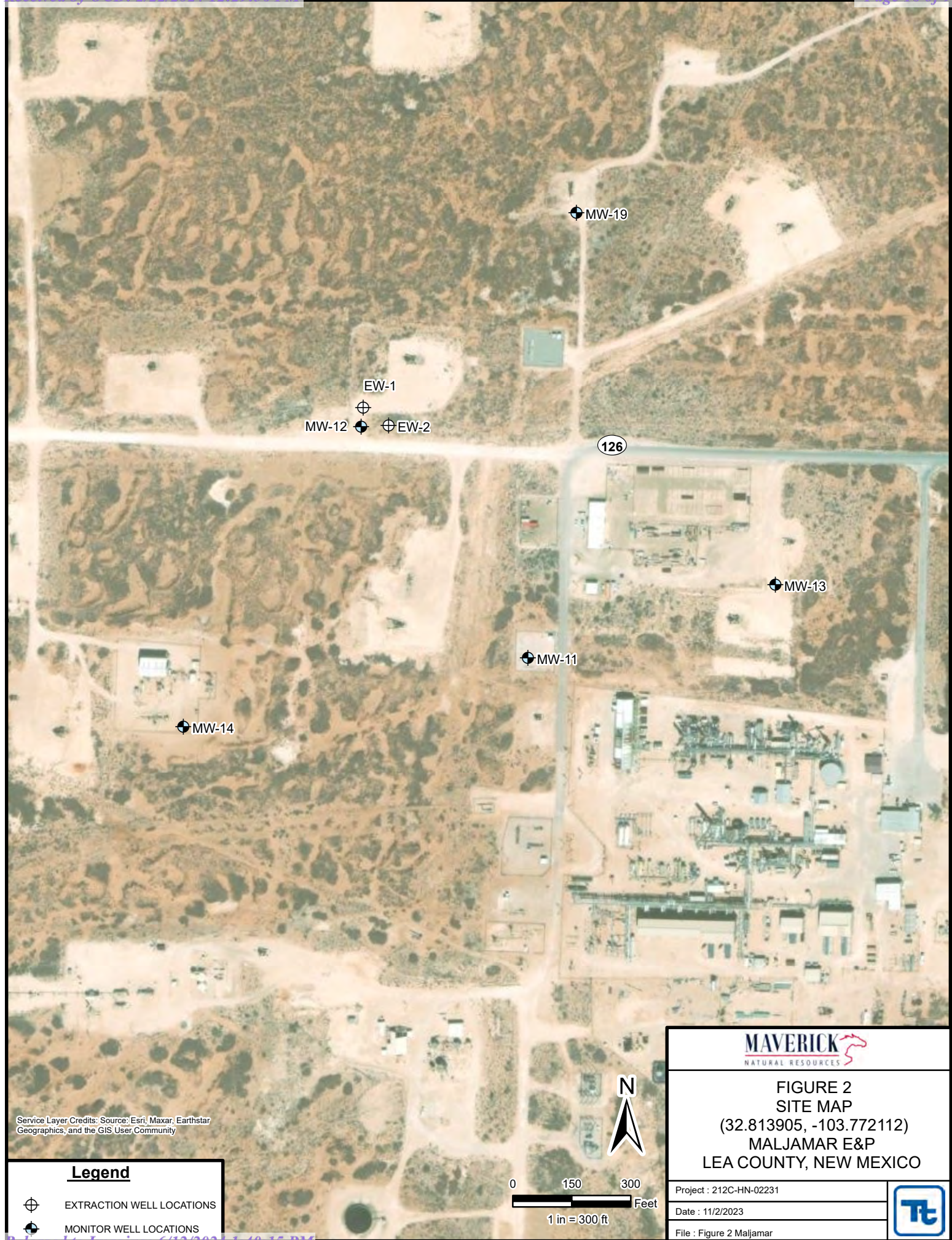
Nicholson Jr., A. and Clebsch Jr., A.. (1961). Geology and Ground-Water Conditions in Southern Lea County, New Mexico. Socorro, NM: State Bureau of Mines and Mineral Resources and New Mexico Institute of Mining & Technology Campus Station.

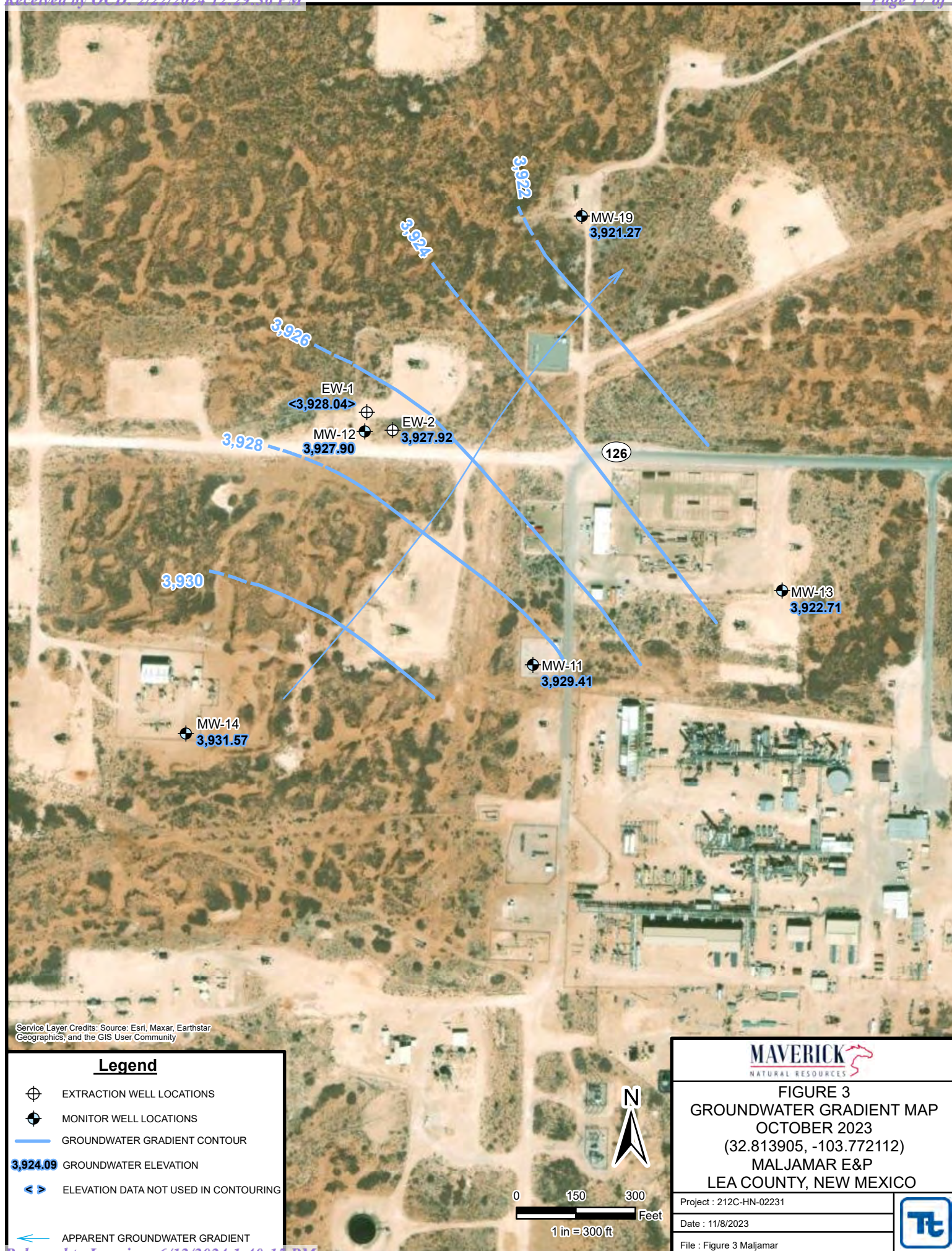
Maljamar E&P (AP-115-1 & 1RP-959)
Lea County, New Mexico

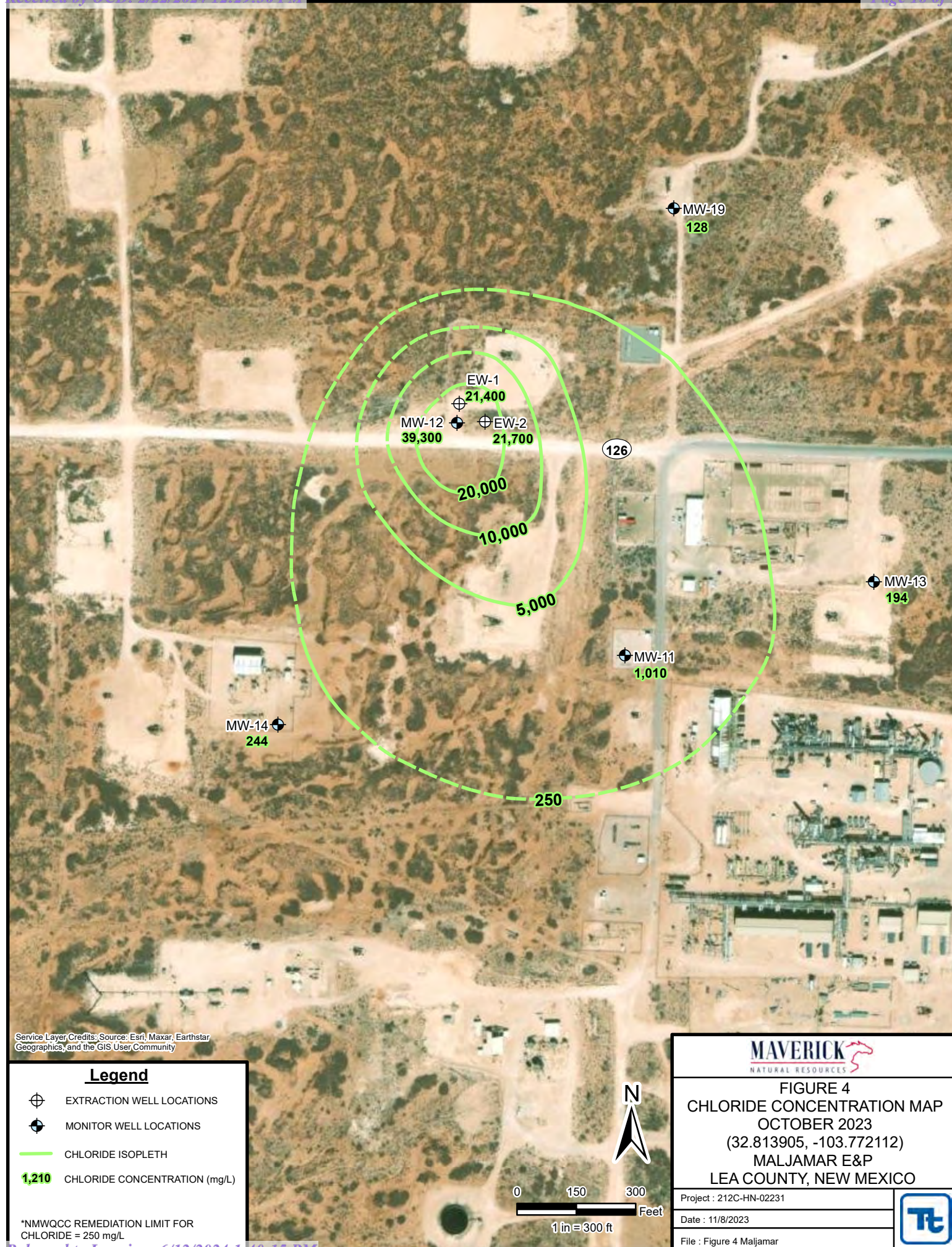
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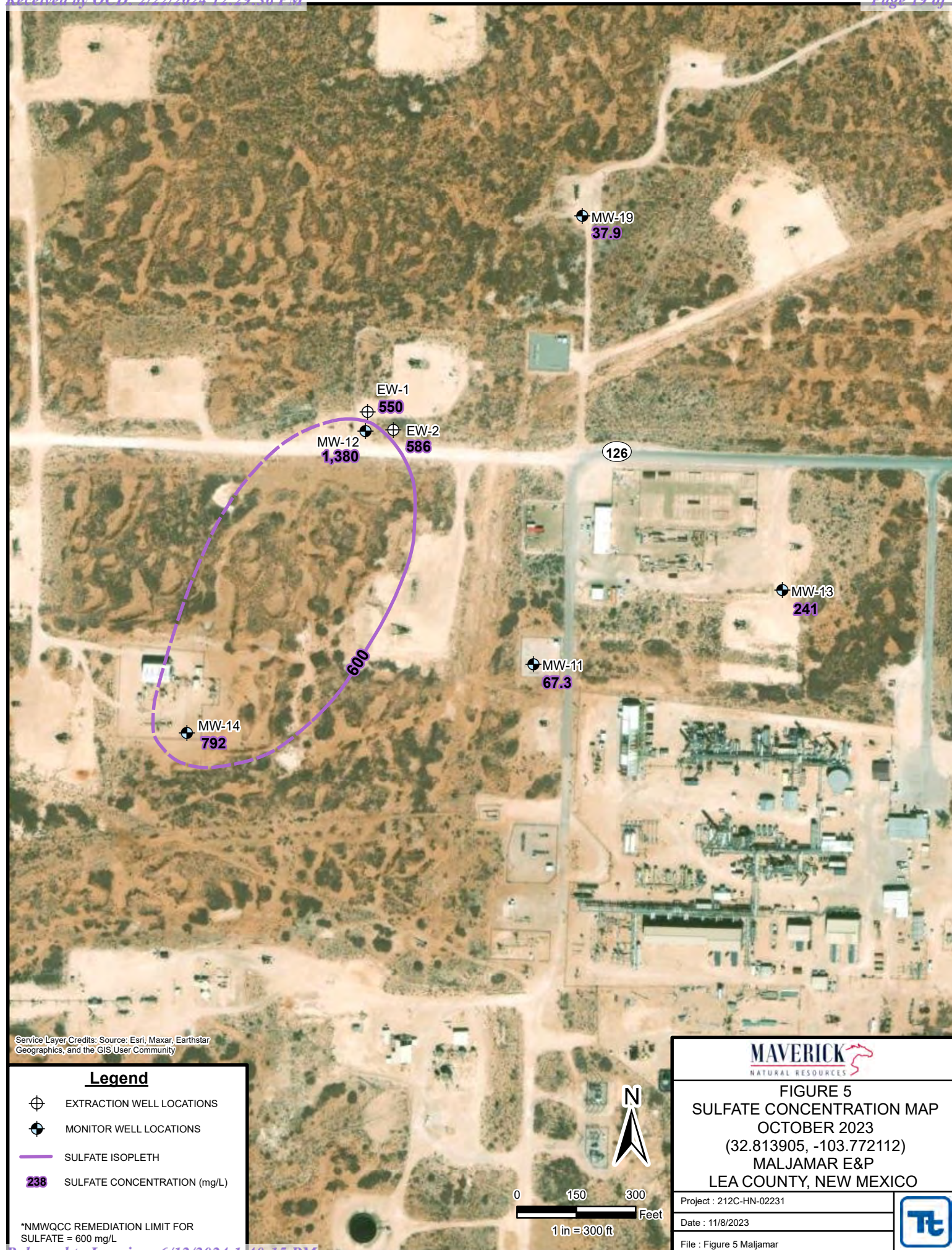
FIGURES

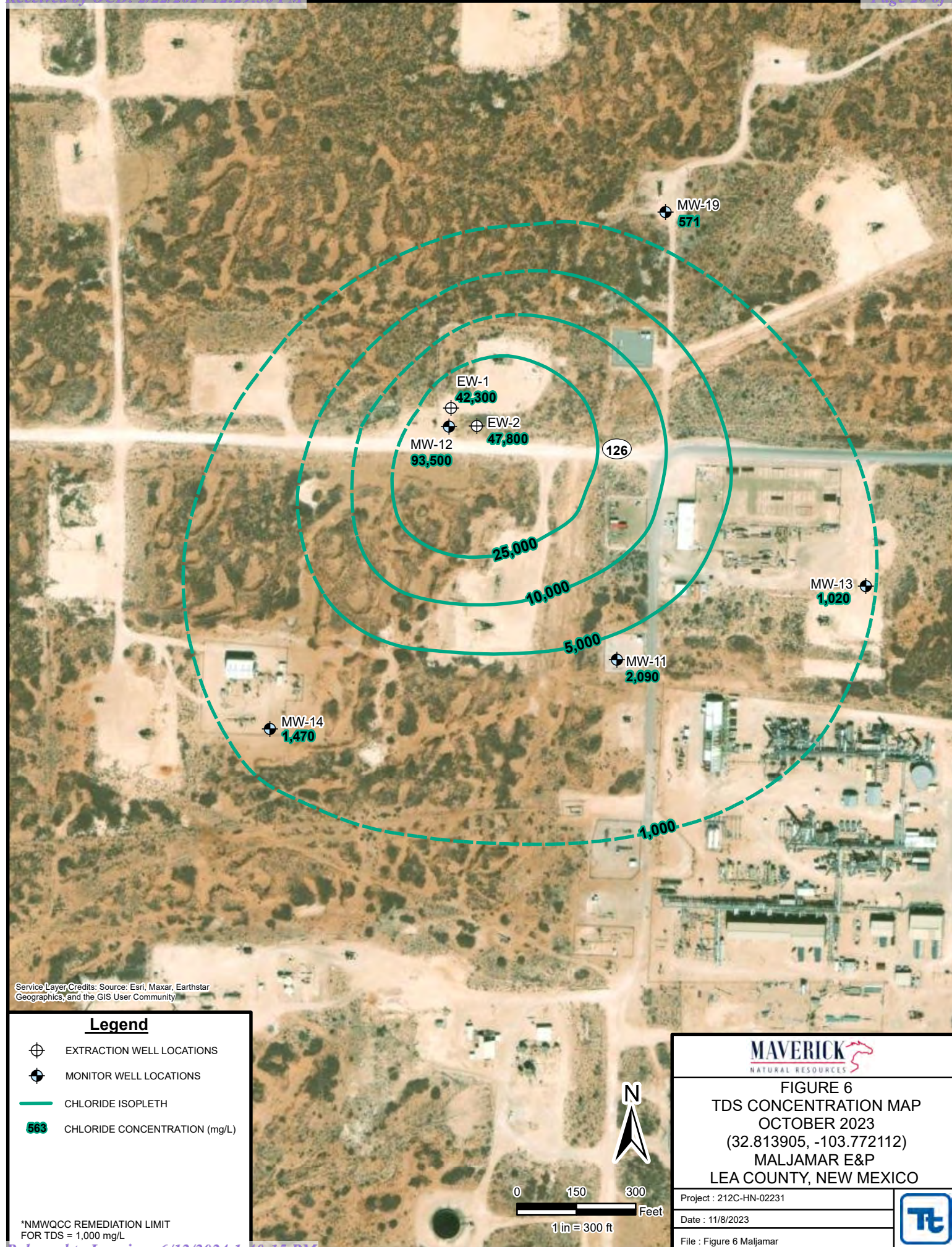












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TABLES



Table 1
2023 Groundwater Elevation Summary
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Well ID	Gauging Date	Well Total Depth (feet BTOC)	Depth to Water (feet BTOC)	Top of Casing Elevation (feet AMSL)	Groundwater Elevation (feet)
EW-1	9/13/2023	124.9	94.00	4,022.04	3,928.04
EW-2	9/13/2023	143.9	94.84	4,022.76	3,927.92
MW-11	9/13/2023	119.6	86.13	4,015.54	3,929.41
MW-12	9/13/2023	122.9	94.63	4,022.53	3,927.90
MW-13	9/13/2023	125	109.25	4,031.96	3,922.71
MW-14	9/13/2023	119.7	75.41	4,006.98	3,931.57
MW-19	9/13/2023	121.4	116.07	4,037.34	3,921.27

Notes:

 AMSL: Above Mean Sea Level

BTOC: Below Top of Casing

NG: Not gauged



Table 2
2023 Groundwater Field Parameters
Maljamar E&P
Lea County, New Mexico

Well ID	Gauging Date	PH	Temperature (°C)	Standard Conductivity (µs/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (mV)	Turbidity (NTU)
EW-1	9/13/2023	6.68	20.2	73,100	0.5	89.3	>200
EW-2	9/13/2023	6.71	20.7	73,300	0.3	-112.8	28.7
MW-11	9/13/2023	7.10	20.0	3,360	1.2	269.3	41.7
MW-12	9/13/2023	7.00	19.1	87,100	0.7	240.6	>200
MW-13	9/13/2023	7.78	22.0	1,830	1.5	235.2	63.8
MW-14	9/13/2023	7.30	19.9	2,440	1.3	74.9	>200
MW-19	9/13/2023	7.33	20.5	895	1.6	62.4	56.0

Notes:

BTOC: Below Top of Casing

µs/cm: Microsiemens per Centimeter

mV: Millivolts

NTU: Nephelometric Turbidity Units



2023 Groundwater Analytical Summary

Maljamar E&P

Lea County, New Mexico

Well ID	Sample Date	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Bromide (mg/L)
NMWQCC Groundwater Quality		250	600	1,000	NE
EW-1	9/13/2023	21,400	550	42,300	66.6
EW-2	9/13/2023	21,700	586	47,800	66.3
MW-11	9/13/2023	1,010	67.3	2,090	2.76
MW-12	9/13/2023	39,300	1380	93,500	69.7
MW-13	9/13/2023	194	241	1,020	1.09
MW-14	9/13/2023	244	792	1,470	<0.53
MW-19	9/13/2023	128	37.9	571	1.18

Notes:

 NMWQCC: New Mexico Water Quality Control Commission

Exceeds applicable regulatory standards

NE: No Established Standard

TDS: Total Dissolved Solids



Table 4
2023 Quality Assurance/Quality Control Summary
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Well ID	Sample Date	Analyte	Primary Sample Result (mg/L)	Duplicate Sample Result (mg/L)	RPD	DQO	Within DQOs
MW-11	9/13/2023	Bromide	2.76	2.78	0.7%	30%	Yes
		Chloride	1,010	1,030	2.0%	30%	Yes
		Sulfate	67.3	68.3	1.5%	30%	Yes
		TDS	2,090	3,290	44.6%	30%	No

Notes:

RPD: Relative Percent Difference calculated as $= (SR-DR)*200/(SR+DR)$

DQO: Data Quality Objectives

ND: Not Detected above the laboratory method detection limit

N/A: Not Applicable

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APPENDIX A: LABORATORY ANALYTICAL DATA



ANALYTICAL REPORT

October 02, 2023

Tetra Tech EMI - Houston, TX

Sample Delivery Group: L1655970

Samples Received: 09/14/2023

Project Number: 212C-HN-02231

Description: MNR - Maljamar

Report To: Dylan Breyman
1500 CityWest Boulevard
Suite 1000
Houston, TX 77042

¹Cp²Tc³Ss⁴Cn⁵Sr⁶Qc⁷Gl⁸Al⁹Sc

Entire Report Reviewed By:

A handwritten signature in blue ink, appearing to read "Chad Upchurch".

Chad A Upchurch
Project Manager

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

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

Cp: Cover Page	1	¹ Cp
Tc: Table of Contents	2	
Ss: Sample Summary	3	² Tc
Cn: Case Narrative	5	
Sr: Sample Results	6	³ Ss
MW-11 L1655970-01	6	
MW-12 L1655970-02	7	⁴ Cn
MW-13 L1655970-03	8	⁵ Sr
MW-14 L1655970-04	9	
MW-19 L1655970-05	10	⁶ Qc
EW-1 L1655970-06	11	
EW-2 L1655970-07	12	⁷ Gl
DUP-01 L1655970-08	13	⁸ Al
Qc: Quality Control Summary	14	
Gravimetric Analysis by Method 2540 C-2011	14	⁹ Sc
Wet Chemistry by Method 9056A	17	
Gl: Glossary of Terms	19	
Al: Accreditations & Locations	20	
Sc: Sample Chain of Custody	21	

MW-11 L1655970-01 GW

Collected by
HMI TEAM

Collected date/time
09/13/23 11:20

Received date/time
09/14/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2134671	1	09/18/23 23:54	09/19/23 16:16	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2134861	1	09/19/23 13:30	09/19/23 13:30	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2134861	10	09/19/23 13:42	09/19/23 13:42	GEB	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

MW-12 L1655970-02 GW

Collected by
HMI TEAM

Collected date/time
09/13/23 13:05

Received date/time
09/14/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2134671	1	09/18/23 23:54	09/19/23 16:16	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2134861	100	09/19/23 13:55	09/19/23 13:55	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2134861	1000	09/19/23 14:08	09/19/23 14:08	GEB	Mt. Juliet, TN

MW-13 L1655970-03 GW

Collected by
HMI TEAM

Collected date/time
09/13/23 13:55

Received date/time
09/14/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2134671	1	09/18/23 23:54	09/19/23 16:16	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2134861	1	09/19/23 14:21	09/19/23 14:21	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2134861	5	09/19/23 14:33	09/19/23 14:33	GEB	Mt. Juliet, TN

MW-14 L1655970-04 GW

Collected by
HMI TEAM

Collected date/time
09/13/23 13:25

Received date/time
09/14/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2134671	1	09/18/23 23:54	09/19/23 16:16	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2134861	1	09/19/23 14:46	09/19/23 14:46	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2134861	10	09/19/23 14:59	09/19/23 14:59	GEB	Mt. Juliet, TN

MW-19 L1655970-05 GW

Collected by
HMI TEAM

Collected date/time
09/13/23 14:10

Received date/time
09/14/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2134671	1	09/18/23 23:54	09/19/23 16:16	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2134861	1	09/19/23 15:12	09/19/23 15:12	GEB	Mt. Juliet, TN

EW-1 L1655970-06 GW

Collected by
HMI TEAM

Collected date/time
09/13/23 13:15

Received date/time
09/14/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2139037	1	09/25/23 16:15	09/26/23 09:36	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2134861	100	09/19/23 16:28	09/19/23 16:28	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2134861	1000	09/19/23 16:41	09/19/23 16:41	GEB	Mt. Juliet, TN

EW-2 L1655970-07 GW

Collected by
HMI TEAM

Collected date/time
09/13/23 13:50

Received date/time
09/14/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2139037	1	09/25/23 16:15	09/26/23 09:36	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2134861	100	09/19/23 16:53	09/19/23 16:53	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2134861	1000	09/19/23 17:06	09/19/23 17:06	GEB	Mt. Juliet, TN

DUP-01 L1655970-08 GW

Collected by
HMI TEAM

Collected date/time
09/13/23 09:00

Received date/time
09/14/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2134672	1	09/18/23 23:56	09/19/23 19:39	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2134861	1	09/19/23 17:19	09/19/23 17:19	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2134861	10	09/19/23 17:32	09/19/23 17:32	GEB	Mt. Juliet, TN

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

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



Chad A Upchurch
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc

Collected date/time: 09/13/23 11:20

L1655970

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	2090		50.0	1	09/19/2023 16:16	WG2134671

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	2.76		0.353	1.00	1	09/19/2023 13:30	WG2134861
Chloride	1010		3.79	10.0	10	09/19/2023 13:42	WG2134861
Sulfate	67.3		0.594	5.00	1	09/19/2023 13:30	WG2134861

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Collected date/time: 09/13/23 13:05

L1655970

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	93500		1000	1	09/19/2023 16:16	WG2134671

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Bromide	69.7	J	35.3	100	100	09/19/2023 13:55	WG2134861
Chloride	39300		379	1000	1000	09/19/2023 14:08	WG2134861
Sulfate	1380		59.4	500	100	09/19/2023 13:55	WG2134861

Sample Narrative:

L1655970-02 WG2134861: Dilution due to matrix.

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Collected date/time: 09/13/23 13:55

L1655970

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1020		20.0	1	09/19/2023 16:16	WG2134671

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	1.09		0.353	1.00	1	09/19/2023 14:21	WG2134861
Chloride	194		0.379	1.00	1	09/19/2023 14:21	WG2134861
Sulfate	241		2.97	25.0	5	09/19/2023 14:33	WG2134861

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Collected date/time: 09/13/23 13:25

L1655970

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1470		50.0	1	09/19/2023 16:16	WG2134671

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	U		0.353	1.00	1	09/19/2023 14:46	WG2134861
Chloride	244		3.79	10.0	10	09/19/2023 14:59	WG2134861
Sulfate	792		5.94	50.0	10	09/19/2023 14:59	WG2134861

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Collected date/time: 09/13/23 14:10

L1655970

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	571		10.0	1	09/19/2023 16:16	WG2134671

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	1.18		0.353	1.00	1	09/19/2023 15:12	WG2134861
Chloride	128	J6	0.379	1.00	1	09/19/2023 15:12	WG2134861
Sulfate	37.9	J6	0.594	5.00	1	09/19/2023 15:12	WG2134861

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Collected date/time: 09/13/23 13:15

L1655970

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	42300	Q	1000	1	09/26/2023 09:36	WG2139037

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	66.6	J	35.3	100	100	09/19/2023 16:28	WG2134861
Chloride	21400		379	1000	1000	09/19/2023 16:41	WG2134861
Sulfate	550		59.4	500	100	09/19/2023 16:28	WG2134861

Sample Narrative:

L1655970-06 WG2134861: Dilution due to matrix.

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Collected date/time: 09/13/23 13:50

L1655970

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	47800	Q	1000	1	09/26/2023 09:36	WG2139037

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	66.3	J	35.3	100	100	09/19/2023 16:53	WG2134861
Chloride	21700		379	1000	1000	09/19/2023 17:06	WG2134861
Sulfate	586		59.4	500	100	09/19/2023 16:53	WG2134861

Sample Narrative:

L1655970-07 WG2134861: Dilution due to matrix.

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Collected date/time: 09/13/23 09:00

L1655970

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	3290		50.0	1	09/19/2023 19:39	WG2134672

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Bromide	2.78		0.353	1.00	1	09/19/2023 17:19	WG2134861
Chloride	1030		3.79	10.0	10	09/19/2023 17:32	WG2134861
Sulfate	68.3		0.594	5.00	1	09/19/2023 17:19	WG2134861

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3976559-1 09/19/23 16:16

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

L1655830-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1655830-04 09/19/23 16:16 • (DUP) R3976559-3 09/19/23 16:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Dissolved Solids	972	1040	1	6.37	<u>J3</u>	5

L1655830-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1655830-08 09/19/23 16:16 • (DUP) R3976559-4 09/19/23 16:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Dissolved Solids	1330	1500	1	12.2	<u>J3</u>	5

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3976559-2 09/19/23 16:16

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Dissolved Solids	8800	8540	97.0	77.3-123	

Method Blank (MB)

(MB) R3977257-1 09/19/23 19:39

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

L1655970-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1655970-08 09/19/23 19:39 • (DUP) R3977257-3 09/19/23 19:39

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	3290	3340	1	1.51		5

L1655972-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1655972-04 09/19/23 19:39 • (DUP) R3977257-4 09/19/23 19:39

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	677	719	1	5.92	<u>J3</u>	5

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3977257-2 09/19/23 19:39

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8520	96.8	77.3-123	

Method Blank (MB)

(MB) R3979049-1 09/26/23 09:36

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U	⬇	10.0	10.0

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1657767-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1657767-01 09/26/23 09:36 • (DUP) R3979049-3 09/26/23 09:36

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	990	1010	1	1.60		5

L1658529-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1658529-09 09/26/23 09:36 • (DUP) R3979049-4 09/26/23 09:36

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	982	998	1	1.62		5

Laboratory Control Sample (LCS)

(LCS) R3979049-2 09/26/23 09:36

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8690	98.8	77.3-123	

Method Blank (MB)

(MB) R3975639-1 09/19/23 09:25

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Bromide	U		0.353	1.00
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

L1655970-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1655970-05 09/19/23 15:12 • (DUP) R3975639-3 09/19/23 15:50

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	1.18	1.17	1	0.707		15
Chloride	128	128	1	0.0743		15
Sulfate	37.9	38.0	1	0.128		15

L1655972-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1655972-07 09/19/23 19:26 • (DUP) R3975639-6 09/19/23 19:39

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	1.06	1.06	1	0.235		15
Chloride	132	132	1	0.155		15
Sulfate	85.1	85.2	1	0.138		15

Laboratory Control Sample (LCS)

(LCS) R3975639-2 09/19/23 09:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromide	40.0	39.1	97.7	80.0-120	
Chloride	40.0	38.7	96.8	80.0-120	
Sulfate	40.0	38.6	96.5	80.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1655970-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1655970-05 09/19/23 15:12 • (MS) R3975639-4 09/19/23 16:03 • (MSD) R3975639-5 09/19/23 16:15

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromide	40.0	1.18	38.4	38.3	93.2	92.7	1	80.0-120			0.504	15
Chloride	40.0	128	142	141	35.2	33.8	1	80.0-120	J6	J6	0.415	15
Sulfate	40.0	37.9	69.5	69.3	78.9	78.5	1	80.0-120	J6	J6	0.194	15

L1655972-07 Original Sample (OS) • Matrix Spike (MS)

(OS) L1655972-07 09/19/23 19:26 • (MS) R3975639-7 09/19/23 19:52

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	40.0	1.06	34.9	84.5	1	80.0-120	
Chloride	40.0	132	144	29.3	1	80.0-120	J6
Sulfate	40.0	85.1	106	51.6	1	80.0-120	J6

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

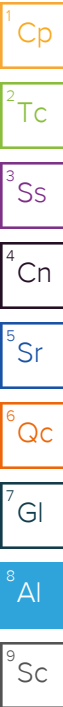
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

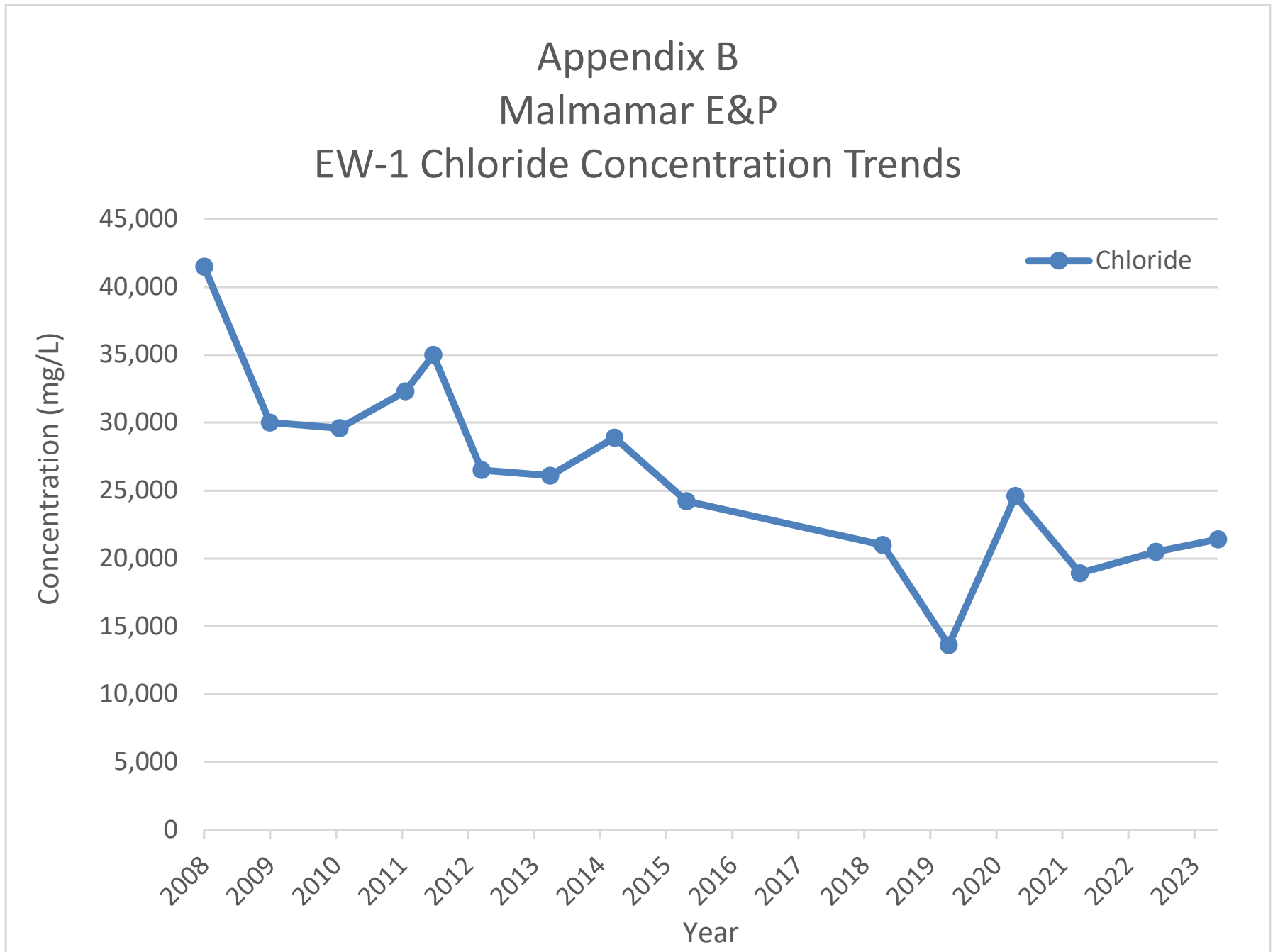


Released to Imaging: 6/12/2024 1:40:15 PM

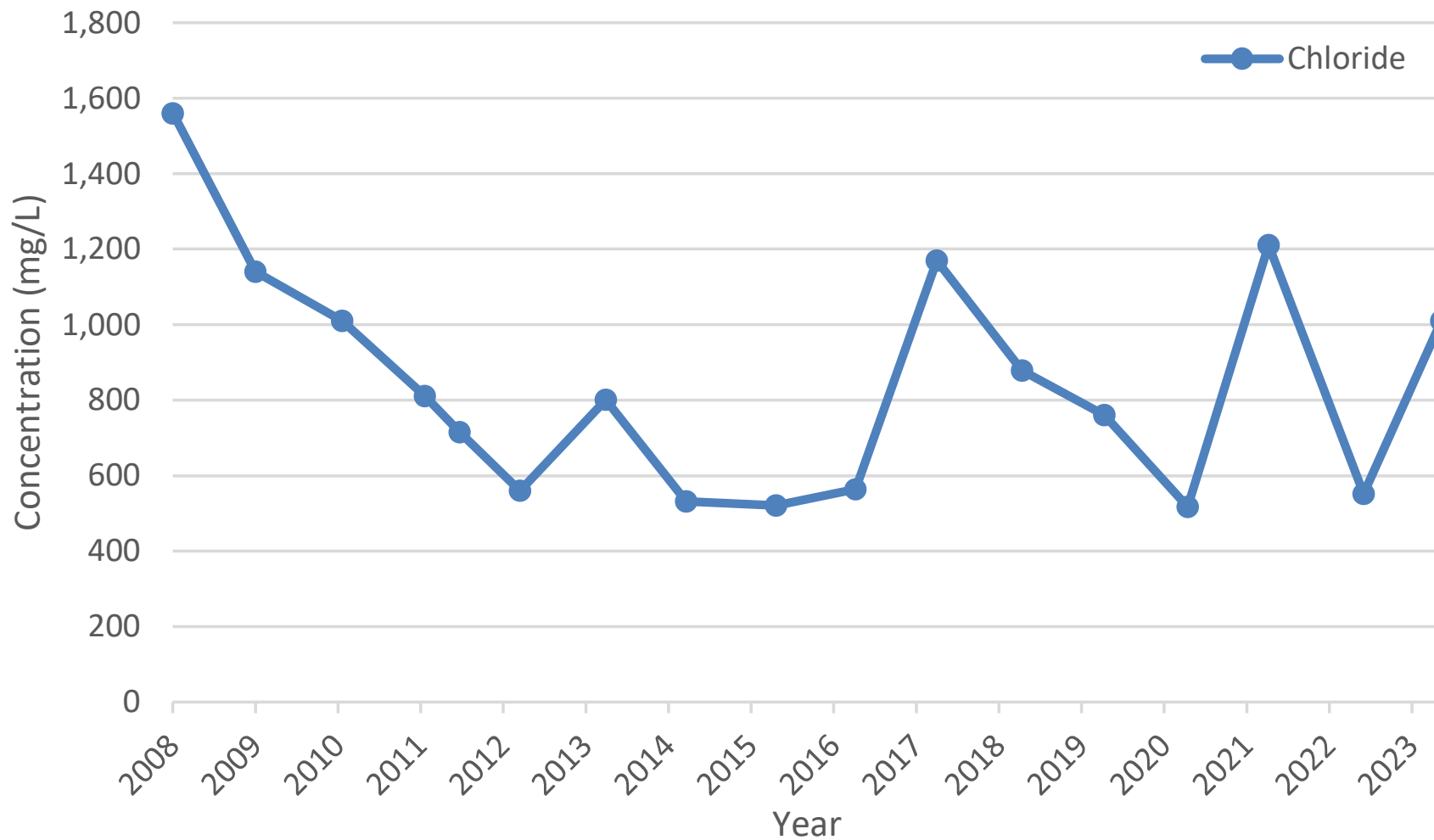
Maljamar E&P (AP-115-1 & 1RP-959)
Lea County, New Mexico

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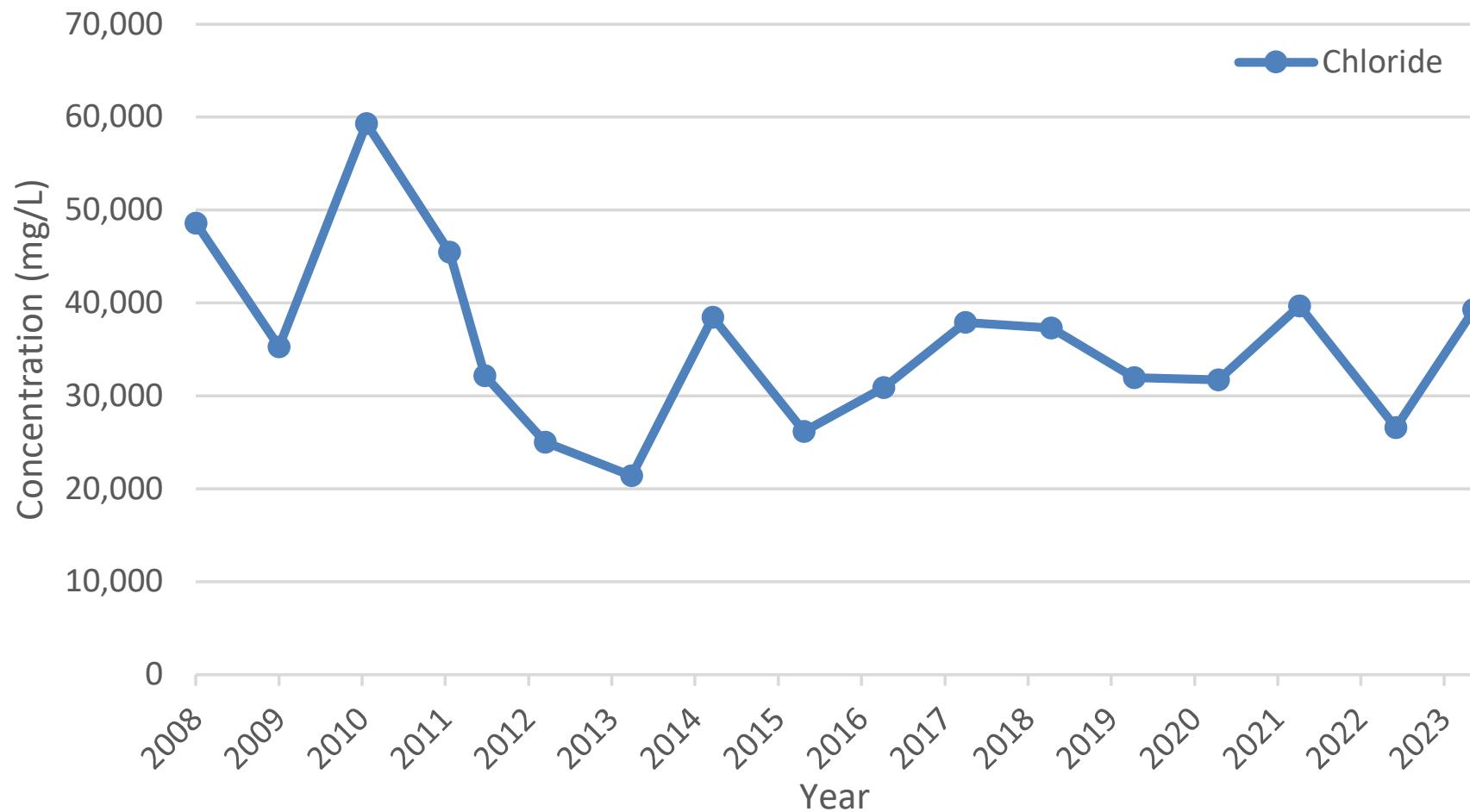
APPENDIX B: CHLORIDE CONCENTRATION GRAPHS

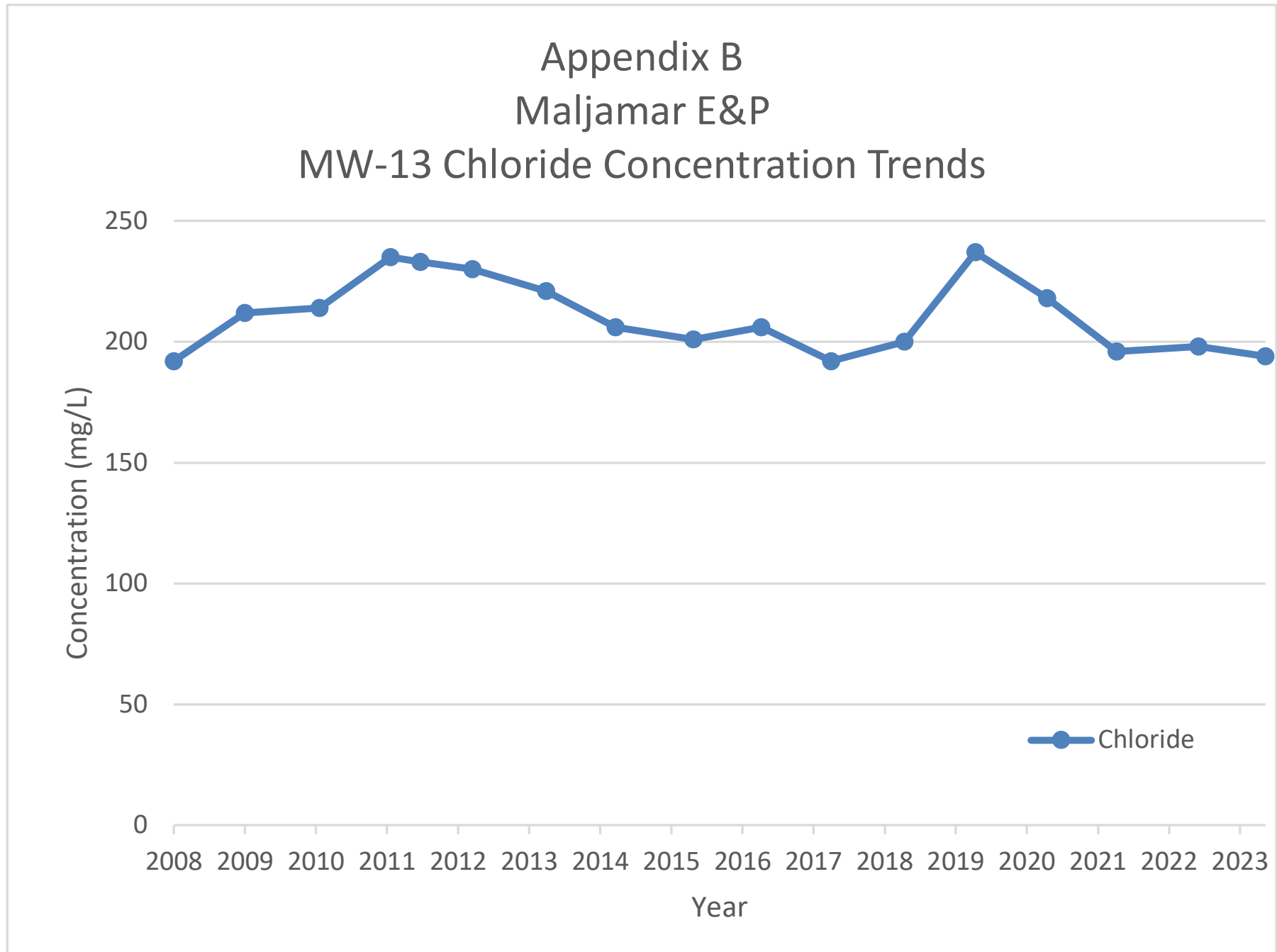


Appendix B Maljamar E&P MW-11 Chloride Concentration Trends

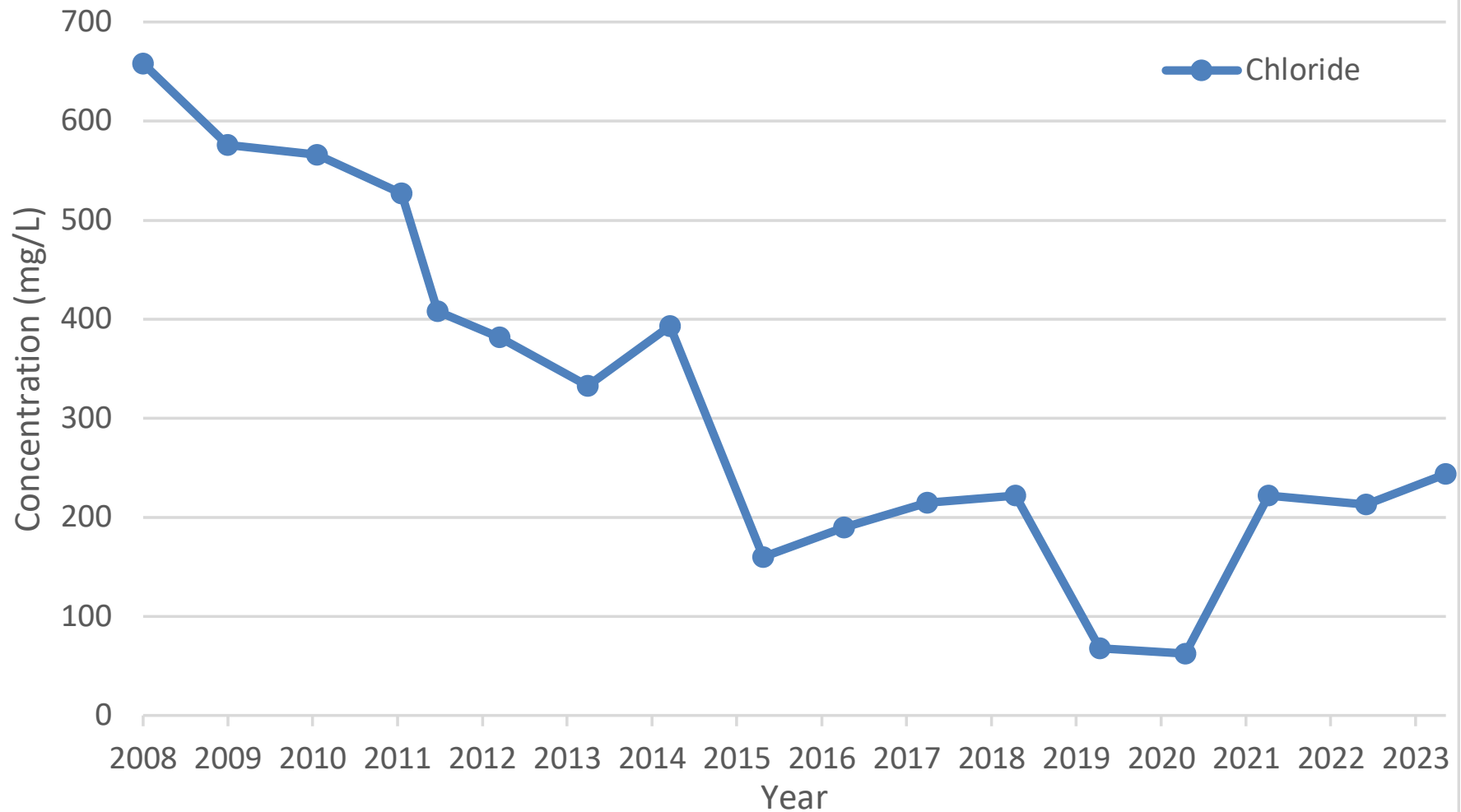


Appendix B Maljamar E&P MW-12 Chloride Concentration Trends

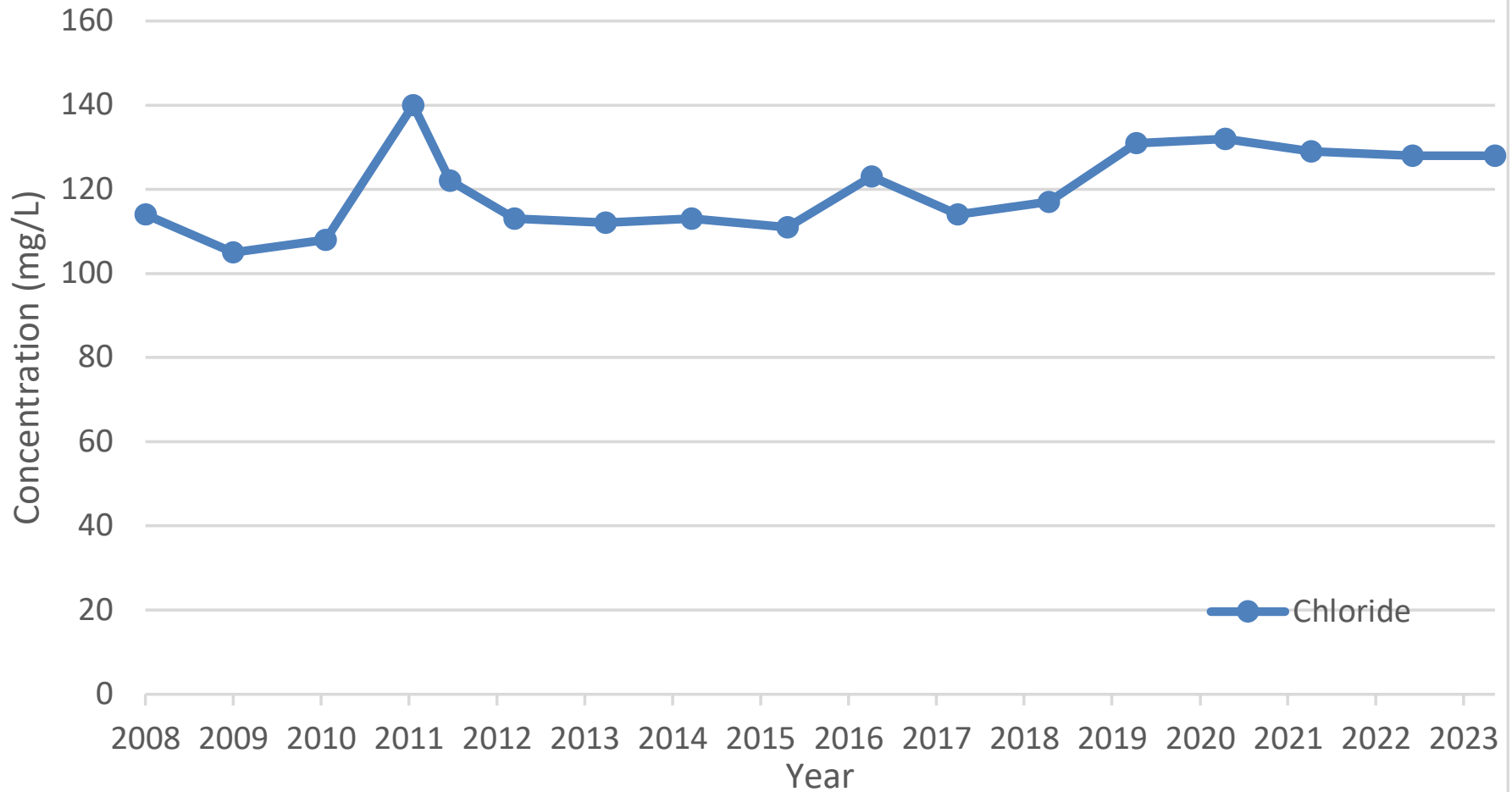




Appendix B Maljamar E&P MW-14 Chloride Concentration Trends



Appendix B Maljamar E&P MW-19 Chloride Concentration Trends



Maljamar E&P (AP-115-1 & 1RP-959)
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APPENDIX C: HISTORICAL GROUNDWATER GAUGING DATA

APPENDIX C
EW-1 Historical Groundwater Gauging Data
Maljamar E&P
Lea County, New Mexico

Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
6/27/2007	-	-	92.58	-	-	4,022.04	3,929.46
7/19/2007	-	-	93.27	-	-	4,022.04	3,928.77
10/24/2011	-	-	96.44	-	-	4,022.04	3,925.60
8/3/2017	125	Not Gauged				4,022.04	-
8/16/2018	-	-	94.87	-	-	4,022.04	3,927.17
8/16/2019	-	-	93.88	-	-	4,022.04	3,928.16
8/18/2020	-	-	93.58	-	-	4,022.04	3,928.46
8/10/2021	-	-	97.95	-	-	4,022.04	3,924.09
10/4/2022	125	-	98.03	-	-	4,022.04	3,924.01
9/13/2023	-	-	94.00	-	-	4,022.04	3,928.04

Notes:

PSH Phase-Separated Hydrocarbons
 AMSL Above Mean Sea Level
 BTOC Below Top of Casing
 - No Measurement

APPENDIX C
EW-2 Historical Groundwater Gauging Data
Maljamar E&P
Lea County, New Mexico

Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
10/4/2017	140	-	95.04	-	-	4,022.76	3,927.72
8/16/2018	not gauged - extraction pump					4022.76	-
8/15/2019	not gauged - extraction pump					4022.76	-
8/18/2020	not gauged - extraction pump					4022.76	-
8/10/2021	not gauged - extraction pump					4022.76	-
10/4/2022	140.00	-	134.85	-	-	4022.76	3,887.91
9/13/2023	-	-	94.84	-	-	4022.76	3,927.92

Notes:

PSH Phase-Separated Hydrocarbons
 AMSL Above Mean Sea Level
 BTOC Below Top of Casing
 - No Measurement

APPENDIX C
MW-11 Historical Groundwater Gauging Data
Maljamar E&P
Lea County, New Mexico

Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
12/13/2001	-	-	81.38	-	-	4,015.54	3,934.16
3/22/2002	-	-	83.60	-	-	4,015.54	3,931.94
9/16/2002	-	-	83.82	-	-	4,015.54	3,931.72
9/20/2002	-	-	83.70	-	-	4,015.54	3,931.84
9/4/2003	-	-	84.50	-	-	4,015.54	3,931.04
4/5/2004	-	-	84.54	-	-	4,015.54	3,931.00
5/17/2004	-	-	84.64	-	-	4,015.54	3,930.90
5/24/2004	-	-	84.55	-	-	4,015.54	3,930.99
6/1/2004	-	-	84.61	-	-	4,015.54	3,930.93
6/7/2004	-	-	84.58	-	-	4,015.54	3,930.96
6/15/2004	-	-	84.69	-	-	4,015.54	3,930.85
6/21/2004	-	-	84.72	-	-	4,015.54	3,930.82
6/28/2004	-	-	84.99	-	-	4,015.54	3,930.55
7/6/2004	-	-	84.83	-	-	4,015.54	3,930.71
7/12/2004	-	-	84.96	-	-	4,015.54	3,930.58
7/19/2004	-	-	84.90	-	-	4,015.54	3,930.64
7/26/2004	-	-	85.11	-	-	4,015.54	3,930.43
8/2/2004	-	-	84.96	-	-	4,015.54	3,930.58
8/10/2004	-	-	85.09	-	-	4,015.54	3,930.45
8/16/2004	-	-	85.06	-	-	4,015.54	3,930.48
8/23/2004	-	-	84.83	-	-	4,015.54	3,930.71
8/30/2004	-	-	85.06	-	-	4,015.54	3,930.48
9/8/2004	-	-	85.14	-	-	4,015.54	3,930.40
10/8/2004	-	-	85.12	-	-	4,015.54	3,930.42
12/30/2004	-	-	85.12	-	-	4,015.54	3,930.42
1/17/2005	-	-	85.52	-	-	4,015.54	3,930.02
2/9/2005	-	-	85.33	-	-	4,015.54	3,930.21
3/9/2005	-	-	85.45	-	-	4,015.54	3,930.09

APPENDIX C
MW-11 Historical Groundwater Gauging Data
Maljamar E&P
Lea County, New Mexico

Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
4/5/2005	-	-	85.15	-	-	4,015.54	3,930.39
5/10/2005	-	-	85.21	-	-	4,015.54	3,930.33
6/8/2005	-	-	85.31	-	-	4,015.54	3,930.23
7/5/2005	-	-	85.59	-	-	4,015.54	3,929.95
8/8/2005	-	-	85.50	-	-	4,015.54	3,930.04
9/14/2005	-	-	85.42	-	-	4,015.54	3,930.12
10/12/2005	-	-	85.54	-	-	4,015.54	3,930.00
11/9/2005	-	-	85.62	-	-	4,015.54	3,929.92
12/14/2005	-	-	85.41	-	-	4,015.54	3,930.13
1/12/2006	-	-	85.26	-	-	4,015.54	3,930.28
2/2/2006	-	-	85.23	-	-	4,015.54	3,930.31
3/7/2006	-	-	85.44	-	-	4,015.54	3,930.10
4/5/2006	-	-	85.38	-	-	4,015.54	3,930.16
5/8/2006	-	-	85.33	-	-	4,015.54	3,930.21
6/5/2006	-	-	85.47	-	-	4,015.54	3,930.07
7/11/2006	-	-	85.48	-	-	4,015.54	3,930.06
8/16/2006	-	-	85.52	-	-	4,015.54	3,930.02
9/7/2006	-	-	85.43	-	-	4,015.54	3,930.11
10/11/2006	-	-	85.41	-	-	4,015.54	3,930.13
11/8/2006	-	-	85.31	-	-	4,015.54	3,930.23
12/4/2006	-	-	85.88	-	-	4,015.54	3,929.66
1/4/2007	-	-	85.20	-	-	4,015.54	3,930.34
2/27/2007	-	-	85.16	-	-	4,015.54	3,930.38
3/20/2007	-	-	85.33	-	-	4,015.54	3,930.21
4/17/2007	-	-	85.17	-	-	4,015.54	3,930.37
5/7/2007	-	-	85.40	-	-	4,015.54	3,930.14
6/27/2007	-	-	85.27	-	-	4,015.54	3,930.27
7/19/2007	-	-	85.13	-	-	4,015.54	3,930.41

APPENDIX C
MW-11 Historical Groundwater Gauging Data
Maljamar E&P
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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
8/21/2007	-	-	85.08	-	-	4,015.54	3,930.46
9/17/2007	-	-	85.05	-	-	4,015.54	3,930.49
10/16/2007	-	-	84.97	-	-	4,015.54	3,930.57
11/20/2007	-	-	85.02	-	-	4,015.54	3,930.52
12/21/2007	-	-	84.81	-	-	4,015.54	3,930.73
1/22/2008	-	-	85.27	-	-	4,015.54	3,930.27
2/27/2008	-	-	85.20	-	-	4,015.54	3,930.34
3/25/2008	-	-	84.99	-	-	4,015.54	3,930.55
4/29/2008	-	-	84.98	-	-	4,015.54	3,930.56
5/5/2008	-	-	84.93	-	-	4,015.54	3,930.61
6/10/2008	-	-	84.94	-	-	4,015.54	3,930.60
7/15/2008	-	-	84.90	-	-	4,015.54	3,930.64
8/19/2008	-	-	84.88	-	-	4,015.54	3,930.66
9/16/2008	-	-	85.13	-	-	4,015.54	3,930.41
10/15/2008	-	-	85.03	-	-	4,015.54	3,930.51
11/12/2008	-	-	84.72	-	-	4,015.54	3,930.82
12/11/2008	-	-	84.92	-	-	4,015.54	3,930.62
1/13/2009	-	-	85.15	-	-	4,015.54	3,930.39
2/11/2009	-	-	84.85	-	-	4,015.54	3,930.69
3/10/2009	-	-	84.63	-	-	4,015.54	3,930.91
4/13/2009	-	-	84.79	-	-	4,015.54	3,930.75
5/1/2009	-	-	84.64	-	-	4,015.54	3,930.90
6/8/2009	-	-	84.51	-	-	4,015.54	3,931.03
7/13/2009	-	-	84.61	-	-	4,015.54	3,930.93
8/10/2009	-	-	84.60	-	-	4,015.54	3,930.94
9/15/2009	-	-	84.44	-	-	4,015.54	3,931.10
10/6/2009	-	-	84.34	-	-	4,015.54	3,931.20
11/9/2009	-	-	84.58	-	-	4,015.54	3,930.96

APPENDIX C
MW-11 Historical Groundwater Gauging Data
Maljamar E&P
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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
12/23/2009	-	-	84.06	-	-	4,015.54	3,931.48
1/20/2010	-	-	83.99	-	-	4,015.54	3,931.55
2/9/2010	-	-	84.64	-	-	4,015.54	3,930.90
3/9/2010	-	-	84.23	-	-	4,015.54	3,931.31
4/12/2010	-	-	84.54	-	-	4,015.54	3,931.00
5/24/2010	-	-	84.34	-	-	4,015.54	3,931.20
6/14/2010	-	-	84.48	-	-	4,015.54	3,931.06
7/20/2010	-	-	84.54	-	-	4,015.54	3,931.00
8/11/2010	-	-	84.57	-	-	4,015.54	3,930.97
9/21/2010	-	-	84.56	-	-	4,015.54	3,930.98
10/20/2010	-	-	84.62	-	-	4,015.54	3,930.92
11/8/2010	-	-	84.48	-	-	4,015.54	3,931.06
12/7/2010	-	-	84.58	-	-	4,015.54	3,930.96
1/18/2011	-	-	84.61	-	-	4,015.54	3,930.93
2/8/2011	-	-	84.38	-	-	4,015.54	3,931.16
3/8/2011	-	-	84.40	-	-	4,015.54	3,931.14
4/13/2011	-	-	84.61	-	-	4,015.54	3,930.93
5/23/2011	-	-	84.54	-	-	4,015.54	3,931.00
6/28/2011	-	-	84.85	-	-	4,015.54	3,930.69
7/19/2011	-	-	84.73	-	-	4,015.54	3,930.81
8/31/2011	-	-	84.61	-	-	4,015.54	3,930.93
9/27/2011	-	-	84.66	-	-	4,015.54	3,930.88
10/24/2011	-	-	84.79	-	-	4,015.54	3,930.75
11/29/2011	-	-	84.99	-	-	4,015.54	3,930.55
12/23/2011	-	-	84.83	-	-	4,015.54	3,930.71
1/31/2012	-	-	84.77	-	-	4,015.54	3,930.77
2/29/2012	-	-	84.81	-	-	4,015.54	3,930.73
3/27/2012	-	-	84.85	-	-	4,015.54	3,930.69

APPENDIX C
MW-11 Historical Groundwater Gauging Data
Maljamar E&P
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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
4/18/2012	-	-	84.91	-	-	4,015.54	3,930.63
5/21/2012	-	-	85.15	-	-	4,015.54	3,930.39
7/17/2012	-	-	84.97	-	-	4,015.54	3,930.57
8/21/2012	-	-	84.97	-	-	4,015.54	3,930.57
9/17/2012	-	-	84.83	-	-	4,015.54	3,930.71
12/13/2012	-	-	85.15	-	-	4,015.54	3,930.39
1/9/2013	-	-	85.24	-	-	4,015.54	3,930.30
2/6/2013	-	-	85.03	-	-	4,015.54	3,930.51
3/6/2013	-	-	85.33	-	-	4,015.54	3,930.21
5/1/2013	-	-	85.11	-	-	4,015.54	3,930.43
6/5/2013	-	-	85.29	-	-	4,015.54	3,930.25
7/3/2013	-	-	85.51	-	-	4,015.54	3,930.03
7/30/2013	-	-	85.55	-	-	4,015.54	3,929.99
8/15/2013	-	-	85.58	-	-	4,015.54	3,929.96
10/2/2013	-	-	85.50	-	-	4,015.54	3,930.04
12/23/2013	-	-	85.86	-	-	4,015.54	3,929.68
1/9/2014	-	-	85.46	-	-	4,015.54	3,930.08
2/12/2014	-	-	85.73	-	-	4,015.54	3,929.81
3/19/2014	-	-	85.85	-	-	4,015.54	3,929.69
4/3/2014	-	-	85.46	-	-	4,015.54	3,930.08
5/7/2014	-	-	85.46	-	-	4,015.54	3,930.08
6/5/2014	-	-	85.54	-	-	4,015.54	3,930.00
7/1/2014	-	-	85.76	-	-	4,015.54	3,929.78
7/22/2014	-	-	85.90	-	-	4,015.54	3,929.64
8/5/2014	-	-	85.88	-	-	4,015.54	3,929.66
9/4/2014	-	-	85.73	-	-	4,015.54	3,929.81
10/2/2014	-	-	85.77	-	-	4,015.54	3,929.77
11/6/2014	-	-	86.22	-	-	4,015.54	3,929.32

APPENDIX C
MW-11 Historical Groundwater Gauging Data
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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
12/4/2014	-	-	85.79	-	-	4,015.54	3,929.75
8/24/2015	-	-	86.21	-	-	4,015.54	3,929.33
1/20/2016	-	-	85.91	-	-	4,015.54	3,929.63
2/16/2016	-	-	85.94	-	-	4,015.54	3,929.60
3/15/2016	-	-	85.86	-	-	4,015.54	3,929.68
4/20/2016	-	-	85.90	-	-	4,015.54	3,929.64
5/17/2016	-	-	86.00	-	-	4,015.54	3,929.54
8/16/2016	-	-	85.85	-	-	4,015.54	3,929.69
9/20/2016	-	-	85.75	-	-	4,015.54	3,929.79
10/18/2016	-	-	85.56	-	-	4,015.54	3,929.98
12/20/2016	-	-	85.82	-	-	4,015.54	3,929.72
8/3/2017	120	-	86.32	-	-	4,015.54	3,929.22
8/16/2018	-	-	84.80	-	-	4,015.54	3,930.74
8/15/2019	-	-	84.85	-	-	4,015.54	3,930.69
8/18/2020	119.7	-	84.90	-	-	4,015.54	3,930.64
8/10/2021	-	-	85.89	-	-	4,015.54	3,929.65
10/4/2022	120	-	85.93	-	-	4,015.54	3,929.61
9/13/2023	-	-	86.13	-	-	4,015.54	3,929.41

Notes:

PSH Phase-Separated Hydrocarbons
 AMSL Above Mean Sea Level
 BTOC Below Top of Casing
 - No Measurement

APPENDIX C
MW-12 Historical Groundwater Gauging Data
Maljamar E&P
Lea County, New Mexico

Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
12/13/2001	-	-	91.43	-	-	4,022.71	3,931.28
3/22/2002	-	-	94.38	-	-	4,022.71	3,928.33
9/16/2002	-	-	94.51	-	-	4,022.71	3,928.20
9/20/2002	-	-	94.31	-	-	4,022.71	3,928.40
4/5/2004	-	-	94.59	-	-	4,022.71	3,928.12
5/17/2004	-	-	94.60	-	-	4,022.71	3,928.11
5/24/2004	-	-	94.51	-	-	4,022.71	3,928.20
6/1/2004	-	-	94.53	-	-	4,022.71	3,928.18
6/7/2004	-	-	94.45	-	-	4,022.71	3,928.26
6/15/2004	-	-	94.56	-	-	4,022.71	3,928.15
6/21/2004	-	-	94.57	-	-	4,022.71	3,928.14
6/28/2004	-	-	94.84	-	-	4,022.71	3,927.87
7/6/2004	-	-	94.70	-	-	4,022.71	3,928.01
7/12/2004	-	-	94.80	-	-	4,022.71	3,927.91
7/19/2004	-	-	94.74	-	-	4,022.71	3,927.97
7/26/2004	-	-	94.92	-	-	4,022.71	3,927.79
8/2/2004	-	-	94.77	-	-	4,022.71	3,927.94
8/10/2004	-	-	94.88	-	-	4,022.71	3,927.83
8/16/2004	-	-	94.86	-	-	4,022.71	3,927.85
8/23/2004	-	-	94.60	-	-	4,022.71	3,928.11
8/30/2004	-	-	94.82	-	-	4,022.71	3,927.89
9/8/2004	-	-	94.89	-	-	4,022.71	3,927.82
10/8/2004	-	-	94.83	-	-	4,022.71	3,927.88
12/30/2004	-	-	94.72	-	-	4,022.71	3,927.99
1/17/2005	-	-	95.06	-	-	4,022.71	3,927.65
2/9/2005	-	-	94.94	-	-	4,022.71	3,927.77
3/9/2005	-	-	94.92	-	-	4,022.71	3,927.79
4/5/2005	-	-	94.58	-	-	4,022.71	3,928.13

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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
5/10/2005	-	-	94.61	-	-	4,022.71	3,928.10
6/8/2005	-	-	94.58	-	-	4,022.71	3,928.13
7/5/2005	-	-	94.84	-	-	4,022.71	3,927.87
8/8/2005	-	-	94.78	-	-	4,022.71	3,927.93
9/14/2005	-	-	94.71	-	-	4,022.71	3,928.00
10/12/2005	-	-	94.82	-	-	4,022.71	3,927.89
11/9/2005	-	-	94.92	-	-	4,022.71	3,927.79
12/14/2005	-	-	94.70	-	-	4,022.71	3,928.01
1/12/2006	-	-	94.50	-	-	4,022.71	3,928.21
2/2/2006	-	-	94.58	-	-	4,022.71	3,928.13
3/7/2006	-	-	94.76	-	-	4,022.71	3,927.95
4/5/2006	-	-	94.67	-	-	4,022.71	3,928.04
5/8/2006	-	-	94.61	-	-	4,022.71	3,928.10
6/5/2006	-	-	94.77	-	-	4,022.71	3,927.94
7/11/2006	-	-	94.84	-	-	4,022.71	3,927.87
8/16/2006	-	-	94.93	-	-	4,022.71	3,927.78
9/7/2006	-	-	94.86	-	-	4,022.71	3,927.85
10/11/2006	-	-	94.86	-	-	4,022.71	3,927.85
11/8/2006	-	-	94.72	-	-	4,022.71	3,927.99
12/4/2006	-	-	95.35	-	-	4,022.71	3,927.36
1/4/2007	-	-	94.68	-	-	4,022.71	3,928.03
2/27/2007	-	-	94.73	-	-	4,022.71	3,927.98
3/20/2007	-	-	94.93	-	-	4,022.71	3,927.78
4/17/2007	-	-	94.73	-	-	4,022.71	3,927.98
5/7/2007	-	-	94.95	-	-	4,022.71	3,927.76
6/27/2007	-	-	94.42	-	-	4,022.71	3,928.29
7/19/2007	-	-	94.71	-	-	4,022.71	3,928.00
8/21/2007	-	-	94.77	-	-	4,022.71	3,927.94

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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
9/17/2007	-	-	94.90	-	-	4,022.71	3,927.81
10/16/2007	-	-	98.83	-	-	4,022.71	3,923.88
11/20/2007	-	-	99.07	-	-	4,022.71	3,923.64
12/21/2007	-	-	98.82	-	-	4,022.53	3,923.71
1/22/2008	-	-	97.14	-	-	4,022.53	3,925.39
2/27/2008	-	-	97.32	-	-	4,022.53	3,925.21
3/25/2008	-	-	98.91	-	-	4,022.53	3,923.62
4/29/2008	-	-	98.87	-	-	4,022.53	3,923.66
5/5/2008	-	-	98.82	-	-	4,022.53	3,923.71
6/10/2008	-	-	98.63	-	-	4,022.53	3,923.90
7/15/2008	-	-	98.65	-	-	4,022.53	3,923.88
8/19/2008	-	-	98.43	-	-	4,022.53	3,924.10
9/16/2008	-	-	98.92	-	-	4,022.53	3,923.61
10/15/2008	-	-	98.84	-	-	4,022.53	3,923.69
11/12/2008	-	-	98.52	-	-	4,022.53	3,924.01
12/11/2008	-	-	98.48	-	-	4,022.53	3,924.05
1/13/2009	-	-	98.86	-	-	4,022.53	3,923.67
2/11/2009	-	-	98.52	-	-	4,022.53	3,924.01
3/10/2009	-	-	98.29	-	-	4,022.53	3,924.24
4/13/2009	-	-	98.44	-	-	4,022.53	3,924.09
5/1/2009	-	-	98.27	-	-	4,022.53	3,924.26
6/8/2009	-	-	98.25	-	-	4,022.53	3,924.28
7/13/2009	-	-	98.28	-	-	4,022.53	3,924.25
8/10/2009	-	-	98.27	-	-	4,022.53	3,924.26
9/15/2009	-	-	98.04	-	-	4,022.53	3,924.49
10/6/2009	-	-	94.93	-	-	4,022.53	3,927.60
11/9/2009	-	-	97.97	-	-	4,022.53	3,924.56
12/23/2009	-	-	97.47	-	-	4,022.53	3,925.06

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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
1/20/2010	-	-	97.36	-	-	4,022.53	3,925.17
2/9/2010	-	-	97.98	-	-	4,022.53	3,924.55
3/9/2010	-	-	97.58	-	-	4,022.53	3,924.95
4/12/2010	-	-	97.85	-	-	4,022.53	3,924.68
5/24/2010	-	-	97.57	-	-	4,022.53	3,924.96
6/14/2010	-	-	98.32	-	-	4,022.53	3,924.21
7/20/2010	-	-	98.23	-	-	4,022.53	3,924.30
8/11/2010	-	-	98.22	-	-	4,022.53	3,924.31
9/21/2010	-	-	98.01	-	-	4,022.53	3,924.52
10/20/2010	-	-	98.13	-	-	4,022.53	3,924.40
11/8/2010	-	-	97.97	-	-	4,022.53	3,924.56
12/7/2010	-	-	97.93	-	-	4,022.53	3,924.60
1/18/2011	-	-	97.81	-	-	4,022.53	3,924.72
2/8/2011	-	-	96.88	-	-	4,022.53	3,925.65
3/8/2011	-	-	94.42	-	-	4,022.53	3,928.11
4/13/2011	-	-	94.36	-	-	4,022.53	3,928.17
5/23/2011	-	-	94.20	-	-	4,022.53	3,928.33
6/28/2011	-	-	97.80	-	-	4,022.53	3,924.73
7/19/2011	-	-	97.74	-	-	4,022.53	3,924.79
8/31/2011	-	-	97.65	-	-	4,022.53	3,924.88
9/27/2011	-	-	97.67	-	-	4,022.53	3,924.86
10/24/2011	-	-	96.44	-	-	4,022.53	3,926.09
11/29/2011	-	-	98.06	-	-	4,022.53	3,924.47
12/23/2011	-	-	97.87	-	-	4,022.53	3,924.66
1/31/2012	-	-	97.73	-	-	4,022.53	3,924.80
2/29/2012	-	-	97.83	-	-	4,022.53	3,924.70
3/27/2012	-	-	97.78	-	-	4,022.53	3,924.75
4/18/2012	-	-	97.80	-	-	4,022.53	3,924.73

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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
5/21/2012	-	-	98.02	-	-	4,022.53	3,924.51
7/17/2012	-	-	94.66	-	-	4,022.53	3,927.87
8/21/2012	-	-	97.65	-	-	4,022.53	3,924.88
9/17/2012	-	-	97.62	-	-	4,022.53	3,924.91
12/13/2012	-	-	97.87	-	-	4,022.53	3,924.66
1/9/2013	-	-	98.05	-	-	4,022.53	3,924.48
2/6/2013	-	-	94.89	-	-	4,022.53	3,927.64
3/6/2013	-	-	94.80	-	-	4,022.53	3,927.73
5/1/2013	-	-	94.36	-	-	4,022.53	3,928.17
6/5/2013	-	-	97.82	-	-	4,022.53	3,924.71
7/3/2013	-	-	98.07	-	-	4,022.53	3,924.46
7/30/2013	-	-	98.16	-	-	4,022.53	3,924.37
8/15/2013	-	-	98.36	-	-	4,022.53	3,924.17
10/2/2013	-	-	98.05	-	-	4,022.53	3,924.48
12/23/2013	-	-	98.45	-	-	4,022.53	3,924.08
1/9/2014	-	-	97.90	-	-	4,022.53	3,924.63
2/12/2014	-	-	98.05	-	-	4,022.53	3,924.48
3/19/2014	-	-	98.48	-	-	4,022.53	3,924.05
4/3/2014	-	-	98.07	-	-	4,022.53	3,924.46
5/7/2014	-	-	98.09	-	-	4,022.53	3,924.44
6/5/2014	-	-	98.13	-	-	4,022.53	3,924.40
7/1/2014	-	-	98.33	-	-	4,022.53	3,924.20
7/22/2014	-	-	98.45	-	-	4,022.53	3,924.08
8/5/2014	-	-	98.58	-	-	4,022.53	3,923.95
9/4/2014	-	-	98.42	-	-	4,022.53	3,924.11
10/2/2014	-	-	98.43	-	-	4,022.53	3,924.10
11/6/2014	-	-	98.79	-	-	4,022.53	3,923.74
12/4/2014	-	-	98.36	-	-	4,022.53	3,924.17

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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
4/21/2015	-	-	94.69	-	-	4,022.53	3,927.84
5/15/2015	-	-	94.62	-	-	4,022.53	3,927.91
6/11/2015	-	-	94.62	-	-	4,022.53	3,927.91
8/24/2015	-	-	95.00	-	-	4,022.53	3,927.53
11/23/2015	-	-	94.87	-	-	4,022.53	3,927.66
1/20/2016	-	-	94.79	-	-	4,022.53	3,927.74
2/16/2016	-	-	94.80	-	-	4,022.53	3,927.73
3/15/2016	-	-	94.74	-	-	4,022.53	3,927.79
4/20/2016	-	-	94.79	-	-	4,022.53	3,927.74
5/17/2016	-	-	95.25	-	-	4,022.53	3,927.28
8/16/2016	-	-	94.90	-	-	4,022.53	3,927.63
9/20/2016	-	-	94.89	-	-	4,022.53	3,927.64
10/18/2016	-	-	94.74	-	-	4,022.53	3,927.79
12/20/2016	-	-	95.00	-	-	4,022.53	3,927.53
8/3/2017	120	-	94.72	-	-	4,022.53	3,927.81
8/16/2018	-	-	94.57	-	-	4,022.53	3,927.96
8/16/2019	123	-	94.43	-	-	4,022.53	3,928.10
8/18/2020	122.85	-	94.27	-	-	4,022.53	3,928.26
8/10/2021	-	-	97.40	-	-	4,022.53	3,925.13
10/4/2022	123	-	97.35	-	-	4,022.53	3,925.18
9/13/2023	-	-	94.63	-	-	4,022.53	3,927.90

Notes:

PSH Phase-Separated Hydrocarbons
 AMSL Above Mean Sea Level
 BTOC Below Top of Casing
 - No Measurement

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12/13/2001	-	-	103.76	-	-	4,031.96	3,928.20
3/22/2002	-	-	107.18	-	-	4,031.96	3,924.78
9/16/2002	-	-	107.58	-	-	4,031.96	3,924.38
9/20/2002	-	-	107.48	-	-	4,031.96	3,924.48
4/5/2004	-	-	108.04	-	-	4,031.96	3,923.92
5/17/2004	-	-	108.06	-	-	4,031.96	3,923.90
5/24/2004	-	-	107.97	-	-	4,031.96	3,923.99
6/1/2004	-	-	107.97	-	-	4,031.96	3,923.99
6/7/2004	-	-	107.89	-	-	4,031.96	3,924.07
6/15/2004	-	-	107.99	-	-	4,031.96	3,923.97
6/21/2004	-	-	107.98	-	-	4,031.96	3,923.98
6/28/2004	-	-	108.29	-	-	4,031.96	3,923.67
7/6/2004	-	-	108.12	-	-	4,031.96	3,923.84
7/12/2004	-	-	108.22	-	-	4,031.96	3,923.74
7/19/2004	-	-	108.16	-	-	4,031.96	3,923.80
7/26/2004	-	-	108.34	-	-	4,031.96	3,923.62
8/2/2004	-	-	108.17	-	-	4,031.96	3,923.79
8/10/2004	-	-	108.29	-	-	4,031.96	3,923.67
8/16/2004	-	-	108.27	-	-	4,031.96	3,923.69
8/23/2004	-	-	108.01	-	-	4,031.96	3,923.95
8/30/2004	-	-	108.24	-	-	4,031.96	3,923.72
9/8/2004	-	-	108.31	-	-	4,031.96	3,923.65
10/8/2004	-	-	108.23	-	-	4,031.96	3,923.73
12/30/2004	-	-	108.12	-	-	4,031.96	3,923.84
1/17/2005	-	-	108.49	-	-	4,031.96	3,923.47
2/9/2005	-	-	108.38	-	-	4,031.96	3,923.58
3/9/2005	-	-	108.44	-	-	4,031.96	3,923.52
4/5/2005	-	-	108.04	-	-	4,031.96	3,923.92

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5/10/2005	-	-	108.09	-	-	4,031.96	3,923.87
6/8/2005	-	-	108.18	-	-	4,031.96	3,923.78
7/5/2005	-	-	108.47	-	-	4,031.96	3,923.49
8/8/2005	-	-	108.37	-	-	4,031.96	3,923.59
9/14/2005	-	-	108.28	-	-	4,031.96	3,923.68
10/12/2005	-	-	108.42	-	-	4,031.96	3,923.54
11/9/2005	-	-	108.51	-	-	4,031.96	3,923.45
12/14/2005	-	-	108.31	-	-	4,031.96	3,923.65
1/12/2006	-	-	108.16	-	-	4,031.96	3,923.80
2/2/2006	-	-	108.17	-	-	4,031.96	3,923.79
3/7/2006	-	-	108.33	-	-	4,031.96	3,923.63
4/5/2006	-	-	108.22	-	-	4,031.96	3,923.74
5/8/2006	-	-	108.18	-	-	4,031.96	3,923.78
6/5/2006	-	-	108.30	-	-	4,031.96	3,923.66
7/11/2006	-	-	108.34	-	-	4,031.96	3,923.62
8/16/2006	-	-	108.43	-	-	4,031.96	3,923.53
9/7/2006	-	-	108.32	-	-	4,031.96	3,923.64
10/11/2006	-	-	108.31	-	-	4,031.96	3,923.65
11/8/2006	-	-	108.18	-	-	4,031.96	3,923.78
12/4/2006	-	-	108.79	-	-	4,031.96	3,923.17
1/4/2007	-	-	108.11	-	-	4,031.96	3,923.85
2/27/2007	-	-	108.16	-	-	4,031.96	3,923.80
3/20/2007	-	-	108.37	-	-	4,031.96	3,923.59
4/17/2007	-	-	108.13	-	-	4,031.96	3,923.83
5/7/2007	-	-	108.37	-	-	4,031.96	3,923.59
6/27/2007	-	-	108.23	-	-	4,031.96	3,923.73
7/19/2007	-	-	108.13	-	-	4,031.96	3,923.83
8/21/2007	-	-	108.10	-	-	4,031.96	3,923.86

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9/17/2007	-	-	108.08	-	-	4,031.96	3,923.88
10/16/2007	-	-	108.03	-	-	4,031.96	3,923.93
11/20/2007	-	-	108.11	-	-	4,031.96	3,923.85
12/21/2007	-	-	107.92	-	-	4,031.96	3,924.04
1/22/2008	-	-	108.42	-	-	4,031.96	3,923.54
2/27/2008	-	-	108.40	-	-	4,031.96	3,923.56
3/25/2008	-	-	108.22	-	-	4,031.96	3,923.74
4/29/2008	-	-	108.22	-	-	4,031.96	3,923.74
5/5/2008	-	-	108.22	-	-	4,031.96	3,923.74
6/10/2008	-	-	108.23	-	-	4,031.96	3,923.73
7/15/2008	-	-	108.23	-	-	4,031.96	3,923.73
8/19/2008	-	-	108.24	-	-	4,031.96	3,923.72
9/16/2008	-	-	108.52	-	-	4,031.96	3,923.44
10/15/2008	-	-	108.44	-	-	4,031.96	3,923.52
11/12/2008	-	-	108.15	-	-	4,031.96	3,923.81
12/11/2008	-	-	108.34	-	-	4,031.96	3,923.62
1/13/2009	-	-	108.55	-	-	4,031.96	3,923.41
2/11/2009	-	-	108.27	-	-	4,031.96	3,923.69
3/10/2009	-	-	108.05	-	-	4,031.96	3,923.91
4/13/2009	-	-	108.20	-	-	4,031.96	3,923.76
5/1/2009	-	-	108.02	-	-	4,031.96	3,923.94
6/8/2009	-	-	107.90	-	-	4,031.96	3,924.06
7/13/2009	-	-	107.97	-	-	4,031.96	3,923.99
8/10/2009	-	-	107.98	-	-	4,031.96	3,923.98
9/15/2009	-	-	107.83	-	-	4,031.96	3,924.13
10/6/2009	-	-	107.73	-	-	4,031.96	3,924.23
11/9/2009	-	-	107.95	-	-	4,031.96	3,924.01
12/23/2009	-	-	107.45	-	-	4,031.96	3,924.51

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1/20/2010	-	-	107.40	-	-	4,031.96	3,924.56
2/9/2010	-	-	108.03	-	-	4,031.96	3,923.93
3/9/2010	-	-	107.65	-	-	4,031.96	3,924.31
4/12/2010	-	-	107.94	-	-	4,031.96	3,924.02
5/24/2010	-	-	107.76	-	-	4,031.96	3,924.20
6/14/2010	-	-	107.90	-	-	4,031.96	3,924.06
7/20/2010	-	-	107.98	-	-	4,031.96	3,923.98
8/11/2010	-	-	108.00	-	-	4,031.96	3,923.96
9/21/2010	-	-	107.90	-	-	4,031.96	3,924.06
10/20/2010	-	-	108.08	-	-	4,031.96	3,923.88
11/8/2010	-	-	107.93	-	-	4,031.96	3,924.03
12/7/2010	-	-	107.99	-	-	4,031.96	3,923.97
1/18/2011	-	-	108.03	-	-	4,031.96	3,923.93
2/8/2011	-	-	108.77	-	-	4,031.96	3,923.19
3/8/2011	-	-	107.82	-	-	4,031.96	3,924.14
4/13/2011	-	-	108.03	-	-	4,031.96	3,923.93
5/23/2011	-	-	108.01	-	-	4,031.96	3,923.95
6/28/2011	-	-	108.28	-	-	4,031.96	3,923.68
7/19/2011	-	-	108.19	-	-	4,031.96	3,923.77
8/31/2011	-	-	108.05	-	-	4,031.96	3,923.91
9/27/2011	-	-	108.09	-	-	4,031.96	3,923.87
10/24/2011	-	-	108.19	-	-	4,031.96	3,923.77
11/29/2011	-	-	108.31	-	-	4,031.96	3,923.65
12/23/2011	-	-	108.13	-	-	4,031.96	3,923.83
1/31/2012	-	-	108.14	-	-	4,031.96	3,923.82
2/29/2012	-	-	108.06	-	-	4,031.96	3,923.90
3/27/2012	-	-	108.05	-	-	4,031.96	3,923.91
4/18/2012	-	-	108.12	-	-	4,031.96	3,923.84

APPENDIX C
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Maljamar E&P
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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
5/21/2012	-	-	108.36	-	-	4,031.96	3,923.60
7/17/2012	-	-	108.18	-	-	4,031.96	3,923.78
8/21/2012	-	-	108.21	-	-	4,031.96	3,923.75
9/17/2012	-	-	108.08	-	-	4,031.96	3,923.88
12/13/2012	-	-	108.40	-	-	4,031.96	3,923.56
1/9/2013	-	-	108.49	-	-	4,031.96	3,923.47
2/6/2013	-	-	108.28	-	-	4,031.96	3,923.68
3/6/2013	-	-	108.55	-	-	4,031.96	3,923.41
6/5/2013	-	-	108.44	-	-	4,031.96	3,923.52
7/3/2013	-	-	108.61	-	-	4,031.96	3,923.35
7/30/2013	-	-	108.65	-	-	4,031.96	3,923.31
8/15/2013	-	-	108.65	-	-	4,031.96	3,923.31
10/2/2013	-	-	108.75	-	-	4,031.96	3,923.21
12/23/2013	-	-	108.83	-	-	4,031.96	3,923.13
1/9/2014	-	-	118.34	-	-	4,031.96	3,913.62
2/12/2014	-	-	108.53	-	-	4,031.96	3,923.43
3/19/2014	-	-	108.50	-	-	4,031.96	3,923.46
4/3/2014	-	-	108.05	-	-	4,031.96	3,923.91
5/7/2014	-	-	107.90	-	-	4,031.96	3,924.06
6/5/2014	-	-	107.92	-	-	4,031.96	3,924.04
7/1/2014	-	-	108.01	-	-	4,031.96	3,923.95
7/22/2014	-	-	108.12	-	-	4,031.96	3,923.84
8/5/2014	-	-	108.06	-	-	4,031.96	3,923.90
9/4/2014	-	-	107.93	-	-	4,031.96	3,924.03
10/2/2014	-	-	107.93	-	-	4,031.96	3,924.03
11/6/2014	-	-	108.31	-	-	4,031.96	3,923.65
12/4/2014	-	-	107.93	-	-	4,031.96	3,924.03
8/24/2015	-	-	108.50	-	-	4,031.96	3,923.46

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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
1/20/2016	-	-	108.60	-	-	4,031.96	3,923.36
2/16/2016	-	-	108.65	-	-	4,031.96	3,923.31
3/15/2016	-	-	108.65	-	-	4,031.96	3,923.31
4/20/2016	-	-	108.74	-	-	4,031.96	3,923.22
5/17/2016	-	-	108.92	-	-	4,031.96	3,923.04
8/16/2016	-	-	108.92	-	-	4,031.96	3,923.04
9/20/2016	-	-	108.86	-	-	4,031.96	3,923.10
10/18/2016	-	-	108.74	-	-	4,031.96	3,923.22
12/20/2016	-	-	109.02	-	-	4,031.96	3,922.94
8/3/2017	127	-	108.80	-	-	4,031.96	3,923.16
8/16/2018	-	-	108.40	-	-	4,031.96	3,923.56
8/15/2019	-	-	108.27	-	-	4,031.96	3,923.69
8/18/2020	125.1	-	108.37	-	-	4,031.96	3,923.59
8/10/2021	-	-	108.44	-	-	4,031.96	3,923.52
10/4/2022	125	-	108.41	-	-	4,031.96	3,923.55
9/13/2023	-	-	109.25	-	-	4,031.96	3,922.71

Notes:

PSH Phase-Separated Hydrocarbons
 AMSL Above Mean Sea Level
 BTOC Below Top of Casing
 - No Measurement

APPENDIX C
MW-14 Historical Groundwater Gauging Data
Maljamar E&P
Lea County, New Mexico

Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
12/13/2001	-	-	74.67	-	-	4,006.98	3,932.31
3/22/2002	-	-	74.67	-	-	4,006.98	3,932.31
9/16/2002	-	-	74.56	-	-	4,006.98	3,932.42
9/20/2002	-	-	74.40	-	-	4,006.98	3,932.58
4/5/2004	-	-	75.20	-	-	4,006.98	3,931.78
5/17/2004	-	-	75.25	-	-	4,006.98	3,931.73
5/24/2004	-	-	75.17	-	-	4,006.98	3,931.81
6/1/2004	-	-	75.18	-	-	4,006.98	3,931.80
6/7/2004	-	-	75.12	-	-	4,006.98	3,931.86
6/15/2004	-	-	75.23	-	-	4,006.98	3,931.75
6/21/2004	-	-	75.24	-	-	4,006.98	3,931.74
6/28/2004	-	-	75.55	-	-	4,006.98	3,931.43
7/6/2004	-	-	75.37	-	-	4,006.98	3,931.61
7/12/2004	-	-	75.49	-	-	4,006.98	3,931.49
7/19/2004	-	-	75.43	-	-	4,006.98	3,931.55
7/26/2004	-	-	75.64	-	-	4,006.98	3,931.34
8/2/2004	-	-	75.49	-	-	4,006.98	3,931.49
8/10/2004	-	-	75.62	-	-	4,006.98	3,931.36
8/16/2004	-	-	75.59	-	-	4,006.98	3,931.39
8/23/2004	-	-	75.32	-	-	4,006.98	3,931.66
8/30/2004	-	-	75.57	-	-	4,006.98	3,931.41
9/8/2004	-	-	75.65	-	-	4,006.98	3,931.33
10/8/2004	-	-	75.61	-	-	4,006.98	3,931.37
12/30/2004	-	-	75.45	-	-	4,006.98	3,931.53
1/17/2005	-	-	75.74	-	-	4,006.98	3,931.24
2/9/2005	-	-	75.46	-	-	4,006.98	3,931.52
3/9/2005	-	-	75.37	-	-	4,006.98	3,931.61
4/5/2005	-	-	74.84	-	-	4,006.98	3,932.14

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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
5/10/2005	-	-	74.72	-	-	4,006.98	3,932.26
6/8/2005	-	-	74.71	-	-	4,006.98	3,932.27
7/5/2005	-	-	74.93	-	-	4,006.98	3,932.05
8/8/2005	-	-	74.78	-	-	4,006.98	3,932.20
9/14/2005	-	-	74.62	-	-	4,006.98	3,932.36
10/12/2005	-	-	74.69	-	-	4,006.98	3,932.29
11/9/2005	-	-	74.69	-	-	4,006.98	3,932.29
12/14/2005	-	-	74.29	-	-	4,006.98	3,932.69
1/12/2006	-	-	74.01	-	-	4,006.98	3,932.97
2/2/2006	-	-	73.91	-	-	4,006.98	3,933.07
3/7/2006	-	-	73.97	-	-	4,006.98	3,933.01
4/5/2006	-	-	73.80	-	-	4,006.98	3,933.18
5/8/2006	-	-	73.69	-	-	4,006.98	3,933.29
6/5/2006	-	-	73.78	-	-	4,006.98	3,933.20
7/11/2006	-	-	73.83	-	-	4,006.98	3,933.15
8/16/2006	-	-	73.94	-	-	4,006.98	3,933.04
9/7/2006	-	-	72.93	-	-	4,006.98	3,934.05
10/11/2006	-	-	73.95	-	-	4,006.98	3,933.03
11/8/2006	-	-	73.88	-	-	4,006.98	3,933.10
12/4/2006	-	-	74.53	-	-	4,006.98	3,932.45
1/4/2007	-	-	73.79	-	-	4,006.98	3,933.19
2/27/2007	-	-	73.73	-	-	4,006.98	3,933.25
3/20/2007	-	-	73.90	-	-	4,006.98	3,933.08
4/17/2007	-	-	73.68	-	-	4,006.98	3,933.30
5/7/2007	-	-	73.88	-	-	4,006.98	3,933.10
6/27/2007	-	-	73.80	-	-	4,006.98	3,933.18
7/19/2007	-	-	73.69	-	-	4,006.98	3,933.29
8/21/2007	-	-	73.61	-	-	4,006.98	3,933.37

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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
9/17/2007	-	-	73.54	-	-	4,006.98	3,933.44
10/16/2007	-	-	73.39	-	-	4,006.98	3,933.59
11/20/2007	-	-	73.34	-	-	4,006.98	3,933.64
12/21/2007	-	-	73.05	-	-	4,006.98	3,933.93
1/22/2008	-	-	73.44	-	-	4,006.98	3,933.54
2/27/2008	-	-	73.37	-	-	4,006.98	3,933.61
3/25/2008	-	-	73.17	-	-	4,006.98	3,933.81
4/29/2008	-	-	73.16	-	-	4,006.98	3,933.82
5/5/2008	-	-	73.14	-	-	4,006.98	3,933.84
6/10/2008	-	-	73.16	-	-	4,006.98	3,933.82
7/15/2008	-	-	73.25	-	-	4,006.98	3,933.73
8/19/2008	-	-	73.32	-	-	4,006.98	3,933.66
9/16/2008	-	-	73.68	-	-	4,006.98	3,933.30
10/15/2008	-	-	73.67	-	-	4,006.98	3,933.31
11/12/2008	-	-	73.44	-	-	4,006.98	3,933.54
12/11/2008	-	-	73.69	-	-	4,006.98	3,933.29
1/13/2009	-	-	73.89	-	-	4,006.98	3,933.09
2/11/2009	-	-	73.57	-	-	4,006.98	3,933.41
3/10/2009	-	-	73.34	-	-	4,006.98	3,933.64
4/13/2009	-	-	73.43	-	-	4,006.98	3,933.55
5/1/2009	-	-	73.30	-	-	4,006.98	3,933.68
6/8/2009	-	-	73.15	-	-	4,006.98	3,933.83
7/13/2009	-	-	73.29	-	-	4,006.98	3,933.69
8/10/2009	-	-	73.32	-	-	4,006.98	3,933.66
9/15/2009	-	-	73.22	-	-	4,006.98	3,933.76
10/6/2009	-	-	73.15	-	-	4,006.98	3,933.83
11/9/2009	-	-	73.43	-	-	4,006.98	3,933.55
12/23/2009	-	-	72.93	-	-	4,006.98	3,934.05

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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
1/20/2010	-	-	72.88	-	-	4,006.98	3,934.10
2/9/2010	-	-	73.48	-	-	4,006.98	3,933.50
3/9/2010	-	-	73.09	-	-	4,006.98	3,933.89
4/12/2010	-	-	73.40	-	-	4,006.98	3,933.58
5/24/2010	-	-	73.24	-	-	4,006.98	3,933.74
6/14/2010	-	-	73.40	-	-	4,006.98	3,933.58
7/20/2010	-	-	73.53	-	-	4,006.98	3,933.45
8/11/2010	-	-	73.59	-	-	4,006.98	3,933.39
9/21/2010	-	-	73.55	-	-	4,006.98	3,933.43
10/20/2010	-	-	73.74	-	-	4,006.98	3,933.24
11/8/2010	-	-	73.62	-	-	4,006.98	3,933.36
12/7/2010	-	-	73.73	-	-	4,006.98	3,933.25
1/18/2011	-	-	73.73	-	-	4,006.98	3,933.25
2/8/2011	-	-	73.53	-	-	4,006.98	3,933.45
3/8/2011	-	-	73.54	-	-	4,006.98	3,933.44
4/13/2011	-	-	73.78	-	-	4,006.98	3,933.20
5/23/2011	-	-	73.75	-	-	4,006.98	3,933.23
6/28/2011	-	-	74.04	-	-	4,006.98	3,932.94
7/19/2011	-	-	73.93	-	-	4,006.98	3,933.05
8/31/2011	-	-	73.82	-	-	4,006.98	3,933.16
9/27/2011	-	-	73.92	-	-	4,006.98	3,933.06
10/24/2011	-	-	74.05	-	-	4,006.98	3,932.93
11/29/2011	-	-	74.22	-	-	4,006.98	3,932.76
12/23/2011	-	-	74.09	-	-	4,006.98	3,932.89
1/31/2012	-	-	74.05	-	-	4,006.98	3,932.93
2/29/2012	-	-	74.12	-	-	4,006.98	3,932.86
3/27/2012	-	-	74.05	-	-	4,006.98	3,932.93
4/18/2012	-	-	74.23	-	-	4,006.98	3,932.75

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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
5/21/2012	-	-	74.49	-	-	4,006.98	3,932.49
7/17/2012	-	-	74.41	-	-	4,006.98	3,932.57
8/21/2012	-	-	74.46	-	-	4,006.98	3,932.52
9/17/2012	-	-	74.36	-	-	4,006.98	3,932.62
12/13/2012	-	-	74.26	-	-	4,006.98	3,932.72
1/9/2013	-	-	74.85	-	-	4,006.98	3,932.13
2/6/2013	-	-	74.66	-	-	4,006.98	3,932.32
3/6/2013	-	-	74.97	-	-	4,006.98	3,932.01
6/5/2013	-	-	74.93	-	-	4,006.98	3,932.05
7/3/2013	-	-	75.15	-	-	4,006.98	3,931.83
7/30/2013	-	-	75.14	-	-	4,006.98	3,931.84
8/15/2013	-	-	75.21	-	-	4,006.98	3,931.77
10/2/2013	-	-	75.15	-	-	4,006.98	3,931.83
12/23/2013	-	-	75.59	-	-	4,006.98	3,931.39
1/9/2014	-	-	75.23	-	-	4,006.98	3,931.75
2/12/2014	-	-	75.50	-	-	4,006.98	3,931.48
3/19/2014	-	-	75.63	-	-	4,006.98	3,931.35
4/3/2014	-	-	75.24	-	-	4,006.98	3,931.74
5/7/2014	-	-	75.26	-	-	4,006.98	3,931.72
6/5/2014	-	-	75.37	-	-	4,006.98	3,931.61
7/1/2014	-	-	75.60	-	-	4,006.98	3,931.38
7/22/2014	-	-	75.77	-	-	4,006.98	3,931.21
8/5/2014	-	-	75.77	-	-	4,006.98	3,931.21
9/4/2014	-	-	75.67	-	-	4,006.98	3,931.31
10/2/2014	-	-	75.70	-	-	4,006.98	3,931.28
11/6/2014	-	-	76.15	-	-	4,006.98	3,930.83
12/4/2014	-	-	75.78	-	-	4,006.98	3,931.20
8/24/2015	-	-	75.10	-	-	4,006.98	3,931.88

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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
1/20/2016	-	-	74.31	-	-	4,006.98	3,932.67
2/16/2016	-	-	74.22	-	-	4,006.98	3,932.76
3/15/2016	-	-	74.06	-	-	4,006.98	3,932.92
4/20/2016	-	-	74.02	-	-	4,006.98	3,932.96
5/17/2016	-	-	74.09	-	-	4,006.98	3,932.89
8/16/2016	-	-	73.91	-	-	4,006.98	3,933.07
9/20/2016	-	-	73.87	-	-	4,006.98	3,933.11
10/18/2016	-	-	73.70	-	-	4,006.98	3,933.28
12/20/2016	-	-	73.72	-	-	4,006.98	3,933.26
8/3/2017	120	-	78.35	-	-	4,006.98	3,928.63
8/16/2018	-	-	73.30	-	-	4,006.98	3,933.68
8/15/2019	-	-	73.70	-	-	4,006.98	3,933.28
8/18/2020	119.2	-	73.75	-	-	4,006.98	3,933.23
8/10/2021	-	-	74.03	-	-	4,006.98	3,932.95
10/4/2022	120	-	74.14	-	-	4,006.98	3,932.84
9/13/2023	-	-	75.41	-	-	4,006.98	3,931.57

Notes:

PSH Phase-Separated Hydrocarbons
 AMSL Above Mean Sea Level
 BTOC Below Top of Casing
 - No Measurement

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MW-19 Historical Groundwater Gauging Data
Maljamar E&P
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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
9/20/2002	-	-	117.23	-	-	4,037.34	3,920.11
4/5/2004	-	-	116.67	-	-	4,037.34	3,920.67
5/17/2004	-	-	116.62	-	-	4,037.34	3,920.72
5/24/2004	-	-	116.59	-	-	4,037.34	3,920.75
6/1/2004	-	-	116.57	-	-	4,037.34	3,920.77
6/7/2004	-	-	116.59	-	-	4,037.34	3,920.75
6/15/2004	-	-	116.53	-	-	4,037.34	3,920.81
6/21/2004	-	-	116.63	-	-	4,037.34	3,920.71
6/28/2004	-	-	116.68	-	-	4,037.34	3,920.66
7/6/2004	-	-	116.65	-	-	4,037.34	3,920.69
7/12/2004	-	-	116.66	-	-	4,037.34	3,920.68
7/19/2004	-	-	116.68	-	-	4,037.34	3,920.66
7/26/2004	-	-	116.73	-	-	4,037.34	3,920.61
8/2/2004	-	-	116.71	-	-	4,037.34	3,920.63
8/10/2004	-	-	116.71	-	-	4,037.34	3,920.63
8/16/2004	-	-	116.74	-	-	4,037.34	3,920.60
8/23/2004	-	-	116.69	-	-	4,037.34	3,920.65
8/30/2004	-	-	116.69	-	-	4,037.34	3,920.65
9/8/2004	-	-	116.73	-	-	4,037.34	3,920.61
10/8/2004	-	-	116.78	-	-	4,037.34	3,920.56
12/30/2004	-	-	116.76	-	-	4,037.34	3,920.58
1/17/2005	-	-	116.78	-	-	4,037.34	3,920.56
2/9/2005	-	-	116.76	-	-	4,037.34	3,920.58
3/9/2005	-	-	116.70	-	-	4,037.34	3,920.64
4/5/2005	-	-	116.64	-	-	4,037.34	3,920.70
5/10/2005	-	-	116.63	-	-	4,037.34	3,920.71
6/8/2005	-	-	116.57	-	-	4,037.34	3,920.77
7/5/2005	-	-	116.64	-	-	4,037.34	3,920.70

APPENDIX C
MW-19 Historical Groundwater Gauging Data
Maljamar E&P
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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
8/8/2005	-	-	116.77	-	-	4,037.34	3,920.57
9/15/2005	-	-	116.71	-	-	4,037.34	3,920.63
10/12/2005	-	-	116.70	-	-	4,037.34	3,920.64
11/9/2005	-	-	116.74	-	-	4,037.34	3,920.60
12/14/2005	-	-	116.74	-	-	4,037.34	3,920.60
1/12/2006	-	-	116.73	-	-	4,037.34	3,920.61
2/2/2006	-	-	116.70	-	-	4,037.34	3,920.64
3/7/2006	-	-	116.72	-	-	4,037.34	3,920.62
4/5/2006	-	-	116.68	-	-	4,037.34	3,920.66
5/8/2006	-	-	116.61	-	-	4,037.34	3,920.73
6/5/2006	-	-	116.66	-	-	4,037.34	3,920.68
7/11/2006	-	-	116.73	-	-	4,037.34	3,920.61
8/16/2006	-	-	116.74	-	-	4,037.34	3,920.60
9/7/2006	-	-	116.74	-	-	4,037.34	3,920.60
10/11/2006	-	-	116.80	-	-	4,037.34	3,920.54
11/8/2006	-	-	116.79	-	-	4,037.34	3,920.55
12/4/2006	-	-	116.90	-	-	4,037.34	3,920.44
1/4/2007	-	-	116.65	-	-	4,037.34	3,920.69
2/27/2007	-	-	116.71	-	-	4,037.34	3,920.63
3/20/2007	-	-	116.76	-	-	4,037.34	3,920.58
4/17/2007	-	-	116.61	-	-	4,037.34	3,920.73
5/7/2007	-	-	116.66	-	-	4,037.34	3,920.68
6/27/2007	-	-	116.59	-	-	4,037.34	3,920.75
7/19/2007	-	-	116.65	-	-	4,037.34	3,920.69
8/21/2007	-	-	116.63	-	-	4,037.34	3,920.71
9/17/2007	-	-	116.70	-	-	4,037.34	3,920.64
10/16/2007	-	-	116.66	-	-	4,037.34	3,920.68
11/20/2007	-	-	116.78	-	-	4,037.34	3,920.56

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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
12/21/2007	-	-	116.64	-	-	4,037.34	3,920.70
1/22/2008	-	-	116.88	-	-	4,037.34	3,920.46
2/27/2008	-	-	117.04	-	-	4,037.34	3,920.30
3/25/2008	-	-	116.88	-	-	4,037.34	3,920.46
4/29/2008	-	-	116.89	-	-	4,037.34	3,920.45
5/5/2008	-	-	116.82	-	-	4,037.34	3,920.52
6/10/2008	-	-	116.79	-	-	4,037.34	3,920.55
7/15/2008	-	-	116.88	-	-	4,037.34	3,920.46
8/19/2008	-	-	116.89	-	-	4,037.34	3,920.45
9/16/2008	-	-	117.17	-	-	4,037.34	3,920.17
10/15/2008	-	-	117.09	-	-	4,037.34	3,920.25
11/12/2008	-	-	116.82	-	-	4,037.34	3,920.52
12/11/2008	-	-	117.09	-	-	4,037.34	3,920.25
1/13/2009	-	-	117.28	-	-	4,037.34	3,920.06
2/11/2009	-	-	116.83	-	-	4,037.34	3,920.51
3/10/2009	-	-	116.78	-	-	4,037.34	3,920.56
4/13/2009	-	-	116.80	-	-	4,037.34	3,920.54
5/1/2009	-	-	116.77	-	-	4,037.34	3,920.57
6/8/2009	-	-	116.61	-	-	4,037.34	3,920.73
7/13/2009	-	-	116.78	-	-	4,037.34	3,920.56
8/10/2009	-	-	116.74	-	-	4,037.34	3,920.60
9/15/2009	-	-	116.62	-	-	4,037.34	3,920.72
10/6/2009	-	-	116.47	-	-	4,037.34	3,920.87
11/9/2009	-	-	116.64	-	-	4,037.34	3,920.70
12/23/2009	-	-	116.29	-	-	4,037.34	3,921.05
1/20/2010	-	-	116.27	-	-	4,037.34	3,921.07
2/9/2010	-	-	116.61	-	-	4,037.34	3,920.73
3/9/2010	-	-	116.32	-	-	4,037.34	3,921.02

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Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
4/12/2010	-	-	116.62	-	-	4,037.34	3,920.72
5/24/2010	-	-	116.37	-	-	4,037.34	3,920.97
6/14/2010	-	-	116.51	-	-	4,037.34	3,920.83
7/20/2010	-	-	116.59	-	-	4,037.34	3,920.75
8/11/2010	-	-	116.58	-	-	4,037.34	3,920.76
9/21/2010	-	-	116.49	-	-	4,037.34	3,920.85
10/20/2010	-	-	116.60	-	-	4,037.34	3,920.74
11/8/2010	-	-	116.52	-	-	4,037.34	3,920.82
12/7/2010	-	-	116.57	-	-	4,037.34	3,920.77
1/18/2011	-	-	116.38	-	-	4,037.34	3,920.96
2/8/2011	-	-	116.37	-	-	4,037.34	3,920.97
3/8/2011	-	-	116.21	-	-	4,037.34	3,921.13
4/13/2011	-	-	116.12	-	-	4,037.34	3,921.22
5/23/2011	-	-	116.35	-	-	4,037.34	3,920.99
6/28/2011	-	-	116.57	-	-	4,037.34	3,920.77
7/19/2011	-	-	116.49	-	-	4,037.34	3,920.85
8/31/2011	-	-	116.37	-	-	4,037.34	3,920.97
9/27/2011	-	-	116.38	-	-	4,037.34	3,920.96
10/24/2011	-	-	116.55	-	-	4,037.34	3,920.79
11/29/2011	-	-	116.63	-	-	4,037.34	3,920.71
12/23/2011	-	-	116.35	-	-	4,037.34	3,920.99
1/31/2012	-	-	116.35	-	-	4,037.34	3,920.99
2/29/2012	-	-	116.39	-	-	4,037.34	3,920.95
3/27/2012	-	-	116.30	-	-	4,037.34	3,921.04
4/18/2012	-	-	116.39	-	-	4,037.34	3,920.95
5/21/2012	-	-	116.54	-	-	4,037.34	3,920.80
7/17/2012	-	-	116.36	-	-	4,037.34	3,920.98
8/21/2012	-	-	116.33	-	-	4,037.34	3,921.01

APPENDIX C
MW-19 Historical Groundwater Gauging Data
Maljamar E&P
Lea County, New Mexico

Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
9/17/2012	-	-	116.25	-	-	4,037.34	3,921.09
12/13/2012	-	-	116.42	-	-	4,037.34	3,920.92
1/9/2013	-	-	116.92	-	-	4,037.34	3,920.42
2/6/2013	-	-	116.28	-	-	4,037.34	3,921.06
3/6/2013	-	-	116.57	-	-	4,037.34	3,920.77
5/1/2013	-	-	116.11	-	-	4,037.34	3,921.23
6/5/2013	-	-	116.23	-	-	4,037.34	3,921.11
7/3/2013	-	-	116.46	-	-	4,037.34	3,920.88
7/30/2013	-	-	116.48	-	-	4,037.34	3,920.86
8/15/2013	-	-	116.47	-	-	4,037.34	3,920.87
10/2/2013	-	-	116.28	-	-	4,037.34	3,921.06
12/23/2013	-	-	116.63	-	-	4,037.34	3,920.71
1/9/2014	-	-	116.35	-	-	4,037.34	3,920.99
2/12/2014	-	-	117.46	-	-	4,037.34	3,919.88
3/19/2014	-	-	116.43	-	-	4,037.34	3,920.91
4/3/2014	-	-	116.12	-	-	4,037.34	3,921.22
5/7/2014	-	-	116.13	-	-	4,037.34	3,921.21
6/5/2014	-	-	116.19	-	-	4,037.34	3,921.15
7/1/2014	-	-	116.27	-	-	4,037.34	3,921.07
7/22/2014	-	-	116.46	-	-	4,037.34	3,920.88
8/5/2014	-	-	116.48	-	-	4,037.34	3,920.86
9/4/2014	-	-	116.31	-	-	4,037.34	3,921.03
10/2/2014	-	-	116.25	-	-	4,037.34	3,921.09
11/6/2014	-	-	116.72	-	-	4,037.34	3,920.62
12/4/2014	-	-	116.18	-	-	4,037.34	3,921.16
8/24/2015	-	-	116.50	-	-	4,037.34	3,920.84
1/20/2016	-	-	116.34	-	-	4,037.34	3,921.00
2/16/2016	-	-	116.28	-	-	4,037.34	3,921.06

APPENDIX C
MW-19 Historical Groundwater Gauging Data
Maljamar E&P
Lea County, New Mexico

Gauging Date	Well Total Depth (feet)	PSH (feet BTOC)	Water level (feet BTOC)	PSH Thickness (feet)	PSH Elevation (feet AMSL)	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)
3/15/2016	-	-	116.15	-	-	4,037.34	3,921.19
4/20/2016	-	-	116.31	-	-	4,037.34	3,921.03
5/17/2016	-	-	116.44	-	-	4,037.34	3,920.90
8/16/2016	-	-	116.41	-	-	4,037.34	3,920.93
9/20/2016	-	-	116.40	-	-	4,037.34	3,920.94
10/18/2016	-	-	116.16	-	-	4,037.34	3,921.18
12/20/2016	-	-	116.60	-	-	4,037.34	3,920.74
8/3/2017	120	-	117.32	-	-	4,037.34	3,920.02
8/16/2018	-	-	116.35	-	-	4,037.34	3,920.99
8/16/2019	-	-	116.42	-	-	4,037.34	3,920.92
8/18/2020	121.3	-	116.17	-	-	4,037.34	3,921.17
8/10/2021	-	-	115.70	-	-	4,037.34	3,921.64
10/4/2022	121	-	115.77	-	-	4,037.34	3,921.57
9/13/2023	-	-	116.07	-	-	4,037.34	3,921.27

Notes:

PSH Phase-Separated Hydrocarbons
 AMSL Above Mean Sea Level
 BTOC Below Top of Casing
 - No Measurement

Maljamar E&P (AP-115-1 & 1RP-959)
Lea County, New Mexico

2023 Annual Report
November 17, 2023

APPENDIX D: HISTORICAL GROUNDWATER ANALYTICAL DATA



APPENDIX D
EW-1 Historical Groundwater Analytical Data
Maljamar E&P
Lea County, New Mexico

Sample Date	Bromide (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Nitrate as N (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Carbonate Alkalinity (mg/L)	Bicarbonate Alkalinity (mg/L)	Total Alklanity (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)
NMWQCC GQS	NE	250	600	1000	10	0.01	0.75	0.75	0.62	NE	NE	NE	NE	NE	NE	NE
7/19/2007	-	1,820	-	3,370	-	ND	ND	ND	ND	-	-	-	-	-	-	-
5/6/2008	ND	41,500	1,150	77,200	ND	ND	ND	ND	ND	ND	105	105	3,340	1,040	74.1	19,000
5/5/2009	ND	30,000	1,110	60,000	ND	ND	ND	ND	ND	ND	99	99	3,680	1,110	58	21,700
5/25/2010	ND	29,600	852	40,200	ND	ND	ND	ND	ND	ND	113	113	2,830	1,050	74.7	16,300
5/24/2011	8.8	32,300	865	58,300	0.57	<0.002	<0.002	<0.002	<0.006	<5	110	110	2,450	694	69.6	14,400
10/25/2011	25.6	35,000	923	66,300	3.9	<0.001	0.003	<0.001	<0.003	<20	116	116	2,400	624	42.7	11,300
7/18/2012	38	26,500	746	59,600	6.1	<0.001	<0.001	<0.001	<0.003	<20	108	108	2,450	748	67.6	13,000
8/1/2013	<50	26,100	691	61,000	4	-	-	-	-	<20	148	148	2,480	740	68.9	13,900
7/23/2014	25.3	28,900	803	52,300	-	<0.001	<0.001	<0.001	<0.003	-	-	-	-	-	-	-
8/26/2015	<5.0	24,200	711	65,000	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2016	Not Sampled															
8/3/2017	Not Sampled															
8/16/2018	11.7	21,000	588	36,000	-	-	-	-	-	-	-	-	-	-	-	-
8/16/2019	5.9	13,600	148	28,700	-	-	-	-	-	-	-	-	-	-	-	-
8/18/2020	4.81 J	13,600	151	33,900	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2021	7.94 B	18,900	544	38,100	-	-	-	-	-	-	-	-	-	-	-	-
10/6/2022	18.90	20,500	478	44,900	-	-	-	-	-	-	-	-	-	-	-	-
9/13/2023	66.60	21,400	550	42,300	-	-	-	-	-	-	-	-	-	-	-	-

- Notes:
- TDS Total Dissolved Solids
 - NMWQCC New Mexico Water Quality Control Commission
 - GQS Groundwater Quality Standards
 - NE Not Established
 - Not Analyzed
 - Result exceeds NMWQCC groundwater quality standards
 - B The same analyte is found in the associated blank
 - J The identification of the analyte is acceptable; the reported value is an estimate
 - ND Not detected above laboratory detection limit

APPENDIX D
EW-2 Historical Groundwater Analytical Data
Maljamar E&P
Lea County, New Mexico

Sample Date	Bromide (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)
NMWQCC GQS	NE	250	600	1000
10/4/2017	6.6	17,500	492	28,000
8/16/2018	Not Sampled - pump out of service			
8/15/2019	Not Sampled - pump out of service			
10/9/2020	<35.3	20,100	576	39,600
8/10/2021	63.6 B J	20,900	546	37,500
9/13/2023	66.3	21,700	586	47,800

Notes:

TDS	Total Dissolved Solids
NMWQCC	New Mexico Water Quality Control Commission
GQS	Groundwater Quality Standards
NE	Not Established
-	Not Analyzed
	Result exceeds NMWQCC groundwater quality standards
B	The same analyte is found in the associated blank
J	The identification of the analyte is acceptable; the reported value is an estimate
ND	Not detected above laboratory detection limit



APPENDIX D
MW-11 Historical Groundwater Analytical Data
Maljamar E&P
Lea County, New Mexico

Sample Date	Bromide (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Nitrate as N (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Carbonate Alkalinity (mg/L)	Bicarbonate Alkalinity (mg/L)	Total Alkalanity (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)
NMWQCC GQS	NE	250	600	1000	10	0.01	0.75	0.75	0.62	NE	NE	NE	NE	NE	NE	NE
5/8/2007	4.6	3,570	440	7,400	ND	ND	ND	ND	ND	ND	197	197	1,060	258	7.8	496
5/6/2008	8.18	1,560	163	4,140	ND	0.009	ND	ND	ND	ND	168	168	615	166	8.62	204
5/5/2009	6.82	1,140	149	3,430	ND	0.02	ND	ND	ND	ND	162	162	528	150	6	172
5/25/2010	ND	1,010	142	3,630	ND	0.039	ND	ND	ND	ND	139	139	332	105	4.44	118
5/24/2011	2.6	811	99.9	2,510	3.6	0.0912	<0.002	<0.002	<0.006	<5	149	149	298	83.7	6.61	103
10/25/2011	2.7	715	90.9	1,790	4.9	<0.001	<0.001	<0.001	<0.003	<20	220	220	325	86	6	101
7/18/2012	4.1	560	55.3	1,780	7.3	<0.001	<0.001	<0.001	<0.003	<20	144	144	215	64.2	3.6	80.6
8/2/2013	4.4	801	98.1	2,640	4.7	0.0056	<0.001	<0.001	<0.003	<20	198	198	325	97.5	8.37	93.2
7/23/2014	2.3	532	50.4	1,760	-	<0.001	<0.001	<0.001	<0.003	-	-	-	-	-	-	-
8/26/2015	2.2	521	57.9	3,620	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2016	2.5	564	78.2	1,750	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2016	2.5	564	78	1,750	-	-	-	-	-	-	-	-	-	-	-	-
8/3/2017	5.3	1,170	116	3,030	-	-	-	-	-	-	-	-	-	-	-	-
8/16/2018	3.19	879	161	3,250	-	-	-	-	-	-	-	-	-	-	-	-
8/15/2019	2.07	760	124	2,280	-	-	-	-	-	-	-	-	-	-	-	-
8/18/2020	1.69	517	31.1	1,480	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2021	3.16 B	1,210	71.3	3,180 J3	-	-	-	-	-	-	-	-	-	-	-	-
10/5/2022	4.14	552	38.2	1,290	-	-	-	-	-	-	-	-	-	-	-	-
9/13/2023	2.76	1,010	67.3	2,090	-	-	-	-	-	-	-	-	-	-	-	-

- Notes:
- TDS Total Dissolved Solids
 - NMWQCC New Mexico Water Quality Control Commission
 - GQS Groundwater Quality Standards
 - NE Not Established
 - Not Analyzed
 - Result exceeds NMWQCC groundwater quality standards
 - B The same analyte is found in the associated blank
 - J The identification of the analyte is acceptable; the reported value is an estimate
 - J3 The associated quality control batch was outside of the established range for precision.
 - ND Not detected above laboratory detection limit



APPENDIX D
MW-12 Historical Groundwater Analytical Data
Maljamar E&P
Lea County, New Mexico

Sample Date	Bromide (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Nitrate as N (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Carbonate Alkalinity (mg/L)	Bicarbonate Alkalinity (mg/L)	Total Alkalanity (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)
NMWQCC GQS	NE	250	600	1000	10	0.01	0.75	0.75	0.62	NE	NE	NE	NE	NE	NE	NE
5/8/2007	19.2	61,700	1,690	107,000	ND	ND	ND	ND	ND	ND	79.8	79.8	4,760	1,330	143	15,800
5/6/2008	ND	48,600	1,600	88,500	ND	ND	ND	ND	ND	ND	97	97	3,880	1,030	84.3	24,000
5/5/2009	ND	35,300	1,140	71,200	1.79	ND	ND	ND	ND	ND	101	101	3,720	844	59.3	21,200
5/25/2010	ND	59,300	1,210	72,000	ND	ND	ND	ND	ND	ND	106	106	2,490	700	42.4	14,300
5/24/2011	9.7	45,500	1,170	66,400	2.2	<0.002	<0.002	<0.002	<0.006	<20	114	114	3,260	794	79.1	15,100
10/25/2011	<1	32,200	1,020	55,900	3	<0.001	<0.001	<0.001	<0.003	<20	138	138	3,370	743	54	14,800
7/18/2012	32.6	25,000	716	57,200	3.3	<0.001	<0.001	<0.001	<0.003	<20	122	122	3,420	812	56.5	11,400
8/1/2013	<50	21,400	731	47,000	3.6	<0.001	<0.001	<0.001	<0.003	<20	163	163	2,580	613	60.6	12,100
7/23/2014	<50	38,500	1,680	72,200	-	<0.001	<0.001	<0.001	<0.003	-	-	-	-	-	-	-
8/26/2015	<5.0	26,200	804	87,300	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2016	34.1	30,900	1,070	63,900	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2016	34.1J	30,900	1,070	63,900	-	-	-	-	-	-	-	-	-	-	-	-
8/3/2017	44.9	37,900	1,480	69,600	-	-	-	-	-	-	-	-	-	-	-	-
8/16/2018	11.1	37,300	1,430	60,300	-	-	-	-	-	-	-	-	-	-	-	-
8/16/2019	12.1	32,000	715	44,200	-	-	-	-	-	-	-	-	-	-	-	-
8/18/2020	10.3	31,700	755	71,700	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2021	14.9 B	39,700	1,500	70,500	-	-	-	-	-	-	-	-	-	-	-	-
10/6/2022	24.1	26,600	933	45,900	-	-	-	-	-	-	-	-	-	-	-	-
9/13/2023	69.7	39,300	1,380	93,500	-	-	-	-	-	-	-	-	-	-	-	-

- Notes:
- TDS Total Dissolved Solids
 - NMWQCC New Mexico Water Quality Control Commission
 - GQS Groundwater Quality Standards
 - NE Not Established
 - Not Analyzed
 - Result exceeds NMWQCC groundwater quality standards
 - B The same analyte is found in the associated blank
 - J The identification of the analyte is acceptable; the reported value is an estimate
 - ND Not detected above laboratory detection limit



APPENDIX D
MW-13 Historical Groundwater Analytical Data
Maljamar E&P
Lea County, New Mexico

Sample Date	Bromide (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Nitrate as N (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Carbonate Alkalinity (mg/L)	Bicarbonate Alkalinity (mg/L)	Total Alkalanity (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)
NMWQCC GQS	NE	250	600	1000	10	0.01	0.75	0.75	0.62	NE	NE	NE	NE	NE	NE	NE
5/8/2007	0.9	217	249	1,160	16	ND	ND	ND	ND	ND	209	209	198	43.1	ND	72.4
5/6/2008	ND	192	234	1,270	11.9	ND	ND	ND	ND	ND	201	201	193	43.9	3.09	66.8
5/5/2009	1.32	212	236	1,400	15.9	ND	ND	ND	ND	ND	204	204	226	46.8	3.1	74.4
5/25/2010	1.42	214	276	1,500	17.8	ND	ND	ND	ND	ND	196	196	203	42.4	2.81	71.9
5/24/2011	1.4	235	267	1,120	15	<0.002	<0.002	<0.002	<0.006	<5	217	218	204	41.4	<5.0	73.5
10/25/2011	1.3	233	253	1,090	18	<0.001	<0.001	<0.001	<0.003	<20	765	765	541	99.6	16.9	81.3
7/18/2012	2.4	230	239	1,240	15.2	<0.001	<0.001	<0.001	<0.003	<20	340	340	252	53.4	6.24	71.5
8/1/2013	1.7	221	232	1,420	15.7	<0.001	<0.001	<0.001	<0.003	<20	243	243	321	51	6.22	74.9
7/23/2014	1.7	206	284	1,160	-	<0.001	<0.001	<0.001	<0.003	-	-	-	-	-	-	-
8/26/2015	1.2	201	278	1,850	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2016	7.4	206	310	1,220	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2016	7.4	206	310	1,220	-	-	-	-	-	-	-	-	-	-	-	-
8/3/2017	2.0	192	267	972	-	-	-	-	-	-	-	-	-	-	-	-
8/16/2018	1.42	200	248	1,180	-	-	-	-	-	-	-	-	-	-	-	-
8/15/2019	3.00 J	237	247	1,350	-	-	-	-	-	-	-	-	-	-	-	-
8/18/2020	1.99 J	218	254	1,100	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2021	1.26 B	196	238	1,020	-	-	-	-	-	-	-	-	-	-	-	-
10/5/2022	3.16	198	248	922	-	-	-	-	-	-	-	-	-	-	-	-
9/13/2023	1.09	194	241	1,020	-	-	-	-	-	-	-	-	-	-	-	-

- Notes:
- TDS Total Dissolved Solids
 - NMWQCC New Mexico Water Quality Control Commission
 - GQS Groundwater Quality Standards
 - NE Not Established
 - Not Analyzed
 - Result exceeds NMWQCC groundwater quality standards
 - B The same analyte is found in the associated blank
 - J The identification of the analyte is acceptable; the reported value is an estimate
 - ND Not detected above laboratory detection limit



APPENDIX D
MW-14 Historical Groundwater Analytical Data
Maljamar E&P
Lea County, New Mexico

Sample Date	Bromide (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Nitrate as N (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Carbonate Alkalinity (mg/L)	Bicarbonate Alkalinity (mg/L)	Total Alkalinity (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)
NMWQCC GQS	NE	250	600	1000	10	0.01	0.75	0.75	0.62	NE	NE	NE	NE	NE	NE	NE
5/8/2007	7.1	1,000	1,010	4,990	10.7	ND	ND	ND	ND	ND	203	203	656	197	5.7	65.3
5/6/2008	8.04	658	904	3,760	10.1	ND	ND	ND	ND	ND	208	208	613	165	6.09	57.1
5/5/2009	6.05	576	774	3,740	11.8	ND	ND	ND	ND	ND	230	230	648	176	5.74	51.3
5/25/2010	4.96	566	1,030	2,430	13.7	ND	ND	ND	ND	ND	263	263	544	150	6	79.3
5/24/2011	4.2	527	1,110	2,980	16	<0.002	<0.002	<0.002	<0.006	<5	276	276	525	133	<5.0	57.7
10/25/2011	3.4	408	848	2,350	20	<0.001	<0.001	<0.001	<0.003	<20	390	390	532	159	14.4	58.1
7/18/2012	1.1	382	812	2,430	16	<0.001	<0.001	<0.001	<0.003	<20	314	314	455	137	9	49.8
8/1/2013	3	333	863	2,150	19.6	<0.001	<0.001	<0.001	<0.003	<20	293	293	454	130	5	60.2
7/23/2014	3.2	393	847	2,430	-	<0.001	<0.001	<0.001	<0.003	-	-	-	-	-	-	-
8/26/2015	1.4	160	930	3,130	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2016	1.7	190	1,010	2,180	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2016	1.7	190	1,010	2,180	-	-	-	-	-	-	-	-	-	-	-	-
8/3/2017	2.4	215	953	2,220	-	-	-	-	-	-	-	-	-	-	-	-
8/16/2018	<1.00	222	923	2,100	-	-	-	-	-	-	-	-	-	-	-	-
8/15/2019	<1.00	67.9	585	1,270	-	-	-	-	-	-	-	-	-	-	-	-
8/18/2020	<10.0	62.4	572	1,290	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2021	6.79 BJ	222.0	862	1,750	-	-	-	-	-	-	-	-	-	-	-	-
10/5/2022	2.8	213.0	790	1,400	-	-	-	-	-	-	-	-	-	-	-	-
9/13/2023	U	244.0	792	1,470	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

- U Not detected at the Reporting Limit (or MDL where applicable)
- TDS Total Dissolved Solids
- NMWQCC New Mexico Water Quality Control Commission
- GQS Groundwater Quality Standards
- NE Not Established
- Not Analyzed
- Result exceeds NMWQCC groundwater quality standards
- B The same analyte is found in the associated blank
- J The identification of the analyte is acceptable; the reported value is an estimate
- ND Not detected above laboratory detection limit



APPENDIX D
MW-19 Historical Groundwater Analytical Data
Maljamar E&P
Lea County, New Mexico

Sample Date	Bromide (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Nitrate as N (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Carbonate Alkalinity (mg/L)	Bicarbonate Alkalinity (mg/L)	Total Alkalanity (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)
NMWQCC GQS	NE	250	600	1000	10	0.01	0.75	0.75	0.62	NE	NE	NE	NE	NE	NE	NE
5/8/2007	1.1	101	20.8	837	0.75	ND	ND	ND	ND	ND	272	272	1,690	571	24.7	983
5/6/2008	ND	114	29.3	1,190	1.06	ND	ND	ND	ND	ND	229	229	3,220	617	27.8	1,260
5/5/2009	0.836	105	26.7	597	0.944	ND	ND	ND	ND	ND	241	241	1,850	664	21.5	1,020
5/25/2010	0.97	108	33.2	1,080	0.867	ND	ND	ND	ND	ND	245	245	2,050	632	53.8	1,000
5/24/2011	1.1	140	27.4	589	1.4	<0.002	<0.002	<0.002	<0.006	<5	255	256	3,080	640	41.9	1,050
10/25/2011	<1	122	32.9	523	2.2	<0.001	<0.001	<0.001	<0.003	<20	436	436	2,240	654	39.6	1,070
7/18/2012	1.4	113	27.8	585	2.6	<0.001	<0.001	<0.001	<0.003	<20	635	635	203	37	4.2	53
8/1/2013	1.3	112	27.8	583	3.1	<0.001	<0.001	<0.001	<0.003	<20	289	289	-	-	-	-
7/23/2014	1.4	113	31.3	557	-	<0.001	<0.001	<0.001	<0.003	-	-	-	-	-	-	-
8/26/2015	<1.0	111	32.2	696	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2016	1.2	123	29.3	590	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2016	1.2	123	29.3	590	-	-	-	-	-	-	-	-	-	-	-	-
8/3/2017	1.5	114	29.0	540	-	-	-	-	-	-	-	-	-	-	-	-
8/16/2018	0.996 J	117	32.5	587	-	-	-	-	-	-	-	-	-	-	-	-
8/16/2019	1.1	131	41.7	640	-	-	-	-	-	-	-	-	-	-	-	-
8/18/2020	0.935 J	132	41.1	602	-	-	-	-	-	-	-	-	-	-	-	-
8/10/2021	1.21 B	129	45.3	563	-	-	-	-	-	-	-	-	-	-	-	-
10/6/2022	3.5	128	41.9	577	-	-	-	-	-	-	-	-	-	-	-	-
9/13/2023	1.2	128	37.9	571	-	-	-	-	-	-	-	-	-	-	-	-

- Notes:
- TDS Total Dissolved Solids
 - NMWQCC New Mexico Water Quality Control Commission
 - GQS Groundwater Quality Standards
 - NE Not Established
 - Not Analyzed
 - Result exceeds NMWQCC groundwater quality standards
 - B The same analyte is found in the associated blank
 - J The identification of the analyte is acceptable; the reported value is an estimate
 - ND Not detected above laboratory detection limit

Maljamar E&P (AP-115-1 & 1RP-959)
Lea County, New Mexico

2023 Annual Report
November 17, 2023

APPENDIX E: WELL CONSTRUCTION DETAILS



APPENDIX E
Well Construction Details
Maljamar E&P
Lea County, New Mexico

Well ID	Date Installed	Latitude	Longitude	Screen Length (feet)	Screened Interval (feet bgs)	Total Depth (feet bgs)
EW-1	5/15/2007	32.81650	-103.77452	30	95 - 125	125
EW-2	09/2017	32.81666	-103.77490	No Information Available		141
MW-11	12/4/2001	32.81442	-103.77314	20	100 - 120	120
MW-12	12/4/2001	32.81646	-103.77455	20	100 - 120	120
MW-13	12/3/2001	32.81547	-103.77128	20	105 - 125	125
MW-14	3/20/2002	32.81436	-103.77603	20	100 - 120	120
MW-19	9/17/2002	32.81796	-103.77289	20	100 - 120	120

Notes:

 AMSL: Above Mean Sea Level

bgs: Below ground surface

BTOC: Below Top of Casing

No Information Available: Well installed by another consultant and not reported to NMOSE

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 316690

CONDITIONS

Operator: Maverick Permian LLC 1000 Main Street, Suite 2900 Houston, TX 77002	OGRID:	331199
	Action Number:	316690
	Action Type:	[UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	Review of the 2023 Annual Report for Maljamar E&P: Content Satisfactory 1. Continue to sample groundwater monitoring network until eight consecutive quarterly sampling events demonstrate below the WQCC human health standards. 2. Evaluate annual groundwater analytical results as planned in report and provide recommendation on continued extraction at the site for abatement. 3. Submit the 2024 Annual Groundwater Monitoring Site to OCD by April 1, 2025.	6/12/2024