Armando Martinez
Operations Lead, Portfolio Operations Central

December 17, 2020

Bradford Billings
New Mexico Oil Conservation Division
5200 Oakland Avenue, N.E. Suite 100
Albuquerque, New Mexico 87113

Re: Lovington Unit Water Plant
2019 Annual Groundwater Monitoring Report
Case No. 1R394, OGRID No. 4323
Lea County, New Mexico

Dear Mr. Billings,

Please find enclosed the following report:

Lovington Unit Water Plant Site – 2019 Annual Groundwater Monitoring Report, Section 1 – Township 17 South – Range 36 East, Lea County New Mexico.

The Report was prepared by Arcadis U.S., Inc. (Arcadis), on behalf of Chevron Environmental Management Company (CEMC) to document on-going groundwater monitoring activities throughout 2019 at the Site.

Should you have any questions or require additional information please contact Scott Foord with Arcadis at (713) 953-4853 or myself at (505) 690 5408 or you can reach me via email at amarti@chevron.com. Please note that I am the new Project Manager for this site.

Respectfully,

Armando Martinez

Encl. Lovington Unit Water Plant – 2019 Annual Groundwater Monitoring Report

Armando Martinez
Operations Lead Central
Portfolio Operations - Central
354 State Highway 38, Questa, NM 87556-0469
Tel 575 586 7639 Mobile 505 690 5408 Fax 575 586 0811
amarti@chevron.com

ARCADIS Design & Consultancy for natural and built assets

Chevron Environmental Management Company

2019 ANNUAL GROUNDWATER MONITORING REPORT

Lovington Unit Water Plant
Lea County, New Mexico

OGRID No. 4323
Case No. 1R394

December 2020

2019 ANNUAL GROUNDWATER MONITORING REPORT

Lovington Unit Water Plant

Morgan Jordan
Scientist II

Scott Foord, P.G.
Certified Project Manager

Prepared for:

Armando Martinez

Operations Lead Central

Chevron Environmental Management Company

P.O. Box 469
Questa, New Mexico 87556

Tel 505 690 5408

Prepared by:

Arcadis U.S., Inc.

10205 Westheimer Road

Suite 800

Houston

Texas 77042

Tel 713 953 4800

Fax 713 977 4620

Our Ref.:

30038058

Date:

December 2020

CONTENTS

TABLES

FIGURES

APPENDICES

1 INTRODUCTION

Arcadis U.S., Inc. (Arcadis) submits the Annual Groundwater Monitoring Report herein, on behalf of Chevron Environmental Management Company (CEMC), which summarizes semi-annual groundwater monitoring activities conducted in 2019 at the Lovington Unit Water Plant (Site). Data presented in this report was collected during two semi-annual groundwater monitoring events throughout 2019 (February and December).

The Site is located on land owned by the City of Lovington in the northeast quarter of Section 1, Township 17 South, Range 36 East, Lea County, New Mexico. Geographic coordinates are 32° 52' 3.77" N latitude, 103° 18' 20.39" W longitude.

The Site is located in the Monument-Draw Watershed in Lea County, New Mexico, which is an area with very low topographic relief that has an overall gentle southward slope. The Site is on the eastern edge of an upland that breaks in slope downward into the Monument Draw valley immediately to the east of the Site. Elevations slope from approximately 3,400 feet above mean sea level (ft AMSL) to approximately 3,360 ft AMSL in the Monument Draw. A Site Location Map is presented as **Figure 1**. A Site Detail Map is presented as **Figure 2**. Additional Site background information is in **Appendix A**.

2 GROUNDWATER MONITORING RESULTS

Groundwater at the Site is monitored semi-annually from a network of 16 monitoring wells and one supply well. The monitoring wells and supply well locations are shown on **Figure 2**. GHD Services, Inc. (GHD) performed the first semi-annual ground water sampling event on February 6 - 7, 2019. Arcadis performed the second semi-annual groundwater sampling event on December 3 - 4, 2019. Field monitoring methodologies are described in **Appendix B**.

2.1 Groundwater Gauging Data

Groundwater measurements collected during the 2019 semi-annual monitoring events indicate:

- Groundwater elevations ranged from
  - 3717.62 ft AMSL (MW-14) to 3724.35 ft AMSL (MW-9) during the February 2019 event, and
  - 3719.04 ft AMSL (MW-14) to 3727.04 ft AMSL (MW-3) during the December 2019 event.
- The groundwater elevations during the 2019 period appear to be consistent with historical levels, with groundwater flow generally to the south-southeast. Mounding was observed in MW-3 during the December 2019 event, but the overall flow was consistent with historical levels.
- Potentiometric elevation data for the sampling events are presented in **Table 1**. Groundwater potentiometric surface maps for the 2019 monitoring period are presented on **Figure 3**.
- The calculated gradient was 0.007 feet/foot (ft/ft) for the February 2019 gauging event, and 0.006 for the December 2019 gauging event. Cumulative summary of groundwater potentiometric elevation data is presented in **Appendix C**.

2.2 2019 Groundwater Analytical Results

Fourteen of the 16 monitoring wells (MW-2, MW-4 through MW-16) located at the Site were sampled during the February 2019 semi-annual monitoring event. Monitor wells (MW-1 and MW-3) were not sampled due to having insufficient water to collect groundwater samples in February 2019. All 16 Site wells were sampled during the December 2019 semi-annual monitoring event. Groundwater analytical results for chloride and total dissolved solids (TDS) were compared to the New Mexico Environment Department Water Quality Control Commission (NMWQCC) Groundwater Standards. A summary of the groundwater sample analytical results from the February and December 2019 semi-annual events is presented in **Table 2**. A cumulative summary table of groundwater analytical results from 2010 through 2019 is presented in **Appendix D**. Copies of the certified analytical reports and chain-of-custody documentation from Xenco Laboratories and Test America, Inc. are provided in **Appendix E**.

Isoconcentration maps for chloride during the 2019 semi-annual sampling events are presented on **Figure 4**. The isoconcentration maps for the TDS during the 2019 semi-annual sampling events are presented on **Figure 5**. The analytical results are further summarized below.

2.2.1 Chloride

- Chloride concentrations during the February 2019 semi-annual sampling event exceeded the NMWQCC standard of 250 milligrams per liter (mg/L) in
  - 6 of 16 wells (MW-2, MW-6, MW-8, MW-11, MW-12, and MW-15) at concentrations ranging from 438 mg/L (MW-8) to 1,760 mg/L (MW-12).
- Chloride concentrations during the December 2019 semi-annual sampling event exceeded the NMWQCC standard of 250 mg/L in
  - 10 of 16 wells (MW-1 through MW-4, MW-8, MW-9, MW-11, MW-12, MW-15, and MW-16) at concentrations ranging from 330 mg/L (MW-8) to 3,100 mg/L (MW-9).
- Chloride concentrations in upgradient wells to the west (MW-4, MW-9, and MW-16) were below NMWQCC standard of 250 milligrams per liter (mg/L) during the February 2019 sampling event, but exceeded the standard during the December 2019 event at 1,200 mg/L (MW-4), 3,100 mg/L (MW-9), and 430 mg/L (MW-16), respectively. These results are not consistent with historical upgradient sampling data and will be confirmed during the next sampling event.
- Chloride exceeded in downgradient wells to the east (MW-8 and MW-12) during both the February and December 2019 sampling events.

2.2.2 TDS

- TDS concentrations during the February 2019 quarterly sampling event exceeded the NMWQCC standard of 1,000 mg/L in
  - 6 of 14 wells sampled (MW-2, MW-6, MW-8, MW-11, MW-12, and MW-15) at concentrations ranging from 1,110 mg/L (MW-15) to 2,850 mg/L (MW-12).

- TDS concentrations during the December 2019 quarterly sampling event exceeded the NMWQCC standard of 1,000 mg/L in
    - 9 of 16 wells (MW-1 through MW-4, MW-8, MW-9, MW-11, MW-12 and MW-16) at concentrations ranging from 1,200 mg/L (MW-8) to 3,500mg/L (MW-4 and MW-9).
- TDS concentrations in upgradient wells to the west (MW-4, MW-9, and MW-16) were below NMWQCC standard of 1,000 mg/L during the February 2019 sampling event, but had exceeded the standard during the December 2019 event at 3,500 mg/L (MW-4), 3,500 mg/L (MW-9), and 1,300 mg/L (MW-16), respectively. These results are also not consistent with historical sampling results and will be confirmed during the next sampling event.
- TDS exceeded in downgradient wells to the east (MW-8 and MW-12) during both the February and December 2019 sampling events.

3 SUMMARY

In summary, the semi-annual monitoring activities conducted at the Site in February 2019 and December 2019 indicate the following:

- 16 monitoring wells and 1 supply well on-Site were gauged;
- Potentiometric surface conditions were consistent with historical results, with groundwater flow to the generally to the southeast;
- 14 monitoring wells were sampled during the February 2019 event. Monitor wells (MW-1 and MW-3) were not sampled due to having insufficient water to collect groundwater samples in February 2019;
- All 16 monitor wells were sampled during the December 2019 event;
- Chloride exceeded the NMWQCC standard of 250 mg/L in 6 wells in February and 10 wells in December 2019;
- TDS exceeded the NMWQCC standard of 1,000 mg/L in 6 wells in February and 9 wells in December 2019;
- Chloride and TDS concentrations in upgradient wells to the west (MW-4, MW-9, and MW-16) were below NMWQCC standard during the February 2019 sampling event, but exceeded the applicable standards during the December 2019 event. These results are not consistent with historical sampling results and will be confirmed during the next sampling event; and
- Chloride and TDS exceeded in downgradient wells to the east (MW-8 and MW-12) during both the February and December 2019 sampling events.

4 PLANNED ACTIVITIES

Based upon the findings presented in this report, the following activities are planned:

- Continue to perform semi-annual groundwater monitoring for chloride and TDS with annual reporting for all Site wells.

TABLES

Table 1
2019 Groundwater Potentiometric Elevation Data
Lovington Unit Water Plant
Lea County, New Mexico

Well	TOC elev[1]	Well Diameter (inches)	Screen Interval (ft bgs[3])	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Corrected Groundwater Elevation (ft above MSL[2])
MW-01	3832.74	4	95'-115'	2/4/2019 12/2/2019	115.24 115.25	114.40 111.70	3718.34 3721.04
MW-02	3830.96	4	95'-115'	2/4/2019 12/2/2019	115.37 116.75	110.76 108.08	3720.20 3722.88
MW-03	3834.31	4	95'-115'	2/4/2019 12/2/2019	116.12 114.58	115.02 107.27	3719.29 3727.04
MW-04	3831.95	4	95'-115'	2/4/2019 12/2/2019	115.11 114.58	108.53 107.27	3723.42 3724.68
MW-05	3830.07	4	95'-130'	2/4/2019 12/2/2019	131.73 131.31	108.66 106.74	3721.41 3723.33
MW-06	3835.60	4	95'-130'	2/4/2019 12/2/2019	131.20 131.20	114.49 112.54	3721.11 3723.06
MW-07	3834.46	4	95'-132'	2/4/2019 12/2/2019	135.44 134.70	114.29 112.77	3720.17 3721.69
MW-08	3832.40	4	97'-132'	2/4/2019 12/3/2019	134.99 132.54	113.48 112.38	3718.92 3720.02
MW-09	3832.62	4	92'-222'	2/4/2019 12/2/2019	221.60 220.25	108.27 106.50	3724.35 3726.12
MW-10	3828.57	4	92'-223'	2/4/2019 12/2/2019	224.42 223.00	107.82 106.14	3720.75 3722.43
MW-11	3833.06	4	92'-223'	2/4/2019 12/3/2019	226.64 225.00	113.95 111.27	3719.11 3721.79
MW-12	3831.71	4	97'-227'	2/4/2019 12/3/2019	226.34 229.85	112.69 111.95	3719.02 3719.76
MW-13	3831.06	4	104'-234'	2/4/2019 12/3/2019	234.82 227.18	111.86 110.81	3719.20 3720.25
MW-14	3831.06	4	100'-130'	2/4/2019 12/2/2019	134.53 134.55	113.44 112.05	3717.62 3719.01
MW-15	3835.75	4	100'-130'	2/5/2019 12/2/2019	135.00 134.40	115.59 113.63	3720.16 3722.12
MW-16	3835.36	4	100'-130'	2/4/2019 12/2/2019	134.70 134.15	112.27 110.77	3723.09 3724.59

Notes:
[1] TOC - Top of Casing
[2] MSL - Mean Sea Level
[3] bgs - below ground surface
Professional Survey conducted by West Company of Midland, Inc. in March 2013 and January 2015.

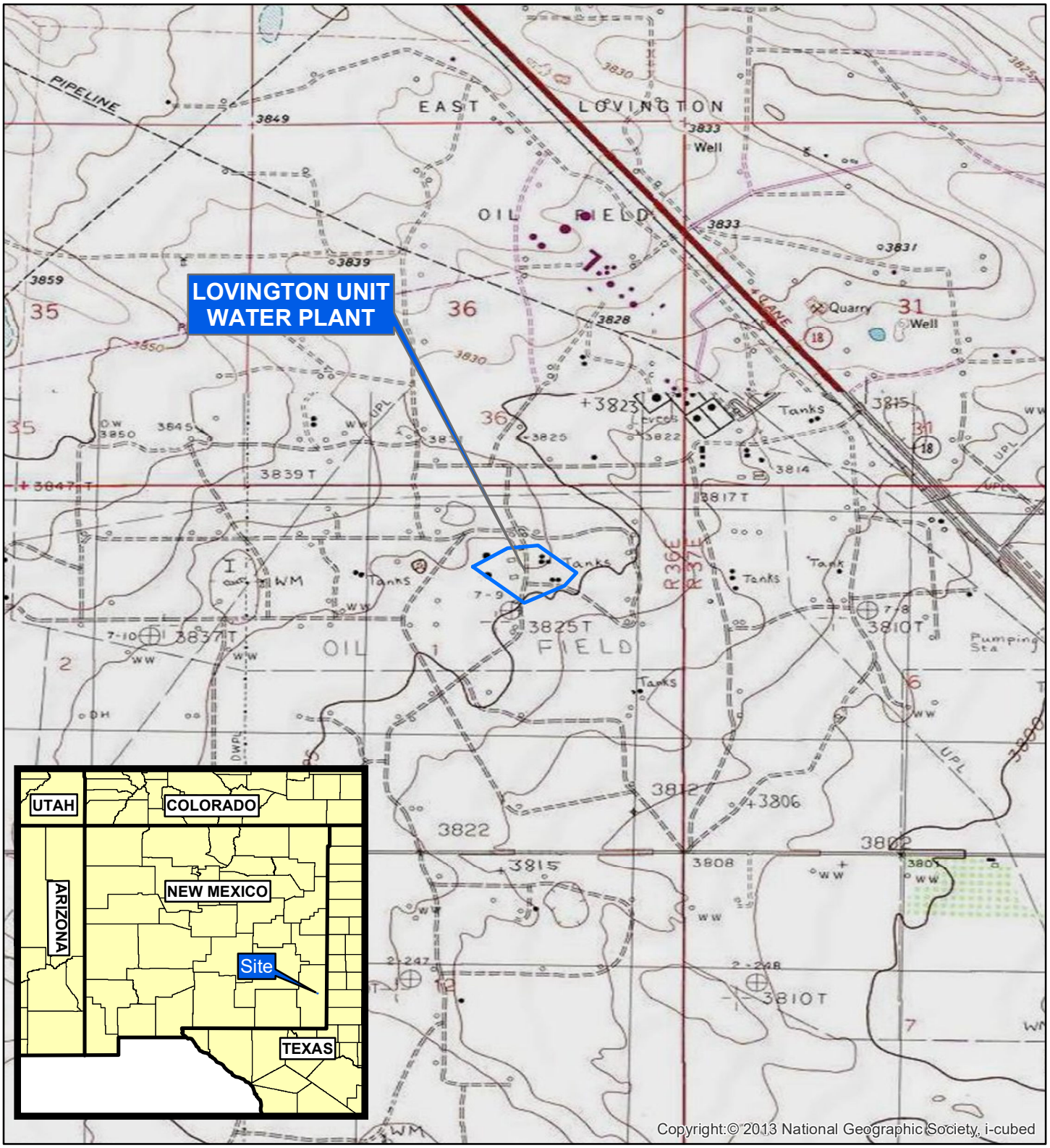
Table 2
2019 Groundwater Analytical Results
Lovington Unit Water Plant
Lea County, New Mexico

ARCADIS Design & Consultancy for natural and built assets

Sample I.D. No.	Date	NMWQCC Standards	
		Chloride 250 mg/L	Total Dissolved Solids 1,000 mg/L
MW-2	02/07/19	**840**	**1,820**
	12/03/19	**1100**	**3,300**
MW-3	02/05/19	NA	NA
	12/03/19	**580**	**1,800**
MW-4	02/06/19	219	720
	12/03/19	**1,200**	**3,500**
MW-5	02/05/19	98.4	805
	12/03/19	130	350
MW-6	02/06/19	**701**	**1,260**
	12/03/19	220	690
DUP	12/03/19	220	750
MW-7	02/06/19	131	545
	12/03/19	130	450
MW-8	02/07/19	**438**	**1,130**
	12/03/19	**330**	**1,200**
MW-9	02/05/19	69.5	451
	12/03/19	**3,100**	**3,500**
MW-10	02/05/19	99.4	510
	12/03/19	85	330
MW-11	02/06/19	**955**	**1,460**
	12/03/19	**580**	**1,500**
MW-12	02/07/19	**1,760**	**2,850**
DUP	02/07/19	**1,730**	**2,570**
	12/03/19	**880**	**2,500**
MW-13	02/05/19	230	750
	12/3/2019	160	490
MW-14	02/06/19	75.7	468
	12/03/19	96	330
MW-15	02/07/19	**483**	**1,110**
	12/03/19	**330**	990
MW-16	02/06/19	215	698
	12/03/19	**430**	**1,300**

Notes:
2) Groundwater Quality by EPA Methods 160.1, 300.0, and 310.1.
3) Highlighted values indicate concentrations above NMWQCC Standards for Domestic Water Supply.
4) [1] NMWQCC Human Health Standards Per NMAC 20.6.2.3103A.
5) [2] NMWQCC Other Standards for Domestic Water Supply Per NMAC 20.6.2.3103B.
6) NA= Not analyzed
7) DUP = Duplicate sample

FIGURES



Legend

Site Boundary

Notes:
1. Datum: D_WGS_1984
2. Source: United States Geological Survey 7.5 Minute Quadrangle Map

0 1,000 2,000 4,000 Feet

N

Chevron Environmental Management Company
Lovington Unit Water Plant
Lea County, New Mexico

SITE LOCATION MAP

ARCADIS

FIGURE 1

Document Path: \\arcadis-us\officedata\Houston-TX\ENV\ChevronTexaco TX8\HES Transfer\Lovington Water Plant\GIS Files\Fig 1 - Site Location Map 01.03.2020.mxd

Legend

- Monitoring Well Location
- Waterflood Supply Well Location
- Fence Line

N

0 75 150 300 Feet

Chevron Environmental Management Company
Lovington Unit Water Plant
Lea County, New Mexico

SITE DETAILS MAP

ARCADIS

FIGURE 2

Document Path:\\arcadis-us.com\officedata\Houston-TX\ENV\Chevron\Texaco TX8\HES Transfer\04 Field Investigations\2019\6 - Annual GWMR\Lovington Water Plant\GIS\Figure 2 LWP Site Details Map 01.03.2019.mxd

FEBRUARY 2019

MW-16 3723.09
MW-14 3717.62
MW-7 3720.17
MW-4 3723.42
MW-9 3724.35
MW-6 3721.11
MW-3 3719.29
MW-15 3720.16
MW-8 3718.92
MW-12 3719.02
MW-2 3720.2
MW-11 3719.11
MW-13 3719.2
MW-1 3718.34
MW-5 3721.41
MW-10 3720.75

3724, 3723, 3722, 3721, 3720, 3719

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

DECEMBER 2019

MW-16 3724.59
MW-14 3719.01
MW-6 3723.06
MW-4 3724.68
MW-7 3721.69
MW-9 3726.12
MW-3 3727.04
MW-15 3722.12
MW-12 3719.76
MW-2 3722.88
MW-8 3720.02
MW-1 3721.04
MW-11 3721.79
MW-13 3720.25
MW-5 3723.33
MW-10 3722.43

3722, 3721, 3723, 3724, 3725, 3720

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Monitoring Well Location
- Waterflood Supply Well Location
- 3721 — Potentiometric Contour and Elevation
- 3720.75 — Groundwater Elevation (ft above mean sea level)
- Approximate Groundwater Flow Direction
- Fence Line

Note:
1. Waterford Supply and Reovery Wells were not sampled.
2. Datum: D_WGS_1984
3. Site Location: 32.868054, -103.305479

N

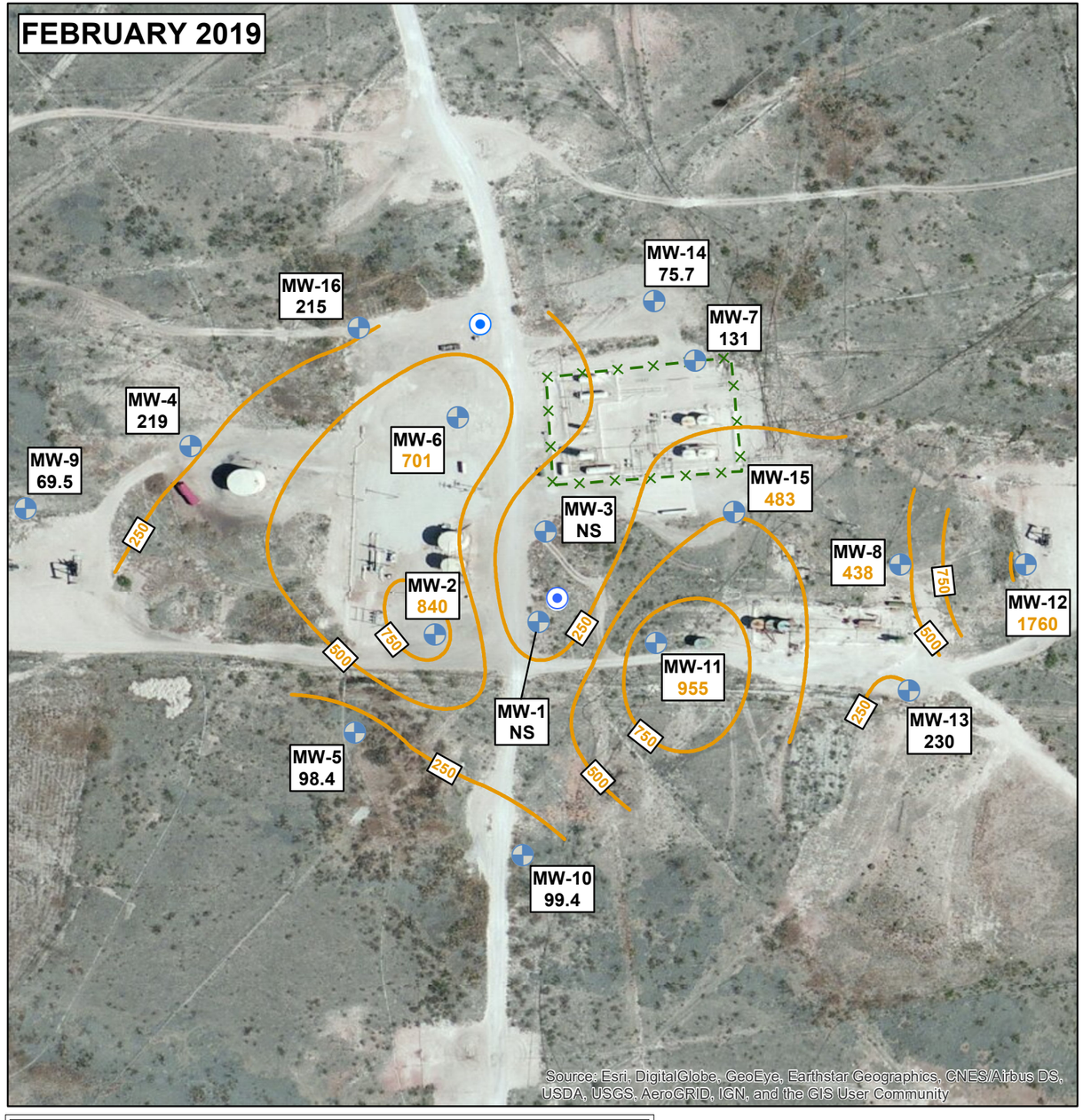
0 100 200 400 Feet

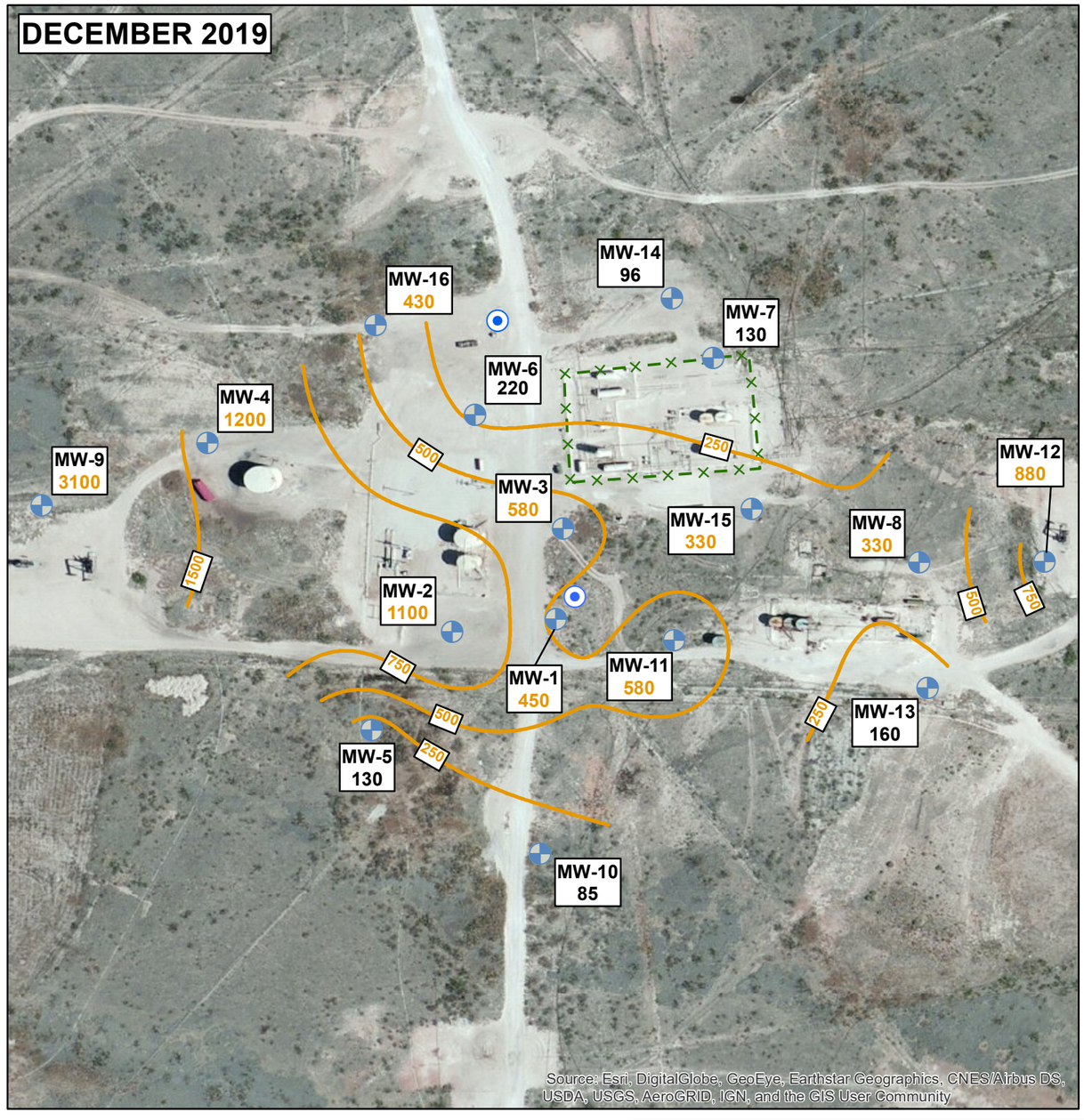
Chevron Environmental Management Company
Lovington Unit Water Plant
Lea County, New Mexico

SEMI-ANNUAL GROUNDWATER POTENTIOMETRIC MAP 2019

ARCADIS

FIGURE 3





Legend

- Monitoring Well Location
- Waterflood Supply Well Location
- 250 — Chloride Isoconcentration Contour
- 98.4 — Chloride Concentration in milligrams per liter (mg/L)
- 438 — Chloride Concentration (mg/L) Exceeds NMWQCC Other Standards for Domestic Water Supply
- Fence Line

Note:
1. Waterford Supply and Reovery Wells were not sampled.
2. Datum: D_WGS_1984
3. Site Location: 32.868054, -103.305479

N

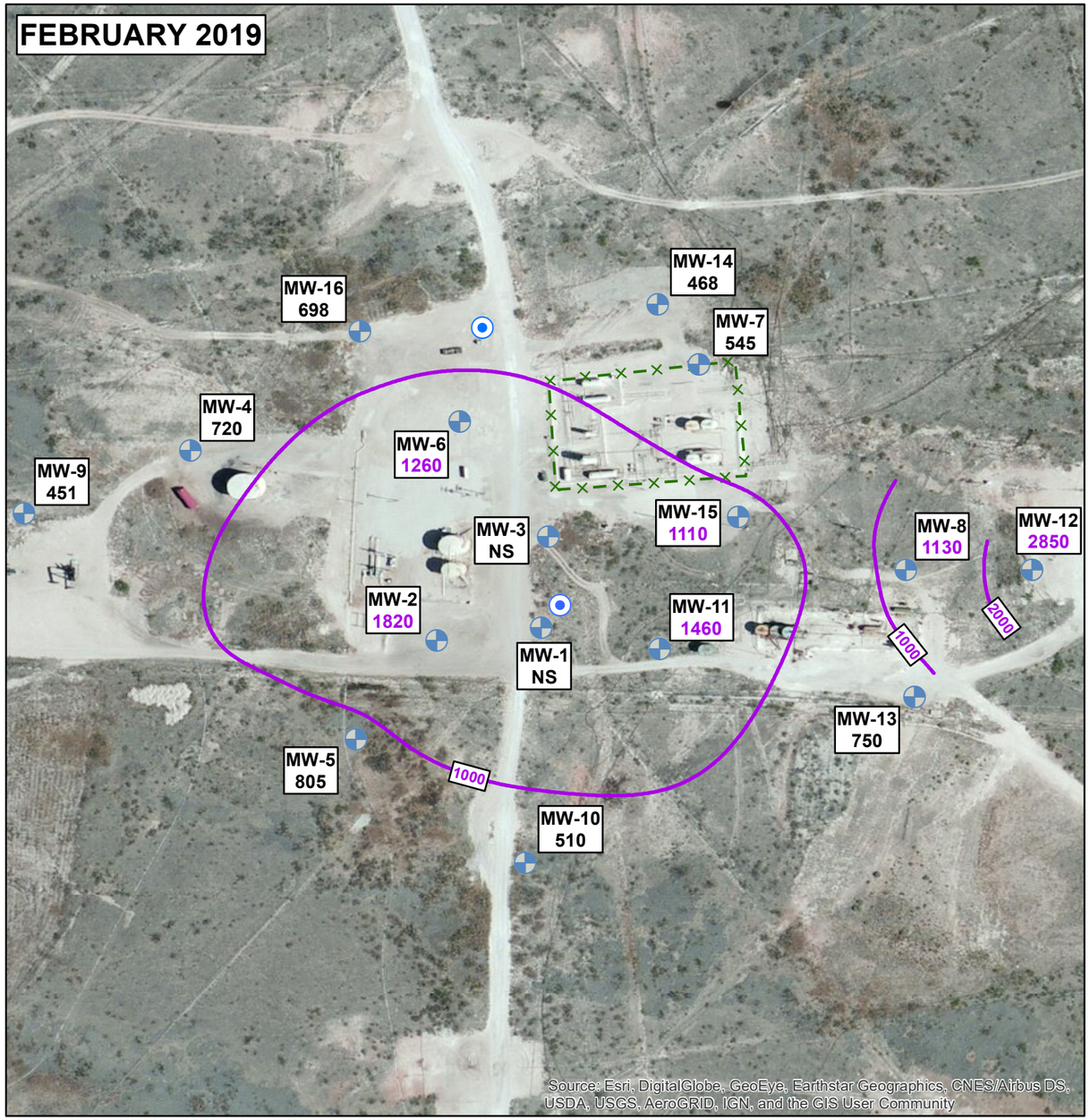
0 100 200 400 Feet

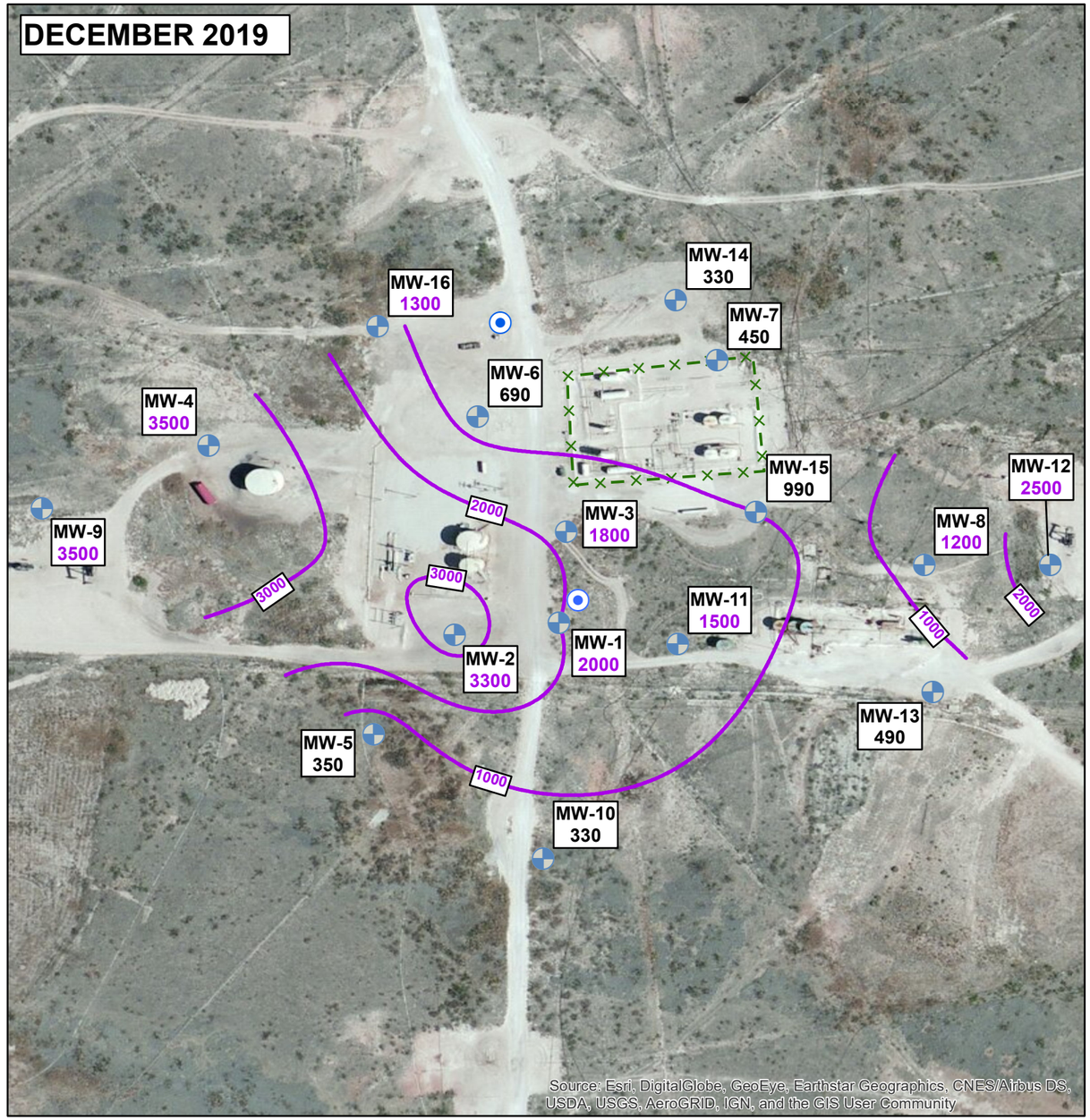
Chevron Environmental Management Company
Lovington Unit Water Plant
Lea County, New Mexico

SEMI-ANNUAL CHLORIDE ISOCONCENTRATION MAP 2019

ARCADIS

FIGURE 4





Legend

- Monitoring Well Location
- Waterflood Supply Well Location
- 250 — Total Dissolved Solids (TDS) Isoconcentration Contour
- 98.4 — TDS Concentration in milligrams per liter (mg/L)
- 438 — TDS Concentration (mg/L) Exceeds NMWQCC Other Standards for Domestic Water Supply
- Fence Line

Note:
1. Waterford Supply and Reovery Wells were not sampled.
2. Datum: D_WGS_1984
3. Site Location: 32.868054, -103.305479

N

0 100 200 400 Feet

Chevron Environmental Management Company
Lovington Unit Water Plant
Lea County, New Mexico

SEMI-ANNUAL TDS ISOCONCENTRATION MAP 2019

ARCADIS

FIGURE 5

APPENDIX A

Site Background

GEOLOGY/HYDROGEOLOGY ASSESSMENT

Site Setting

The Site is located approximately 5 miles southeast of the City of Lovington, in Lea County, New Mexico. The general vicinity of the Site is shown on Figure 1 and Site details are presented on Figure 2. The Site is located on land owned by the City of Lovington in the northeast quarter of Section 1, Township 17 South, Range 36 East. Geographic coordinates are 32° 52' 3.77" N latitude, 103° 18' 20.39" W longitude.

The Site is located in the Monument-Draw Watershed in Lea County, New Mexico, which is an area with very low topographic relief that has an overall gentle southward slope. The Site is on the eastern edge of an upland that breaks in slope downward into the Monument Draw valley immediately to the east of the Site. Elevations slope from approximately 3,400 feet above mean sea level (ft AMSL) to approximately 3,360 feet in Monument Draw.

Regional Geologic Conditions

The region is characterized by a surface cover of up to 200 feet of unconsolidated to semi-lithified sediments of the Ogallala Formation consisting of sand, clay, and fluvial gravel. The upper portion of the Ogallala Formation has been heavily cemented by caliche. The Tertiary-aged sediments are underlain by the Triassic-aged Dockum Group shale (“red beds”).

Site Geology

The Site boring logs used to interpret the Site geology included the logs from the September 2018 GHD field work and logs from previous groundwater assessments. The locations of the soil borings and monitoring wells are shown on Figure 2 (GHD, 2018, Report No 13). The subsurface stratigraphy typically included the following:

- A zone of caliche-cemented fine to medium sand, typically 15 to 20 ft bgs
- An underlying unconsolidated fine sand layer ranging from 20 to 50 ft bgs
- An unconsolidated very fine to fine sand layer ranging from 50 to 130 ft bgs

Hydrogeologic Conditions

Regional groundwater flow in the Ogallala Aquifer is controlled by the slope of the land surface to the south with localized eastward flow into the valley of Monument Draw. The aquifer typically behaves as an unconfined aquifer. Monument Draw is an intermittent stream that contains water only after heavy rains (Texas Water Development Board [TWDB], 2008)1. The Dockum Group Shale is considered the underlying aquitard for the Ogallala Aquifer.

Site Hydrogeology

Groundwater beneath the Site is found within the lower Ogallala deposits. The depth to groundwater at the Site ranges from approximately 107 to 115 ft bgs, based on the groundwater monitoring event conducted in October 2018.

At the Site, the local groundwater flow direction trends to the east with an average horizontal hydraulic gradient of approximately 0.006 feet per foot (ft/ft), as presented in the attached report. The east to southeast groundwater

flow direction observed at the Site is consistent with the regional groundwater flow direction to the southeast. The groundwater elevations and potentiometric conditions from 2019 are shown on Figure 3 of the 2019 GWM Report. The 2019 chloride and TDS isopleths for the Site are shown on Figure 4 and 5 of the 2019 GWM Report.

REGULATORY BACKGROUND

Sometime between 2000 and 2010, a surface release of produced water (i.e., chlorides) occurred from a salt water disposal pipeline operated by Rice Operating Company located approximately 700 feet southeast of the Site. The release was located in the area of the City of Lovington's public water supply wells, and in a downgradient area in regard to groundwater elevations in the Ogallala Aquifer. Specific details of the release are not available (GHD, 2018, Report No 13).

The City of Lovington requested Chevron assess chloride groundwater impacts resulting from operation of Chevron's water processing plant. Four monitoring wells, MW-1 through MW-4, were installed by Stantec Consulting Corporation (Stantec) in January 2010. The highest chloride concentration in soil was present at a depth of 40 feet below ground surface (bgs) at MW-4. Chloride impacted soil was observed at depths less than 20 feet bgs at MW-1 through MW-3. Groundwater from all four wells was sampled in January and February 2010. Chloride and total dissolved solids (TDS) concentrations in groundwater from MW-1 through MW-3 exceeded the New Mexico Water Quality Control Commission (NMWQCC) groundwater standards set forth in New Mexico Administrative Code (NMAC) Section 20.6.2.3103B. Both chloride and TDS concentrations in groundwater at MW-4 were below standards in both samples collected in 2010.

Quarterly monitoring was initiated in 2011. Additional monitoring wells, MW-5 through MW-8, were installed in February and March 2012 to further assess the dissolved phase chloride plume. All eight monitoring wells were gauged and sampled on a quarterly basis through 2013. Based on the previous results, the monitoring program was changed to semi-annual in 2014.

In 2016, recovery well RW-1 was installed to remediate/control expansion of the chloride plume and to provide water to the waterflood supply program, as well as three additional monitoring wells (MW-9, MW-10, and MW-11) to further delineate the chloride groundwater plume. The monitoring wells were placed around the Site perimeter, and RW-1 was placed between MW-1 and MW-3 in the central plume area.

RW-1 serves both as a remediation well for recovery of chloride-impacted groundwater from the aquifer, and as a water supply well for the oil field's waterflood system. The radial gradient induced by the water extraction at RW-1 is also intended to aid in stabilizing the chloride plume by pulling chloride-impacted groundwater inward toward the central plume area.

Due to downgradient expansion of the chloride plume to MW-12 during 2017 and elevated chloride concentrations in MW-4, MW-6, and MW-7, three monitoring wells (MW-14, MW-15, MW-16) and four soil borings (SB-1 through SB-4) were installed during 2018 (GHD, 2018, Report No 13).

REGULATORY FRAMEWORK

The NMOCD provides guidance for remediation of contaminants of oil field wastes or products in Guidelines for Remediation of Leaks, Spills, and Releases (August 13, 1993). These guidelines require remediation of groundwater to human health standards of the NMWQCC established in New Mexico Administrative Code Section 20.6.2.3103. Standards for chloride and TDS are listed below.

Analyte	NMWQCC Standard for Groundwater (mg/L)
Chloride	250
Total Dissolved Solids (TDS)	1,000

Note: mg/L = milligrams per liter

2018 HYDROGEOLOGY ASSESSMENT

On September 5th, 2018, GHD began installation of additional soil borings and monitoring wells at the Site to further delineate the vertical and horizontal extent of chloride impacts in the groundwater and evaluate Site hydrogeological conditions. NMOSE approvals for installation were received on December 13, 2017, and August 10, 2018.

Soil Boring and Monitoring Well Installation

Three (3) monitoring wells, MW-14 through MW-16, and four (4) soil borings, SB-1 through SB-4, were installed at the Site on September 5 and September 6, 2018, with the use of air rotary and mud rotary drilling equipment by Harrison & Cooper, Inc (HCI). The soil boring and monitoring well locations, along with pertinent Site features, are shown on Figure 2 of GHD's 2018 Annual Groundwater Monitoring report (GHD, 2018). The soil borings for each monitoring well installation were continuously drilled to 90 feet bgs prior to transitioning to mud rotary. The lithology of each monitoring well location was documented with soil boring logs that are attached in Appendix C of the 2018 GHD Report No 13.

The three (3) monitoring wells were constructed with four-inch diameter, schedule 40 PVC casing and with 30-feet of well screen (0.020-inch slotted screen). Well construction details included an 8/16 sand filter pack around the well screen, bentonite seal above the filter pack with riser casing to the ground surface. The wells were completed at the surface with stick-up well protectors set in a concrete pad. Well registration documentation was submitted to the NMOSE by HCI in November 2018. A copy of the submittal is attached as Appendix D in the 2018 GHD Report No 13. The monitoring wells were surveyed by West Company of Midland, Texas on November 13, 2018. The monitoring well installation details are included in Table 1 in the 2018 GHD Report No 13.

APPENDIX B

Field Methodology

FIELD METHODOLOGY

Prior to sampling, static fluid water levels were measured with an electronic interface probe to the nearest hundredth of a foot and recorded. In addition, a conductivity probe was used to record the conductivity levels every 2 feet in each well to evaluate the vertical distribution of chloride-affected groundwater. After recording conductivity levels, discrete samples were collected at the interval of highest conductivity using a Hydrasleeve™. Geochemical water quality parameters (pH, temperature, and conductivity) were recorded at the sampling depth.

All non-disposable groundwater sampling equipment was thoroughly decontaminated between measurements to prevent possible cross-contamination between wells. Laboratory-supplied sample containers were filled directly from the Hydrasleeve™.

Groundwater samples were placed on ice in insulated coolers and chilled to a temperature of approximately 4°C (40°F). The coolers were sealed for shipment with proper chain-of-custody documentation and shipped to Eurofins TestAmerica, located in Houston, Texas, for analysis of chloride by Environmental Protection Agency (EPA) Method 300.0 and total dissolved solids (TDS) by SM 2540C.

APPENDIX C

Cumulative Summary of Groundwater Potentiometric Elevation Data

Appendix C
Cumulative Summary of Groundwater Potentiometric Elevation data
Lovington Unit Water Plant
Lea County, New Mexico

ARCADIS Design & Consultancy for natural and built assets

Well	TOC elev[1]	Well Diameter (inches)	Screen Interval (ft bgs[3])	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Corrected Groundwater Elevation (ft above MSL[2])
MW-01	3832.74	4	95'-115'	1/19/2010	115.00	100.31	3732.43
				2/25/2010	115.00	100.41	3732.33
				3/1/2011	115.00	102.20	3730.54
				4/13/2011	115.00	102.40	3730.34
				7/15/2011	115.00	102.58	3730.16
				12/22/2011	115.00	102.63	3730.11
				3/22/2012	115.00	103.87	3728.87
				6/13/2012	115.00	103.89	3728.85
				9/27/2012	115.00	104.25	3728.49
				12/19/2012	115.00	104.97	3727.77
				1/17/2013	115.00	106.98	3725.76
				4/18/2013	115.00	105.47	3727.27
				7/18/2013	115.00	105.60	3727.14
				10/17/2013	115.00	105.59	3727.15
				3/6/2014	115.00	105.63	3727.11
				9/9/2014	115.00	106.02	3726.72
				3/11/2015	115.00	106.26	3726.48
				9/16/2015	115.00	106.53	3726.21
				3/30/2016	114.75	107.20	3725.54
				9/5/2016	---	107.80	3724.94
				3/6/2017	115.73	108.98	3723.76
				9/5/2017	---	112.20	3720.54
				4/12/2018	115.40	113.64	3719.10
				10/1/2018	---	Dry	--
				2/7/2019	115.24	114.40	3718.34
				12/2/2019	115.25	111.70	3721.04
MW-02	3830.96	4	95'-115'	1/19/2010	115.00	98.10	3732.86
				2/25/2010	115.00	98.17	3732.79
				3/1/2011	115.00	99.89	3731.07
				4/13/2011	115.00	100.03	3730.93
				7/15/2011	115.00	100.41	3730.55
				12/22/2011	115.00	100.53	3730.43
				3/22/2012	115.00	101.60	3729.36
				6/13/2012	115.00	101.60	3729.36
				9/27/2012	115.00	102.02	3728.94
				12/19/2012	115.00	102.68	3728.28
				1/17/2013	115.00	103.40	3727.56
				4/19/2013	115.00	102.93	3728.03
				7/18/2013	115.00	103.30	3727.66
				10/17/2013	115.00	103.54	3727.42
				3/6/2014	115.00	114.95	3716.01
				9/9/2014	115.00	103.70	3727.26
				3/15/2015	115.00	104.09	3726.87
				9/16/2015	115.00	104.30	3726.66
				3/30/2016	114.82	104.93	3726.03
				9/5/2016	---	105.55	3725.41
				3/6/2017	114.98	106.61	3724.35
				9/5/2017	---	108.45	3722.51
				4/12/2018	114.97	109.87	3721.09
				10/1/2018	114.71	110.65	3720.31
				2/4/2019	115.37	110.76	3720.20
				12/2/2019	116.75	108.08	3722.88
MW-03	3834.31	4	95'-115'	1/19/2010	115.00	101.96	3732.35
				2/25/2010	115.00	102.10	3732.21
				3/1/2011	115.00	103.94	3730.37
				4/13/2011	115.00	104.30	3730.01

Well	TOC elev[1]	Well Diameter (inches)	Screen Interval (ft bgs[3])	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Corrected Groundwater Elevation (ft above MSL[2])
MW-3 cont.				7/15/2011	115.00	104.76	3729.55
				12/22/2011	115.00	104.98	3729.33
				3/22/2012	115.00	105.60	3728.71
				6/13/2012	115.00	105.50	3728.81
				9/27/2012	115.00	105.83	3728.48
				12/19/2012	115.00	106.69	3727.62
				1/17/2013	115.00	107.03	3727.28
				4/19/2013	115.00	106.85	3727.46
				7/18/2013	115.00	107.33	3726.98
				10/17/2013	115.00	107.30	3727.01
				3/6/2014	115.00	107.03	3727.28
				9/9/2014	115.00	107.50	3726.81
				3/11/2015	115.00	107.82	3726.49
				9/16/2015	115.00	107.98	3726.33
				3/30/2016	115.07	108.70	3725.61
				9/5/2016	---	109.30	3725.01
				3/6/2017	115.91	110.31	3724.00
				9/5/2017	---	112.61	3721.70
				4/12/2018	---	113.98	3720.33
				10/1/2018	115.00	114.80	3719.51
				2/4/2019	116.12	115.02	3719.29
				12/2/2019	115.20	111.94	3722.37
MW-04	3831.95	4	95'-115'	1/19/2010	115.00	98.23	3733.72
				2/25/2010	115.00	98.28	3733.67
				3/1/2011	115.00	99.94	3732.01
				4/13/2011	115.00	100.18	3731.77
				7/15/2011	115.00	100.45	3731.50
				12/22/2011	115.00	100.48	3731.47
				3/22/2012	115.00	101.50	3730.45
				6/13/2012	115.00	101.55	3730.40
				9/27/2012	115.00	102.07	3729.88
				12/19/2012	115.00	102.84	3729.11
				1/17/2013	115.00	102.91	3729.04
				4/18/2013	115.00	102.78	3729.17
				7/18/2013	115.00	103.23	3728.72
				10/17/2013	115.00	103.18	3728.77
				3/6/2014	115.00	103.05	3728.90
				9/8/2014	115.00	103.62	3728.33
				3/10/2015	115.00	103.89	3728.06
				9/16/2015	115.00	104.25	3727.70
				3/30/2016	114.53	105.09	3726.86
				9/5/2016	115.00	105.91	3726.04
				3/6/2017	114.83	106.87	3725.08
				9/5/2017	115.00	107.78	3724.17
				4/12/2018	114.60	108.08	3723.87
				10/1/2018	114.91	109.15	3722.80
				2/4/2019	115.11	108.53	3723.42
				12/2/2019	114.58	107.27	3724.68
MW-05	3830.07	4	95'-130'	3/22/2012	133.00	100.15	3729.92
				6/13/2012	133.00	100.23	3729.84
				9/27/2012	133.00	100.72	3729.35
				12/19/2012	133.00	101.28	3728.79
				1/17/2013	133.00	101.65	3728.42
				4/18/2013	133.00	101.70	3728.37
				7/18/2013	133.00	101.81	3728.26
				10/17/2013	133.00	102.03	3728.04

Well	TOC elev[1]	Well Diameter (inches)	Screen Interval (ft bgs[3])	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Corrected Groundwater Elevation (ft above MSL[2])
MW-5 cont.				3/6/2014	133.00	102.03	3728.04
				9/8/2014	133.00	102.44	3727.63
				3/10/2015	133.00	103.20	3726.87
				9/16/2015	133.00	102.99	3727.08
				3/30/2016	132.60	103.70	3726.37
				9/5/2016	---	104.26	3725.81
				3/6/2017	---	105.27	3724.80
				9/5/2017	---	106.50	3723.57
				4/12/2018	131.95	107.61	3722.46
				10/1/2018	131.83	108.63	3721.44
				2/4/2019	131.73	108.66	3721.41
				12/2/2019	131.31	106.74	3723.33
MW-06	3835.60	4	95'-130'	3/22/2012	133.00	106.73	3728.87
				6/13/2012	133.00	106.56	3729.04
				9/27/2012	133.00	107.00	3728.60
				12/19/2012	133.00	108.28	3727.32
				1/17/2013	133.00	108.60	3727.00
				4/19/2013	133.00	107.83	3727.77
				7/18/2013	133.00	108.80	3726.80
				10/17/2013	133.00	108.75	3726.85
				3/6/2014	133.00	107.89	3727.71
				9/9/2014	133.00	108.31	3727.29
				3/10/2015	133.00	108.56	3727.04
				9/16/2015	133.00	108.98	3726.62
				3/30/2016	131.70	109.60	3726.00
				9/5/2016	---	110.25	3725.35
				3/6/2017	132.40	111.30	3724.30
				9/5/2017	---	112.50	3723.10
				4/12/2018	131.80	113.51	3722.09
				10/1/2018	131.80	114.40	3721.20
				2/4/2019	131.20	114.49	3721.11
				12/2/2019	131.20	112.54	3723.06
MW-07	3834.46	4	95'-132'	3/22/2012	135.00	105.97	3728.49
				6/13/2012	135.00	106.23	3728.23
				9/27/2012	135.00	106.44	3728.02
				12/19/2012	135.00	107.31	3727.15
				1/17/2013	135.00	107.53	3726.93
				4/18/2013	135.00	107.46	3727.00
				7/18/2013	135.00	108.01	3726.45
				10/17/2013	135.00	107.98	3726.48
				3/6/2014	135.00	107.55	3726.91
				9/9/2014	135.00	108.05	3726.41
				3/10/2015	135.00	108.50	3725.96
				9/16/2015	135.00	108.68	3725.78
				3/30/2016	134.90	109.41	3725.05
				9/5/2016	---	110.12	3724.34
				3/6/2017	135.21	110.80	3723.66
				9/5/2017	---	111.88	3722.58
				4/12/2018	135.70	113.28	3721.18
				10/1/2018	135.40	114.02	3720.44
				2/4/2019	135.44	114.29	3720.17
				12/2/2019	134.70	112.77	3721.69
MW-08	3832.40	4	97'-132'	3/22/2012	135.00	104.71	3727.69
				6/13/2012	135.00	104.84	3727.56
				9/27/2012	135.00	105.21	3727.19
				12/19/2012	135.00	105.82	3726.58

Well	TOC elev[1]	Well Diameter (inches)	Screen Interval (ft bgs[3])	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Corrected Groundwater Elevation (ft above MSL[2])
MW-8 cont.				1/17/2013	135.00	106.10	3726.30
				4/18/2013	135.00	106.27	3726.13
				7/18/2013	135.00	106.55	3725.85
				10/17/2013	135.00	106.55	3725.85
				3/6/2014	135.00	106.75	3725.65
				9/9/2014	135.00	107.27	3725.13
				3/10/2015	135.00	107.59	3724.81
				9/16/2015	135.00	107.73	3724.67
				3/30/2016	135.23	108.35	3724.05
				9/5/2016	---	108.82	3723.58
				3/6/2017	135.50	109.65	3722.75
				9/5/2017	---	110.70	3721.70
				4/12/2018	135.63	112.23	3720.17
				10/1/2018	134.81	112.40	3720.00
				2/4/2019	134.99	113.48	3718.92
				12/3/2019	132.54	112.38	3720.02
MW-09	3832.62	4	92'-222'	9/5/2016	226.00	105.77	3726.85
				3/6/2017	226.83	106.58	3726.04
				9/5/2017	---	107.60	3725.02
				4/12/2018	226.89	107.75	3724.87
				10/1/2018	225.03	109.08	3723.54
				2/4/2019	231.60	108.27	3724.35
				12/2/2019	280.25	106.50	3726.12
MW-10	3828.57	4	92'-223'	9/5/2016	223.00	103.08	3725.49
				3/6/2017	222.91	104.30	3724.27
				9/5/2017	---	105.25	3723.32
				4/12/2018	223.21	106.51	3722.06
				10/1/2018	223.04	107.48	3721.09
				2/4/2019	224.42	107.82	3720.75
				12/2/2019	223.00	106.14	3722.43
MW-11	3833.06	4	92'-223'	9/5/2016	225.00	108.05	3725.01
				3/6/2017	227.57	109.32	3723.74
				9/5/2017	---	111.38	3721.68
				4/12/2018	225.42	112.71	3720.35
				10/1/2018	226.31	113.60	3719.46
				2/4/2019	226.64	113.95	3719.11
				12/3/2019	225.00	11.27	3821.79
MW-12	3831.71	4	97'-227'	9/5/2017	227.00	110.07	3721.64
				4/12/2018	227.87	111.37	3720.34
				10/1/2018	227.89	112.10	3719.61
				2/4/2019	226.34	112.69	3719.02
				12/3/2019	229.85	111.95	3719.76
MW-13	3831.06	4	104'-234'	9/5/2017	234.00	109.22	3721.84
				4/12/2018	235.80	110.57	3720.49
				10/1/2018	230.61	111.41	3719.65
				2/4/2019	234.82	111.86	3719.20
				12/3/2019	227.18	110.81	3720.25
MW-14	3831.06	4	100'-130'	10/1/2018	134.51	113.14	3717.92
				2/4/2019	134.53	113.44	3717.62
				12/2/2019	134.55	112.05	3719.01
MW-15	3835.75	4	100'-130'	10/1/2018	134.76	115.13	3720.62
				2/5/2019	135.00	115.59	3720.16
				12/2/2019	134.40	113.63	3722.12
MW-16	3835.36	4	100'-130'	10/1/2018	134.10	112.44	3722.92
				2/4/2019	134.70	112.27	3723.09
				12/2/2019	134.15	110.77	3724.59

Well	TOC elev[1]	Well Diameter (inches)	Screen Interval (ft bgs[3])	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Corrected Groundwater Elevation (ft above MSL[2])

Notes:
[1] TOC - Top of Casing
[2] MSL - Mean Sea Level
[3] bgs - below ground surface
Professional Survey conducted by West Company of Midland, Inc. in March 2013 and January 2015.

APPENDIX D

Cumulative Summary of Groundwater Analytical Results

Appendix D
Cumulative Summary of Groundwater Analaytical Results
Lovington Unit Water Plant
Lea County, New Mexico

ARCADIS Design & Consultancy for natural and built assets

Sample I.D. No.	Replecate Sample I.D.	Date	NMWQCC Standards	
			Chloride 250 mg/L	Total Dissolved Solids 1,000 mg/L
MW-1		01/19/10	**336**	**1,080**
		02/25/10	**357**	**1,100**
		03/01/11	**264**	870
		04/13/11	**348**	**1,070**
		07/15/11	**271**	740
		12/22/11	**332**	**1,120**
	DUP	12/22/11	**339**	**1,010**
		03/22/12	**485**	**2,170**
		06/14/12	**502**	**1,550**
		09/28/12	**404**	**1,190**
		12/19/12	**401**	**1,000**
		01/18/13	102	**1,400**
		04/18/13	**567**	**1,250**
		07/18/13	**753**	**2,410**
		10/21/13	**578**	**2,010**
		03/07/14	**483**	**1,380**
		09/09/14	211	861
		03/11/15	**399**	**1,270**
		09/17/15	**791**	**1,780**
		03/31/16	**793**	**1,670**
		09/06/16	**359**	**1,300**
		03/07/17	**519**	**1,450**
		09/06/17	**618**	**1,560**
		04/13/18	**352**	933
		10/01/18	NA	NA
		02/05/19	NA	NA
		12/03/19	**450**	**2,000**
MW-2		01/19/10	**857**	**2180**
	DUP	01/19/10	**912**	**2150**
		02/25/10	**901**	**2440**
		03/01/11	**649**	**2390**
	DUP	03/01/11	**627**	**2400**
		04/13/11	**775**	**2690**
		07/15/11	**384**	**3220**
		12/22/11	**456**	**1420**
		03/23/12	**614**	**2640**
		06/14/12	**292**	**1190**
		09/28/12	**467**	**1490**
		12/20/12	**670**	**1,560**
		01/18/13	**486**	**1620**
		04/19/13	**406**	**1,340**
		07/18/13	**582**	**2000**
		10/21/13	**547**	**2,260**
		03/07/14	**483**	**1,280**
		09/09/14	**886**	**3,600**
		03/11/15	**1390**	**4,440**
		09/17/15	**1450**	**3060**
		03/31/16	**1050**	**1880**
		10/06/16	**838**	**2,600**
		03/07/17	**636**	**1,790**
		09/06/17	**401**	**1,440**
		04/12/18	**657**	**1,460**
		10/02/18	**764**	**1,530**
		02/07/19	**840**	**1,820**
		12/03/19	**1100**	**3,300**

Sample I.D. No.	Replecate Sample I.D.	Date	NMWQCC Standards	
			Chloride 250 mg/L	Total Dissolved Solids 1,000 mg/L
MW-3		01/19/10	**734**	**1920**
		02/25/10	**763**	**2130**
		03/01/11	**944**	**2670**
		04/13/11	**1050**	**4180**
	DUP	04/13/11	**1070**	**3650**
		07/15/11	**1130**	**3330**
	DUP	07/15/11	**1120**	**3480**
		12/22/11	**1200**	**2850**
		03/23/12	**1380**	**4220**
	DUP	03/23/12	**1390**	**3100**
		06/14/12	**1290**	**4220**
		09/28/12	**1440**	**6350**
	DUP	09/28/12	**1430**	**5650**
		12/20/12	**1190**	**2,860**
		01/18/13	**1210**	**3850**
	DUP	01/18/13	**1210**	**3650**
	DUP	04/18/13	**928**	**2310**
		04/19/13	**932**	**2120**
		07/18/13	**1120**	**3340**
	DUP	07/18/13	**1060**	**3320**
	DUP	10/20/13	**1140**	**3380**
		10/21/13	**1130**	**3,280**
		03/07/14	**1280**	**2890**
	DUP	03/07/14	**1250**	**2830**
		09/09/14	**807**	**2,850**
	DUP	09/09/14	**793**	**2,950**
		03/11/15	**785**	**2,440**
	DUP	03/11/15	**770**	**2,260**
		09/17/15	**354**	**1110**
	DUP	09/17/15	**343**	**1030**
		03/31/16	**279**	751
	DUP	03/31/16	**270**	703
		09/06/16	239	784
	DUP	09/06/16	236	759
		03/07/17	**505**	**1170**
	DUP	03/07/17	**508**	**1240**
		09/06/17	**703**	**1700**
	DUP	09/06/17	**693**	**1780**
		10/01/18	NA	NA
		02/05/19	NA	NA
		12/03/19	**580**	**1,800**
MW-4		01/19/10	212	622
		02/25/10	110	586
		03/01/11	73	452
		04/13/11	70	446
		07/15/11	66	366
		12/22/11	67	526
		03/22/12	92	626
		06/14/12	65	460
	DUP	06/14/12	66	436
		09/28/12	134	661
		12/19/12	125	501
		01/17/13	133	690
		04/18/13	83	468
		07/18/13	63	421
		10/18/13	72	446
		03/06/14	110	528
		09/08/14	107	613
		03/10/15	192	**1,340**
		09/16/15	**433**	**1,400**
		03/30/16	187	865

Sample I.D. No.	Replecate Sample I.D.	Date	NMWQCC Standards	
			Chloride 250 mg/L	Total Dissolved Solids 1,000 mg/L
MW-4 cont.		09/06/16	**400**	**1,490**
		03/07/17	**372**	**1,110**
		09/06/17	**503**	**1,240**
		04/12/18	126	702
		10/05/18	**410**	999
		02/06/19	219	720
		12/03/19	**1,200**	**3,500**
MW-5		03/22/12	199	**1100**
		06/14/12	88	468
		09/28/12	130	691
		12/19/12	126	489
		01/17/13	123	587
		04/18/13	140	625
		07/18/13	118	470
		10/18/13	59.9	318
		03/06/14	116	514
		09/08/14	41.3	408
		03/10/15	36.2	364
		09/16/15	34.6	365
		03/30/16	39.4	244
		09/05/16	33.8	178
		03/07/17	36.3	677
		09/06/17	35.0	394
		04/12/18	41.9	352
		10/02/18	48.0	415
		02/05/19	98	805
		12/03/19	130	350
MW-6		03/22/12	243	**1,140**
		06/14/12	**566**	**1,670**
		09/28/12	**1,040**	**2,300**
		12/20/12	**961**	**2,210**
		01/18/13	**1,310**	**2,700**
		04/19/13	**528**	**1,590**
		07/18/13	**256**	970
		10/18/13	214	763
		03/07/14	**576**	**1,510**
		09/09/14	**491**	**2,190**
		03/10/15	**341**	**1,250**
		09/16/15	**262**	**1,020**
		03/31/16	**833**	**1,310**
		09/05/16	**959**	**2,840**
		03/07/17	**842**	**1,940**
		09/06/17	**606**	**1,550**
		04/12/18	202	636
		10/03/18	**363**	847
	DUP	10/03/18	**361**	861
		02/06/19	**701**	**1,260**
		12/03/19	220	690
	DUP	12/03/19	220	750
MW-7		03/22/12	**251**	**1,210**
		06/14/12	196	926
		09/28/12	**258**	**1,000**
		12/19/12	192	683
		12/19/12	243	669
		01/18/13	221	776
		04/18/13	187	756
		07/18/13	178	736
		10/18/13	163	885
		03/06/14	188	763
		09/09/14	144	805
		03/10/15	140	676
		09/16/15	168	675

Sample I.D. No.	Replecate Sample I.D.	Date	NMWQCC Standards	
			Chloride 250 mg/L	Total Dissolved Solids 1,000 mg/L
MW-7 cont.		03/30/16	**297**	422
		09/05/16	212	778
		03/07/17	185	984
		09/06/17	**284**	990
		04/12/18	117	667
		10/03/18	97	500
		02/06/19	131	545
		12/03/19	130	450
MW-8		03/22/12	192	910
		06/14/12	184	914
		09/28/12	210	814
		12/19/12	192	702
		01/17/13	205	923
		04/18/13	216	853
		07/18/13	219	885
		10/18/13	90	443
		03/06/14	222	819
		09/09/14	184	911
		03/10/15	198	772
		09/16/15	241	922
		03/31/16	**271**	712
		10/06/16	**291**	**1,220**
		03/07/17	**338**	**1,220**
		09/06/17	**298**	**1,120**
		04/13/18	**305**	923
	DUP	04/13/18	**290**	875
		10/02/18	**304**	854
		02/07/19	**438**	**1,130**
		12/03/19	330	**1,200**

Sample I.D. No.	Replecate Sample I.D.	Date	NMWQCC Standards	
			Chloride 250 mg/L	Total Dissolved Solids 1,000 mg/L
MW-9		09/06/16	87	462
		03/07/17	74	430
		09/06/17	163	658
		04/12/18	67	438
		10/03/18	59	449
		02/05/19	70	451
		12/03/19	**3,100**	**3,500**
MW-10		09/06/16	64	346
		03/07/17	106	463
		09/06/17	96	534
		04/12/18	47	441
		10/02/18	33	330
		02/05/19	99	510
		12/03/19	85	330
MW-11		09/06/16	98	549
		03/07/17	**592**	**1,330**
		09/06/17	**390**	**1,040**
		04/13/18	75	487
		10/04/18	140	547
		02/06/19	**955**	**1,460**
		12/03/19	**580**	**1,500**
MW-12		09/06/17	**1,160**	**2,710**
		04/13/18	**592**	**1,380**
		10/02/18	**477**	**1,200**
		02/07/19	**1,760**	**2,850**
	DUP	02/07/19	**1,730**	**2,570**
		12/03/19	**880**	**2,500**
MW-13		09/06/17	206	810
		04/13/18	**306**	859
		10/02/18	93	439
		02/05/19	230	750
		12/3/2019	160	490
MW-14		10/03/18	98	479
		02/06/19	76	468
		12/03/19	96	330
MW-15		10/03/18	**325**	910
		02/07/19	**483**	**1,110**
		12/03/19	330	990
MW-16		10/04/18	56	434
		02/06/19	215	698
		12/03/19	**430**	**1,300**
RW-1 (Waterford Supply Well)		10/21/13	178	848

Notes:

1) RCRA Metals Analysis by Environment Protections Agency (EPA) Methods 6010B and 7470A.
2) Groundwater Quality by EPA Methods 160.1, 300.0, and 310.1.
3) Highlighted values indicate concentrations above NMWQCC Other Standards for Domestic Water Supply.
4) [1] NMWQCC Human Health Standards Per NMAC 20.6.2.3103A.
5) [2] NMWQCC Other Standards for Domestic Water Supply Per NMAC 20.6.2.3103B.
6) NA= Not analyzed
7) DUP = Duplicate sample
8) D = Dilution factors are included in the final results. The result is from a diluted sample.
9) * = Likely an order of magnitude higher then actual result; however reported value was verified by the laboratory

APPENDIX E

Analytical Reports

February 11, 2019

Scott Foord
GHD Services, INC- Midland
2135 S Loop 250 W Midland, TX 79703

Please find the attached Confirmation of Sample Receipt for samples received by our laboratory on 02/08/2019. The samples have been logged in for a 5 Day TAT turnaround with results due 02/15/2019. The following is our understanding of your project requirements as described on the enclosed chain of custody form. To ensure that your needs are met, please take a moment to verify that:

1. The number and type of samples received are correct.

2. The analytical methods specified are correct.

3. Due dates for analytical results are correct.

4. Address, phone and fax information are correct.

Your samples will be retained for a period of 60 business days following receipt of the samples. After that time, they will be properly disposed of without further notice, unless there is an acknowledged written request. We reserve the right to return any unused samples, extracts or related solutions that have been identified as hazardous waste, are controlled substances under regulated protocols or have sample sizes exceeding standard analytical practices.

If there are any questions, please do not hesitate to contact your Project Manager and reference work order number **613999**

Confirmation of Sample Receipt # 613999

The following samples were received on Feb 08,2019 and will be analyzed as follows:

Client:	**GHD Services, INC- Midland**	**Turnaround:**	5 Day TAT
Lab PM:	Debbie Simmons	**Results Due:**	Feb-15-2019 17:00
Project ID:	073016	**Report to**	Scott Foord
Project Name:	CEMC- Lovington Water Unit Plant Site		
Location:	Lovington NM		
QC Package:	Texas Level II Results per Page - Summary Cover		
EDD Type:	Chevron_Locus_v62		

Client Sample ID	Lab ID	Method Name (Analysis)	Matrix	Sampled
MW-5-020519	613999-001	Inorganic Anions by EPA 300/300.1	Water	02/05/19 11:50
MW-5-020519	613999-001	TDS by SM2540C	Water	02/05/19 11:50
MW-10-020519	613999-002	Inorganic Anions by EPA 300/300.1	Water	02/05/19 13:10
MW-10-020519	613999-002	TDS by SM2540C	Water	02/05/19 13:10
MW-9-020519	613999-003	Inorganic Anions by EPA 300/300.1	Water	02/05/19 14:30
MW-9-020519	613999-003	TDS by SM2540C	Water	02/05/19 14:30
MW-13-020519	613999-004	Inorganic Anions by EPA 300/300.1	Water	02/05/19 15:35
MW-13-020519	613999-004	TDS by SM2540C	Water	02/05/19 15:35
MW-7-020619	613999-005	Inorganic Anions by EPA 300/300.1	Water	02/06/19 11:20
MW-7-020619	613999-005	TDS by SM2540C	Water	02/06/19 11:20
MW-14-020619	613999-006	Inorganic Anions by EPA 300/300.1	Water	02/06/19 12:10
MW-14-020619	613999-006	TDS by SM2540C	Water	02/06/19 12:10
MW-16-020619	613999-007	Inorganic Anions by EPA 300/300.1	Water	02/06/19 13:10
MW-16-020619	613999-007	TDS by SM2540C	Water	02/06/19 13:10
MW-4-020619	613999-008	Inorganic Anions by EPA 300/300.1	Water	02/06/19 14:00
MW-4-020619	613999-008	TDS by SM2540C	Water	02/06/19 14:00
MW-6-020619	613999-009	Inorganic Anions by EPA 300/300.1	Water	02/06/19 15:00
MW-6-020619	613999-009	TDS by SM2540C	Water	02/06/19 15:00
MW-11-020619	613999-010	Inorganic Anions by EPA 300/300.1	Water	02/06/19 15:55
MW-11-020619	613999-010	TDS by SM2540C	Water	02/06/19 15:55
MW-08-020719	613999-011	Inorganic Anions by EPA 300/300.1	Water	02/07/19 12:10
MW-08-020719	613999-011	TDS by SM2540C	Water	02/07/19 12:10
MW-12-020719	613999-012	Inorganic Anions by EPA 300/300.1	Water	02/07/19 13:00
MW-12-020719	613999-012	TDS by SM2540C	Water	02/07/19 13:00
MW-15-020719	613999-013	Inorganic Anions by EPA 300/300.1	Water	02/07/19 14:30
MW-15-020719	613999-013	TDS by SM2540C	Water	02/07/19 14:30
MW-DUP-020719	613999-014	Inorganic Anions by EPA 300/300.1	Water	02/07/19 00:00
MW-DUP-020719	613999-014	TDS by SM2540C	Water	02/07/19 00:00
MW-02-020719	613999-015	Inorganic Anions by EPA 300/300.1	Water	02/07/19 15:00
MW-02-020719	613999-015	TDS by SM2540C	Water	02/07/19 15:00

Special Instructions:

Hold times up 2/12 for samples 1-4, then 2/13 for 5-10 and 2/14 for 11-15
Watch HOLD times!!!

Chain of Custody

XENCO LABORATORIES

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432-704-5440) EL Paso,TX (915)585-3443 Lubbock,TX (806)794-1296
Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000) www.xenco.com

Work Order No: 613999

Page 1 of 2

Project Manager:	Scott Foord	Bill to: (if different)	Cenergy Partners c/o Jason Michaelson
Company Name:	GHD	Company Name:	CEMC
Address:	2135 S. Loop 250 West	Address:	1400 Smith Street, Office 07084
City, State ZIP:	Midland, TX. 79703	City, State ZIP:	Houston, TX. 77002
Phone:	713-734-3090 Email:	Christopher.Knight@ghd.com, William.Foord@ghd.com & Paige.Hall@ghd.com	

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting:Level II ☐ Level III ☐ PST/UST ☐ RRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	CEMC- Lovington Water Unit Plant Site	Turn Around	
Project Number:	073016	Routine	X
P.O. Number:		Rush:	
Sampler's Name:	Joe Mireles Joshua Pigg	Due Date:	

SAMPLE RECEIPT				
Temp Blank:	(Yes) No	Wet Ice:	(Yes) No	
Temperature (°C):	-3.1 -.4	Thermometer ID	R8	
Received Intact:	(Yes) No			
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.1	
Sample Custody Seals:	Yes No (N/A)	Total Containers:		

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TDS SM2540	Chlorides EPA 300.0	Work Order Notes
MW-5-020519	GW	2-5	1150	—	1	X	X	
MW-10-020519	GW	2-5	1310	—	1	X	X	
MW-9-020519	GW	2-5	1430	—	1	X	X	
MW-13-020519	GW	2-5	1535	—	1	X	X	
MW-7-020619	GW	2-6	1120	—	1	X	X	
~~MW-15-020~~								
MW-14-020619	GW	2-6	1210	—	1	X	X	
MW-16-020619	GW	2-6	1310	—	1	X	X	
MW-4-020619	GW	2-6	1400	—	1	X	X	
MW-6-020619	GW	2-6	1500	—	1	X	X	

TAT starts the day recevied by the lab, if received by 4:30pm

Sample Comments

Page 3 of 5

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed **TCLP / SPLP 6010**: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U **1631 / 245.1 / 7470 / 7471** : Hg

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 Joe Mireles		2/8/18 1152	2		
3			4		
5			6		

Chain of Custody

XENCO LABORATORIES

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432-704-5440) EL Paso,TX (915)585-3443 Lubbock,TX (806)794-1296
Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000) www.xenco.com

Work Order No: 613999

Page 1 of 2

Project Manager:	Scott Foord	Bill to: (if different)	Cenergy Partners c/o Jason Michaelson
Company Name:	GHD	Company Name:	CEMC
Address:	2135 S. Loop 250 West	Address:	1400 Smith Street, Office 07084
City, State ZIP:	Midland, TX. 79703	City, State ZIP:	Houston, TX. 77002
Phone:	713-734-3090 Email:	Christopher.Knight@ghd.com, William.Foord@ghd.com & Paige.Hall@ghd.com	

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting:Level II ☐ Level III ☐ PST/UST ☐ RRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	CEMC- Lovington Water Unit Plant Site	Turn Around	
Project Number:	073016	Routine	☒
P.O. Number:		Rush:	
Sampler's Name:	Joe Mireles Joshua Rigg Joshua Sharkey	Due Date:	

SAMPLE RECEIPT			
Temp Blank:	(Yes) No	Wet Ice:	(Yes) No
Temperature (°C):	-.3/-.4	Thermometer ID	R8
Received Intact:	(Yes) No		
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.1
Sample Custody Seals:	Yes No (N/A)	Total Containers:	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TDS SM 2540	Chlorides EPA 300.0
MW-11-020619	GW	2-6	1555	—	1	X	X
MW-08-020719	GW	2-7	1210		1	X	X
MW-12-020719	GW	2-7	1300		1	X	X
MW-15-020719	GW	2-7	1430		1	X	X
MW-Dup-020719	GW	2-7	Dup		1	X	X
MW-02-020719	GW	2-7	1500		1	X	X

ANALYSIS REQUEST

Work Order Notes

TAT starts the day recevied by the lab, if received by 4:30pm

Sample Comments

Page 4 of 5

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed **TCLP / SPLP 6010**: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U **1631 / 245.1 / 7470 / 7471** : Hg

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 Joe Mireles		2/8/18 1152	2		
3			4		
5			6		

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: GHD Services, INC- Midland

Date/ Time Received: 02/08/2019 11:52:00 AM

Work Order #: 613999

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	-.3
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**No**
#18 Water VOC samples have zero headspace?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: BT

PH Device/Lot#: A023690

Checklist completed by: Katie Lowe Date: 02/08/2019

Checklist reviewed by: Debbie Simmons Date: 02/11/2019

Certificate of Analysis Summary 613999

GHD Services, INC- Midland, Midland, TX

Project Name: CEMC- Lovington Water Unit Plant Site

Project Id: 073016
Contact: Scott Foord
Project Location: Lovington NM

Date Received in Lab: Fri Feb-08-19 11:52 am
Report Date: 20-FEB-19
Project Manager: Debbie Simmons

Analysis Requested													
	Lab Id:	613999-001		613999-002		613999-003		613999-004		613999-005		613999-006	
	Field Id:	MW-5-020519		MW-10-020519		MW-9-020519		MW-13-020519		MW-7-020619		MW-14-020619	
	Depth:												
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	Sampled:	Feb-05-19 11:50		Feb-05-19 13:10		Feb-05-19 14:30		Feb-05-19 15:35		Feb-06-19 11:20		Feb-06-19 12:10	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Feb-11-19 14:15		Feb-11-19 14:15		Feb-11-19 14:15		Feb-11-19 14:15		Feb-11-19 14:15		Feb-11-19 14:15	
	Analyzed:	Feb-11-19 16:20		Feb-11-19 16:48		Feb-11-19 16:58		Feb-11-19 17:08		Feb-11-19 17:17		Feb-11-19 17:27	
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
Chloride		98.4	2.50	99.4	2.50	69.5	2.50	230	2.50	131	2.50	75.7	2.50
TDS by SM2540C	***Extracted:***												
	Analyzed:	Feb-11-19 13:10		Feb-11-19 13:10		Feb-11-19 13:10		Feb-11-19 13:10		Feb-11-19 13:10		Feb-11-19 13:10	
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
Total Dissolved Solids		805	5.00	510	5.00	451	5.00	750	5.00	545	5.00	468	5.00

Debbie Simmons
Project Manager

Certificate of Analysis Summary 613999

GHD Services, INC- Midland, Midland, TX

Project Name: CEMC- Lovington Water Unit Plant Site

Project Id: 073016
Contact: Scott Foord
Project Location: Lovington NM

Date Received in Lab: Fri Feb-08-19 11:52 am
Report Date: 20-FEB-19
Project Manager: Debbie Simmons

Analysis Requested													
	Lab Id:	613999-007		613999-008		613999-009		613999-010		613999-011		613999-012	
	Field Id:	MW-16-020619		MW-4-020619		MW-6-020619		MW-11-020619		MW-08-020719		MW-12-020719	
	Depth:												
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	Sampled:	Feb-06-19 13:10		Feb-06-19 14:00		Feb-06-19 15:00		Feb-06-19 15:55		Feb-07-19 12:10		Feb-07-19 13:00	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Feb-11-19 14:15		Feb-11-19 14:15		Feb-11-19 14:15		Feb-11-19 14:15		Feb-11-19 14:15		Feb-11-19 14:15	
	Analyzed:	Feb-11-19 17:37		Feb-11-19 18:06		Feb-11-19 18:15		Feb-11-19 18:44		Feb-11-19 18:54		Feb-11-19 19:03	
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
Chloride		215	2.50	219	2.50	701	5.00	955	10.0	438	2.50	1760	25.0
TDS by SM2540C	***Extracted:***												
	Analyzed:	Feb-11-19 13:10		Feb-11-19 13:10		Feb-11-19 13:10		Feb-11-19 13:10		Feb-11-19 13:10		Feb-11-19 13:10	
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
Total Dissolved Solids		698	5.00	720	5.00	1260	5.00	1460	5.00	1130	5.00	2850	5.00

Debbie Simmons
Project Manager

Certificate of Analysis Summary 613999

GHD Services, INC- Midland, Midland, TX

Project Name: CEMC- Lovington Water Unit Plant Site

Project Id: 073016
Contact: Scott Foord
Project Location: Lovington NM

Date Received in Lab: Fri Feb-08-19 11:52 am
Report Date: 20-FEB-19
Project Manager: Debbie Simmons

Analysis Requested											
	Lab Id:	613999-013		613999-014		613999-015					
	Field Id:	MW-15-020719		MW-DUP-020719		MW-02-020719					
	Depth:										
	Matrix:	WATER		WATER		WATER					
	Sampled:	Feb-07-19 14:30		Feb-07-19 00:00		Feb-07-19 15:00					
Inorganic Anions by EPA 300/300.1	***Extracted:***	Feb-11-19 14:15		Feb-11-19 14:15		Feb-11-19 14:15					
	Analyzed:	Feb-11-19 19:13		Feb-11-19 19:23		Feb-11-19 19:32					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL				
Chloride		483	5.00	1730	25.0	840	10.0				
TDS by SM2540C	***Extracted:***										
	Analyzed:	Feb-11-19 13:10		Feb-11-19 13:10		Feb-11-19 13:10					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL				
Total Dissolved Solids		1110	5.00	2570	5.00	1820	5.00				

Debbie Simmons
Project Manager

Analytical Report 613999

for

GHD Services, INC- Midland

Project Manager: Scott Foord

CEMC- Lovington Water Unit Plant Site

073016

20-FEB-19

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)
Xenco-Lakeland: Florida (E84098)

20-FEB-19

Project Manager: **Scott Foord**
GHD Services, INC- Midland
2135 S Loop 250 W
Midland, TX 79703

Reference: XENCO Report No(s): **613999**
CEMC- Lovington Water Unit Plant Site
Project Address: Lovington NM

Scott Foord:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 613999. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 613999 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Debbie Simmons

Debbie Simmons
Project Manager

Sample Cross Reference 613999

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-5-020519	W	02-05-19 11:50		613999-001
MW-10-020519	W	02-05-19 13:10		613999-002
MW-9-020519	W	02-05-19 14:30		613999-003
MW-13-020519	W	02-05-19 15:35		613999-004
MW-7-020619	W	02-06-19 11:20		613999-005
MW-14-020619	W	02-06-19 12:10		613999-006
MW-16-020619	W	02-06-19 13:10		613999-007
MW-4-020619	W	02-06-19 14:00		613999-008
MW-6-020619	W	02-06-19 15:00		613999-009
MW-11-020619	W	02-06-19 15:55		613999-010
MW-08-020719	W	02-07-19 12:10		613999-011
MW-12-020719	W	02-07-19 13:00		613999-012
MW-15-020719	W	02-07-19 14:30		613999-013
MW-DUP-020719	W	02-07-19 00:00		613999-014
MW-02-020719	W	02-07-19 15:00		613999-015

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3078759 Inorganic Anions by EPA 300/300.1

Lab Sample ID 614076-003 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 613999-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015.

The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.

Certificate of Analytical Results 613999

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id: **MW-5-020519** Matrix: Water Date Received:02.08.19 11.52

Lab Sample Id: 613999-001 Date Collected: 02.05.19 11.50

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 02.11.19 14.15

Seq Number: 3078759

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**98.4**	2.50	mg/L	02.11.19 16.20		5

Analytical Method: TDS by SM2540C

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3078888

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**805**	5.00	mg/L	02.11.19 13.10		1

Certificate of Analytical Results 613999

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id:	**MW-10-020519**	Matrix:	Water	Date Received:	02.08.19 11.52
Lab Sample Id:	613999-002	Date Collected:	02.05.19 13.10		

Analytical Method: Inorganic Anions by EPA 300/300.1 — Prep Method: E300P

Tech: CHE — % Moisture:

Analyst: CHE — Date Prep: 02.11.19 14.15

Seq Number: 3078759

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**99.4**	2.50	mg/L	02.11.19 16.48		5

Analytical Method: TDS by SM2540C

Tech: CHE — % Moisture:

Analyst: CHE

Seq Number: 3078888

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**510**	5.00	mg/L	02.11.19 13.10		1

Certificate of Analytical Results 613999

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id: **MW-9-020519** Matrix: Water Date Received:02.08.19 11.52

Lab Sample Id: 613999-003 Date Collected: 02.05.19 14.30

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 02.11.19 14.15

Seq Number: 3078759

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**69.5**	2.50	mg/L	02.11.19 16.58		5

Analytical Method: TDS by SM2540C

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3078888

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**451**	5.00	mg/L	02.11.19 13.10		1

Certificate of Analytical Results 613999

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id:	**MW-13-020519**	Matrix:	Water	Date Received:	02.08.19 11.52
Lab Sample Id:	613999-004	Date Collected:	02.05.19 15.35		

Analytical Method: Inorganic Anions by EPA 300/300.1 — Prep Method: E300P

Tech: CHE — % Moisture:

Analyst: CHE — Date Prep: 02.11.19 14.15

Seq Number: 3078759

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**230**	2.50	mg/L	02.11.19 17.08		5

Analytical Method: TDS by SM2540C

Tech: CHE — % Moisture:

Analyst: CHE

Seq Number: 3078888

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**750**	5.00	mg/L	02.11.19 13.10		1

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id: **MW-7-020619** Matrix: Water Date Received:02.08.19 11.52

Lab Sample Id: 613999-005 Date Collected: 02.06.19 11.20

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 02.11.19 14.15

Seq Number: 3078759

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**131**	2.50	mg/L	02.11.19 17.17		5

Analytical Method: TDS by SM2540C

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3078888

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**545**	5.00	mg/L	02.11.19 13.10		1

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id: **MW-14-020619** Matrix: Water Date Received:02.08.19 11.52

Lab Sample Id: 613999-006 Date Collected: 02.06.19 12.10

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 02.11.19 14.15

Seq Number: 3078759

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**75.7**	2.50	mg/L	02.11.19 17.27		5

Analytical Method: TDS by SM2540C

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3078888

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**468**	5.00	mg/L	02.11.19 13.10		1

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id: **MW-16-020619** Matrix: Water Date Received:02.08.19 11.52

Lab Sample Id: 613999-007 Date Collected: 02.06.19 13.10

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 02.11.19 14.15

Seq Number: 3078759

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**215**	2.50	mg/L	02.11.19 17.37		5

Analytical Method: TDS by SM2540C

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3078888

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**698**	5.00	mg/L	02.11.19 13.10		1

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id: **MW-4-020619** Matrix: Water Date Received:02.08.19 11.52

Lab Sample Id: 613999-008 Date Collected: 02.06.19 14.00

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 02.11.19 14.15

Seq Number: 3078759

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**219**	2.50	mg/L	02.11.19 18.06		5

Analytical Method: TDS by SM2540C

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3078888

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**720**	5.00	mg/L	02.11.19 13.10		1

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id: **MW-6-020619** Matrix: Water Date Received:02.08.19 11.52

Lab Sample Id: 613999-009 Date Collected: 02.06.19 15.00

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 02.11.19 14.15

Seq Number: 3078759

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**701**	5.00	mg/L	02.11.19 18.15		10

Analytical Method: TDS by SM2540C

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3078888

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**1260**	5.00	mg/L	02.11.19 13.10		1

Certificate of Analytical Results 613999

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id: **MW-11-020619** Matrix: Water Date Received:02.08.19 11.52

Lab Sample Id: 613999-010 Date Collected: 02.06.19 15.55

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 02.11.19 14.15

Seq Number: 3078759

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**955**	10.0	mg/L	02.11.19 18.44		20

Analytical Method: TDS by SM2540C

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3078888

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**1460**	5.00	mg/L	02.11.19 13.10		1

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id: **MW-08-020719** Matrix: Water Date Received:02.08.19 11.52

Lab Sample Id: 613999-011 Date Collected: 02.07.19 12.10

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 02.11.19 14.15

Seq Number: 3078759

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**438**	2.50	mg/L	02.11.19 18.54		5

Analytical Method: TDS by SM2540C

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3078888

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**1130**	5.00	mg/L	02.11.19 13.10		1

Certificate of Analytical Results 613999

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id: **MW-12-020719** Matrix: Water Date Received:02.08.19 11.52

Lab Sample Id: 613999-012 Date Collected: 02.07.19 13.00

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 02.11.19 14.15

Seq Number: 3078759

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1760**	25.0	mg/L	02.11.19 19.03		50

Analytical Method: TDS by SM2540C

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3078888

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**2850**	5.00	mg/L	02.11.19 13.10		1

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id: **MW-15-020719** Matrix: Water Date Received:02.08.19 11.52

Lab Sample Id: 613999-013 Date Collected: 02.07.19 14.30

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 02.11.19 14.15

Seq Number: 3078759

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**483**	5.00	mg/L	02.11.19 19.13		10

Analytical Method: TDS by SM2540C

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3078888

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**1110**	5.00	mg/L	02.11.19 13.10		1

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id: **MW-DUP-020719** Matrix: Water Date Received:02.08.19 11.52

Lab Sample Id: 613999-014 Date Collected: 02.07.19 00.00

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 02.11.19 14.15

Seq Number: 3078759

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1730**	25.0	mg/L	02.11.19 19.23		50

Analytical Method: TDS by SM2540C

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3078888

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**2570**	5.00	mg/L	02.11.19 13.10		1

GHD Services, INC- Midland, Midland, TX

CEMC- Lovington Water Unit Plant Site

Sample Id: **MW-02-020719** Matrix: Water Date Received:02.08.19 11.52

Lab Sample Id: 613999-015 Date Collected: 02.07.19 15.00

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 02.11.19 14.15

Seq Number: 3078759

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**840**	10.0	mg/L	02.11.19 19.32		20

Analytical Method: TDS by SM2540C

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3078888

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**1820**	5.00	mg/L	02.11.19 13.10		1

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

QC Summary 613999

GHD Services, INC- Midland

CEMC- Lovington Water Unit Plant Site

Analytical Method: **Inorganic Anions by EPA 300/300.1** Prep Method: E300P

Seq Number: 3078759 Matrix: Water Date Prep: 02.11.19

MB Sample Id: 7671522-1-BLK LCS Sample Id: 7671522-1-BKS LCSD Sample Id: 7671522-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.500	25.0	26.1	104	26.2	105	90-110	0	20	mg/L	02.11.19 15:02	

Analytical Method: **Inorganic Anions by EPA 300/300.1** Prep Method: E300P

Seq Number: 3078759 Matrix: Water Date Prep: 02.11.19

Parent Sample Id: 613999-007 MS Sample Id: 613999-007 S MSD Sample Id: 613999-007 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	215	125	362	118	361	117	90-110	0	20	mg/L	02.11.19 17:46	X

Analytical Method: **Inorganic Anions by EPA 300/300.1** Prep Method: E300P

Seq Number: 3078759 Matrix: Water Date Prep: 02.11.19

Parent Sample Id: 614076-003 MS Sample Id: 614076-003 S MSD Sample Id: 614076-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	31.6	25.0	57.2	102	57.4	103	90-110	0	20	mg/L	02.11.19 15:31	

Analytical Method: **TDS by SM2540C**

Seq Number: 3078888 Matrix: Water

MB Sample Id: 3078888-1-BLK LCS Sample Id: 3078888-1-BKS LCSD Sample Id: 3078888-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Total Dissolved Solids	11.0	1000	977	98	965	97	80-120	1	10	mg/L	02.11.19 13:10	

Analytical Method: **TDS by SM2540C**

Seq Number: 3078888 Matrix: Water

Parent Sample Id: 613999-001 MD Sample Id: 613999-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Total Dissolved Solids	805	801	0	10	mg/L	02.11.19 13:10	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

QC Summary 613999

GHD Services, INC- Midland

CEMC- Lovington Water Unit Plant Site

Analytical Method: **TDS by SM2540C**

Seq Number: 3078888 Matrix: Water

Parent Sample Id: 613999-011 MD Sample Id: 613999-011 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Total Dissolved Solids	1130	1040	8	10	mg/L	02.11.19 13:10	

MS/MSD Percent Recovery [D] = 100*(C-A) / B LCS = Laboratory Control Sample MS = Matrix Spike

Relative Percent Difference RPD = 200* | (C-E) / (C+E) | A = Parent Result B = Spike Added

LCS/LCSD Recovery [D] = 100 * (C) / [B] C = MS/LCS Result D = MSD/LCSD % Rec

Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample) E = MSD/LCSD Result

Chain of Custody

XENCO LABORATORIES

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432-704-5440) EL Paso,TX (915)585-3443 Lubbock,TX (806)794-1296
Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000) www.xenco.com

Work Order No: 613999

Page 1 of 2

Project Manager:	Scott Foord	Bill to: (if different)	Cenergy Partners c/o Jason Michaelson
Company Name:	GHD	Company Name:	CEMC
Address:	2135 S. Loop 250 West	Address:	1400 Smith Street, Office 07084
City, State ZIP:	Midland, TX. 79703	City, State ZIP:	Houston, TX. 77002
Phone:	713-734-3090 Email:	Christopher.Knight@ghd.com, William.Foord@ghd.com & Paige.Hall@ghd.com	

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting:Level II ☐ Level III ☐ PST/UST ☐ RRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	CEMC- Lovington Water Unit Plant Site	Turn Around	
Project Number:	073016	Routine	X
P.O. Number:		Rush:	
Sampler's Name:	Joe Mireles Joshua Pigg	Due Date:	

SAMPLE RECEIPT			
Temp Blank:	(Yes) No	Wet Ice:	(Yes) No
Temperature (°C):	-3.1 -.4	Thermometer ID	R8
Received Intact:	(Yes) No		
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.1
Sample Custody Seals:	Yes No (N/A)	Total Containers:	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TDS SM2540	Chlorides EPA 300.0
MW-5-020519	GW	2-5	1150	—	1	X	X
MW-10-020519	GW	2-5	1310	—	1	X	X
MW-9-020519	GW	2-5	1430	—	1	X	X
MW-13-020519	GW	2-5	1535	—	1	X	X
MW-7-020619	GW	2-6	1120	—	1	X	X
~~MW-15-020~~							
MW-14-020619	GW	2-6	1210	—	1	X	X
MW-16-020619	GW	2-6	1310	—	1	X	X
MW-4-020619	GW	2-6	1400	—	1	X	X
MW-6-020619	GW	2-6	1500	—	1	X	X

ANALYSIS REQUEST

Work Order Notes

TAT starts the day recevied by the lab, if received by 4:30pm

Sample Comments

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed **TCLP / SPLP 6010**: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U **1631 / 245.1 / 7470 / 7471** : Hg

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 Joe Mireles		2/8/18 1152	2		
3			4		
5			6		

Revised Date 051418 Rev. 2018.1

Final 1.000

Page 26 of 28

Chain of Custody

XENCO LABORATORIES

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432-704-5440) EL Paso,TX (915)585-3443 Lubbock,TX (806)794-1296
Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000) www.xenco.com

Work Order No: 613999

Page 1 of 2

Project Manager:	Scott Foord	Bill to: (if different)	Cenergy Partners c/o Jason Michaelson
Company Name:	GHD	Company Name:	CEMC
Address:	2135 S. Loop 250 West	Address:	1400 Smith Street, Office 07084
City, State ZIP:	Midland, TX. 79703	City, State ZIP:	Houston, TX. 77002
Phone:	713-734-3090 Email:	Christopher.Knight@ghd.com, William.Foord@ghd.com & Paige.Hall@ghd.com	

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting:Level II ☐ Level III ☐ PST/UST ☐ RRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	CEMC- Lovington Water Unit Plant Site	Turn Around	
Project Number:	073016	Routine	☒
P.O. Number:		Rush:	
Sampler's Name:	Joe Mireles Joshua Rigg Joshua Sharkey	Due Date:	

SAMPLE RECEIPT			
Temp Blank:	(Yes) No	Wet Ice:	(Yes) No
Temperature (°C):	-.3/-.4	Thermometer ID	R8
Received Intact:	(Yes) No		
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.1
Sample Custody Seals:	Yes No (N/A)	Total Containers:	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TDS SM 2540	Chlorides EPA 300.0
MW-11-020619	GW	2-6	1555	—	1	X	X
MW-08-020719	GW	2-7	1210		1	X	X
MW-12-020719	GW	2-7	1300		1	X	X
MW-15-020719	GW	2-7	1430		1	X	X
MW-Dup-020719	GW	2-7	Dup		1	X	X
MW-02-020719	GW	2-7	1500		1	X	X

Work Order Notes

TAT starts the day recevied by the lab, if received by 4:30pm

Sample Comments

Total 200.7 / 6010 **200.8 / 6020:** 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed **TCLP / SPLP 6010**: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U **1631 / 245.1 / 7470 / 7471** : Hg

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 Joe Mireles		2/8/18 1152	2		
3			4		
5			6		

Revised Date 051418 Rev. 2018.1

Final 1.000

Page 27 of 28

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: GHD Services, INC- Midland

Date/ Time Received: 02/08/2019 11:52:00 AM

Work Order #: 613999

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	-.3
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**No**
#18 Water VOC samples have zero headspace?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: BT

PH Device/Lot#: A023690

Checklist completed by: Katie Lowe Date: 02/08/2019

Checklist reviewed by: Debbie Simmons Date: 02/11/2019

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Houston
6310 Rothway Street
Houston, TX 77040
Tel: (713)690-4444

Laboratory Job ID: 600-196881-1
Client Project/Site: Chevron Lovington Water Plant

For:
ARCADIS U.S., Inc.
10205 Westheimer Rd
Suite 800
Houston, Texas 77042

Attn: Scott Foord

Authorized for release by:
12/20/2019 3:03:10 PM

Sachin Kudchadkar, Senior Project Manager
(713)690-4444
sachin.kudchadkar@testamericainc.com

Table of Contents

Job ID: 600-196881-1

Laboratory: Eurofins TestAmerica, Houston

Narrative

Job Narrative
600-196881-1

Comments
No additional comments.

Receipt
The samples were received on 12/4/2019 10:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.1° C.

Receipt Exceptions

Verify analysis.

General Chemistry
Method 9056: The method blank for analytical batch 600-283335 contained Chloride above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method 9056: The method blank for analytical batch 600-283462 contained Chloride above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Methods 300.0, 9056: The method blank for analytical batch 600-283348 contained chloride above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method 9056: The method blank for analytical batch 600-283517 contained Chloride above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

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

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 600-196881-1
Project/Site: Chevron Lovington Water Plant

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL HOU
2540 C-1997	Total Dissolved Solids (Dried at 180 °C)	SM	TAL HOU

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

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

Laboratory References:

TAL HOU = Eurofins TestAmerica, Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 600-196881-1
Project/Site: Chevron Lovington Water Plant

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
600-196881-1	MW-1-W-191203	Water	12/03/19 10:15	12/04/19 10:35	
600-196881-2	MW-02-W-191203	Water	12/03/19 10:50	12/04/19 10:35	
600-196881-3	MW-03-W-191203	Water	12/03/19 11:00	12/04/19 10:35	
600-196881-4	MW-04-W-191203	Water	12/03/19 11:15	12/04/19 10:35	
600-196881-5	MW-05-W-191203	Water	12/03/19 12:00	12/04/19 10:35	
600-196881-6	MW-06-W-191203	Water	12/03/19 12:10	12/04/19 10:35	
600-196881-7	MW-06-WD-191203	Water	12/03/19 12:10	12/04/19 10:35	
600-196881-8	MW-07-W-191203	Water	12/03/19 12:32	12/04/19 10:35	

Detection Summary

Client: ARCADIS U.S., Inc.
Job ID: 600-196881-1
Project/Site: Chevron Lovington Water Plant

Client Sample ID: MW-1-W-191203 — Lab Sample ID: 600-196881-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	450	B	40	5.3	mg/L	100		9056A	Total/NA
Total Dissolved Solids	2000		20	20	mg/L	1		2540 C-1997	Total/NA

Client Sample ID: MW-02-W-191203 — Lab Sample ID: 600-196881-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	1100	B	40	5.3	mg/L	100		9056A	Total/NA
Total Dissolved Solids	3300		40	40	mg/L	1		2540 C-1997	Total/NA

Client Sample ID: MW-03-W-191203 — Lab Sample ID: 600-196881-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	580	B	40	5.3	mg/L	100		9056A	Total/NA
Total Dissolved Solids	1800		20	20	mg/L	1		2540 C-1997	Total/NA

Client Sample ID: MW-04-W-191203 — Lab Sample ID: 600-196881-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	1200	B	80	11	mg/L	200		9056A	Total/NA
Total Dissolved Solids	3500		40	40	mg/L	1		2540 C-1997	Total/NA

Client Sample ID: MW-05-W-191203 — Lab Sample ID: 600-196881-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	130	B	8.0	1.1	mg/L	20		9056A	Total/NA
Total Dissolved Solids	350		20	20	mg/L	1		2540 C-1997	Total/NA

Client Sample ID: MW-06-W-191203 — Lab Sample ID: 600-196881-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	220	B	20	2.7	mg/L	50		9056A	Total/NA
Total Dissolved Solids	690		20	20	mg/L	1		2540 C-1997	Total/NA

Client Sample ID: MW-06-WD-191203 — Lab Sample ID: 600-196881-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	220	B	20	2.7	mg/L	50		9056A	Total/NA
Total Dissolved Solids	750		20	20	mg/L	1		2540 C-1997	Total/NA

Client Sample ID: MW-07-W-191203 — Lab Sample ID: 600-196881-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	130	B	8.0	1.1	mg/L	20		9056A	Total/NA
Total Dissolved Solids	450		20	20	mg/L	1		2540 C-1997	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-1-W-191203
Lab Sample ID: 600-196881-1

Date Collected: 12/03/19 10:15
Matrix: Water
Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	450	B	40	5.3	mg/L			12/19/19 13:21	100

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	2000		20	20	mg/L			12/07/19 09:59	1

Client Sample ID: MW-02-W-191203
Lab Sample ID: 600-196881-2

Date Collected: 12/03/19 10:50
Matrix: Water
Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1100	B	40	5.3	mg/L			12/18/19 10:23	100

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	3300		40	40	mg/L			12/10/19 14:27	1

Client Sample ID: MW-03-W-191203
Lab Sample ID: 600-196881-3

Date Collected: 12/03/19 11:00
Matrix: Water
Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	580	B	40	5.3	mg/L			12/18/19 18:51	100

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1800		20	20	mg/L			12/07/19 09:59	1

Client Sample ID: MW-04-W-191203
Lab Sample ID: 600-196881-4

Date Collected: 12/03/19 11:15
Matrix: Water
Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1200	B	80	11	mg/L			12/18/19 19:11	200

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	3500		40	40	mg/L			12/10/19 08:51	1

Client Sample ID: MW-05-W-191203
Lab Sample ID: 600-196881-5

Date Collected: 12/03/19 12:00
Matrix: Water
Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	130	B	8.0	1.1	mg/L			12/18/19 20:33	20

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	350		20	20	mg/L			12/10/19 08:51	1

Client: ARCADIS U.S., Inc.
Job ID: 600-196881-1
Project/Site: Chevron Lovington Water Plant

Client Sample ID: MW-06-W-191203
Lab Sample ID: 600-196881-6
Date Collected: 12/03/19 12:10
Matrix: Water
Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	220	B	20	2.7	mg/L			12/18/19 20:53	50

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	690		20	20	mg/L			12/10/19 08:51	1

Client Sample ID: MW-06-WD-191203
Lab Sample ID: 600-196881-7
Date Collected: 12/03/19 12:10
Matrix: Water
Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	220	B	20	2.7	mg/L			12/18/19 21:14	50

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	750		20	20	mg/L			12/10/19 08:51	1

Client Sample ID: MW-07-W-191203
Lab Sample ID: 600-196881-8
Date Collected: 12/03/19 12:32
Matrix: Water
Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	130	B	8.0	1.1	mg/L			12/18/19 13:45	20

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	450		20	20	mg/L			12/10/19 08:51	1

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 600-196881-1
Project/Site: Chevron Lovington Water Plant

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

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

Glossary

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

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 600-283335/37
Matrix: Water
Analysis Batch: 283335

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.317	J	0.40	0.053	mg/L			12/18/19 10:02	1

Lab Sample ID: LCS 600-283335/38
Matrix: Water
Analysis Batch: 283335

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	20.0	19.5		mg/L		98	90 - 110

Lab Sample ID: 600-196881-A-1 MS
Matrix: Water
Analysis Batch: 283335

Client Sample ID: 600-196881-A-1 MS
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	440	B ^	1000	1400		mg/L		97	80 - 120

Lab Sample ID: MB 600-283348/4
Matrix: Water
Analysis Batch: 283348

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.185	J	0.40	0.053	mg/L			12/18/19 10:35	1

Lab Sample ID: LCS 600-283348/5
Matrix: Water
Analysis Batch: 283348

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	20.0	19.7		mg/L		99	90 - 110

Lab Sample ID: MB 600-283462/6
Matrix: Water
Analysis Batch: 283462

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.324	J	0.40	0.053	mg/L			12/18/19 13:23	1

Lab Sample ID: LCS 600-283462/7
Matrix: Water
Analysis Batch: 283462

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	20.0	19.5		mg/L		98	90 - 110

Lab Sample ID: 600-196881-8 MS
Matrix: Water
Analysis Batch: 283462

Client Sample ID: MW-07-W-191203
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	130	B	200	310		mg/L		92	80 - 120

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: 600-196881-8 MSD
Client Sample ID: MW-07-W-191203
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 283462

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	130	B	200	312		mg/L		93	80 - 120	1	20

Lab Sample ID: MB 600-283517/37
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 283517

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.331	J	0.40	0.053	mg/L			12/19/19 11:44	1

Lab Sample ID: MB 600-283517/6
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 283517

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.321	J	0.40	0.053	mg/L			12/19/19 04:34	1

Lab Sample ID: LCS 600-283517/38
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 283517

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	20.0	19.6		mg/L		98	90 - 110

Lab Sample ID: LCS 600-283517/7
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 283517

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	20.0	19.4		mg/L		97	90 - 110

Method: 2540 C-1997 - Total Dissolved Solids (Dried at 180 °C)

Lab Sample ID: MB 600-282381/1
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 282381

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	10	U	10	10	mg/L			12/07/19 09:59	1

Lab Sample ID: LCS 600-282381/2
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 282381

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1800	1770		mg/L		98	90 - 110

Method: 2540 C-1997 - Total Dissolved Solids (Dried at 180 °C) (Continued)

Lab Sample ID: MB 600-282564/1
Matrix: Water
Analysis Batch: 282564

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

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	10	U	10	10	mg/L			12/10/19 08:51	1

Lab Sample ID: LCS 600-282564/2
Matrix: Water
Analysis Batch: 282564

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1800	1750		mg/L		97	90 - 110

Lab Sample ID: MB 600-282629/1
Matrix: Water
Analysis Batch: 282629

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

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	10	U	10	10	mg/L			12/10/19 14:27	1

Lab Sample ID: LCS 600-282629/2
Matrix: Water
Analysis Batch: 282629

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1800	1750		mg/L		97	90 - 110

HPLC/IC

Analysis Batch: 283335

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-196881-2	MW-02-W-191203	Total/NA	Water	9056A	
MB 600-283335/37	Method Blank	Total/NA	Water	9056A	
LCS 600-283335/38	Lab Control Sample	Total/NA	Water	9056A	
600-196881-A-1 MS	600-196881-A-1 MS	Total/NA	Water	9056A	

Analysis Batch: 283348

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-196881-3	MW-03-W-191203	Total/NA	Water	9056A	
600-196881-4	MW-04-W-191203	Total/NA	Water	9056A	
600-196881-5	MW-05-W-191203	Total/NA	Water	9056A	
600-196881-6	MW-06-W-191203	Total/NA	Water	9056A	
600-196881-7	MW-06-WD-191203	Total/NA	Water	9056A	
MB 600-283348/4	Method Blank	Total/NA	Water	9056A	
LCS 600-283348/5	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 283462

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-196881-8	MW-07-W-191203	Total/NA	Water	9056A	
MB 600-283462/6	Method Blank	Total/NA	Water	9056A	
LCS 600-283462/7	Lab Control Sample	Total/NA	Water	9056A	
600-196881-8 MS	MW-07-W-191203	Total/NA	Water	9056A	
600-196881-8 MSD	MW-07-W-191203	Total/NA	Water	9056A	

Analysis Batch: 283517

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-196881-1	MW-1-W-191203	Total/NA	Water	9056A	
MB 600-283517/37	Method Blank	Total/NA	Water	9056A	
MB 600-283517/6	Method Blank	Total/NA	Water	9056A	
LCS 600-283517/38	Lab Control Sample	Total/NA	Water	9056A	
LCS 600-283517/7	Lab Control Sample	Total/NA	Water	9056A	

General Chemistry

Analysis Batch: 282381

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-196881-1	MW-1-W-191203	Total/NA	Water	2540 C-1997	
600-196881-3	MW-03-W-191203	Total/NA	Water	2540 C-1997	
MB 600-282381/1	Method Blank	Total/NA	Water	2540 C-1997	
LCS 600-282381/2	Lab Control Sample	Total/NA	Water	2540 C-1997	

Analysis Batch: 282564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-196881-4	MW-04-W-191203	Total/NA	Water	2540 C-1997	
600-196881-5	MW-05-W-191203	Total/NA	Water	2540 C-1997	
600-196881-6	MW-06-W-191203	Total/NA	Water	2540 C-1997	
600-196881-7	MW-06-WD-191203	Total/NA	Water	2540 C-1997	
600-196881-8	MW-07-W-191203	Total/NA	Water	2540 C-1997	
MB 600-282564/1	Method Blank	Total/NA	Water	2540 C-1997	
LCS 600-282564/2	Lab Control Sample	Total/NA	Water	2540 C-1997	

QC Association Summary

Client: ARCADIS U.S., Inc.
Job ID: 600-196881-1
Project/Site: Chevron Lovington Water Plant

General Chemistry

Analysis Batch: 282629

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-196881-2	MW-02-W-191203	Total/NA	Water	2540 C-1997	
MB 600-282629/1	Method Blank	Total/NA	Water	2540 C-1997	
LCS 600-282629/2	Lab Control Sample	Total/NA	Water	2540 C-1997	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 600-196881-1
Project/Site: Chevron Lovington Water Plant

Client Sample ID: MW-1-W-191203
Lab Sample ID: 600-196881-1
Date Collected: 12/03/19 10:15
Matrix: Water
Date Received: 12/04/19 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		100			283517	12/19/19 13:21	W1N	TAL HOU
Total/NA	Analysis	2540 C-1997		1	50 mL	100 mL	282381	12/07/19 09:59	TNL	TAL HOU

Client Sample ID: MW-02-W-191203
Lab Sample ID: 600-196881-2
Date Collected: 12/03/19 10:50
Matrix: Water
Date Received: 12/04/19 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		100			283335	12/18/19 10:23	W1N	TAL HOU
Total/NA	Analysis	2540 C-1997		1	25 mL	100 mL	282629	12/10/19 14:27	TNL	TAL HOU

Client Sample ID: MW-03-W-191203
Lab Sample ID: 600-196881-3
Date Collected: 12/03/19 11:00
Matrix: Water
Date Received: 12/04/19 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		100			283348	12/18/19 18:51	SKR	TAL HOU
Total/NA	Analysis	2540 C-1997		1	50 mL	100 mL	282381	12/07/19 09:59	TNL	TAL HOU

Client Sample ID: MW-04-W-191203
Lab Sample ID: 600-196881-4
Date Collected: 12/03/19 11:15
Matrix: Water
Date Received: 12/04/19 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		200			283348	12/18/19 19:11	SKR	TAL HOU
Total/NA	Analysis	2540 C-1997		1	25 mL	100 mL	282564	12/10/19 08:51	TNL	TAL HOU

Client Sample ID: MW-05-W-191203
Lab Sample ID: 600-196881-5
Date Collected: 12/03/19 12:00
Matrix: Water
Date Received: 12/04/19 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		20			283348	12/18/19 20:33	SKR	TAL HOU
Total/NA	Analysis	2540 C-1997		1	50 mL	100 mL	282564	12/10/19 08:51	TNL	TAL HOU

Client Sample ID: MW-06-W-191203
Lab Sample ID: 600-196881-6
Date Collected: 12/03/19 12:10
Matrix: Water
Date Received: 12/04/19 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		50			283348	12/18/19 20:53	SKR	TAL HOU
Total/NA	Analysis	2540 C-1997		1	50 mL	100 mL	282564	12/10/19 08:51	TNL	TAL HOU

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 600-196881-1
Project/Site: Chevron Lovington Water Plant

Client Sample ID: MW-06-WD-191203
Lab Sample ID: 600-196881-7

Date Collected: 12/03/19 12:10
Matrix: Water
Date Received: 12/04/19 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		50			283348	12/18/19 21:14	SKR	TAL HOU
Total/NA	Analysis	2540 C-1997		1	50 mL	100 mL	282564	12/10/19 08:51	TNL	TAL HOU

Client Sample ID: MW-07-W-191203
Lab Sample ID: 600-196881-8

Date Collected: 12/03/19 12:32
Matrix: Water
Date Received: 12/04/19 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		20			283462	12/18/19 13:45	W1N	TAL HOU
Total/NA	Analysis	2540 C-1997		1	50 mL	100 mL	282564	12/10/19 08:51	TNL	TAL HOU

Laboratory References:

TAL HOU = Eurofins TestAmerica, Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc. Job ID: 600-196881-1
Project/Site: Chevron Lovington Water Plant

Laboratory: Eurofins TestAmerica, Houston

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	88-0759	08-04-20
Louisiana	NELAP	01967	06-30-20
Oklahoma	State	2019-073	08-31-20
Texas	NELAP	T104704223-19-25	10-31-19 *
Texas	NELAP	T104704223-19-25	10-31-20
USDA	US Federal Programs	P330-18-00130	04-30-21
Utah	NELAP	TX000832019-5	07-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Houston
6310 Rothway Street
Houston, TX 77040
Phone (713) 690-4444 Fax (713) 690-5646

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Andrew Parker	Lab PM: Kudchadkar, Sachin G	Carrier Tracking No(s):	COC No: 600-72590-19932.1
Client Contact: Douglas Jordan	Phone: 832-260-8150	E-Mail: sachin.kudchadkar@testamericainc.com		Page: Page 1 of 1
Company: ARCADIS U.S. Inc				Job #:
Address: 10205 Westheimer Rd Suite 800	Due Date Requested:			
City: Houston	TAT Requested (days): Standard			
State, Zip: TX, 77042				
Phone:	PO #:			
Email: douglas.jordan@arcadis.com	WO #:			
Project Name: Chevron Lovington Paddock Water plant	Project #: 60011652 30038058			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C_Calcd, TDS	300-Chloride	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N		
MW-1-W-191203	12-3	1015	G	Water			✓	✓	1	
MW-02-W-191203	12-3	1050	G	Water			✓	✓	1	
MW-03-W-191203	12-3	11:00	G	Water			✓	✓	1	
MW-04-W-191203	12-3	11:15	G	Water			✓	✓	1	
MW-05-W-191203	12-3	12:00	G	Water			✓	✓	1	
MW-06-W-191203	12-3	12:10	G	Water			✓	✓	1	
MW-06-WD-191203	12-3	12:10	G	Water			✓	✓	1	
MW-07-W-191203	12-3	12:32	G	Water			✓	✓	1	
				Water						
				Water						
				Water						

600-196881 Chain of Custody

CH

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	Chris Hobbs	12-3-19/1600	Arcadis		12/4/19 1035	TAH
2						
3						

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica Houston

Loc: 600
196881

eurofins | Environment Testing TestAmerica

Sample Receipt Checklist

Date/Time Received: _____

JOB NUMBER: _____ CLIENT: Arcadis

UNPACKED BY: YP CARRIER/DRIVER: FedEx

Custody Seal Present: ☑YES ☐NO Number of Coolers Received: 1

Cooler ID	Temp Blank	Trip Blank	Observed Temp (°C)	Therm ID	Therm CF	Corrected Temp (°C)
7432	Y / N	Y / N	2.0	676	+0.1	2.1
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N			YP 12/4/19	
	Y / N	Y / N				

CF = correction factor

Samples received on ice? ☑YES ☐NO

LABORATORY PRESERVATION OF SAMPLES REQUIRED: ☑NO ☐YES

Base samples are>pH 12: ☐YES ☐NO Acid preserved are<pH 2: ☐YES ☐NO

TX1005 samples frozen upon receipt: ☐ YES DATE & TIME PUT IN FREEZER: _____

pH paper Lot #_____ VOA headspace acceptable (5-6mm): ☐YES ☐NO ☑NA

Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	☑YES	☐ NO

COMMENTS:

YP 12/4/19

HS-SA-WI-013 Rev. 4A: 08/26/2019

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 600-196881-1

Login Number: 196881

List Source: Eurofins TestAmerica, Houston

List Number: 1

Creator: Rubio, Yuri

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Houston
6310 Rothway Street
Houston, TX 77040
Tel: (713)690-4444

Laboratory Job ID: 600-196885-1
Client Project/Site: Lovington Water Plant
Revision: 1

For:
ARCADIS U.S., Inc.
10205 Westheimer Rd
Suite 800
Houston, Texas 77042

Attn: Scott Foord

Authorized for release by:
12/31/2019 2:33:09 PM

Sachin Kudchadkar, Senior Project Manager
(713)690-4444
sachin.kudchadkar@testamericainc.com

Table of Contents

Job ID: 600-196885-1

Laboratory: Eurofins TestAmerica, Houston

Narrative

Job Narrative
600-196885-1

Comments
The report was revised on 12/31/19 to change the project ID as requested by the client.

Receipt
The samples were received on 12/4/2019 10:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.9º C.

General Chemistry
Methods 300.0, 9056: The method blank for analytical batch 600-283348 contained chloride above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method 9056: The method blank for analytical batch 600-283609 contained Chloride above the method detection limit (MDL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

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

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 600-196885-1
Project/Site: Lovington Water Plant

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL HOU
2540 C-1997	Total Dissolved Solids (Dried at 180 °C)	SM	TAL HOU

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

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

Laboratory References:

TAL HOU = Eurofins TestAmerica, Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Lovington Water Plant

Job ID: 600-196885-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
600-196885-1	MW-14-W-191203	Water	12/03/19 12:55	12/04/19 10:35	
600-196885-2	MW-16-W-191203	Water	12/03/19 13:05	12/04/19 10:35	
600-196885-3	MW-09-W-191203	Water	12/03/19 13:25	12/04/19 10:35	
600-196885-4	MW-10-W-191203	Water	12/03/19 13:35	12/04/19 10:35	
600-196885-5	MW-15-W-191203	Water	12/03/19 13:45	12/04/19 10:35	
600-196885-6	MW-11-W-191203	Water	12/03/19 13:55	12/04/19 10:35	
600-196885-7	MW-13-W-191203	Water	12/03/19 14:10	12/04/19 10:35	
600-196885-8	MW-8-W-191203	Water	12/03/19 14:25	12/04/19 10:35	
600-196885-9	MW-12-W-191203	Water	12/03/19 14:43	12/04/19 10:35	

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Lovington Water Plant

Job ID: 600-196885-1

Client Sample ID: MW-14-W-191203 — Lab Sample ID: 600-196885-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	96	B ^	8.0	1.1	mg/L	20		9056A	Total/NA
Total Dissolved Solids	330		20	20	mg/L	1		2540 C-1997	Total/NA

Client Sample ID: MW-16-W-191203 — Lab Sample ID: 600-196885-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	430		40	5.3	mg/L	100		9056A	Total/NA
Total Dissolved Solids	1300		20	20	mg/L	1		2540 C-1997	Total/NA

Client Sample ID: MW-09-W-191203 — Lab Sample ID: 600-196885-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	3100	B	100	13	mg/L	250		9056A	Total/NA
Total Dissolved Solids	3500		100	100	mg/L	1		2540 C-1997	Total/NA

Client Sample ID: MW-10-W-191203 — Lab Sample ID: 600-196885-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	85	B	8.0	1.1	mg/L	20		9056A	Total/NA
Total Dissolved Solids	330		20	20	mg/L	1		2540 C-1997	Total/NA

Client Sample ID: MW-15-W-191203 — Lab Sample ID: 600-196885-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	330	B	40	5.3	mg/L	100		9056A	Total/NA
Total Dissolved Solids	990		20	20	mg/L	1		2540 C-1997	Total/NA

Client Sample ID: MW-11-W-191203 — Lab Sample ID: 600-196885-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	580	B	40	5.3	mg/L	100		9056A	Total/NA
Total Dissolved Solids	1500		40	40	mg/L	1		2540 C-1997	Total/NA

Client Sample ID: MW-13-W-191203 — Lab Sample ID: 600-196885-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	160	B	8.0	1.1	mg/L	20		9056A	Total/NA
Total Dissolved Solids	490		20	20	mg/L	1		2540 C-1997	Total/NA

Client Sample ID: MW-8-W-191203 — Lab Sample ID: 600-196885-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	330	B	40	5.3	mg/L	100		9056A	Total/NA
Total Dissolved Solids	1200		20	20	mg/L	1		2540 C-1997	Total/NA

Client Sample ID: MW-12-W-191203 — Lab Sample ID: 600-196885-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	880	B	80	11	mg/L	200		9056A	Total/NA
Total Dissolved Solids	2500		40	40	mg/L	1		2540 C-1997	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-14-W-191203

Lab Sample ID: 600-196885-1

Date Collected: 12/03/19 12:55

Matrix: Water

Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	96	B ^	8.0	1.1	mg/L			12/20/19 05:58	20

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	330		20	20	mg/L			12/10/19 08:51	1

Client Sample ID: MW-16-W-191203

Lab Sample ID: 600-196885-2

Date Collected: 12/03/19 13:05

Matrix: Water

Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	430		40	5.3	mg/L			12/20/19 06:31	100

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1300		20	20	mg/L			12/10/19 08:51	1

Client Sample ID: MW-09-W-191203

Lab Sample ID: 600-196885-3

Date Collected: 12/03/19 13:25

Matrix: Water

Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3100	B	100	13	mg/L			12/18/19 15:06	250

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	3500		100	100	mg/L			12/10/19 08:51	1

Client Sample ID: MW-10-W-191203

Lab Sample ID: 600-196885-4

Date Collected: 12/03/19 13:35

Matrix: Water

Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	85	B	8.0	1.1	mg/L			12/18/19 16:07	20

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	330		20	20	mg/L			12/10/19 08:51	1

Client Sample ID: MW-15-W-191203

Lab Sample ID: 600-196885-5

Date Collected: 12/03/19 13:45

Matrix: Water

Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	330	B	40	5.3	mg/L			12/18/19 16:28	100

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	990		20	20	mg/L			12/10/19 08:51	1

Client: ARCADIS U.S., Inc.
Project/Site: Lovington Water Plant

Job ID: 600-196885-1

Client Sample ID: MW-11-W-191203

Lab Sample ID: 600-196885-6

Date Collected: 12/03/19 13:55
Matrix: Water
Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	580	B	40	5.3	mg/L			12/18/19 16:48	100

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1500		40	40	mg/L			12/10/19 08:51	1

Client Sample ID: MW-13-W-191203

Lab Sample ID: 600-196885-7

Date Collected: 12/03/19 14:10
Matrix: Water
Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	160	B	8.0	1.1	mg/L			12/18/19 17:09	20

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	490		20	20	mg/L			12/10/19 08:51	1

Client Sample ID: MW-8-W-191203

Lab Sample ID: 600-196885-8

Date Collected: 12/03/19 14:25
Matrix: Water
Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	330	B	40	5.3	mg/L			12/18/19 18:10	100

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1200		20	20	mg/L			12/10/19 08:51	1

Client Sample ID: MW-12-W-191203

Lab Sample ID: 600-196885-9

Date Collected: 12/03/19 14:43
Matrix: Water
Date Received: 12/04/19 10:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	880	B	80	11	mg/L			12/18/19 18:30	200

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	2500		40	40	mg/L			12/10/19 08:51	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Job ID: 600-196885-1
Project/Site: Lovington Water Plant

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

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

Glossary

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

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 600-283348/4
Matrix: Water
Analysis Batch: 283348

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.185	J	0.40	0.053	mg/L			12/18/19 10:35	1

Lab Sample ID: LCS 600-283348/5
Matrix: Water
Analysis Batch: 283348

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	20.0	19.7		mg/L		99	90 - 110

Lab Sample ID: 600-196885-7 MS
Matrix: Water
Analysis Batch: 283348

Client Sample ID: MW-13-W-191203
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	160	B	200	348		mg/L		96	80 - 120

Lab Sample ID: 600-196885-7 MSD
Matrix: Water
Analysis Batch: 283348

Client Sample ID: MW-13-W-191203
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	160	B	200	374		mg/L		109	80 - 120	7	20

Lab Sample ID: MB 600-283609/6
Matrix: Water
Analysis Batch: 283609

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.316	J	0.40	0.053	mg/L			12/20/19 05:37	1

Lab Sample ID: LCS 600-283609/7
Matrix: Water
Analysis Batch: 283609

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	20.0	19.4		mg/L		97	90 - 110

Lab Sample ID: 600-196885-1 MS
Matrix: Water
Analysis Batch: 283609

Client Sample ID: MW-14-W-191203
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	96	B ^	200	287		mg/L		96	80 - 120

Lab Sample ID: 600-196885-1 MSD
Matrix: Water
Analysis Batch: 283609

Client Sample ID: MW-14-W-191203
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	96	B ^	200	284		mg/L		94	80 - 120	1	20

Method: 2540 C-1997 - Total Dissolved Solids (Dried at 180 °C)

Lab Sample ID: MB 600-282564/1
Matrix: Water
Analysis Batch: 282564

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

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	10	U	10	10	mg/L			12/10/19 08:51	1

Lab Sample ID: LCS 600-282564/2
Matrix: Water
Analysis Batch: 282564

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			1800	1750		mg/L		97	90 - 110		

Lab Sample ID: 600-196885-5 DU
Matrix: Water
Analysis Batch: 282564

Client Sample ID: MW-15-W-191203
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	990			896		mg/L				10	10

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Lovington Water Plant

Job ID: 600-196885-1

HPLC/IC

Analysis Batch: 283348

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-196885-3	MW-09-W-191203	Total/NA	Water	9056A	
600-196885-4	MW-10-W-191203	Total/NA	Water	9056A	
600-196885-5	MW-15-W-191203	Total/NA	Water	9056A	
600-196885-6	MW-11-W-191203	Total/NA	Water	9056A	
600-196885-7	MW-13-W-191203	Total/NA	Water	9056A	
600-196885-8	MW-8-W-191203	Total/NA	Water	9056A	
600-196885-9	MW-12-W-191203	Total/NA	Water	9056A	
MB 600-283348/4	Method Blank	Total/NA	Water	9056A	
LCS 600-283348/5	Lab Control Sample	Total/NA	Water	9056A	
600-196885-7 MS	MW-13-W-191203	Total/NA	Water	9056A	
600-196885-7 MSD	MW-13-W-191203	Total/NA	Water	9056A	

Analysis Batch: 283609

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-196885-1	MW-14-W-191203	Total/NA	Water	9056A	
600-196885-2	MW-16-W-191203	Total/NA	Water	9056A	
MB 600-283609/6	Method Blank	Total/NA	Water	9056A	
LCS 600-283609/7	Lab Control Sample	Total/NA	Water	9056A	
600-196885-1 MS	MW-14-W-191203	Total/NA	Water	9056A	
600-196885-1 MSD	MW-14-W-191203	Total/NA	Water	9056A	

General Chemistry

Analysis Batch: 282564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-196885-1	MW-14-W-191203	Total/NA	Water	2540 C-1997	
600-196885-2	MW-16-W-191203	Total/NA	Water	2540 C-1997	
600-196885-3	MW-09-W-191203	Total/NA	Water	2540 C-1997	
600-196885-4	MW-10-W-191203	Total/NA	Water	2540 C-1997	
600-196885-5	MW-15-W-191203	Total/NA	Water	2540 C-1997	
600-196885-6	MW-11-W-191203	Total/NA	Water	2540 C-1997	
600-196885-7	MW-13-W-191203	Total/NA	Water	2540 C-1997	
600-196885-8	MW-8-W-191203	Total/NA	Water	2540 C-1997	
600-196885-9	MW-12-W-191203	Total/NA	Water	2540 C-1997	
MB 600-282564/1	Method Blank	Total/NA	Water	2540 C-1997	
LCS 600-282564/2	Lab Control Sample	Total/NA	Water	2540 C-1997	
600-196885-5 DU	MW-15-W-191203	Total/NA	Water	2540 C-1997	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Lovington Water Plant

Job ID: 600-196885-1

Client Sample ID: MW-14-W-191203
Date Collected: 12/03/19 12:55
Date Received: 12/04/19 10:35

Lab Sample ID: 600-196885-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		20			283609	12/20/19 05:58	W1N	TAL HOU
Total/NA	Analysis	2540 C-1997		1	50 mL	100 mL	282564	12/10/19 08:51	TNL	TAL HOU

Client Sample ID: MW-16-W-191203
Date Collected: 12/03/19 13:05
Date Received: 12/04/19 10:35

Lab Sample ID: 600-196885-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		100			283609	12/20/19 06:31	W1N	TAL HOU
Total/NA	Analysis	2540 C-1997		1	50 mL	100 mL	282564	12/10/19 08:51	TNL	TAL HOU

Client Sample ID: MW-09-W-191203
Date Collected: 12/03/19 13:25
Date Received: 12/04/19 10:35

Lab Sample ID: 600-196885-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		250			283348	12/18/19 15:06	SKR	TAL HOU
Total/NA	Analysis	2540 C-1997		1	10 mL	100 mL	282564	12/10/19 08:51	TNL	TAL HOU

Client Sample ID: MW-10-W-191203
Date Collected: 12/03/19 13:35
Date Received: 12/04/19 10:35

Lab Sample ID: 600-196885-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		20			283348	12/18/19 16:07	SKR	TAL HOU
Total/NA	Analysis	2540 C-1997		1	50 mL	100 mL	282564	12/10/19 08:51	TNL	TAL HOU

Client Sample ID: MW-15-W-191203
Date Collected: 12/03/19 13:45
Date Received: 12/04/19 10:35

Lab Sample ID: 600-196885-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		100			283348	12/18/19 16:28	SKR	TAL HOU
Total/NA	Analysis	2540 C-1997		1	50 mL	100 mL	282564	12/10/19 08:51	TNL	TAL HOU

Client Sample ID: MW-11-W-191203
Date Collected: 12/03/19 13:55
Date Received: 12/04/19 10:35

Lab Sample ID: 600-196885-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		100			283348	12/18/19 16:48	SKR	TAL HOU
Total/NA	Analysis	2540 C-1997		1	25 mL	100 mL	282564	12/10/19 08:51	TNL	TAL HOU

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Lovington Water Plant

Job ID: 600-196885-1

Client Sample ID: MW-13-W-191203

Lab Sample ID: 600-196885-7

Date Collected: 12/03/19 14:10

Matrix: Water

Date Received: 12/04/19 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		20			283348	12/18/19 17:09	SKR	TAL HOU
Total/NA	Analysis	2540 C-1997		1	50 mL	100 mL	282564	12/10/19 08:51	TNL	TAL HOU

Client Sample ID: MW-8-W-191203

Lab Sample ID: 600-196885-8

Date Collected: 12/03/19 14:25

Matrix: Water

Date Received: 12/04/19 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		100			283348	12/18/19 18:10	SKR	TAL HOU
Total/NA	Analysis	2540 C-1997		1	50 mL	100 mL	282564	12/10/19 08:51	TNL	TAL HOU

Client Sample ID: MW-12-W-191203

Lab Sample ID: 600-196885-9

Date Collected: 12/03/19 14:43

Matrix: Water

Date Received: 12/04/19 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		200			283348	12/18/19 18:30	SKR	TAL HOU
Total/NA	Analysis	2540 C-1997		1	25 mL	100 mL	282564	12/10/19 08:51	TNL	TAL HOU

Laboratory References:

TAL HOU = Eurofins TestAmerica, Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 600-196885-1
Project/Site: Lovington Water Plant

Laboratory: Eurofins TestAmerica, Houston

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	88-0759	08-04-20
Louisiana	NELAP	01967	06-30-20
Oklahoma	State	2019-073	08-31-20
Texas	NELAP	T104704223-19-25	10-31-19 *
Texas	NELAP	T104704223-19-25	10-31-20
USDA	US Federal Programs	P330-18-00130	04-30-21
Utah	NELAP	TX000832019-5	07-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Houston
6310 Bellaway Street
Houston, TX 77040
Phone (713) 690-4444 Fax (713) 690-5646

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Andrew Parker	Lab PM: Kudchadkar, Sachin G	Carrier Tracking No(s):	COC No: 600-72590-19932.1
Client Contact: Douglas Jordan	Phone: 832-260-8150	E-Mail: sachin.kudchadkar@testamericainc.com		Page: Page 1 of 1
Company: ARCADIS U.S. Inc				Job #:
Address: 10205 Westheimer Rd Suite 800	Due Date Requested:			
City: Houston	TAT Requested (days): Standard			
State, Zip: TX, 77042				
Phone:	PO #:			
Email: douglas.jordan@arcadis.com	WO #:			
Project Name: Chevron Lovington Paddock Water plant	Project #: 60011652 30038058			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C_Calcd, TDS	300- Chloride	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N		
MW-14-W-191203	12-3	1255	G	Water			✓	✓	1	
MW-16-W-191203	12-3	1305	G	Water			✓	✓	1	
MW-09-W-191203	12-3	1325	G	Water			✓	✓	1	
MW-10-W-191203	12-3	1335	G	Water			✓	✓	1	
MW-15-W-191203	12-3	1345	G	Water			✓	✓	1	
MW-11-W-191203	12-3	1355	G	Water			✓	✓	1	
MW-13-W-191203	12-3	1410	G	Water			✓	✓	1	
MW-8-W-191203	12-3	1425	G	Water			✓	✓	1	
MW-12-W-191203	12-3	1443	G	Water			✓	✓	1	
				Water						
				Water						

600-196885 Chain of Custody

CH

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Chris Holder	12-3-A/1600	Arcadis		12/4/19 1035	TAH
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Loc: 600
196885

eurofins | Environment Testing TestAmerica

Eurofins TestAmerica Houston

Sample Receipt Checklist

Date/Time Received: _____

JOB NUMBER: _____ CLIENT: Arcadis

UNPACKED BY: YP CARRIER/DRIVER: FedEx

Custody Seal Present: ☑YES ☐NO Number of Coolers Received: 1

Cooler ID	Temp Blank	Trip Blank	Observed Temp (°C)	Therm ID	Therm CF	Corrected Temp (°C)
7421	Y / N	Y / N	2.8	676	+0.1	2.9
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N		YP 12/4/19		
	Y / N	Y / N				

CF = correction factor

Samples received on ice? ☑YES ☐NO

LABORATORY PRESERVATION OF SAMPLES REQUIRED: ☑NO ☐YES

Base samples are>pH 12: ☐YES ☐NO Acid preserved are<pH 2: ☐YES ☐NO

TX1005 samples frozen upon receipt: ☐ YES DATE & TIME PUT IN FREEZER: _____

pH paper Lot #_____ VOA headspace acceptable (5-6mm): ☐YES ☐NO ☑NA

Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	☑YES	☐ NO

COMMENTS:

YP 12/4/19

HS-SA-WI-013 Rev. 4A; 08/26/2019

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 600-196885-1

Login Number: 196885
List Number: 1
Creator: Rubio, Yuri

List Source: Eurofins TestAmerica, Houston

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.

Arcadis U.S., Inc.

10205 Westheimer Road

Suite 800

Houston, Texas 77042

Tel 713 953 4800

Fax 713 977 4620

www.arcadis.com