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March 5, 2019

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

**Re: 2018 Annual Groundwater Monitoring Report  
Chevron Dollarhide Groundwater Remediation Site  
Andrews County, Texas  
RRC OCP No. 08-1048  
OCD RP No. 1R-3944**

Dear Mr. Billings:

Chevron Environmental Management Company (CEMC) submits herein to the New Mexico Oil Conservation Division (OCD) the *2018 Annual Groundwater Monitoring Report* for the Chevron Dollarhide Oil Field Unit located in Andrews County, Texas. This report was prepared by GHD Services Inc. (GHD) to document groundwater monitoring activities performed on behalf of CEMC during the 2018 calendar year at the above-referenced Site.

CEMC proposed an additional groundwater investigation to be conducted at the Site in 2019 to establish long-term plume management monitoring points in Texas and New Mexico, and further delineate the downgradient groundwater plume boundary in both states. The scope of work and objectives for the additional groundwater investigation were included in the *2019 Work Plan for Additional Groundwater Investigation* that was submitted to the RRC and OCD on February 1, 2019. The RRC concurred with the proposed activities and responded with approval on February 7, 2019. CEMC will continue conducting quarterly monitoring only for the monitor wells recently installed in 2015, 2016, 2017, and 2019. A report detailing the first two quarters of 2019 groundwater monitoring data will be submitted by August 1, 2019.

CEMC anticipates scheduling a project update meeting with the OCD and the RRC in the third or fourth quarter 2019. If you have any questions regarding this submittal, please contact me at (832) 854-5620 or Nick G. Casten of GHD at (225) 296-6513.

Respectfully,

**Chevron Environmental Management Company**  
**on behalf of**  
**Chevron U.S.A. Inc.**

A handwritten signature in blue ink, appearing to read "Adriane Gifford".

Adriane Gifford  
Project Manager

Enclosure

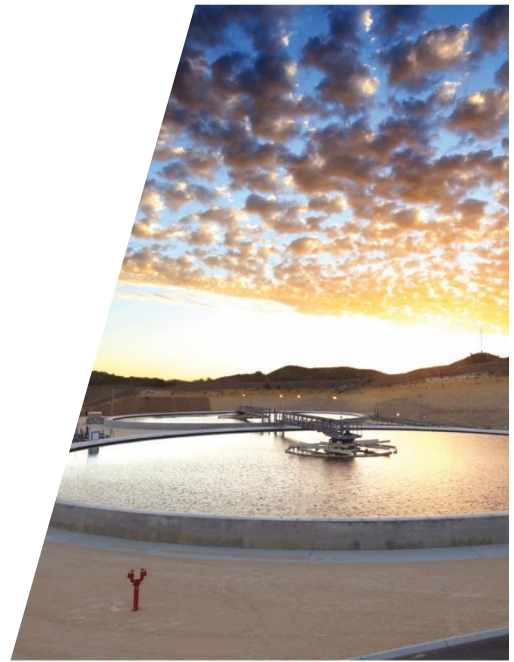
cc: Jessica Cofrancesco, RRC Site Remediation Section  
Nick G. Casten, GHD



# 2018 Annual Groundwater Monitoring Report

Dollarhide Oil Field Unit  
Andrews County, Texas  
RRC OCP No. 08-1048  
OCD RP No. 1R-3944

Chevron Environmental  
Management Company







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## 1. Introduction

GHD Services Inc. (GHD), on behalf of Chevron Environmental Management Company (CEMC), submits herein to the Railroad Commission of Texas (RRC) the *2018 Annual Groundwater Monitoring Report* for the Dollarhide Oil Field Unit located in Andrews County, Texas (Site). The latitude/longitude coordinates for the Site are 32° 08' 45.60" N and 103° 03' 20.12" W, and a vicinity map showing the Site location is included as Figure 1. This report presents a summary and evaluation of the annual groundwater monitoring data collected in January, April, July, and October 2018.

## 2. Background

It is believed that historical operations at the Site have contributed to elevated chloride concentrations in groundwater in the Ogallala Aquifer. The Site was discovered as an oil and gas production field in 1945 and, over the years, was owned and operated and/or leased by various companies that disposed of excess produced water and drilling fluids into pits. The use of pits for water disposal ceased in 1967, and the Site operators began using an injection system for disposal. In 1971, the first evidence of elevated chloride concentrations in groundwater was identified in Tract 26, and then in 1974 in Tract 45. Groundwater assessment was initiated in 1974, and groundwater recovery was initiated in 1994 by Union Oil Company of California (Unocal).

Representatives of Unocal and the RRC participated in a meeting on June 2, 1994, to discuss the installation of 24 recovery wells located in Texas along the Texas and New Mexico State Line to remove chloride-impacted groundwater from the Ogallala aquifer. Unocal received RRC approval of the recovery system in written correspondence on July 7, 1994. Since 1994, two additional recovery wells were installed, totaling 26 recovery wells that recovered groundwater from the Site. The recovered groundwater was pumped into two on-Site injection wells for oil reservoir pressure maintenance. Chevron Corporation purchased Unocal in August 2005. Since that time, Chevron U.S.A., Inc. (Chevron) continued to operate the groundwater recovery system until the system shutdown in November 2017, with concurrence from the RRC and New Mexico Oil Conservation Division (OCD).

### *Former Pits*

Prior to the 1970s, it was an accepted practice in oil field operations to store produced water in pits adjacent to well locations. After livestock water wells in the vicinity of the Site began exhibiting elevated chloride concentrations, soil borings were installed in all former pit locations to assess possible chlorides in soil leaching to groundwater. Historical aerial photographs were reviewed to assess potential source areas. A 1955 aerial photograph identified the presence of approximately 84 former produced water (brine) pits adjacent to Site well locations. A large-scale evaporation pit located to the northwest of the existing gas plant that had been utilized to store mixed brine, was identified as a potential source area. Soil samples were collected from various depths within the former pits and were submitted for laboratory analysis of chlorides. Former pit locations with soil chloride concentrations less than 700 parts per million (ppm) were determined not to be potential





source areas and were left in place. The former pit locations with soil chloride concentrations greater than 700 ppm were determined to be potential source areas, and Unocal capped the pits with a geosynthetic clay liner to prevent any further leaching of chlorides.

#### *Light Non-Aqueous Phase Liquid*

During a groundwater sampling event in January 2000, dissolved hydrocarbon constituents and light non-aqueous phase liquid (LNAPL) were detected in recovery well 44-J-WW during a routine groundwater sampling event. The LNAPL exhibited elevated concentrations of hydrocarbons in the C<sub>6</sub>-C<sub>12</sub> range, indicative of natural gas liquids. A north-south trending underground pipeline that contains hydrocarbon products, operated by another company (not Chevron), is located within 100 feet of monitor well 44-J-WW. Soil investigations were conducted in 2000 (Unocal) and 2011 (CEMC) to determine the source area of the release; however, no hydrocarbon impacts were detected in soil. On November 5, 2010, LNAPL was discovered in two additional recovery wells, 44-I-WW and 44-II-WW, during routine operation and maintenance. Due to the presence of LNAPL, these three wells had remained inactive through November 2017, when the groundwater recovery system was shut down to prevent the introduction of LNAPL into the groundwater recovery system. The LNAPL identified in these three wells (44-J-WW, 44-I-WW, and 44-II-WW) is not located near any Chevron assets that contain hydrocarbons, and the LNAPL is believed to be associated with other third-party pipelines in the vicinity. LNAPL investigation efforts have been summarized in previous reports that have been submitted to the RRC.

### **3. Regulatory Framework**

CEMC has been working under the guidance of the RRC to address the groundwater chloride impacts as a result of historic operations at the Site. The RRC has regulatory jurisdiction over oil and gas production operations in the State of Texas. Under the RRC, the Site is regulated under Title 16 of the Texas Administrative Code (TAC) Chapter 3 (relating to the Oil and Gas Division) and §3.8(b) (Statewide Rule 8 Water Protection).

On October 13, 2015, representatives of the OCD and CEMC participated in a meeting at the OCD office in Santa Fe, New Mexico, to discuss the installation of groundwater monitor wells on CEMC-owned property in New Mexico to delineate and to further assess the impacts to the Site's groundwater with respect to chlorides and total dissolved solids (TDS). Subsequent to the meeting, CEMC submitted a Release Notification and Corrective Action (C-141) Form in a written correspondence on October 28, 2015, per OCD's request, in order to establish a file for the Site. Following the 2015 meeting with the OCD, CEMC completed groundwater investigations in 2015, 2016, and 2017 that included installation of monitor wells in Texas and New Mexico to further delineate the plume boundary.

On May 16, 2017, representatives from CEMC and GHD met with the RRC and the OCD at their respective offices. The meeting was held via teleconference to provide a project status update to both regulatory agencies and to ensure that the regulatory agencies involved in the project are in alignment with the path forward for the Site. During the joint regulatory meeting, the current and future use of the recovery system was discussed. CEMC informed the RRC and OCD of its intentions to temporarily shut down the groundwater recovery system in the fourth quarter 2017, for



at least one calendar year, to evaluate non-pumping aquifer and plume conditions. The RRC and OCD agreed with this approach and the groundwater recovery system was shut down in November 2017.

## **4. Groundwater Recovery**

In the fourth quarter 2018, representatives from CEMC and GHD met with the RRC (November 28, 2018) and the OCD (December 13, 2018) at their respective offices. The purpose of these meetings was to provide a project status update to both regulatory agencies and discuss the path forward for the Site. During both 2018 regulatory meetings, CEMC informed the RRC and the OCD of its intentions to permanently shut down the groundwater recovery system. The RRC and OCD both agreed with this approach, and the groundwater recovery system will remain permanently shut down.

## **5. Groundwater Monitoring**

Currently, groundwater monitoring at the Site is being performed on a quarterly basis, with events conducted in January, April, July, and October. The groundwater monitoring system consists of 58 monitor wells and 8 non-remedial wells screened in the Ogallala Aquifer approximately 120 feet below ground surface (bgs). Groundwater well designations are shown on Figure 2 and listed in Table 1. During the January and July semiannual events, all viable wells in the groundwater monitoring system were sampled. During the voluntary April and October events, only the wells installed during the 2015, 2016, and 2017 groundwater investigations were sampled to develop concentration trends over time.

### **5.1 Potentiometric Conditions**

Prior to sampling during each quarterly event, depth-to-groundwater measurements were collected at each well with an oil/water interface probe, with an accuracy of 0.01 foot, to determine the groundwater elevation in each well. Groundwater potentiometric elevations and contours for the January through October 2018 events are shown on Figures 3 through 6, respectively and indicate that the groundwater flow direction is generally to the southwest, consistent with previous events. A summary of the depth-to-groundwater measurements and the corresponding groundwater elevations is included in Tables 2 through 5. Historical groundwater elevations are included in Appendix A.

### **5.2 Groundwater Sampling**

All groundwater samples were collected via no-purge grab sampling techniques. The groundwater samples were collected directly from the screened interval of each well using a HydraSleeve. The HydraSleeve is deployed during the gauging event to allow the well to return to equilibrium prior to sampling. Groundwater samples were collected in laboratory-supplied containers, preserved on ice, and transported to Xenco Laboratory located in Odessa, Texas, following proper chain-of-custody procedures. The groundwater samples were submitted for analysis of chloride by United States



Environmental Protection Agency (EPA) Method 300/300.1 and total dissolved solids (TDS) by EPA Method SM2540C.

### **5.3 Analytical Results**

Groundwater sample analytical results were compared to the Texas Commission of Environmental Quality (TCEQ) Secondary Drinking Water Standards and Secondary Constituent levels for chloride (300 milligrams per liter [mg/L]) and TDS (1,000 [mg/L]). The groundwater sample analytical results from the January, April, July, and October 2018 events are listed in Tables 6. The groundwater chloride and TDS concentrations and isopleths for the 2018 sampling events are shown on Figures 7 through 14, and the analytical laboratory reports are included in Appendix B. The concentrations of chlorides and TDS are generally consistent with historical events. A table of historical analytical results is included in Appendix C

### **5.4 Quality Assurance/Quality Control**

During the 2018 sampling events, ten duplicate samples were collected for chloride and TDS during each sampling event to confirm sample quality and reproducibility. No significant deviations were encountered in the sample results for duplicate constituents. Additionally, the certified groundwater laboratory reports received from Xenco Laboratory were reviewed and approved by a GHD analytical chemist for laboratory and field method Quality Assurance/Quality Control (QA/QC). The associated data validation reports issued by GHD are included in Appendix D.

## **6. Conclusions and Path Forward**

During the fourth quarter 2018 regulatory meetings, CEMC proposed an additional groundwater investigation to be conducted at the Site in 2019 to establish long-term plume management monitoring points in Texas and New Mexico, and further delineate the downgradient groundwater plume boundary in both states. Additionally, the proposed 2019 wells in New Mexico will be used to define groundwater model parameters, identify bedrock elevations across the Dollarhide field and the monument draw, and define saturated thickness of the Ogallala aquifer and groundwater flow conditions.

The scope of work and objectives for the additional groundwater investigation were included in the *2019 Work Plan for Additional Groundwater Investigation* that was submitted to the RRC and OCD on February 1, 2019. The RRC concurred with the proposed activities and responded with approval on February 7, 2019 for the 2019 groundwater investigation activities. The installation of additional monitor wells is scheduled to be completed in the second quarter 2019, pending access agreements and issuance of applicable well permits from the New Mexico Office of the State Engineer. CEMC anticipates scheduling an update meeting with the RRC and the OCD in the third or fourth quarter 2019 to discuss the results of the 2019 groundwater investigation.

CEMC will continue conducting quarterly monitoring only for the monitor wells recently installed in 2015, 2016, 2017, and 2019. Monitor wells installed before 2015 will continue to be sampled semi-annually. Additionally, the RRC has requested that groundwater reporting be moved from





annual to semi-annual reporting. In compliance with this request, a report detailing the first two quarters of 2019 groundwater monitoring data will be submitted to the RRC by August 1, 2019.

Should you have any questions regarding this submittal, please contact Nick G. Casten of GHD at (225) 296-6513 or Adriane Gifford of CEMC at (832) 854-5620.

All of which is Respectfully Submitted

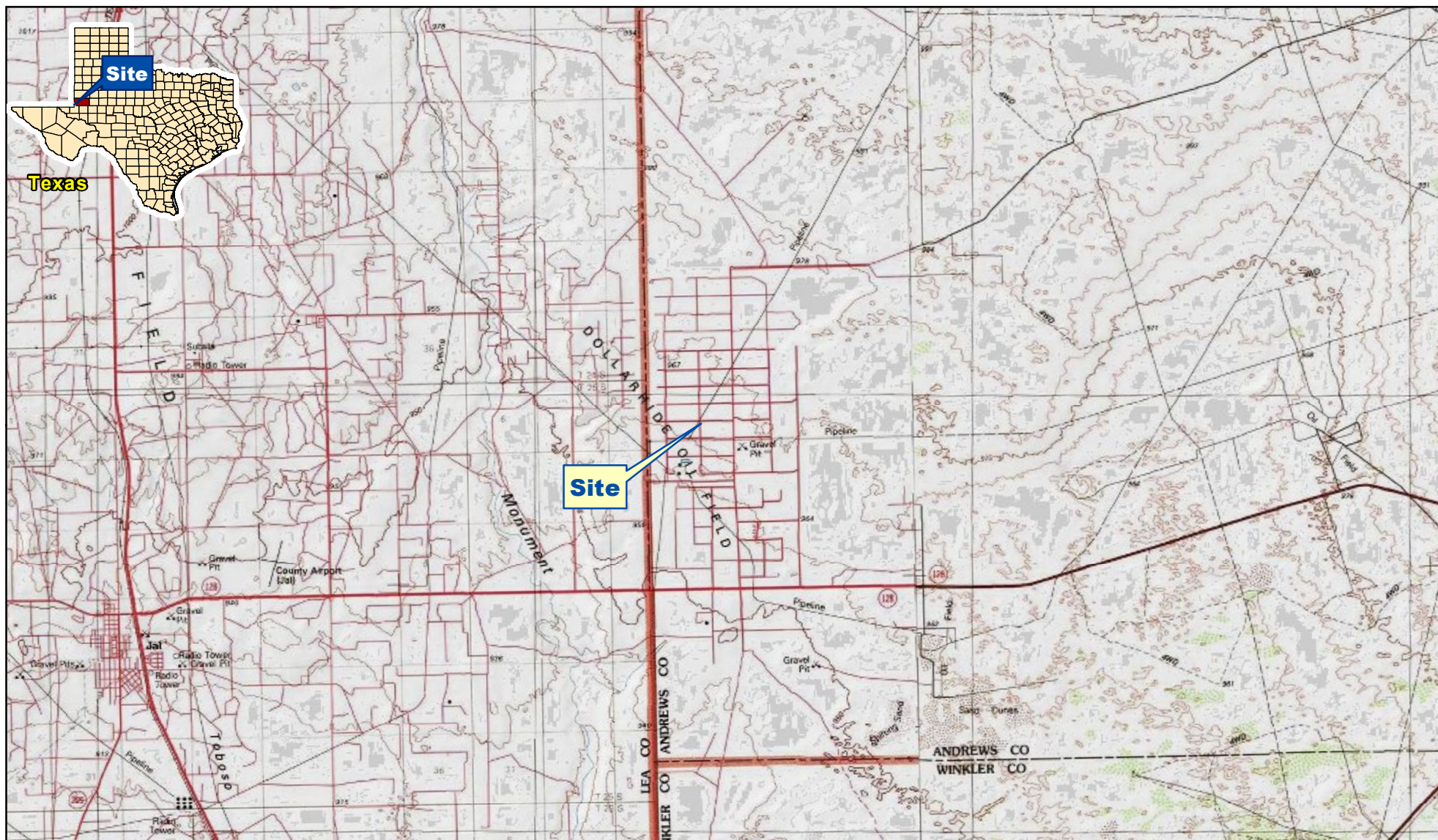
GHD,

A handwritten signature in black ink that reads "Nicholas G. Casten". The signature is written in a cursive style with a large, stylized 'N'.

Nicholas G. Casten

A handwritten signature in blue ink that reads "Brian L. Carter". The signature is written in a cursive style with a large, stylized 'B'.

Brian L. Carter, PhD  
Texas PG No. 10319



Source: USGS 7.5 Minute Topographic Maps.

0 1 2  
Miles

Coordinate System:  
NAD 1983 UTM Zone 13N



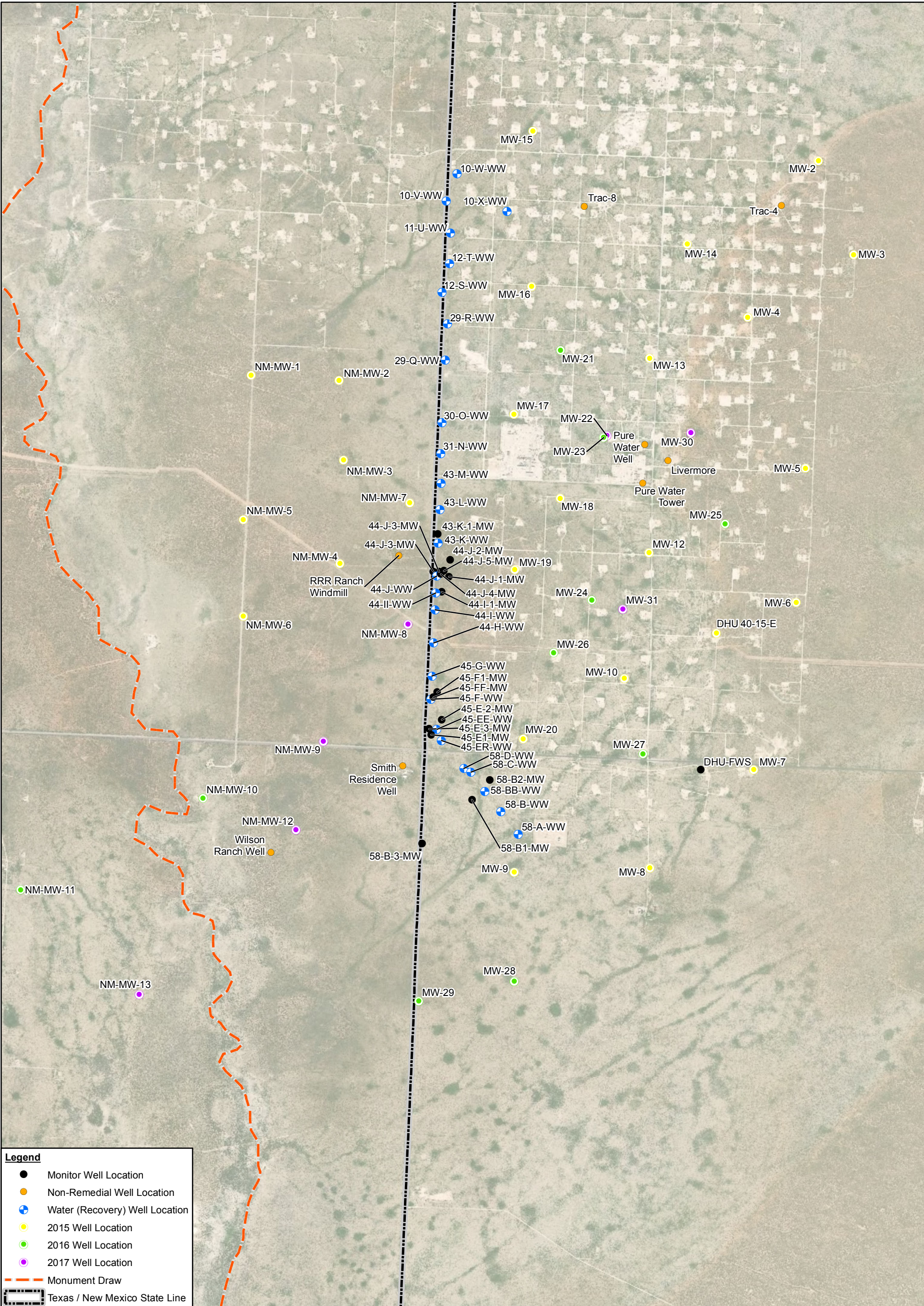
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY  
ANDREWS COUNTY, TEXAS  
CHEVRON DOLLARHIDE UNIT

SITE VICINITY MAP

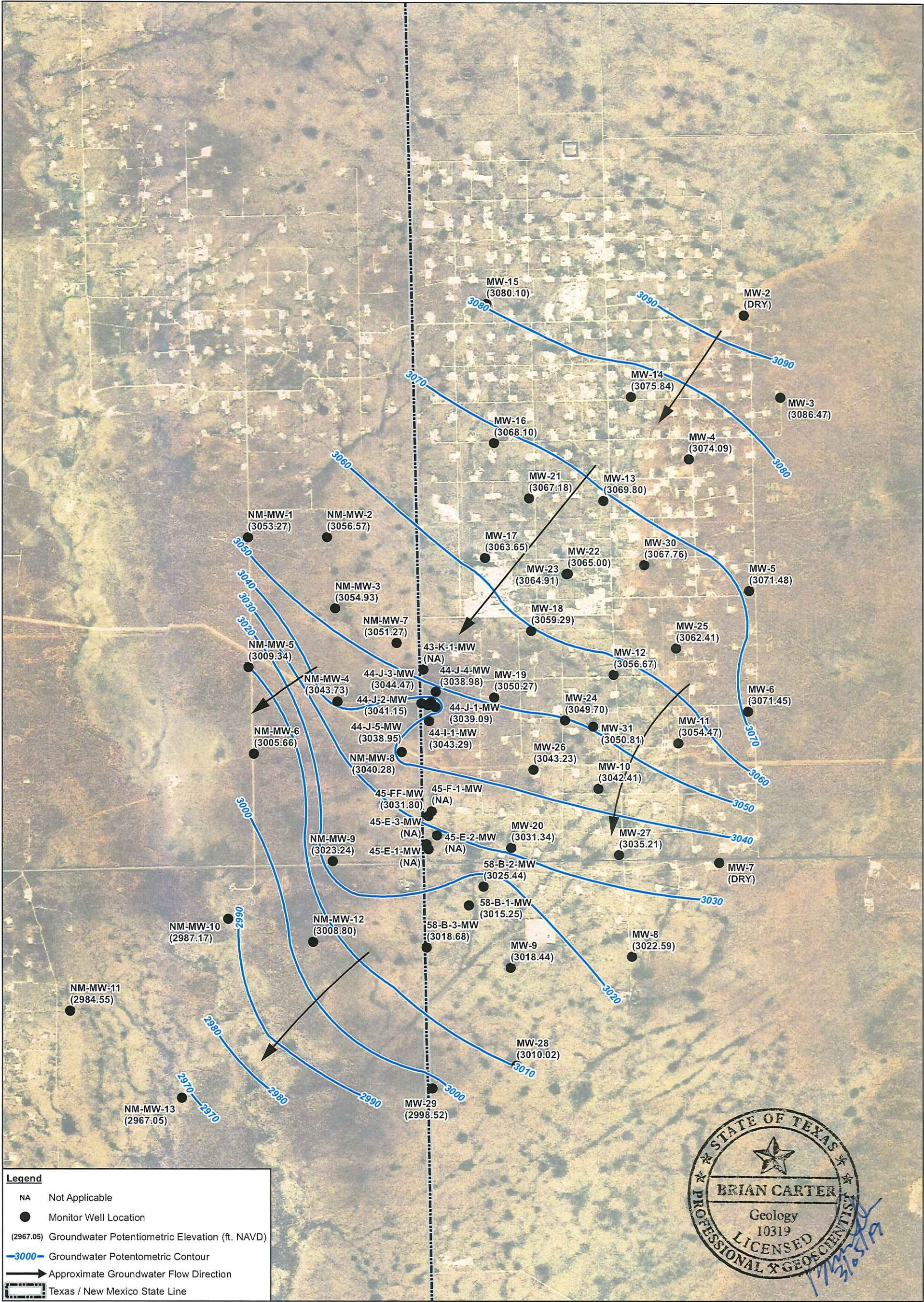
055270-2018  
Feb 7, 2019

FIGURE 1

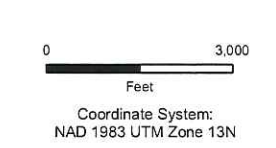








Source: ESRI World Imagery Basemap Service.

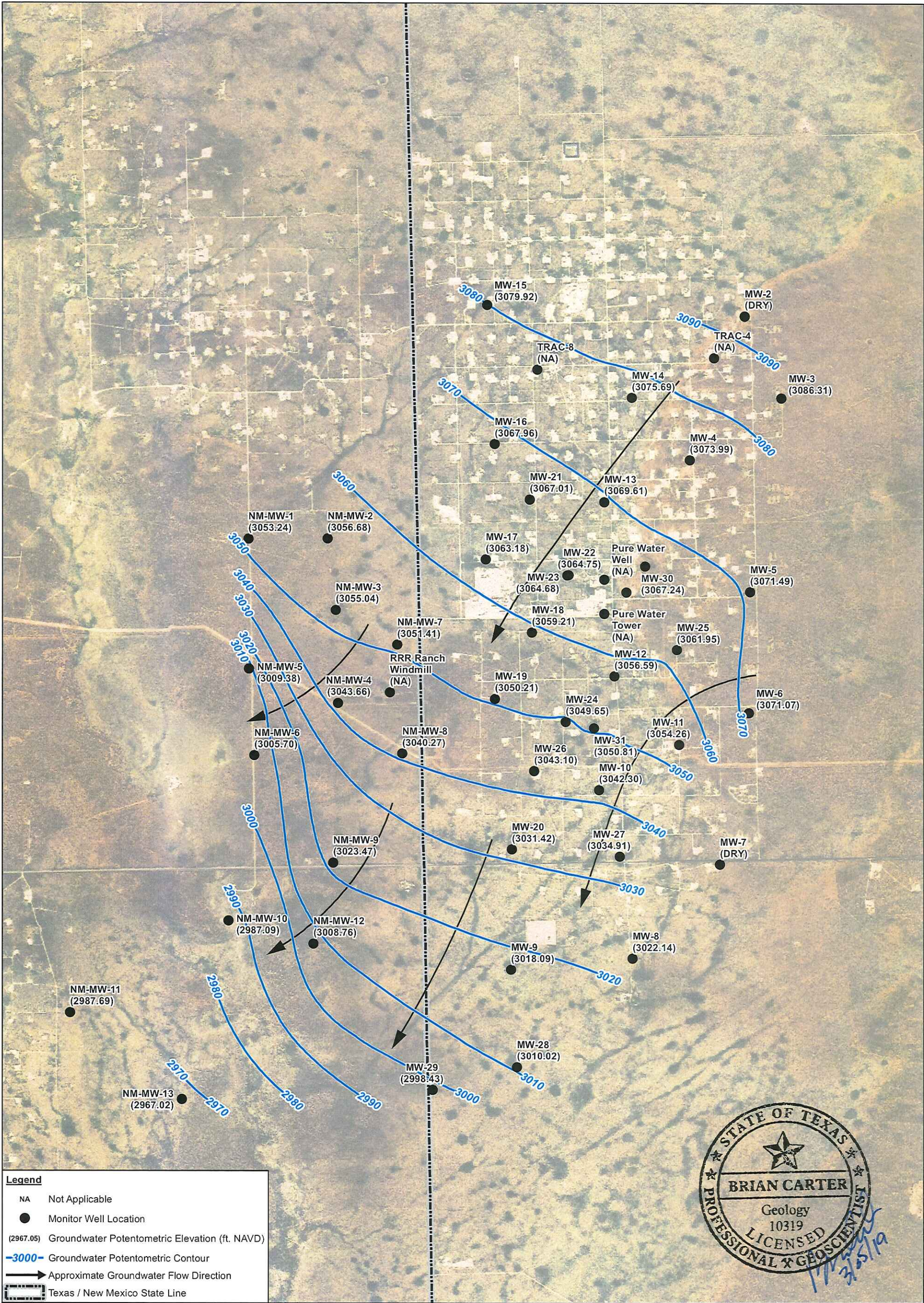


CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY  
ANDREWS COUNTY, TEXAS  
DOLLARHIDE OIL FIELD UNIT  
JANUARY 2018 GROUNDWATER POTENTIOMETRIC  
ELEVATIONS & CONTOURS

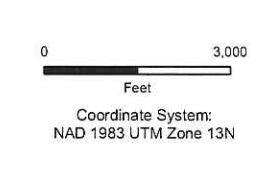
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Feb 20, 2019

FIGURE 3





Source: ESRI World Imagery Basemap Service.

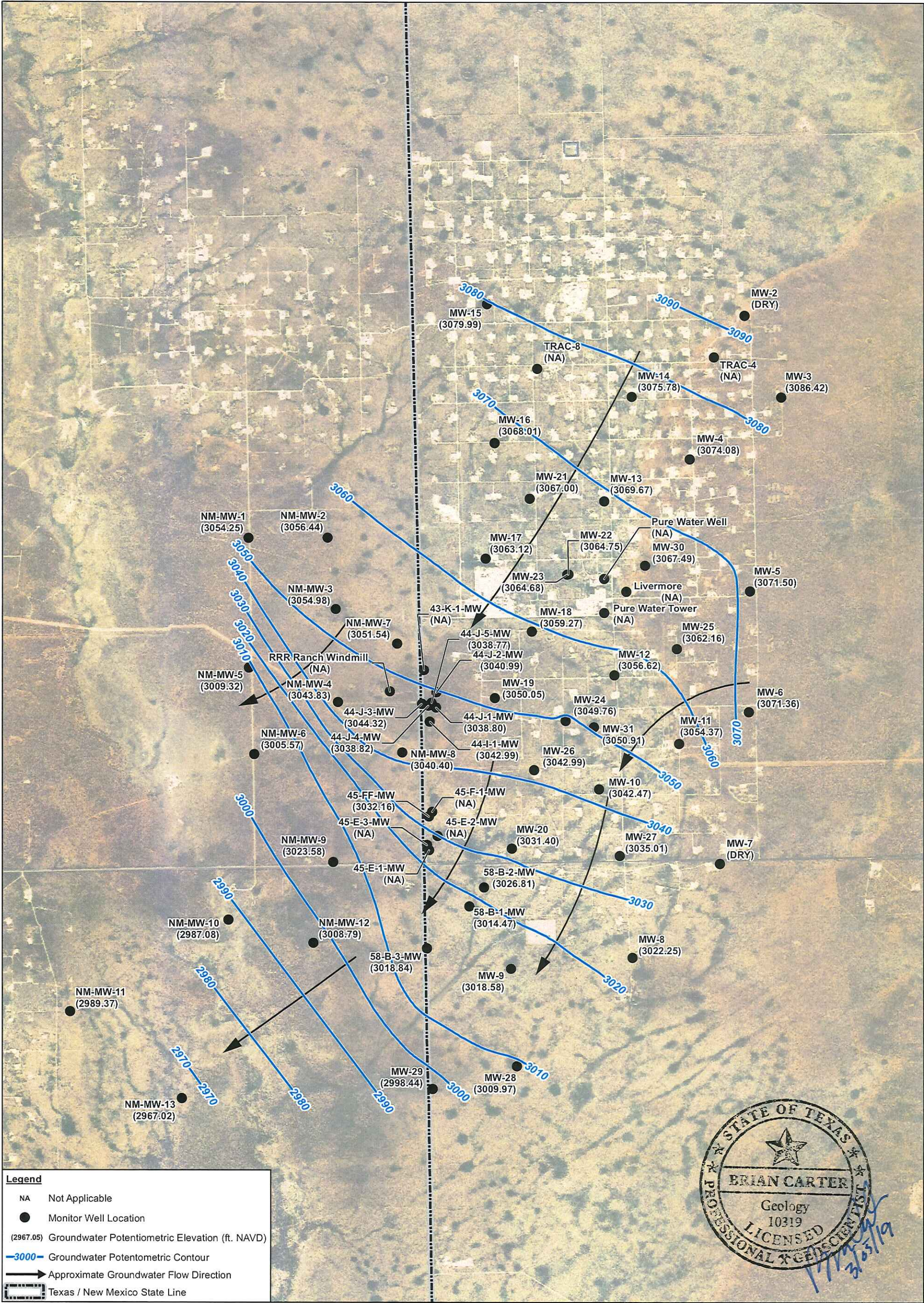


CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY  
ANDREWS COUNTY, TEXAS  
DOLLARHIDE OIL FIELD UNIT  
APRIL 2018 GROUNDWATER POTENTIOMETRIC  
ELEVATIONS & CONTOURS

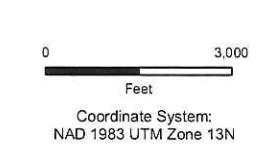
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Feb 20, 2019

FIGURE 4





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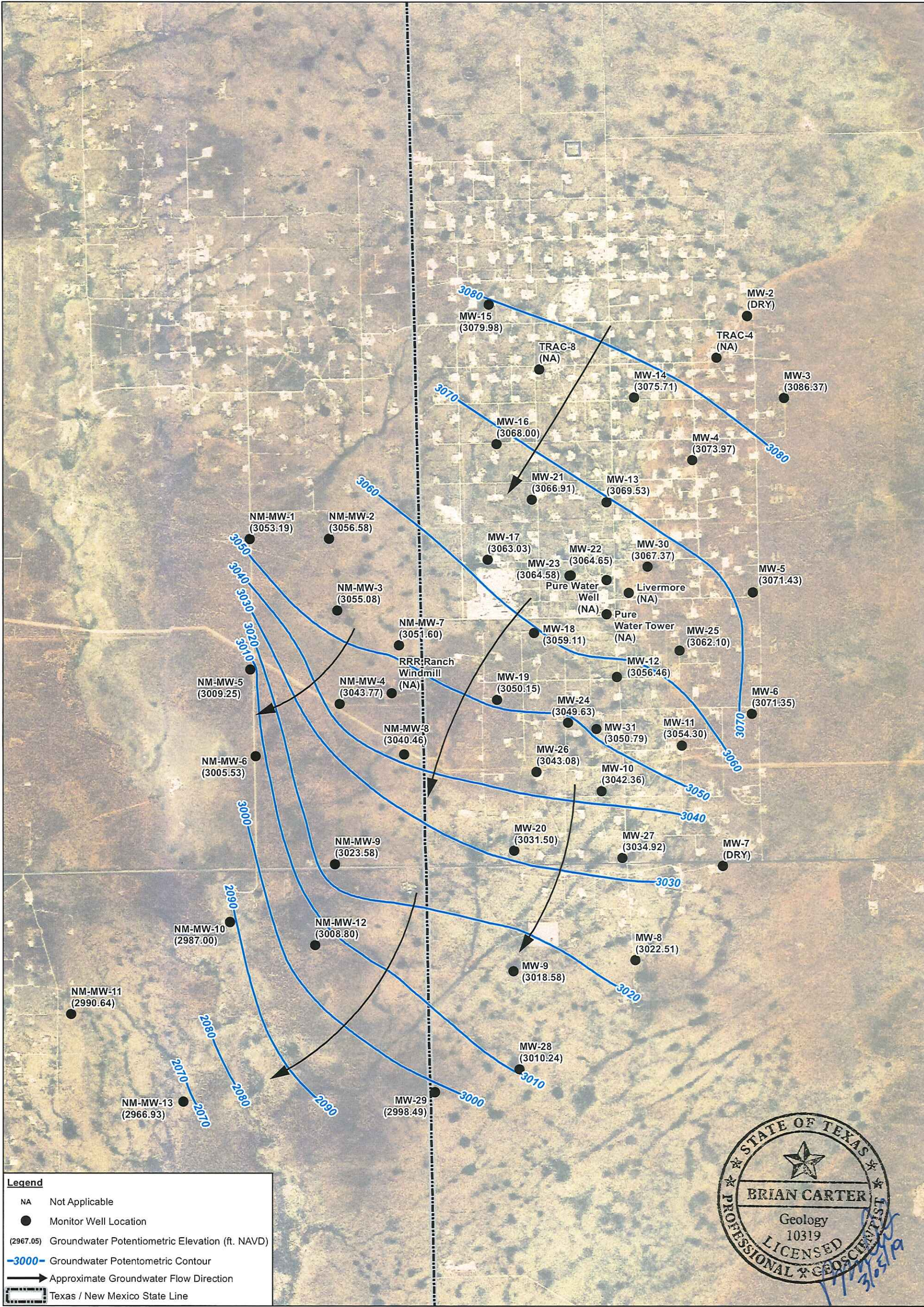


CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY  
ANDREWS COUNTY, TEXAS  
DOLLARHIDE OIL FIELD UNIT  
JULY 2018 GROUNDWATER POTENTIOMETRIC  
ELEVATIONS & CONTOURS

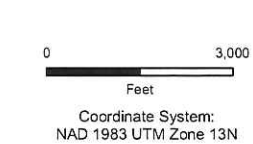
055270-2018  
Feb 20, 2019

FIGURE 5





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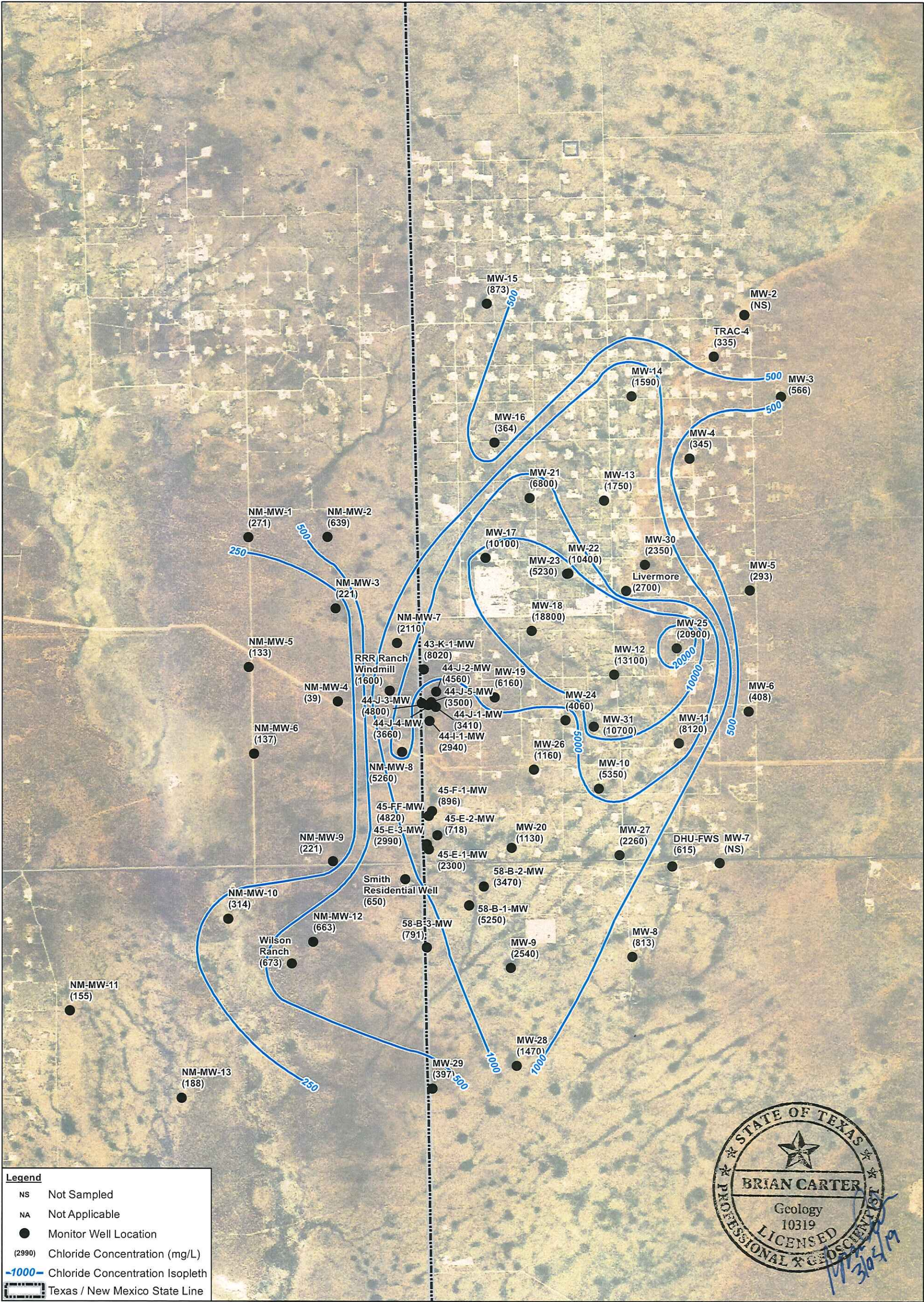


CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY  
ANDREWS COUNTY, TEXAS  
DOLLARHIDE OIL FIELD UNIT  
OCTOBER 2018 GROUNDWATER POTENTIOMETRIC  
ELEVATIONS & CONTOURS

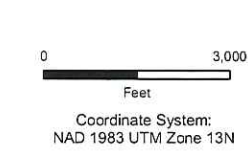
055270-2018  
Feb 20, 2019

FIGURE 6





Source: ESRI World Imagery Basemap Service.

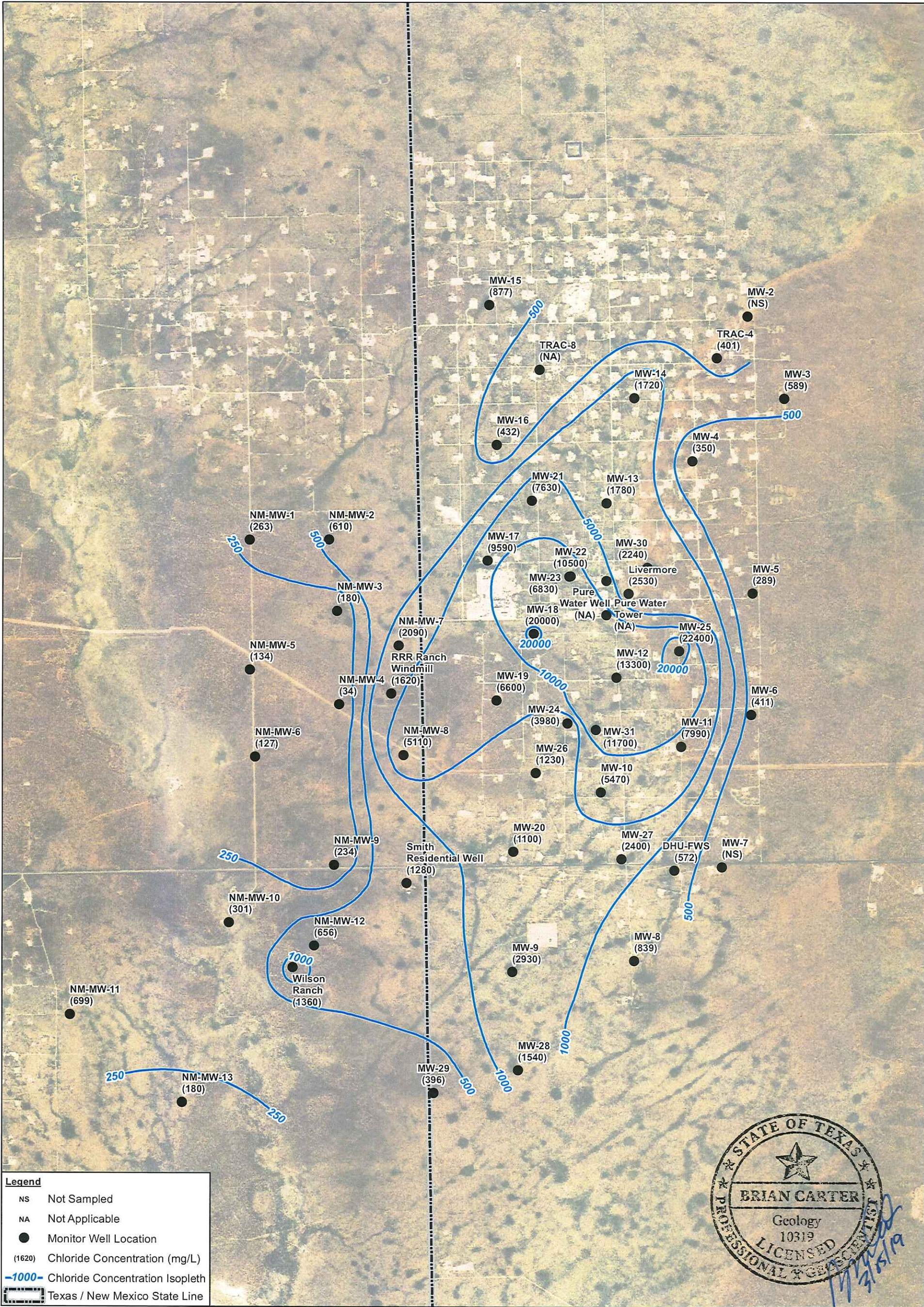


CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY  
ANDREWS COUNTY, TEXAS  
DOLLARHIDE OIL FIELD UNIT  
JANUARY 2018 GROUNDWATER CHLORIDE  
CONCENTRATIONS & ISOPLETHS

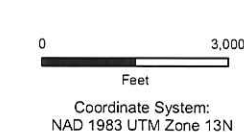
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Feb 20, 2019

FIGURE 7





Source: ESRI World Imagery Basemap Service.

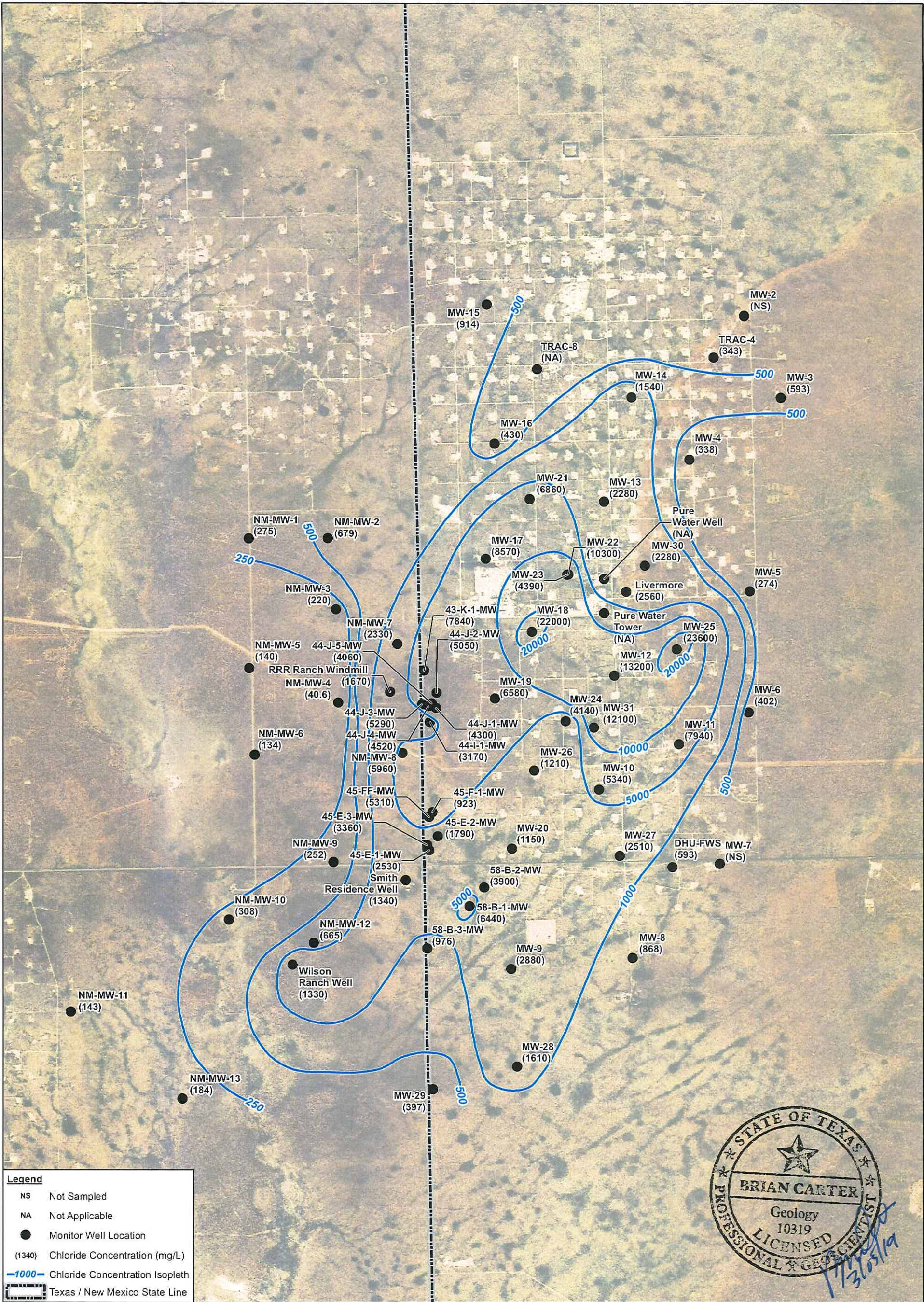


CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY  
ANDREWS COUNTY, TEXAS  
DOLLARHIDE OIL FIELD UNIT  
APRIL 2018 GROUNDWATER CHLORIDE  
CONCENTRATIONS & ISOPLETHS

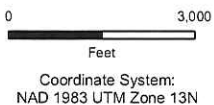
055270-2018  
Feb 22, 2019

FIGURE 8





Source: ESRI World Imagery Basemap Service.

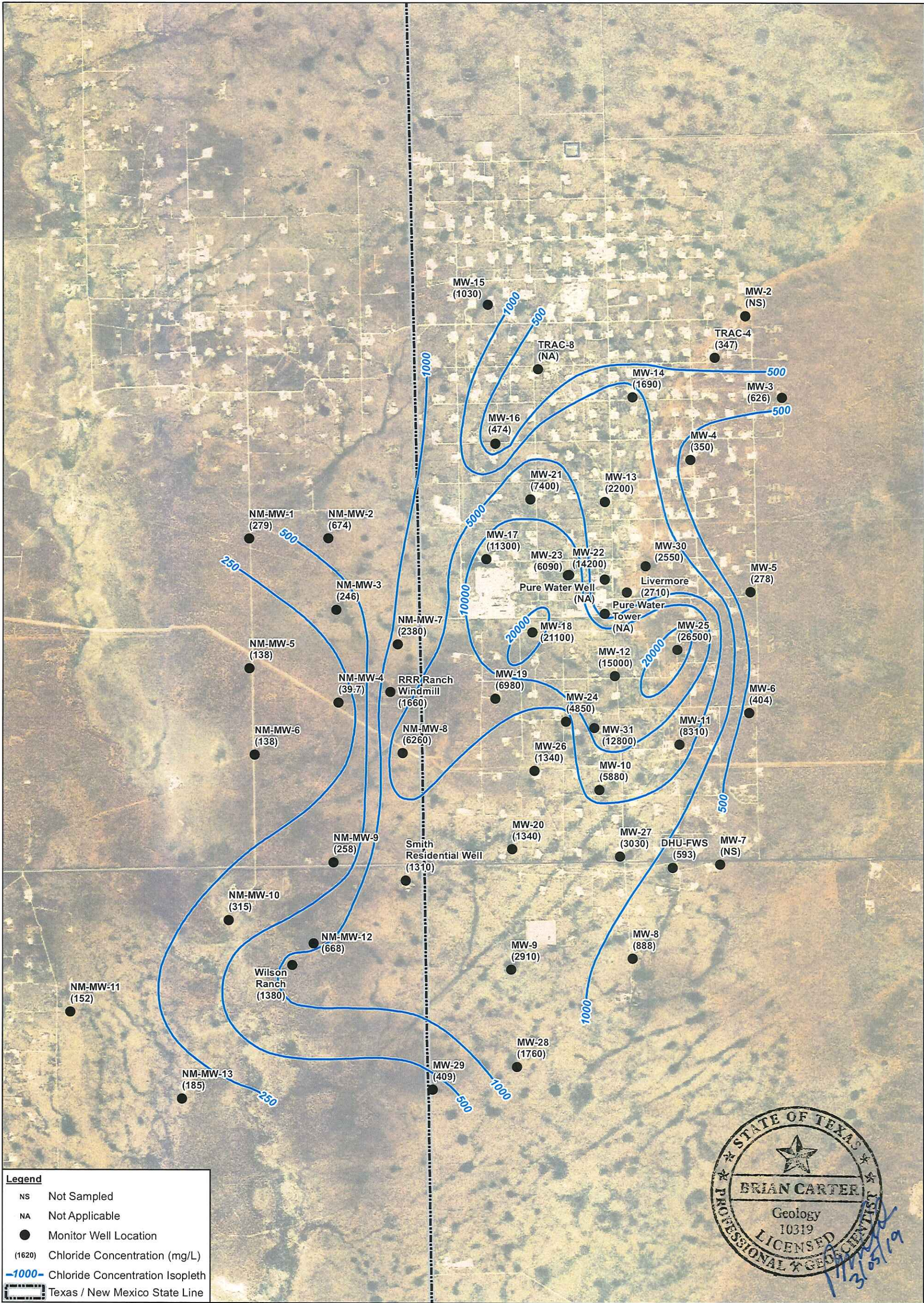


CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY  
ANDREWS COUNTY, TEXAS  
DOLLARHIDE OIL FIELD UNIT  
JULY 2018 GROUNDWATER CHLORIDE  
CONCENTRATIONS & ISOPLETHS

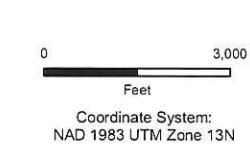
055270-2018  
Feb 20, 2019

FIGURE 9





Source: ESRI World Imagery Basemap Service.

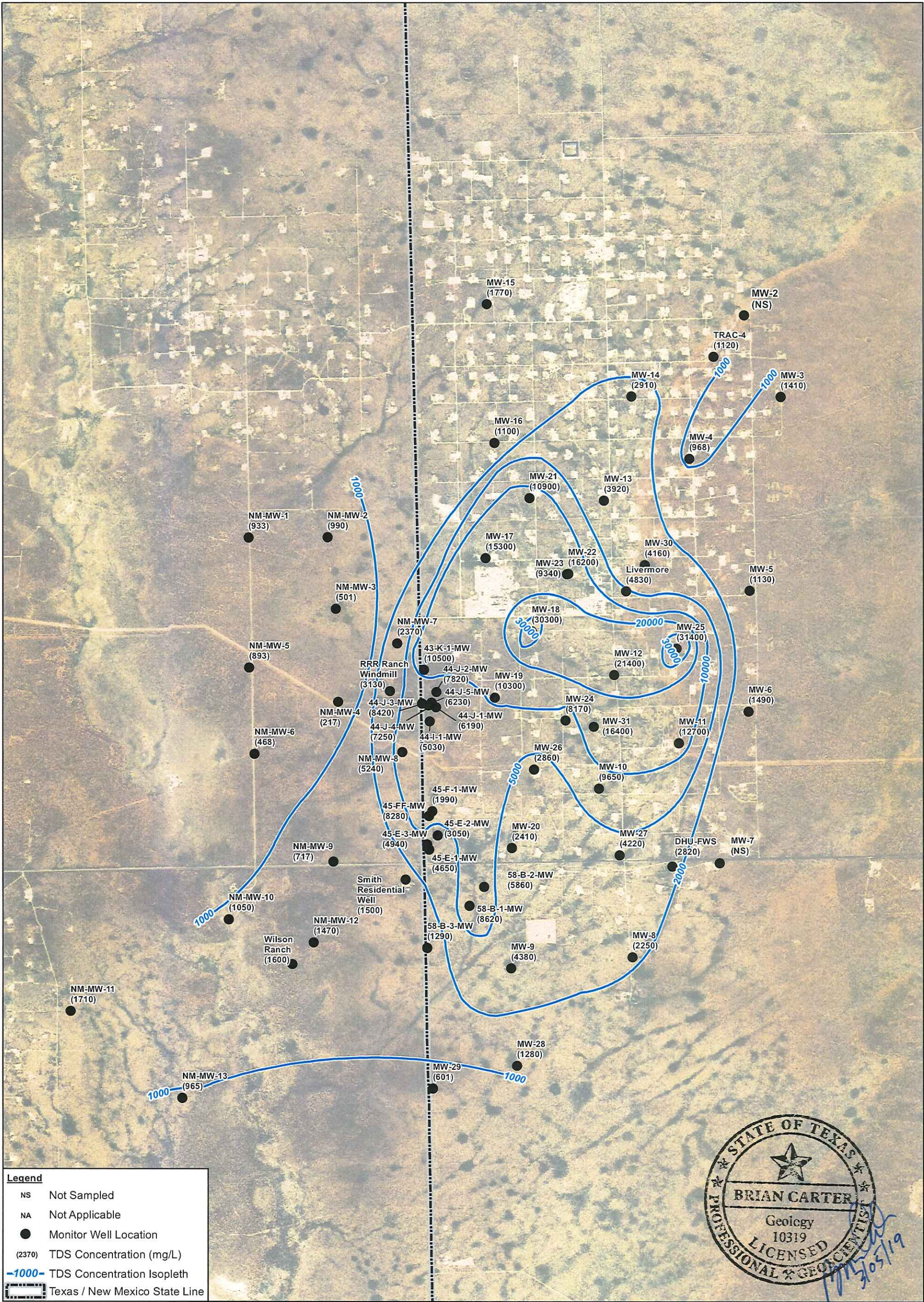


CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY  
ANDREWS COUNTY, TEXAS  
DOLLARHIDE OIL FIELD UNIT  
OCTOBER 2018 GROUNDWATER CHLORIDE  
CONCENTRATIONS & ISOPLETHS

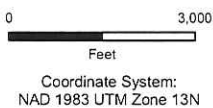
055270-2018  
Feb 20, 2019

FIGURE 10





Source: ESRI World Imagery Basemap Service.

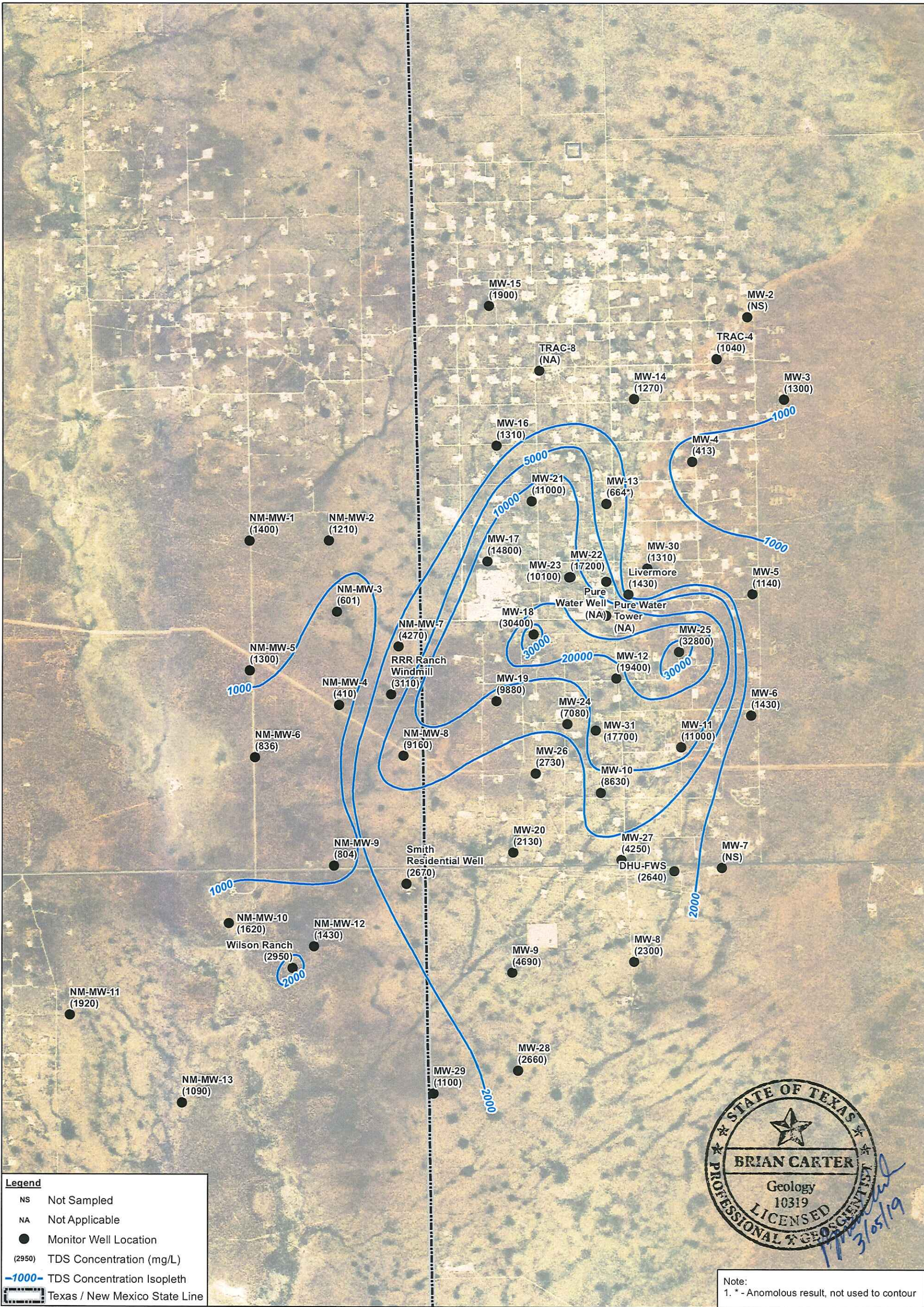


CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY  
ANDREWS COUNTY, TEXAS  
DOLLARHIDE OIL FIELD UNIT  
JANUARY 2018 GROUNDWATER TDS  
CONCENTRATIONS & ISOPLETHS

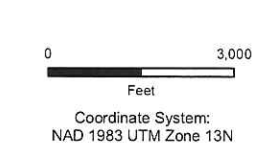
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Feb 20, 2019

FIGURE 11





Source: ESRI World Imagery Basemap Service.

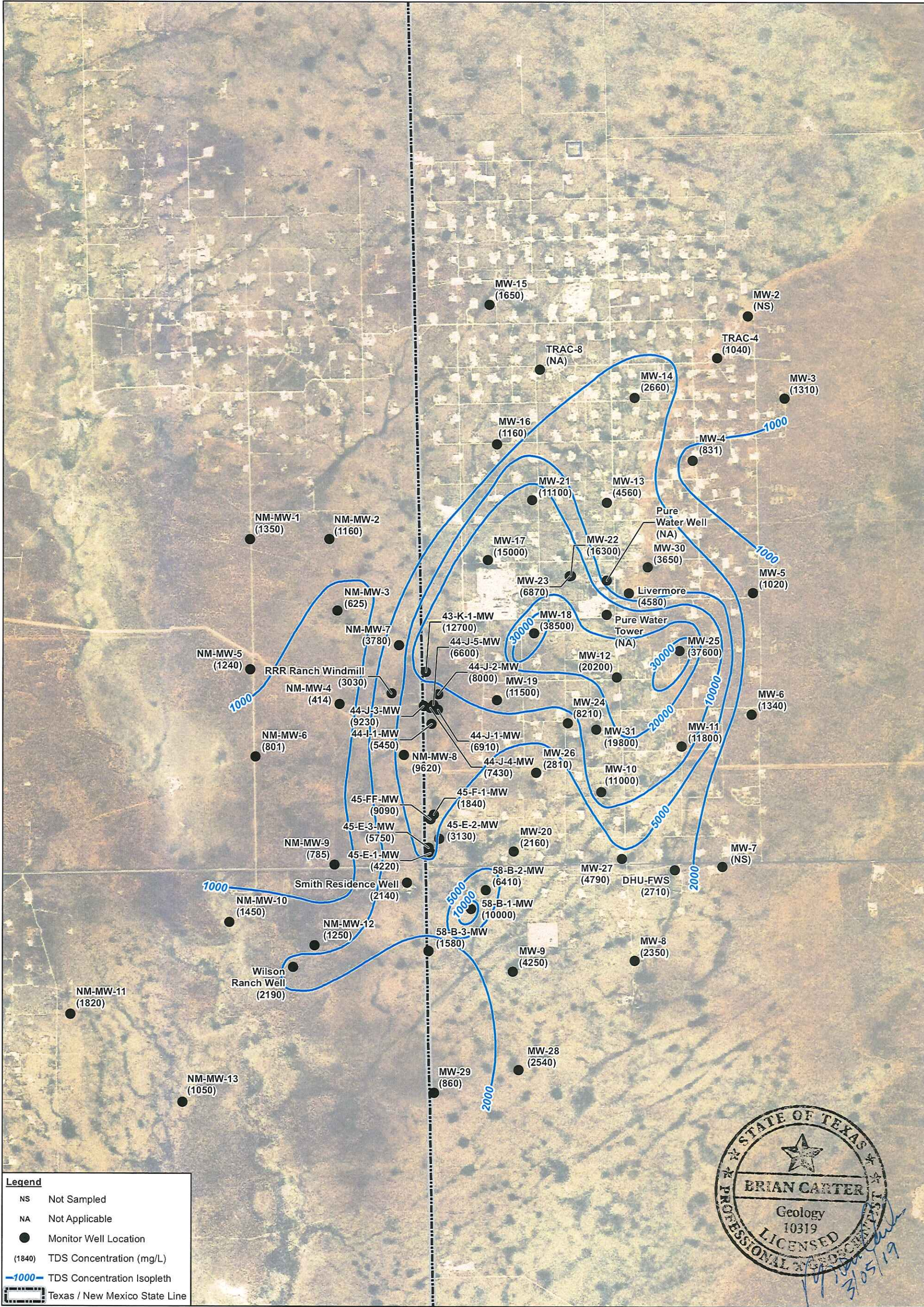


CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY  
ANDREWS COUNTY, TEXAS  
DOLLARHIDE OIL FIELD UNIT  
APRIL 2018 GROUNDWATER TDS  
CONCENTRATIONS & ISOPLETHS

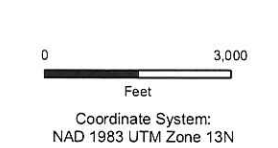
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Feb 22, 2019

FIGURE 12





Source: ESRI World Imagery Basemap Service.

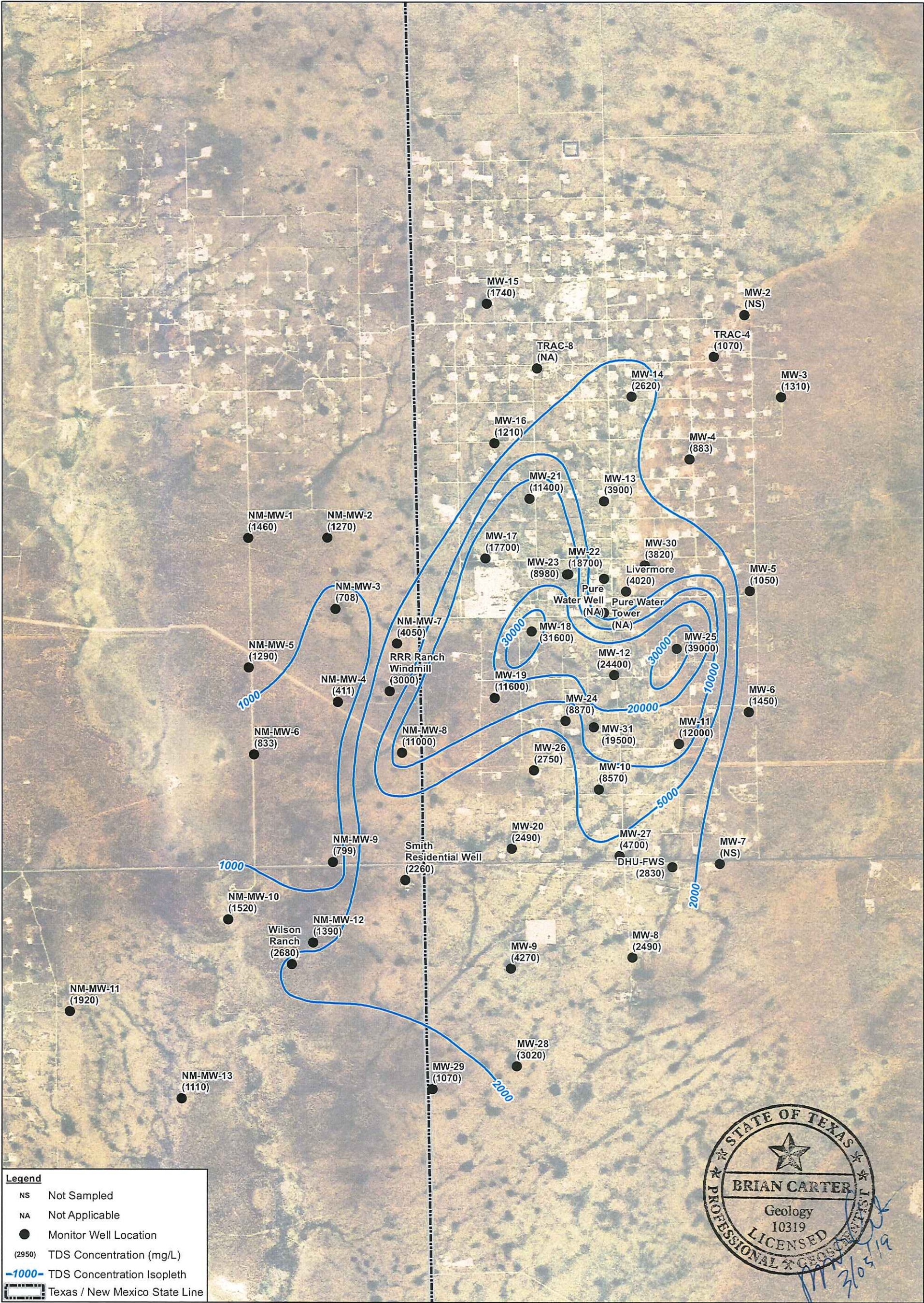


CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY  
ANDREWS COUNTY, TEXAS  
DOLLARHIDE OIL FIELD UNIT  
JULY 2018 GROUNDWATER TDS  
CONCENTRATIONS & ISOPLETHS

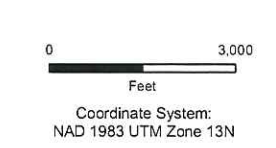
055270-2018  
Feb 20, 2019

FIGURE 13





Source: ESRI World Imagery Basemap Service.



CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY  
ANDREWS COUNTY, TEXAS  
DOLLARHIDE OIL FIELD UNIT  
OCTOBER 2018 GROUNDWATER TDS  
CONCENTRATIONS & ISOPLETHS

055270-2018  
Feb 20, 2019

FIGURE 14



**Table 1**  
**Groundwater Well Designations**  
**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

Well Group Designation	Well Identification
Recovery Wells	10-V-WW
	10-W-WW
	10-X-WW
	11-U-WW
	12-S-WW
	12-T-WW
	29-Q-WW
	29-R-WW
	30-O-WW
	31-N-WW
	43-K-WW
	43-L-WW
	43-M-WW
	44-H-WW
	44-I-WW
	44-II-WW
	44-J-WW
	45-EE-WW
	45-ER-WW
	45-F-WW
	45-G-WW
	58-A-WW
	58-B-WW
	58-BB-WW
	58-C-WW
	58-D-WW
Monitor Wells	43-K-1-MW
	44-I-1-MW
	44-J-1-MW
	44-J-2-MW
	44-J-3-MW
	44-J-4-MW
	44-J-5-MW
	45-E-1-MW
	45-E-2-MW
	45-E-3-MW
	45-F-1-MW
	45-FF-MW
	58-B-1-MW
	58-B-2-MW
	58-B-3-MW
	MW-2 <sup>(1)</sup>
	MW-3 <sup>(1)</sup>
	MW-4 <sup>(1)</sup>
	MW-5 <sup>(1)</sup>
	MW-6 <sup>(1)</sup>
	MW-7 <sup>(1)</sup>

**Table 1**  
**Groundwater Well Designations**  
**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

Well Group Designation	Well Identification
Monitor Wells	MW-8 <sup>(1)</sup>
	MW-9 <sup>(1)</sup>
	MW-10 <sup>(1)</sup>
	MW-11 <sup>(1)</sup>
	MW-12 <sup>(1)</sup>
	MW-13 <sup>(1)</sup>
	MW-14 <sup>(1)</sup>
	MW-15 <sup>(1)</sup>
	MW-16 <sup>(1)</sup>
	MW-17 <sup>(1)</sup>
	MW-18 <sup>(1)</sup>
	MW-19 <sup>(1)</sup>
	MW-20 <sup>(1)</sup>
	MW-21 <sup>(1)</sup>
	MW-22 <sup>(1)</sup>
	MW-23 <sup>(1)</sup>
	MW-24 <sup>(1)</sup>
	MW-25 <sup>(1)</sup>
	MW-26 <sup>(1)</sup>
	MW-27 <sup>(1)</sup>
	MW-28 <sup>(1)</sup>
	MW-29 <sup>(1)</sup>
	MW-30 <sup>(1)</sup>
	MW-31 <sup>(1)</sup>
	NM-MW-1 <sup>(1)</sup>
	NM-MW-2 <sup>(1)</sup>
	NM-MW-3 <sup>(1)</sup>
	NM-MW-4 <sup>(1)</sup>
	NM-MW-5 <sup>(1)</sup>
	NM-MW-6 <sup>(1)</sup>
	NM-MW-7 <sup>(1)</sup>
	NM-MW-8 <sup>(1)</sup>
	NM-MW-9 <sup>(1)</sup>
	NM-MW-10 <sup>(1)</sup>
	NM-MW-11 <sup>(1)</sup>
	NM-MW-12 <sup>(1)</sup>
	NM-MW-13 <sup>(1)</sup>

**Table 1**  
**Groundwater Well Designations**  
**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

Well Group Designation	Well Identification
Non-Remedial Wells	Livermore
	Pure Water Tower
	Pure Water Well
	RRR Ranch Windmill
	TRAC-4
	TRAC-8
	Smith Residence
	Wilson Ranch Well

Note:

(1) Indicates monitor wells installed in 2015, 2016, and 2017 that are voluntarily sampled quarterly.



**Table 2**  
**January 2018 Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Andrews County, Texas**

<b>Well Identification</b>	<b>TOC Elevation (ft NAVD)</b>	<b>Depth to Water (ft below TOC)</b>	<b>Groundwater Elevation (ft NAVD)</b>
<b>Monitor Wells</b>			
43-K-1-MW	NM	94.61	NA
44-I-1-MW	3,138.93	95.64	3,043.29
44-J-1-MW	3,134.50	95.41	3,039.09
44-J-2-MW	3,135.30	94.15	3,041.15
44-J-3-MW	3,140.19	95.72	3,044.47
44-J-4-MW	3,133.69	94.71	3,038.98
44-J-5-MW	3,134.75	95.80	3,038.95
45-E-1-MW	NM	88.74	NA
45-E-2-MW	NM	86.23	NA
45-E-3-MW	NM	89.35	NA
45-F-1-MW	NM	90.44	NA
45-FF-MW	3,122.70	90.90	3,031.80
58-B-1-MW	3,100.59	85.34	3,015.25
58-B-2-MW	3,111.91	86.47	3,025.44
58-B-3-MW	3,108.46	89.78	3,018.68
MW-2	3,204.56	109.15	3,095.41
MW-3	3,199.51	113.04	3,086.47
MW-4	3,189.69	115.60	3,074.09
MW-5	3,174.43	102.95	3,071.48
MW-6	3,165.25	93.80	3,071.45
MW-7	3,132.14	-	3,132.14
MW-8	3,107.34	84.75	3,022.59
MW-9	3,103.82	85.38	3,018.44
MW-10	3,139.71	97.30	3,042.41
MW-11	3,156.65	102.18	3,054.47
MW-12	3,151.33	94.66	3,056.67
MW-13	3,168.41	98.61	3,069.80
MW-14	3,182.69	106.85	3,075.84
MW-15	3,184.55	104.45	3,080.10
MW-16	3,167.93	99.83	3,068.10
MW-17	3,147.44	83.79	3,063.65
MW-18	3,155.01	95.72	3,059.29
MW-19	3,149.90	99.63	3,050.27
MW-20	3,120.09	88.75	3,031.34
MW-21	3,159.65	92.47	3,067.18
MW-22	3,152.50	87.50	3,065.00

**Table 2**  
**January 2018 Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Andrews County, Texas**

<b>Well Identification</b>	<b>TOC Elevation (ft NAVD)</b>	<b>Depth to Water (ft below TOC)</b>	<b>Groundwater Elevation (ft NAVD)</b>
MW-23	3,151.66	86.75	3,064.91
MW-24	3,144.88	95.18	3,049.70
MW-25	3,165.45	103.04	3,062.41
MW-26	3,136.99	93.76	3,043.23
MW-27	3,126.99	91.78	3,035.21
MW-28	3,093.86	83.84	3,010.02
MW-29	3,098.60	100.08	2,998.52
MW-30	3,170.95	103.19	3,067.76
MW-31	3,145.41	94.60	3,050.81
NM-MW-1	3,124.90	71.63	3,053.27
NM-MW-2	3,152.86	96.29	3,056.57
NM-MW-3	3,146.86	91.93	3,054.93
NM-MW-4	3,154.21	110.48	3,043.73
NM-MW-5	3,109.14	99.80	3,009.34
NM-MW-6	3,093.23	87.57	3,005.66
NM-MW-7	3,147.67	96.40	3,051.27
NM-MW-8	3,138.62	98.34	3,040.28
NM-MW-9	3,118.18	94.94	3,023.24
NM-MW-10	3,066.32	79.15	2,987.17
NM-MW-11	3,075.44	90.89	2,984.55
NM-MW-12	3,105.47	96.67	3,008.80
NM-MW-13	3,051.17	84.12	2,967.05
<b>Non-Remedial Wells</b>			
RRR Ranch Windmill	NM	94.24	NA
Livermore	NM	94.97	NA
Pure Water Tower	3,154.43	NM	NA
TRAC-4	NM	NM	NA
TRAC-8	NM	NM	NA
Pure Water Well	3,151.80	NM	NA
Smith Residential Well	NM	NM	NA
Wilson Ranch	NM	NM	NA

Notes:

ft = feet

NM = Not Measured

NA = Not Applicable

TOC = top of casing

NAVD = North American Vertical Datum

Table 3

**April 2018 Groundwater Elevation Measurements  
Chevron Dollarhide Unit  
Andrews County, Texas**

<b>Well Identification</b>	<b>TOC Elevation (ft NAVD)</b>	<b>Depth to Water (ft below TOC)</b>	<b>Groundwater Elevation (ft NAVD)</b>
<b>Monitor Wells</b>			
MW-2	3,204.56	109.15	3,095.41
MW-3	3,199.51	113.20	3,086.31
MW-4	3,189.69	115.70	3,073.99
MW-5	3,174.43	102.94	3,071.49
MW-6	3,165.25	94.18	3,071.07
MW-7	3,132.14	116.66	3,132.14
MW-8	3,107.34	85.20	3,022.14
MW-9	3,103.82	85.73	3,018.09
MW-10	3,139.71	97.41	3,042.30
MW-11	3,156.65	102.39	3,054.26
MW-12	3,151.33	94.74	3,056.59
MW-13	3,168.41	98.80	3,069.61
MW-14	3,182.69	107.00	3,075.69
MW-15	3,184.55	104.63	3,079.92
MW-16	3,167.93	99.97	3,067.96
MW-17	3,147.44	84.26	3,063.18
MW-18	3,155.01	95.80	3,059.21
MW-19	3,149.90	99.69	3,050.21
MW-20	3,120.09	88.67	3,031.42
MW-21	3,159.65	92.64	3,067.01
MW-22	3,152.50	87.75	3,064.75
MW-23	3,151.66	86.98	3,064.68
MW-24	3,144.88	95.23	3,049.65
MW-25	3,165.45	103.50	3,061.95
MW-26	3,136.99	93.89	3,043.10
MW-27	3,126.99	92.08	3,034.91
MW-28	3,093.86	83.84	3,010.02
MW-29	3,098.60	100.17	2,998.43



Table 3

**April 2018 Groundwater Elevation Measurements  
Chevron Dollarhide Unit  
Andrews County, Texas**

<b>Well Identification</b>	<b>TOC Elevation (ft NAVD)</b>	<b>Depth to Water (ft below TOC)</b>	<b>Groundwater Elevation (ft NAVD)</b>
MW-30	3,170.95	103.71	3,067.24
MW-31	3,145.41	94.60	3,050.81
NM-MW-1	3,124.90	71.66	3,053.24
NM-MW-2	3,152.86	96.18	3,056.68
NM-MW-3	3,146.86	91.82	3,055.04
NM-MW-4	3,154.21	110.55	3,043.66
NM-MW-5	3,109.14	99.76	3,009.38
NM-MW-6	3,093.23	87.53	3,005.70
NM-MW-7	3,147.67	96.26	3,051.41
NM-MW-8	3,138.62	98.35	3,040.27
NM-MW-9	3,118.18	94.71	3,023.47
NM-MW-10	3,066.32	79.23	2,987.09
NM-MW-11	3,075.44	87.75	2,987.69
NM-MW-12	3,105.47	96.71	3,008.76
NM-MW-13	3,051.17	84.15	2,967.02
<b>Non-Remedial Wells</b>			
RRR Ranch Windmill	NM	94.23	NA
Livermore	NM	95.97	NA
Pure Water Tower	3,154.43	NM	NA
TRAC-4	NM	NM	NA
TRAC-8	NM	NM	NA
Pure Water Well	3,151.80	NM	NA
Smith Residential Well	NM	NM	NA
Wilson Ranch	NM	NM	NA

Notes:

ft = feet

NM = Not Measured

NA = Not Applicable

TOC = top of casing

NAVD = North American Vertical Datum

**Table 4**  
**July 2018 Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Andrews County, Texas**

Well Identification	TOC Elevation (ft NAVD)	Depth to Water (ft below TOC)	Groundwater Elevation (ft NAVD)
<b>Monitor Wells</b>			
43-K-1-MW	NM	94.47	NA
44-I-1-MW	3,138.93	95.94	3,042.99
44-J-1-MW	3,134.50	95.70	3,038.80
44-J-2-MW	3,135.30	94.31	3,040.99
44-J-3-MW	3,140.19	95.87	3,044.32
44-J-4-MW	3,133.69	94.87	3,038.82
44-J-5-MW	3,134.75	95.98	3,038.77
45-E-1-MW	NM	88.37	NA
45-E-2-MW	NM	88.85	NA
45-E-3-MW	NM	88.75	NA
45-F-1-MW	NM	90.14	NA
45-FF-MW	3,122.70	90.54	3,032.16
58-B-1-MW	3,100.59	86.12	3,014.47
58-B-2-MW	3,111.91	85.10	3,026.81
58-B-3-MW	3,108.46	89.62	3,018.84
MW-2	3,204.56	109.15	3,095.41
MW-3	3,199.51	113.09	3,086.42
MW-4	3,189.69	115.61	3,074.08
MW-5	3,174.43	102.93	3,071.50
MW-6	3,165.25	93.89	3,071.36
MW-7	3,132.14	116.70	3,132.14
MW-8	3,107.34	85.09	3,022.25
MW-9	3,103.82	85.24	3,018.58
MW-10	3,139.71	97.24	3,042.47
MW-11	3,156.65	102.28	3,054.37
MW-12	3,151.33	94.71	3,056.62
MW-13	3,168.41	98.74	3,069.67
MW-14	3,182.69	106.91	3,075.78
MW-15	3,184.55	104.56	3,079.99
MW-16	3,167.93	99.92	3,068.01
MW-17	3,147.44	84.32	3,063.12
MW-18	3,155.01	95.74	3,059.27
MW-19	3,149.90	99.85	3,050.05
MW-20	3,120.09	88.69	3,031.40
MW-21	3,159.65	92.65	3,067.00
MW-22	3,152.50	87.75	3,064.75

**Table 4**  
**July 2018 Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Andrews County, Texas**

<b>Well Identification</b>	<b>TOC Elevation (ft NAVD)</b>	<b>Depth to Water (ft below TOC)</b>	<b>Groundwater Elevation (ft NAVD)</b>
MW-23	3,151.66	86.98	3,064.68
MW-24	3,144.88	95.12	3,049.76
MW-25	3,165.45	103.29	3,062.16
MW-26	3,136.99	94.00	3,042.99
MW-27	3,126.99	91.98	3,035.01
MW-28	3,093.86	83.89	3,009.97
MW-29	3,098.60	100.16	2,998.44
MW-30	3,170.95	103.46	3,067.49
MW-31	3,145.41	94.50	3,050.91
NM-MW-1	3,124.90	70.65	3,054.25
NM-MW-2	3,152.86	96.42	3,056.44
NM-MW-3	3,146.86	91.88	3,054.98
NM-MW-4	3,154.21	110.38	3,043.83
NM-MW-5	3,109.14	99.82	3,009.32
NM-MW-6	3,093.23	87.66	3,005.57
NM-MW-7	3,147.67	96.13	3,051.54
NM-MW-8	3,138.62	98.22	3,040.40
NM-MW-9	3,118.18	94.60	3,023.58
NM-MW-10	3,066.32	79.24	2,987.08
NM-MW-11	3,075.44	86.07	2,989.37
NM-MW-12	3,105.47	96.68	3,008.79
NM-MW-13	3,051.17	84.15	2,967.02
<b>Non-Remedial Wells</b>			
RRR Ranch Windmill	NM	94.14	NA
Livermore	NM	95.19	NA
Pure Water Tower	3,154.43	NM	NA
TRAC-4	NM	NM	NA
TRAC-8	NM	NM	NA
Pure Water Well	3,151.80	NM	NA
Smith Residential Well	NM	NM	NA
Wilson Ranch	NM	NM	NA

**Notes:**

ft = feet

NM = Not Measured

NA = Not Applicable

TOC = top of casing

NAVD = North American Vertical Datum



**Table 5**  
**October 2018 Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Andrews County, Texas**

<b>Well Identification</b>	<b>TOC Elevation (ft NAVD)</b>	<b>Depth to Water (ft below TOC)</b>	<b>Groundwater Elevation (ft NAVD)</b>
<b>Monitor Wells</b>			
MW-2	3,204.56	109.58	3,094.98
MW-3	3,199.51	113.14	3,086.37
MW-4	3,189.69	115.72	3,073.97
MW-5	3,174.43	103.00	3,071.43
MW-6	3,165.25	93.90	3,071.35
MW-7	3,132.14	116.61	3,132.14
MW-8	3,107.34	84.83	3,022.51
MW-9	3,103.82	85.24	3,018.58
MW-10	3,139.71	97.35	3,042.36
MW-11	3,156.65	102.35	3,054.30
MW-12	3,151.33	94.87	3,056.46
MW-13	3,168.41	98.88	3,069.53
MW-14	3,182.69	106.98	3,075.71
MW-15	3,184.55	104.57	3,079.98
MW-16	3,167.93	99.93	3,068.00
MW-17	3,147.44	84.41	3,063.03
MW-18	3,155.01	95.90	3,059.11
MW-19	3,149.90	99.75	3,050.15
MW-20	3,120.09	88.59	3,031.50
MW-21	3,159.65	92.74	3,066.91
MW-22	3,152.50	87.85	3,064.65
MW-23	3,151.66	87.08	3,064.58
MW-24	3,144.88	95.25	3,049.63
MW-25	3,165.45	103.35	3,062.10
MW-26	3,136.99	93.91	3,043.08
MW-27	3,126.99	92.07	3,034.92
MW-28	3,093.86	83.62	3,010.24
MW-29	3,098.60	100.11	2,998.49

**Table 5**  
**October 2018 Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Andrews County, Texas**

<b>Well Identification</b>	<b>TOC Elevation (ft NAVD)</b>	<b>Depth to Water (ft below TOC)</b>	<b>Groundwater Elevation (ft NAVD)</b>
MW-30	3,170.95	103.58	3,067.37
MW-31	3,145.41	94.62	3,050.79
NM-MW-1	3,124.90	71.71	3,053.19
NM-MW-2	3,152.86	96.28	3,056.58
NM-MW-3	3,146.86	91.78	3,055.08
NM-MW-4	3,154.21	110.44	3,043.77
NM-MW-5	3,109.14	99.89	3,009.25
NM-MW-6	3,093.23	87.7	3,005.53
NM-MW-7	3,147.67	96.07	3,051.60
NM-MW-8	3,138.62	98.16	NA
NM-MW-9	3,118.18	94.60	NA
NM-MW-10	3,066.32	79.32	2,987.00
NM-MW-11	3,075.44	84.80	2,990.64
NM-MW-12	3,105.47	96.67	NA
NM-MW-13	3,051.17	84.24	NA
<b>Non-Remedial Wells</b>			
RRR Ranch Windmill	NM	94.08	NA
Livermore	NM	95.26	NA
Pure Water Tower	3,154.43	NM	NA
TRAC-4	NM	NM	NA
TRAC-8	NM	NM	NA
Pure Water Well	3,151.80	NM	NA
Smith Residential Well	NM	NM	NA
Wilson Ranch	NM	NM	NA

Notes:

ft = feet

NM = Not Measured

NA = Not Applicable

TOC = top of casing

NAVD = North American Vertical Datum

**Table 6**  
**2018 Groundwater Analytical Results Summary**  
**Chevron Dollarhide Unit**  
**Andrews County, Texas**

Sample ID	January		April		July		October	
	Chloride (mg/L)	Total Dissolved Solids (mg/L)	Chloride (mg/L)	Total Dissolved Solids (mg/L)	Chloride (mg/L)	Total Dissolved Solids (mg/L)	Chloride (mg/L)	Total Dissolved Solids (mg/L)
<b>TCEQ Secondary Drinking Water Standards (mg/L)</b>	<b>300</b>	<b>1,000</b>	<b>300</b>	<b>1,000</b>	<b>300</b>	<b>1,000</b>	<b>300</b>	<b>1,000</b>
<b>Monitor Wells</b>								
43-K-1-MW	8,020	10,500	NS	NS	7,840	12,700	NS	NS
44-I-1-MW	2,940	5,030	NS	NS	3,170	5,450	NS	NS
44-J-1-MW	3,410	6,190	NS	NS	4,300	6,910	NS	NS
44-J-2-MW	4,560	7,820	NS	NS	5,050	8,000	NS	NS
44-J-3-MW	4,800	8,420	NS	NS	5,290	9,230	NS	NS
44-J-4-MW	3,660	7,250	NS	NS	4,520	7,430	NS	NS
44-J-5-MW	3,500	6,230	NS	NS	4,060	6,600	NS	NS
45-E-1-MW	2,300	4,650	NS	NS	2,530	4,220	NS	NS
45-E-2-MW	718	3,050	NS	NS	1,790	3,130	NS	NS
45-E-3-MW	2,990	4,940	NS	NS	3,360	5,750	NS	NS
45-F-1-MW	896	1,990	NS	NS	923	1,840	NS	NS
45-FF-MW	4,820	8,280	NS	NS	5,310	9,090	NS	NS
58-B-1-MW	5,250	8,620	NS	NS	6,440	10,000	NS	NS
58-B-2-MW	3,470	5,860	NS	NS	3,900	6,410	NS	NS
58-B-3-MW	791	1,290	NS	NS	976	1,580	NS	NS
MW-2	NA	NA	NA	NA	NA	NA	NA	NA
MW-3	566	1,410	589	1,300	593	1,310	626	1,310
MW-4	345	968	350	413	338	831	350	883
MW-5	293	1,130	289	1,140	274	1,020	278	1,050
MW-6	408	1,490	411	1,430	402	1,340	404	1,450
MW-7	NA	NA	NA	NA	NA	NA	NA	NA
MW-8	813	2,250	839	2,300	868	2,350	888	2,490
MW-9	2,540	4,380	2,930	4,690	2,880	4,250	2,910	4,270
MW-10	5,350	9,650	5,470	8,630	5,340	11,000	5,880	8,570
MW-11	8,120	12,700	7,990	11,000	7,940	11,800	8,310	12,000
MW-12	13,100	21,400	13,300	19,400	13,200	20,200	15,000	24,400
MW-13	1,750	3,920	1,780	664	2,280	4,560	2,200	3,900
MW-14	1,590	2,910	1,720	1,270	1,540	2,660	1,690	2,620
MW-15	873	1,770	877	1,900	914	1,650	1,030	1,740
MW-16	364	1,100	432	1,310	430	1,160	474	1,210
MW-17	10,100	15,300	9,590	14,800	8,570	15,000	11,300	17,700
MW-18	18,800	30,300	20,000	30,400	22,000	38,500	21,100	31,600
MW-19	6,160	10,300	6,600	9,880	6,580	11,500	6,980	11,600
MW-20	1,130	2,410	1,100	2,130	1,150	2,160	1,340	2,490
MW-21	6,800	10,900	7,630	11,000	6,860	11,100	7,400	11,400
MW-22	10,400	16,200	10,500	17,200	10,300	16,300	14,200	18,700

**Table 6**  
**2018 Groundwater Analytical Results Summary**  
**Chevron Dollarhide Unit**  
**Andrews County, Texas**

Sample ID	January		April		July		October	
	Chloride (mg/L)	Total Dissolved Solids (mg/L)	Chloride (mg/L)	Total Dissolved Solids (mg/L)	Chloride (mg/L)	Total Dissolved Solids (mg/L)	Chloride (mg/L)	Total Dissolved Solids (mg/L)
<b>TCEQ Secondary Drinking Water Standards (mg/L)</b>	<b>300</b>	<b>1,000</b>	<b>300</b>	<b>1,000</b>	<b>300</b>	<b>1,000</b>	<b>300</b>	<b>1,000</b>
MW-23	5,230	9,340	6,830	10,100	4,390	6,870	6,090	8,980
MW-24	4,060	8,170	3,980	7,080	4,140	8,210	4,850	8,870
MW-25	20,900	31,400	22,400	32,800	23,600	37,600	26,500	39,000
MW-26	1,160	2,860	1,230	2,730	1,210	2,810	1,340	2,750
MW-27	2,260	4,220	2,400	4,250	2,510	4,790	3,030	4,700
MW-28	1,470	1,280	1,540	2,660	1,610	2,540	1,760	3,020
MW-29	397	601	396	1,100	397	860	409	1,070
MW-30	2,350	4,160	2,240	1,310	2,280	3,650	2,550	3,820
MW-31	10,700	16,400	11,700	17,700	12,100	19,800	12,800	19,500
NM-MW-1	271	933	263	1,400	275	1,350	279	1,460
NM-MW-2	639	990	610	1,210	679	1,160	674	1,270
NM-MW-3	221	501	180	601	220	625	246	708
NM-MW-4	39	217	34	410	40.6	414	39.7	411
NM-MW-5	133	893	134	1,300	140	1,240	138	1,290
NM-MW-6	137	468	127	836	134	801	138	833
NM-MW-7	2,110	2,370	2,090	4,270	2,330	3,780	2,380	4,050
NM-MW-8	5,260	5,240	5,110	9,160	5,960	9,620	6,260	11,000
NM-MW-9	221	717	234	807	252	785	258	799
NM-MW-10	314	1,050	301	1,620	308	1,450	315	1,520
NM-MW-11	155	1,710	699	1,920	143	1,820	152	1,920
NM-MW-12	663	1,470	656	1,430	665	1,250	668	1,390
NM-MW-13	188	965	180	1,090	184	1,050	185	1,110
<b>Non-Remedial Wells</b>								
Livermore	2,700	4,830	2,530	1,430	2,560	4,580	2,710	4,020
Pure Water Tower	NA	NA	NA	NA	NA	NA	NA	NA
Pure Water Well	NA	NA	NA	NA	NA	NA	NA	NA
RRR Ranch Windmill	1,600	3,130	1,620	3,110	1,670	3,030	1,660	3,000
Smith Residential Well	650	1,500	1,280	2,670	1,340	2,140	1,310	2,260
TRAC-4	335	1,120	401	1,040	343	1,040	347	1,070
TRAC-8	NA	NA	NA	NA	NA	NA	NA	NA
Wilson Ranch	673	1,600	1,360	2,950	1,330	2,190	1,380	2,680
DHU-FWS	615	2,820	572	2,640	593	2,710	596	2,830

## Notes:

1. Constituent concentrations are reported in milligrams per liter (mg/L).
  2. Bold font and shading indicates that a detected result was above the TCEQ Secondary Drinking Water Standard.
- NA = Not Applicable  
NS = Not Sampled



## **Appendices**

# **Appendix A**

## **Historical Groundwater Elevations**



**Appendix A**  
**Historical Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>10-V-WW</b>						
3,169.13	08/13/09	NM	102.00	NA	NA	3,067.13
	NA	111.80	97.30	NA	NA	3,071.83
	05/16/12	114.50	100.66	NA	NA	3,068.47
	01/29/14	112.55	100.50	NA	NA	3,068.63
	07/14/15	NM	101.17	NA	NA	3,067.96
3,170.45	07/19/16	NM	NM	NA	NA	NA
<b>10-W-WW</b>						
3,173.01	08/13/09	NM	113.98	NA	NA	3,059.03
	01/20/11	124.00	95.00	NA	NA	3,078.01
	08/15/12	122.25	102.30	NA	NA	3,070.71
	08/30/13	122.10	102.20	NA	NA	3,070.81
<b>10-X-WW</b>						
3,167.16	08/13/09	NM	101.57	NA	NA	3,065.59
	02/15/10	NM	101.30	NA	NA	3,065.86
	08/30/13	115.50	102.80	NA	NA	3,064.36
<b>11-U-WW</b>						
3,165.47	NA	NM	NM	NA	NA	NA
<b>12-S-WW</b>						
3,156.76	08/13/09	NM	93.68	NA	NA	3,063.08
	09/02/09	118.00	93.40	NA	NA	3,063.36
	07/20/11	112.70	93.35	NA	NA	3,063.41
	09/15/14	111.21	93.80	NA	NA	3,062.96
	07/14/15	NM	106.91	NA	NA	3,049.85
3,158.24	07/19/16	NM	NM	NA	NA	NA
<b>12-T-WW</b>						
3,162.32	07/20/11	115.60	96.19	NA	NA	3,066.13
	07/14/15	NM	94.05	NA	NA	3,068.27
3,163.22	07/19/16	NM	NM	NA	NA	NA
<b>29-Q-WW</b>						
3,146.57	08/13/09	NM	104.42	NA	NA	3,042.15
	01/20/11	115.30	86.80	NA	NA	3,059.77
	09/28/11	111.40	85.80	NA	NA	3,060.77
	04/18/13	NM	85.65	NA	NA	3,060.92
<b>29-R-WW</b>						
3,152.50	07/07/09	NM	94.45	NA	NA	3,058.05
	08/13/09	NM	90.80	NA	NA	3,061.70
	04/18/13	NM	90.43	NA	NA	3,062.07
	10/18/13	115.22	90.80	NA	NA	3,061.70
	01/29/14	114.72	92.70	NA	NA	3,059.80
	07/14/15	NM	90.68	NA	NA	3,061.82
3,153.69	01/25/16	NM	91.02	NA	NA	3,062.67
<b>30-O-WW</b>						
3,144.06	07/07/08	NM	93.15	NA	NA	3,050.91
	08/13/09	NM	113.14	NA	NA	3,030.92
3,145.43	07/19/16	NM	NM	NA	NA	NA
<b>31-N-WW</b>						
3,148.52	07/07/08	NM	99.11	NA	NA	3,049.41
	08/13/09	NM	102.36	NA	NA	3,046.16
	07/14/15	NM	104.45	NA	NA	3,044.07
3,149.99	07/19/16	NM	NM	NA	NA	NA
<b>43-K-WW</b>						
3,142.59	NA	NM	NM	NA	NA	NA
	07/14/15	NM	96.78	NA	NA	3,045.81
3,144.12	07/19/16	NM	NM	NA	NA	NA
<b>43-L-WW</b>						
3,144.71	01/26/09	NM	NM	NA	NA	NA
	09/28/11	117.10	93.30	NA	NA	3,051.41
	10/18/13	117.19	94.00	NA	NA	3,050.71
<b>43-M-WW</b>						
3,147.75	10/18/13	106.13	95.52	NA	NA	3,052.23
	07/14/15	NM	95.31	NA	NA	3,052.44
3,149.15	07/19/16	NM	NM	NA	NA	NA

**Appendix A**  
**Historical Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>44-H-WW</b>						
3,131.98	08/05/11	NM	95.97	NA	NA	3,036.01
	08/15/12	NM	95.85	NA	NA	3,036.13
	01/30/13	NM	95.71	NA	NA	3,036.27
	07/14/14	NM	95.95	NA	NA	3,036.03
	01/12/15	NM	96.10	NA	NA	3,035.88
	01/26/16	NM	95.89	NA	NA	3,036.09
	07/20/16	NM	95.81	NA	NA	3,036.17
	01/13/17	NM	95.80	NA	NA	3,036.18
<b>44-I-WW</b>						
3,133.95	08/05/11	NM	96.91	93.82	3.09	3,039.36
	08/15/12	NM	96.70	93.83	2.87	3,039.40
	01/30/13	NM	96.64	93.67	2.97	3,039.54
	04/30/13	NM	96.70	93.84	2.86	3,039.40
	01/13/14	NM	96.66	93.94	2.72	3,039.33
	07/14/14	NM	96.55	93.96	2.59	3,039.34
	01/12/15	NM	96.58	94.01	2.57	3,039.30
	07/14/15	NM	96.28	95.01	1.27	3,038.62
	01/25/16	NM	96.28	93.83	2.45	3,039.51
	07/20/16	NM	96.30	93.92	2.38	3,039.44
	01/13/17	NM	96.10	93.80	2.30	3,039.58
	07/13/17	NM	96.05	93.89	2.16	3,039.52
<b>44-II-WW</b>						
3,133.53	07/07/08	NM	96.58	92.87	3.71	3,039.73
	08/05/11	NM	95.47	91.60	3.87	3,040.96
	08/15/12	NM	95.75	92.25	3.50	3,040.41
	01/30/13	NM	94.64	91.71	2.93	3,041.09
	07/14/14	NM	94.63	91.91	2.72	3,040.94
	01/12/15	NM	94.32	92.11	2.21	3,040.87
	07/14/15	NM	94.05	93.11	0.94	3,040.19
3,135.26	01/25/16	NM	93.91	91.94	1.97	3,042.83
	07/20/16	NM	94.03	91.99	2.04	3,042.76
<b>44-J-WW</b>						
3,135.79	08/05/11	NM	93.65	NA	NA	3,042.14
	08/15/12	NM	93.91	NA	NA	3,041.88
	01/30/13	NM	93.62	NA	NA	3,042.17
	01/12/15	NM	93.74	NA	NA	3,042.05
	07/14/15	NM	93.46	NA	NA	3,042.33
	01/25/16	NM	93.47	NA	NA	3,042.32
	07/20/16	NM	93.54	NA	NA	3,042.25
<b>45-EE-WW</b>						
3,144.94	07/07/08	NM	94.97	NA	NA	3,049.97
	09/15/14	105.00	88.69	NA	NA	3,056.25
<b>45-ER-WW</b>						
3,113.82	07/07/08	NM	91.96	NA	NA	3,021.86
	01/29/14	106.33	89.23	NA	NA	3,024.59
	07/14/15	NM	89.17	NA	NA	3,024.65
<b>45-F-WW</b>						
3,216.88	NA	NM	NM	NA	NA	NA
<b>45-G-WW</b>						
3,125.80	12/03/08	111.20	94.10	NA	NA	3,031.70
	11/17/11	105.00	93.63	NA	NA	3,032.17
	09/15/14	105.76	93.84	NA	NA	3,031.96
	07/14/15	NM	96.41	NA	NA	3,029.39
<b>58-A-WW</b>						
3,100.29	04/18/13	NM	80.90	NA	NA	3,019.39
	07/14/15	NM	80.80	NA	NA	3,019.49
<b>58-B-WW</b>						
3,105.94	12/03/09	NM	85.40	NA	NA	3,020.54
	07/07/08	NM	89.98	NA	NA	3,015.96
	08/13/09	NM	92.52	NA	NA	3,013.42
	07/14/15	NM	80.80	NA	NA	3,025.14



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**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>58-BB-WW</b>						
3,107.17	07/07/08	NM	87.94	NA	NA	3,019.23
	08/13/09	NM	89.28	NA	NA	3,017.89
	06/18/11	112.00	84.97	NA	NA	3,022.20
	05/16/12	106.85	85.62	NA	NA	3,021.55
<b>58-C-WW</b>						
3,112.13	08/13/09	NM	89.32	NA	NA	3,022.81
	08/16/12	109.50	89.30	NA	NA	3,022.83
<b>58-D-WW</b>						
NM	01/29/14	103.55	88.71	NA	NA	NA
<b>Monitor Wells</b>						
<b>43-K-1-MW</b>						
NM	02/28/07	NM	94.85	NA	NA	NA
	01/22/08	112.95	95.26	NA	NA	NA
	07/07/08	NM	95.33	NA	NA	NA
	08/26/09	114.28	95.69	NA	NA	NA
	01/28/09	112.95	95.32	NA	NA	NA
	08/16/10	NM	95.40	NA	NA	NA
	02/11/11	112.00	95.45	NA	NA	NA
	08/02/11	112.91	94.79	NA	NA	NA
	01/30/13	112.90	95.23	NA	NA	NA
	01/13/14	112.96	92.33	NA	NA	NA
	07/14/14	NM	95.29	NA	NA	NA
	01/12/15	NM	95.21	NA	NA	NA
	07/14/15	NM	95.00	NA	NA	NA
	01/25/16	116.47	94.90	NA	NA	NA
	07/20/16	NM	94.87	NA	NA	NA
	01/11/17	NM	94.82	NA	NA	NA
	07/13/17	NM	95.00	NA	NA	NA
	01/12/18	NM	94.61	NA	NA	NA
	07/02/18	NM	94.47	NA	NA	NA
<b>44-I-1-MW</b>						
3,133.50	06/13/06	108.25	93.55	NA	NA	3,039.95
	08/15/06	110.00	96.85	NA	NA	3,036.65
	09/13/06	106.38	96.91	NA	NA	3,036.59
	09/20/06	110.00	96.72	NA	NA	3,036.78
	10/04/06	110.00	96.94	NA	NA	3,036.56
	12/08/06	111.05	97.09	NA	NA	3,036.41
	02/13/07	108.25	96.85	NA	NA	3,036.65
	02/28/07	NM	96.85	NA	NA	3,036.65
	07/30/07	108.25	96.88	NA	NA	3,036.62
	01/22/08	108.25	97.05	NA	NA	3,036.45
	07/09/08	108.25	97.13	NA	NA	3,036.37
	01/28/09	108.25	97.46	NA	NA	3,036.04
	08/27/09	106.20	97.57	NA	NA	3,035.93
	02/19/10	NM	97.31	NA	NA	3,036.19
	08/16/10	NM	97.30	NA	NA	3,036.20
	02/11/11	NM	96.68	NA	NA	3,036.82
	08/02/11	106.70	96.17	NA	NA	3,037.33
	08/15/12	106.65	96.21	NA	NA	3,037.29
	01/30/13	106.26	95.97	NA	NA	3,037.53
	07/30/13	106.65	96.18	NA	NA	3,037.32
	01/13/14	106.65	96.21	NA	NA	3,037.29
	07/14/14	111.17	95.85	NA	NA	3,037.65
	01/12/15	NM	96.27	NA	NA	3,037.23
	07/14/15	NM	95.91	NA	NA	3,037.59
3,138.93	01/25/16	106.94	95.96	NA	NA	3,042.97
	07/20/16	NM	96.10	NA	NA	3,042.83
	01/12/17	NM	95.84	NA	NA	3,043.09
	07/13/17	NM	96.03	NA	NA	3,042.90
	01/12/18	NM	95.64	NA	NA	3,043.29
	07/02/18	NM	95.94	NA	NA	3,042.99

**Appendix A**  
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**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>44-J-1-MW</b>						
3,134.50	06/13/06	111.04	96.31	NA	NA	3,038.19
	07/13/06	111.04	96.38	NA	NA	3,038.12
	08/15/06	111.00	96.53	NA	NA	3,037.97
	09/13/06	110.00	96.54	NA	NA	3,037.96
	09/20/06	111.00	96.40	NA	NA	3,038.10
	10/04/06	111.00	96.64	NA	NA	3,037.86
	12/08/06	111.97	97.41	NA	NA	3,037.09
	02/13/07	111.04	96.39	NA	NA	3,038.11
	02/28/07	NM	96.39	NA	NA	3,038.11
	07/30/07	111.04	96.51	NA	NA	3,037.99
	01/22/08	111.04	96.86	NA	NA	3,037.64
	07/09/08	111.04	96.90	NA	NA	3,037.60
	01/28/09	111.04	97.21	NA	NA	3,037.29
	08/28/09	110.40	97.27	NA	NA	3,037.23
	08/16/10	NM	96.82	NA	NA	3,037.68
	02/11/11	NM	96.42	NA	NA	3,038.08
	08/02/11	110.72	95.90	NA	NA	3,038.60
	08/15/12	110.04	96.03	NA	NA	3,038.47
	01/30/13	110.69	95.79	NA	NA	3,038.71
	07/30/13	110.80	95.92	NA	NA	3,038.58
	01/13/14	110.81	95.96	NA	NA	3,038.54
	07/14/14	110.76	95.91	NA	NA	3,038.59
	01/12/15	NM	96.01	NA	NA	3,038.49
	01/25/16	NM	95.72	NA	NA	3,038.78
	07/20/16	NM	95.85	NA	NA	3,038.65
	01/12/17	NM	95.60	NA	NA	3,038.90
	07/13/17	NM	95.80	NA	NA	3,038.70
	01/12/18	NM	95.41	NA	NA	3,039.09
	07/02/18	NM	95.70	NA	NA	3,038.80
<b>44-J-2-MW</b>						
3,135.30	06/13/06	109.87	91.83	NA	NA	3,043.47
	07/13/06	109.87	94.82	NA	NA	3,040.48
	08/15/06	110.00	94.97	NA	NA	3,040.33
	09/13/06	110.00	95.01	NA	NA	3,040.29
	09/20/06	110.00	94.97	NA	NA	3,040.33
	10/04/06	110.00	96.56	NA	NA	3,038.74
	12/08/06	114.32	95.14	NA	NA	3,040.16
	02/13/07	109.87	94.68	NA	NA	3,040.62
	02/28/07	NM	94.68	NA	NA	3,040.62
	07/30/07	109.87	94.82	NA	NA	3,040.48
	01/22/08	109.87	95.04	NA	NA	3,040.26
	07/09/08	109.87	95.10	NA	NA	3,040.20
	01/28/09	109.87	95.29	NA	NA	3,040.01
	08/28/09	109.00	95.37	NA	NA	3,039.93
	02/19/10	NM	94.56	NA	NA	3,040.74
	08/16/10	NM	95.04	NA	NA	3,040.26
	02/11/11	NM	94.99	NA	NA	3,040.31
	08/02/11	108.75	94.48	NA	NA	3,040.82
	08/15/12	108.80	94.99	NA	NA	3,040.31
	01/30/13	108.90	94.57	NA	NA	3,040.73
	07/30/13	109.00	94.61	NA	NA	3,040.69
	01/13/14	109.03	94.56	NA	NA	3,040.74
	07/14/14	109.02	94.65	NA	NA	3,040.65
	01/12/15	NM	94.68	NA	NA	3,040.62
	07/14/15	NM	94.43	NA	NA	3,040.87
	01/25/16	109.01	94.39	NA	NA	3,040.91
	07/20/16	NM	94.45	NA	NA	3,040.85
	01/12/17	NM	94.30	NA	NA	3,041.00
	07/13/17	NM	94.48	NA	NA	3,040.82
	01/12/18	NM	94.15	NA	NA	3,041.15
	07/02/18	NM	94.31	NA	NA	3,040.99



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**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>44-J-3-MW</b>						
3,135.25	07/13/06	113.00	96.77	NA	NA	3,038.48
	08/07/06	113.00	96.94	NA	NA	3,038.31
	08/15/06	113.00	96.98	NA	NA	3,038.27
	09/13/06	113.00	97.01	NA	NA	3,038.24
	09/20/06	113.00	95.96	NA	NA	3,039.29
	10/04/06	113.00	97.10	NA	NA	3,038.15
	12/08/06	120.40	97.04	NA	NA	3,038.21
	01/22/08	114.55	97.63	NA	NA	3,037.62
	08/28/09	114.60	97.97	NA	NA	3,037.28
	02/19/10	NM	97.21	NA	NA	3,038.04
	08/16/10	NM	97.20	NA	NA	3,038.05
	02/11/11	110.00	96.74	NA	NA	3,038.51
	08/02/11	114.71	96.27	NA	NA	3,038.98
	01/30/13	114.83	96.17	NA	NA	3,039.08
	07/30/13	114.55	96.22	NA	NA	3,039.03
	01/13/14	114.55	96.25	NA	NA	3,039.00
	07/14/14	114.51	96.23	NA	NA	3,039.02
	01/12/15	NM	96.30	NA	NA	3,038.95
	07/14/15	NM	96.01	NA	NA	3,039.24
3,140.19	01/25/16	114.59	96.02	NA	NA	3,044.17
	07/20/16	NM	96.03	NA	NA	3,044.16
	01/13/17	NM	95.94	NA	NA	3,044.25
	07/13/17	NM	96.05	NA	NA	3,044.14
	01/12/18	NM	95.72	NA	NA	3,044.47
	07/02/18	NM	95.87	NA	NA	3,044.32
<b>44-J-4-MW</b>						
3,133.69	07/13/06	111.00	95.79	NA	NA	3,037.90
	08/07/06	111.00	95.97	NA	NA	3,037.72
	08/15/06	111.00	96.02	NA	NA	3,037.67
	09/13/06	111.00	96.04	NA	NA	3,037.65
	09/20/06	111.00	96.00	NA	NA	3,037.69
	10/04/06	111.00	96.11	NA	NA	3,037.58
	12/08/06	115.05	96.09	NA	NA	3,037.60
	01/22/08	113.40	96.77	NA	NA	3,036.92
	08/27/09	113.20	97.09	NA	NA	3,036.60
	02/19/10	NM	96.26	NA	NA	3,037.43
	08/16/10	NM	96.23	NA	NA	3,037.46
	02/11/11	110.00	95.74	NA	NA	3,037.95
	08/02/11	113.43	95.22	NA	NA	3,038.47
	01/30/13	113.25	95.14	NA	NA	3,038.55
	07/30/13	112.95	95.19	NA	NA	3,038.50
	01/13/14	112.93	95.22	NA	NA	3,038.47
	07/14/14	112.94	95.21	NA	NA	3,038.48
	01/12/15	NM	95.25	NA	NA	3,038.44
	07/14/15	NM	94.98	NA	NA	3,038.71
	01/25/16	112.98	94.98	NA	NA	3,038.71
	07/20/16	NM	95.03	NA	NA	3,038.66
	01/12/17	NM	94.92	NA	NA	3,038.77
	07/13/17	NM	95.03	NA	NA	3,038.66
	01/12/18	NM	94.71	NA	NA	3,038.98
	07/02/18	NM	94.87	NA	NA	3,038.82

**Appendix A**  
**Historical Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>44-J-5-MW</b>						
3,134.75	06/13/06	110.00	96.83	NA	NA	3,037.92
	07/13/06	110.00	96.83	NA	NA	3,037.92
	08/07/06	110.00	97.00	NA	NA	3,037.75
	08/15/06	110.00	97.01	NA	NA	3,037.74
	09/13/06	110.00	97.05	NA	NA	3,037.70
	09/20/06	110.00	97.02	NA	NA	3,037.73
	10/04/06	110.00	97.13	NA	NA	3,037.62
	12/08/06	117.61	97.13	NA	NA	3,037.62
	01/22/08	113.70	97.53	NA	NA	3,037.22
	08/27/09	113.60	97.88	NA	NA	3,036.87
	08/16/10	NM	97.23	NA	NA	3,037.52
	02/11/11	NM	96.84	NA	NA	3,037.91
	08/02/11	113.71	96.32	NA	NA	3,038.43
	01/30/13	113.70	96.23	NA	NA	3,038.52
	07/30/13	113.23	96.30	NA	NA	3,038.45
	01/13/14	113.25	96.33	NA	NA	3,038.42
	07/14/14	113.20	96.30	NA	NA	3,038.45
	01/12/15	NM	96.38	NA	NA	3,038.37
	07/14/15	NM	96.10	NA	NA	3,038.65
	01/25/16	113.26	96.10	NA	NA	3,038.65
	07/20/16	NM	96.14	NA	NA	3,038.61
	01/12/17	NM	96.02	NA	NA	3,038.73
	07/13/17	NM	96.16	NA	NA	3,038.59
	01/12/18	NM	95.80	NA	NA	3,038.95
	07/02/18	NM	95.98	NA	NA	3,038.77
<b>45-E-1-MW</b>						
NM	09/12/06	NM	88.92	NA	NA	NA
	12/08/06	105.50	89.15	NA	NA	NA
	02/13/07	107.06	88.51	NA	NA	NA
	02/28/07	NM	88.51	NA	NA	NA
	07/30/07	107.06	88.95	NA	NA	NA
	01/22/08	107.06	90.04	NA	NA	NA
	07/09/08	107.06	89.31	NA	NA	NA
	01/28/09	107.06	89.31	NA	NA	NA
	08/27/09	102.95	89.72	NA	NA	NA
	08/16/10	NM	90.37	NA	NA	NA
	02/11/11	NM	90.36	NA	NA	NA
	08/02/11	103.00	89.70	NA	NA	NA
	01/25/16	103.31	90.58	NA	NA	NA
	07/20/16	NM	90.65	NA	NA	NA
	01/12/17	NM	90.20	NA	NA	NA
	07/13/17	NM	89.96	NA	NA	NA
	01/12/18	NM	88.74	NA	NA	NA
	07/02/18	NM	88.37	NA	NA	NA
<b>45-E-2-MW</b>						
NM	09/12/06	NM	81.36	NA	NA	NA
	12/08/06	104.00	86.58	NA	NA	NA
	02/13/07	109.28	85.82	NA	NA	NA
	02/28/07	NM	85.82	NA	NA	NA
	07/30/07	109.28	86.49	NA	NA	NA
	01/22/08	109.28	86.58	NA	NA	NA
	07/09/08	109.28	86.86	NA	NA	NA
	01/28/09	109.28	86.79	NA	NA	NA
	08/26/09	104.20	87.28	NA	NA	NA
	08/16/10	NM	87.84	NA	NA	NA
	02/11/11	NM	88.03	NA	NA	NA
	08/02/11	104.25	87.21	NA	NA	NA
	08/15/12	104.23	87.82	NA	NA	NA
	01/25/16	104.48	88.34	NA	NA	NA
	07/20/16	NM	88.33	NA	NA	NA
	01/12/17	NM	87.93	NA	NA	NA
	07/13/17	NM	87.62	NA	NA	NA
	01/12/18	NM	86.23	NA	NA	NA
	07/02/18	NM	88.85	NA	NA	NA



**Appendix A**  
**Historical Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>45-E-3-MW</b>						
NM	02/13/07	107.95	88.68	NA	NA	NA
	02/28/07	NM	88.68	NA	NA	NA
	07/26/07	107.95	89.30	NA	NA	NA
	01/22/08	107.95	89.54	NA	NA	NA
	07/08/08	107.95	89.70	NA	NA	NA
	01/28/06	107.95	89.70	NA	NA	NA
	08/26/09	110.00	90.06	NA	NA	NA
	08/16/10	NM	90.63	NA	NA	NA
	02/11/11	107.00	90.74	NA	NA	NA
	08/02/11	107.91	90.19	NA	NA	NA
	07/20/16	NM	91.05	NA	NA	NA
	01/11/17	NM	90.50	NA	NA	NA
	07/13/17	NM	90.37	NA	NA	NA
	01/12/18	NM	89.35	NA	NA	NA
	07/02/18	NM	88.75	NA	NA	NA
<b>45-F-1-MW</b>						
NM	06/13/06	108.19	90.99	NA	NA	NA
	09/12/06	NM	90.15	NA	NA	NA
	12/08/06	107.40	90.34	NA	NA	NA
	02/13/07	108.19	90.22	NA	NA	NA
	02/28/07	NM	90.02	NA	NA	NA
	07/30/07	108.19	90.22	NA	NA	NA
	01/22/08	108.19	90.52	NA	NA	NA
	07/09/08	108.19	90.63	NA	NA	NA
	01/28/09	108.19	90.81	NA	NA	NA
	08/27/09	106.80	90.93	NA	NA	NA
	08/16/10	NM	91.41	NA	NA	NA
	02/11/11	NM	91.52	NA	NA	NA
	08/02/11	107.03	91.15	NA	NA	NA
	08/15/12	108.02	91.40	NA	NA	NA
	01/30/13	106.82	91.29	NA	NA	NA
	07/30/13	107.90	91.70	NA	NA	NA
	01/14/13	107.94	91.71	NA	NA	NA
	07/14/14	107.87	91.53	NA	NA	NA
	01/12/15	NM	91.78	NA	NA	NA
	07/14/15	NM	91.62	NA	NA	NA
	01/25/16	107.90	91.72	NA	NA	NA
	07/20/16	NM	91.56	NA	NA	NA
	01/12/17	NM	91.40	NA	NA	NA
	07/13/17	NM	90.96	NA	NA	NA
	01/12/18	NM	90.44	NA	NA	NA
	07/02/18	NM	90.14	NA	NA	NA

**Appendix A**  
**Historical Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>45-FF-MW</b>						
3,122.70	06/13/06	111.19	90.57	NA	NA	3,032.13
	09/12/06	NM	90.77	NA	NA	3,031.93
	12/08/06	114.00	90.94	NA	NA	3,031.76
	02/13/07	111.19	90.58	NA	NA	3,032.12
	02/28/07	NM	90.58	NA	NA	3,032.12
	07/30/07	111.19	90.81	NA	NA	3,031.89
	01/22/08	111.19	91.16	NA	NA	3,031.54
	07/09/08	111.19	91.22	NA	NA	3,031.48
	01/28/09	111.19	91.16	NA	NA	3,031.54
	08/27/09	107.50	91.54	NA	NA	3,031.16
	08/16/10	NM	92.01	NA	NA	3,030.69
	02/11/11	NM	92.19	NA	NA	3,030.51
	08/02/11	111.11	91.71	NA	NA	3,030.99
	01/30/13	110.91	91.92	NA	NA	3,030.78
	07/30/13	110.50	92.30	NA	NA	3,030.40
	01/13/14	110.51	92.33	NA	NA	3,030.37
	07/14/14	110.48	92.02	NA	NA	3,030.68
	01/12/15	NM	92.41	NA	NA	3,030.29
	07/14/15	NM	92.30	NA	NA	3,030.40
	01/25/16	110.94	92.36	NA	NA	3,030.34
	07/20/16	NM	92.16	NA	NA	3,030.54
	01/12/17	NM	91.96	NA	NA	3,030.74
	07/13/17	NM	91.55	NA	NA	3,031.15
	01/12/18	NM	90.90	NA	NA	3,031.80
	07/02/18	NM	90.54	NA	NA	3,032.16
<b>58-B-1-MW</b>						
3,100.59	06/14/06	NM	NM	NA	NA	NA
	09/12/06	NM	87.12	NA	NA	3,013.47
	12/08/06	106.20	87.06	NA	NA	3,013.53
	02/13/07	105.50	87.02	NA	NA	3,013.57
	02/28/07	NM	87.02	NA	NA	3,013.57
	07/26/07	105.50	87.37	NA	NA	3,013.22
	01/22/08	105.50	87.79	NA	NA	3,012.80
	07/08/08	105.50	87.67	NA	NA	3,012.92
	01/28/09	104.79	87.67	NA	NA	3,012.92
	08/26/09	104.80	87.77	NA	NA	3,012.82
	08/16/10	NM	87.88	NA	NA	3,012.71
	02/11/11	NM	87.43	NA	NA	3,013.16
	08/05/11	104.55	87.00	NA	NA	3,013.59
	08/15/12	104.59	88.12	NA	NA	3,012.47
	01/30/13	107.53	87.76	NA	NA	3,012.83
	07/30/13	104.50	88.56	NA	NA	3,012.03
	01/13/14	104.56	88.60	NA	NA	3,011.99
	07/14/14	104.47	87.92	NA	NA	3,012.67
	01/12/15	NM	88.38	NA	NA	3,012.21
	07/22/16	NM	87.70	NA	NA	3,012.89
	01/13/17	NM	87.20	NA	NA	3,013.39
	07/13/17	NM	86.71	NA	NA	3,013.88
	01/12/18	NM	85.34	NA	NA	3,015.25
	07/02/18	NM	86.12	NA	NA	3,014.47



**Appendix A**  
**Historical Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>58-B-2-MW</b>						
3,111.91	06/14/06	NM	NM	NA	NA	NA
	09/12/06	NM	85.80	NA	NA	3,026.11
	12/08/06	NM	85.60	NA	NA	3,026.31
	02/13/07	105.45	85.61	NA	NA	3,026.30
	02/28/07	NM	85.61	NA	NA	3,026.30
	07/26/07	105.45	85.88	NA	NA	3,026.03
	01/22/08	105.45	86.28	NA	NA	3,025.63
	07/08/08	105.45	86.16	NA	NA	3,025.75
	01/28/09	105.45	86.23	NA	NA	3,025.68
	08/26/09	104.50	86.33	NA	NA	3,025.58
	08/16/10	NM	86.42	NA	NA	3,025.49
	02/11/11	NM	86.11	NA	NA	3,025.80
	08/02/11	105.12	85.75	NA	NA	3,026.16
	08/15/12	105.43	86.70	NA	NA	3,025.21
	07/14/15	NM	88.61	NA	NA	3,023.30
	01/25/16	105.08	85.92	NA	NA	3,025.99
	07/22/16	NM	86.40	NA	NA	3,025.51
	01/13/17	NM	85.92	NA	NA	3,025.99
	07/13/17	NM	85.55	NA	NA	3,026.36
	01/12/18	NM	86.47	NA	NA	3,025.44
	07/02/18	NM	85.10	NA	NA	3,026.81
<b>58-B-3-MW</b>						
3,108.46	02/13/07	100.75	89.48	NA	NA	3,018.98
	02/28/07	NM	89.48	NA	NA	3,018.98
	07/26/07	100.75	89.39	NA	NA	3,019.07
	01/22/08	100.75	89.71	NA	NA	3,018.75
	07/08/08	100.75	89.75	NA	NA	3,018.71
	01/28/09	100.75	89.81	NA	NA	3,018.65
	08/26/09	104.00	89.88	NA	NA	3,018.58
	08/16/10	NM	90.05	NA	NA	3,018.41
	02/11/11	102.00	90.02	NA	NA	3,018.44
	08/02/11	100.68	89.97	NA	NA	3,018.49
	08/15/12	100.73	90.11	NA	NA	3,018.35
	01/30/13	100.89	90.16	NA	NA	3,018.30
	07/30/13	100.80	90.24	NA	NA	3,018.22
	01/13/14	100.80	90.33	NA	NA	3,018.13
	07/14/14	100.79	90.39	NA	NA	3,018.07
	01/12/15	NM	89.80	NA	NA	3,018.66
	07/14/15	NM	90.06	NA	NA	3,018.40
	01/25/16	100.78	90.08	NA	NA	3,018.38
	07/22/16	NM	90.14	NA	NA	3,018.32
	01/10/17	NM	90.02	NA	NA	3,018.44
	07/13/17	NM	89.88	NA	NA	3,018.58
	01/12/18	NM	89.78	NA	NA	3,018.68
	07/02/18	NM	89.62	NA	NA	3,018.84
<b>MW-2</b>						
3,204.56	8/7/2015	NM	104.07	NA	NA	3,100.49
	1/25/2016	109.14	109.05	NA	NA	3,095.51
	7/21/2016	NM	109.10	NA	NA	3,095.46
	1/12/2017	NM	109.20	NA	NA	3,095.36
	4/10/2017	109.71	DRY	NA	NA	DRY
	7/13/2017	NM	109.14	NA	NA	3,095.42
	10/3/2017	109.33	DRY	NA	NA	DRY
	1/12/2018	109.15	DRY	NA	NA	DRY
	4/2/2018	109.15	DRY	NA	NA	DRY
	07/02/18	109.15	DRY	NA	NA	DRY
	10/1/2018	109.58	DRY	NA	NA	DRY

**Appendix A**  
**Historical Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>MW-3</b>						
3,199.51	8/7/2015	NM	112.88	NA	NA	3,086.63
	1/25/2016	119.30	112.95	NA	NA	3,086.56
	7/21/2016	NM	113.02	NA	NA	3,086.49
	1/11/2017	NM	112.95	NA	NA	3,086.56
	4/10/2017	NM	113.17	NA	NA	3,086.34
	7/13/2017	NM	113.04	NA	NA	3,086.47
	10/3/2017	NM	113.11	NA	NA	3,086.40
	1/12/2018	NM	113.04	NA	NA	3,086.47
	4/2/2018	NM	113.20	NA	NA	3,086.31
	07/02/18	NM	113.09	NA	NA	3,086.42
	10/1/2018	NM	113.14	NA	NA	3,086.37
<b>MW-4</b>						
3,189.69	8/7/2015	NM	115.53	NA	NA	3,074.16
	1/25/2016	116.91	115.60	NA	NA	3,074.09
	7/21/2016	NM	115.65	NA	NA	3,074.04
	1/11/2017	NM	115.55	NA	NA	3,074.14
	4/10/2017	117.74	115.67	NA	NA	3,074.02
	7/13/2017	NM	115.64	NA	NA	3,074.05
	10/3/2017	118.13	115.65	NA	NA	3,074.04
	1/12/2018	NM	115.60	NA	NA	3,074.09
	4/2/2018	NM	115.70	NA	NA	3,073.99
	07/02/18	NM	115.61	NA	NA	3,074.08
	10/1/2018	NM	115.72	NA	NA	3,073.97
<b>MW-5</b>						
3,174.43	8/7/2015	NM	102.74	NA	NA	3,071.69
	1/25/2016	116.91	102.78	NA	NA	3,071.65
	7/21/2016	NM	102.84	NA	NA	3,071.59
	1/11/2017	NM	102.80	NA	NA	3,071.63
	4/10/2017	116.95	102.85	NA	NA	3,071.58
	7/13/2017	NM	102.88	NA	NA	3,071.55
	10/3/2017	NM	102.91	NA	NA	3,071.52
	1/12/2018	NM	102.95	NA	NA	3,071.48
	4/2/2018	NM	102.94	NA	NA	3,071.49
	07/02/18	NM	102.93	NA	NA	3,071.50
	10/1/2018	NM	103.00	NA	NA	3,071.43
<b>MW-6</b>						
3,165.25	8/7/2015	NM	93.97	NA	NA	3,071.28
	1/25/2016	130.94	94.21	NA	NA	3,071.04
	7/21/2016	NM	94.28	NA	NA	3,070.97
	1/11/2017	NM	94.01	NA	NA	3,071.24
	4/10/2017	130.83	94.21	NA	NA	3,071.04
	7/13/2017	NM	94.11	NA	NA	3,071.14
	10/3/2017	NM	94.14	NA	NA	3,071.11
	1/12/2018	NM	93.80	NA	NA	3,071.45
	4/2/2018	NM	94.18	NA	NA	3,071.07
	07/02/18	NM	93.89	NA	NA	3,071.36
	10/1/2018	NM	93.90	NA	NA	3,071.35
<b>MW-7</b>						
3,132.14	8/7/2015	NM	112.10	NA	NA	3,020.04
	1/25/2016	117.20	112.77	NA	NA	3,019.37
	7/21/2016	NM	114.50	NA	NA	3,017.64
	1/11/2017	NM	115.92	NA	NA	3,016.22
	4/10/2017	116.73	DRY	NA	NA	DRY
	7/13/2017	116.55	DRY	NA	NA	DRY
	10/3/2017	116.46	DRY	NA	NA	DRY
	1/12/2018	NM	DRY	NA	NA	DRY
	4/2/2018	116.66	DRY	NA	NA	DRY
	07/02/18	116.70	DRY	NA	NA	DRY
	10/1/2018	116.61	DRY	NA	NA	DRY



**Appendix A**  
**Historical Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>MW-8</b>						
3,107.34	8/7/2015	NM	85.03	NA	NA	3,022.31
	1/25/2016	110.98	85.46	NA	NA	3,021.88
	7/21/2016	NM	85.10	NA	NA	3,022.24
	1/13/2017	NM	84.95	NA	NA	3,022.39
	4/7/2017	110.98	85.00	NA	NA	3,022.34
	7/13/2017	NM	84.68	NA	NA	3,022.66
	10/3/2017	NM	84.86	NA	NA	3,022.48
	1/12/2018	NM	84.75	NA	NA	3,022.59
	4/2/2018	NM	85.20	NA	NA	3,022.14
	07/02/18	NM	85.09	NA	NA	3,022.25
	10/1/2018	NM	84.83	NA	NA	3,022.51
<b>MW-9</b>						
3,103.82	8/7/2015	NM	85.68	NA	NA	3,018.14
	1/25/2016	105.30	85.87	NA	NA	3,017.95
	7/21/2016	NM	85.80	NA	NA	3,018.02
	1/13/2017	NM	85.76	NA	NA	3,018.06
	4/7/2017	105.28	85.65	NA	NA	3,018.17
	7/13/2017	NM	85.50	NA	NA	3,018.32
	10/3/2017	NM	85.53	NA	NA	3,018.29
	1/12/2018	NM	85.38	NA	NA	3,018.44
	4/2/2018	NM	85.73	NA	NA	3,018.09
	07/02/18	NM	85.24	NA	NA	3,018.58
	10/1/2018	NM	85.24	NA	NA	3,018.58
<b>MW-10</b>						
3,139.71	8/7/2015	NM	97.21	NA	NA	3,042.50
	1/25/2016	116.50	97.33	NA	NA	3,042.38
	7/20/2016	NM	97.18	NA	NA	3,042.53
	1/12/2017	NM	97.21	NA	NA	3,042.50
	4/7/2017	116.36	97.22	NA	NA	3,042.49
	7/13/2017	NM	97.12	NA	NA	3,042.59
	10/3/2017	NM	97.35	NA	NA	3,042.36
	1/12/2018	NM	97.30	NA	NA	3,042.41
	4/2/2018	NM	97.41	NA	NA	3,042.30
	07/02/18	NM	97.24	NA	NA	3,042.47
	10/1/2018	NM	97.35	NA	NA	3,042.36
<b>MW-11</b>						
3,156.65	8/7/2015	NM	102.00	NA	NA	3,054.65
	1/25/2016	110.23	102.08	NA	NA	3,054.57
	7/21/2016	NM	102.16	NA	NA	3,054.49
	1/11/2017	NM	102.10	NA	NA	3,054.55
	4/10/2017	110.02	102.22	NA	NA	3,054.43
	7/13/2017	NM	102.22	NA	NA	3,054.43
	10/3/2017	NM	102.28	NA	NA	3,054.37
	1/12/2018	NM	102.18	NA	NA	3,054.47
	4/2/2018	NM	102.39	NA	NA	3,054.26
	07/02/18	NM	102.28	NA	NA	3,054.37
	10/1/2018	NM	102.35	NA	NA	3,054.30
<b>MW-12</b>						
3,151.33	8/7/2015	NM	94.70	NA	NA	3,056.63
	1/25/2016	114.18	94.68	NA	NA	3,056.65
	7/20/2016	NM	94.69	NA	NA	3,056.64
	1/11/2017	NM	94.70	NA	NA	3,056.63
	4/7/2017	114.15	94.66	NA	NA	3,056.67
	7/13/2017	NM	94.60	NA	NA	3,056.73
	10/3/2017	NM	94.87	NA	NA	3,056.46
	1/12/2018	NM	94.66	NA	NA	3,056.67
	4/2/2018	NM	94.74	NA	NA	3,056.59
	07/02/18	NM	94.71	NA	NA	3,056.62
	10/1/2018	NM	94.87	NA	NA	3,056.46

**Appendix A**  
**Historical Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>MW-13</b>						
3,168.41	8/7/2015	NM	98.61	NA	NA	3,069.80
	1/25/2016	127.85	98.88	NA	NA	3,069.53
	7/21/2016	NM	98.78	NA	NA	3,069.63
	1/11/2017	NM	98.49	NA	NA	3,069.92
	4/10/2017	127.90	98.70	NA	NA	3,069.71
	7/13/2017	NM	98.60	NA	NA	3,069.81
	10/3/2017	NM	98.70	NA	NA	3,069.71
	1/12/2018	NM	98.61	NA	NA	3,069.80
	4/2/2018	NM	98.80	NA	NA	3,069.61
	07/02/18	NM	98.74	NA	NA	3,069.67
	10/1/2018	NM	98.88	NA	NA	3,069.53
<b>MW-14</b>						
3,182.69	8/7/2015	NM	106.69	NA	NA	3,076.00
	1/25/2016	124.62	106.78	NA	NA	3,075.91
	7/21/2016	NM	106.90	NA	NA	3,075.79
	1/11/2017	NM	106.78	NA	NA	3,075.91
	4/10/2017	124.48	107.01	NA	NA	3,075.68
	7/13/2017	NM	106.88	NA	NA	3,075.81
	10/3/2017	NM	106.95	NA	NA	3,075.74
	1/12/2018	NM	106.85	NA	NA	3,075.84
	4/2/2018	NM	107.00	NA	NA	3,075.69
	07/02/18	NM	106.91	NA	NA	3,075.78
	10/1/2018	NM	106.98	NA	NA	3,075.71
<b>MW-15</b>						
3,184.55	8/7/2015	NM	104.29	NA	NA	3,080.26
	1/25/2016	126.36	104.56	NA	NA	3,079.99
	7/21/2016	NM	104.60	NA	NA	3,079.95
	1/11/2017	NM	104.45	NA	NA	3,080.10
	4/10/2017	NM	104.76	NA	NA	3,079.79
	7/13/2017	NM	104.52	NA	NA	3,080.03
	10/3/2017	NM	104.66	NA	NA	3,079.89
	1/12/2018	NM	104.45	NA	NA	3,080.10
	4/2/2018	NM	104.63	NA	NA	3,079.92
	07/02/18	NM	104.56	NA	NA	3,079.99
	10/1/2018	NM	104.57	NA	NA	3,079.98
<b>MW-16</b>						
3,167.93	8/7/2015	NM	99.76	NA	NA	3,068.17
	1/25/2016	119.30	99.86	NA	NA	3,068.07
	7/21/2016	NM	100.02	NA	NA	3,067.91
	1/11/2017	NM	99.88	NA	NA	3,068.05
	4/10/2017	119.07	100.03	NA	NA	3,067.90
	7/13/2017	NM	99.94	NA	NA	3,067.99
	10/3/2017	NM	100.01	NA	NA	3,067.92
	1/12/2018	NM	99.83	NA	NA	3,068.10
	4/2/2018	NM	99.97	NA	NA	3,067.96
	07/02/18	NM	99.92	NA	NA	3,068.01
	10/1/2018	NM	99.93	NA	NA	3,068.00
<b>MW-17</b>						
3,147.44	8/7/2015	NM	83.74	NA	NA	3,063.70
	1/25/2016	118.27	84.18	NA	NA	3,063.26
	7/20/2016	NM	82.79	NA	NA	3,064.65
	1/11/2017	NM	83.75	NA	NA	3,063.69
	4/10/2017	118.26	84.27	NA	NA	3,063.17
	7/13/2017	NM	84.06	NA	NA	3,063.38
	10/3/2017	NM	84.08	NA	NA	3,063.36
	1/12/2018	NM	83.79	NA	NA	3,063.65
	4/2/2018	NM	84.26	NA	NA	3,063.18
	07/02/18	NM	84.32	NA	NA	3,063.12
	10/1/2018	NM	84.41	NA	NA	3,063.03



**Appendix A**  
**Historical Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>MW-18</b>						
3,155.01	8/7/2015	NM	95.94	NA	NA	3,059.07
	1/25/2016	122.40	95.81	NA	NA	3,059.20
	7/20/2016	NM	95.91	NA	NA	3,059.10
	1/12/2017	NM	95.82	NA	NA	3,059.19
	4/7/2017	122.37	95.76	NA	NA	3,059.25
	7/13/2017	NM	95.67	NA	NA	3,059.34
	10/3/2017	NM	95.87	NA	NA	3,059.14
	1/12/2018	NM	95.72	NA	NA	3,059.29
	4/2/2018	NM	95.80	NA	NA	3,059.21
	07/02/18	NM	95.74	NA	NA	3,059.27
	10/1/2018	NM	95.90	NA	NA	3,059.11
<b>MW-19</b>						
3,149.90	8/7/2015	NM	99.58	NA	NA	3,050.32
	1/25/2016	115.04	99.68	NA	NA	3,050.22
	7/20/2016	NM	99.78	NA	NA	3,050.12
	1/12/2017	NM	99.68	NA	NA	3,050.22
	4/7/2017	115.03	99.78	NA	NA	3,050.12
	7/13/2017	NM	99.61	NA	NA	3,050.29
	10/3/2017	NM	99.83	NA	NA	3,050.07
	1/12/2018	NM	99.63	NA	NA	3,050.27
	4/2/2018	NM	99.69	NA	NA	3,050.21
	07/02/18	NM	99.85	NA	NA	3,050.05
	10/1/2018	NM	99.75	NA	NA	3,050.15
<b>MW-20</b>						
3,120.09	8/7/2015	NM	88.96	NA	NA	3,031.13
	1/25/2016	112.91	88.96	NA	NA	3,031.13
	7/20/2016	NM	89.07	NA	NA	3,031.02
	1/12/2017	NM	89.00	NA	NA	3,031.09
	4/7/2017	112.65	88.97	NA	NA	3,031.12
	7/13/2017	NM	88.76	NA	NA	3,031.33
	10/3/2017	NM	88.88	NA	NA	3,031.21
	1/12/2018	NM	88.75	NA	NA	3,031.34
	4/2/2018	NM	88.67	NA	NA	3,031.42
	07/02/18	NM	88.69	NA	NA	3,031.40
	10/1/2018	NM	88.59	NA	NA	3,031.50
<b>MW-21</b>						
3,159.65	7/21/2016	NM	92.31	NA	NA	3,067.34
	1/12/2017	NM	92.41	NA	NA	3,067.24
	4/10/2017	123.74	92.65	NA	NA	3,067.00
	7/13/2017	NM	92.55	NA	NA	3,067.10
	10/3/2017	NM	92.65	NA	NA	3,067.00
	1/12/2018	NM	92.47	NA	NA	3,067.18
	4/2/2018	NM	92.64	NA	NA	3,067.01
	07/02/18	NM	92.65	NA	NA	3,067.00
	10/1/2018	NM	92.74	NA	NA	3,066.91
<b>MW-22</b>						
3,152.50	4/10/2017	117.94	87.78	NA	NA	3,064.72
	7/13/2017	NM	87.64	NA	NA	3,064.86
	10/3/2017	NM	87.71	NA	NA	3,064.79
	1/12/2018	NM	87.50	NA	NA	3,065.00
	4/2/2018	NM	87.75	NA	NA	3,064.75
	07/02/18	NM	87.75	NA	NA	3,064.75
	10/1/2018	NM	87.85	NA	NA	3,064.65
<b>MW-23</b>						
3,151.66	7/21/2016	NM	87.03	NA	NA	3,064.63
	1/11/2017	NM	86.74	NA	NA	3,064.92
	4/10/2017	124.94	87.02	NA	NA	3,064.64
	7/13/2017	NM	86.86	NA	NA	3,064.80
	10/3/2017	NM	86.95	NA	NA	3,064.71
	1/12/2018	NM	86.75	NA	NA	3,064.91
	4/2/2018	NM	86.98	NA	NA	3,064.68
	07/02/18	NM	86.98	NA	NA	3,064.68
	10/1/2018	NM	87.08	NA	NA	3,064.58



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**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>MW-24</b>						
3,144.88	7/20/2016	NM	95.02	NA	NA	3,049.86
	1/12/2017	NM	95.11	NA	NA	3,049.77
	4/7/2017	115.39	95.15	NA	NA	3,049.73
	7/13/2017	NM	95.11	NA	NA	3,049.77
	10/3/2017	NM	95.33	NA	NA	3,049.55
	1/12/2018	NM	95.18	NA	NA	3,049.70
	4/2/2018	NM	95.23	NA	NA	3,049.65
	07/02/18	NM	95.12	NA	NA	3,049.76
	10/1/2018	NM	95.25	NA	NA	3,049.63
<b>MW-25</b>						
3,165.45	7/21/2016	NM	103.05	NA	NA	3,062.40
	1/11/2017	NM	103.00	NA	NA	3,062.45
	4/10/2017	116.81	103.26	NA	NA	3,062.19
	7/13/2017	NM	103.17	NA	NA	3,062.28
	10/3/2017	NM	103.20	NA	NA	3,062.25
	1/12/2018	NM	103.04	NA	NA	3,062.41
	4/2/2018	NM	103.50	NA	NA	3,061.95
	07/02/18	NM	103.29	NA	NA	3,062.16
	10/1/2018	NM	103.34	NA	NA	3,062.11
<b>MW-26</b>						
3,136.99	1/12/2017	NM	93.78	NA	NA	3,043.21
	4/7/2017	108.41	93.83	NA	NA	3,043.16
	7/13/2017	NM	93.75	NA	NA	3,043.24
	10/3/2017	NM	94.00	NA	NA	3,042.99
	1/12/2018	NM	93.76	NA	NA	3,043.23
	4/2/2018	NM	93.89	NA	NA	3,043.10
	07/02/18	NM	94.00	NA	NA	3,042.99
	10/1/2018	NM	93.91	NA	NA	3,043.08
<b>MW-27</b>						
3,126.99	7/20/2016	NM	91.61	NA	NA	3,035.38
	1/11/2017	NM	91.40	NA	NA	3,035.59
	4/7/2017	108.40	91.65	NA	NA	3,035.34
	7/13/2017	NM	91.60	NA	NA	3,035.39
	10/3/2017	NM	91.80	NA	NA	3,035.19
	1/12/2018	NM	91.78	NA	NA	3,035.21
	4/2/2018	NM	92.08	NA	NA	3,034.91
	07/02/18	NM	91.98	NA	NA	3,035.01
	10/1/2018	NM	92.07	NA	NA	3,034.92
<b>MW-28</b>						
3,093.86	1/10/2017	NM	83.60	NA	NA	3,010.26
	4/7/2017	104.02	83.74	NA	NA	3,010.12
	7/13/2017	NM	83.78	NA	NA	3,010.08
	10/3/2017	NM	83.79	NA	NA	3,010.07
	1/12/2018	NM	83.84	NA	NA	3,010.02
	4/2/2018	NM	83.84	NA	NA	3,010.02
	07/02/18	NM	83.89	NA	NA	3,009.97
	10/1/2018	NM	83.62	NA	NA	3,010.24
<b>MW-29</b>						
3,098.60	1/10/2017	NM	99.85	NA	NA	2,998.75
	4/7/2017	113.55	99.97	NA	NA	2,998.63
	7/13/2017	NM	100.00	NA	NA	2,998.60
	10/3/2017	NM	99.95	NA	NA	2,998.65
	1/12/2018	NM	100.08	NA	NA	2,998.52
	4/2/2018	NM	100.17	NA	NA	2,998.43
	07/02/18	NM	100.16	NA	NA	2,998.44
	10/1/2018	NM	100.11	NA	NA	2,998.49
<b>MW-30</b>						
3,170.95	7/13/2017	NM	103.41	NA	NA	3,067.54
	10/3/2017	NM	103.57	NA	NA	3,067.38
	1/12/2018	NM	103.19	NA	NA	3,067.76
	4/2/2018	NM	103.71	NA	NA	3,067.24
	07/02/18	NM	103.46	NA	NA	3,067.49
	10/1/2018	NM	103.58	NA	NA	3,067.37



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**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>MW-31</b>						
3,145.41	7/13/2017	NM	94.50	NA	NA	3,050.91
	10/3/2017	NM	94.74	NA	NA	3,050.67
	1/12/2018	NM	94.60	NA	NA	3,050.81
	4/2/2018	NM	94.60	NA	NA	3,050.81
	07/02/18	NM	94.50	NA	NA	3,050.91
	10/1/2018	NM	94.62	NA	NA	3,050.79
<b>NM-MW-1</b>						
3,124.90	12/2/2015	NM	72.01	NA	NA	3,052.89
	1/25/2016	106.86	72.01	NA	NA	3,052.89
	7/22/2016	NM	71.90	NA	NA	3,053.00
	1/12/2017	NM	71.73	NA	NA	3,053.17
	4/7/2017	106.36	71.78	NA	NA	3,053.12
	7/13/2017	NM	71.67	NA	NA	3,053.23
	10/3/2017	NM	71.65	NA	NA	3,053.25
	1/12/2018	NM	71.63	NA	NA	3,053.27
	4/2/2018	NM	71.66	NA	NA	3,053.24
	07/02/18	NM	70.65	NA	NA	3,054.25
	10/1/2018	NM	71.71	NA	NA	3,053.19
<b>NM-MW-2</b>						
3,152.86	12/2/2015	NM	96.14	NA	NA	3,056.72
	1/25/2016	120.55	96.38	NA	NA	3,056.48
	7/22/2016	NM	96.28	NA	NA	3,056.58
	1/12/2017	NM	96.20	NA	NA	3,056.66
	4/7/2017	120.60	96.49	NA	NA	3,056.37
	7/13/2017	NM	96.25	NA	NA	3,056.61
	10/3/2017	NM	96.17	NA	NA	3,056.69
	1/12/2018	NM	96.29	NA	NA	3,056.57
	4/2/2018	NM	96.18	NA	NA	3,056.68
	07/02/18	NM	96.42	NA	NA	3,056.44
	10/1/2018	NM	96.28	NA	NA	3,056.58
<b>NM-MW-3</b>						
3,146.86	12/2/2015	NM	91.70	NA	NA	3,055.16
	1/25/2016	105.01	91.80	NA	NA	3,055.06
	7/22/2016	NM	91.81	NA	NA	3,055.05
	1/12/2017	NM	91.75	NA	NA	3,055.11
	4/7/2017	105.28	91.99	NA	NA	3,054.87
	7/13/2017	NM	91.92	NA	NA	3,054.94
	10/3/2017	NM	91.90	NA	NA	3,054.96
	1/12/2018	NM	91.93	NA	NA	3,054.93
	4/2/2018	NM	91.82	NA	NA	3,055.04
	07/02/18	NM	91.88	NA	NA	3,054.98
	10/1/2018	NM	91.78	NA	NA	3,055.08
<b>NM-MW-4</b>						
3,154.21	12/2/2015	NM	110.59	NA	NA	3,043.62
	1/25/2016	116.91	110.46	NA	NA	3,043.75
	7/22/2016	NM	110.57	NA	NA	3,043.64
	1/12/2017	NM	110.40	NA	NA	3,043.81
	4/7/2017	117.19	110.52	NA	NA	3,043.69
	7/13/2017	NM	110.50	NA	NA	3,043.71
	10/3/2017	NM	110.52	NA	NA	3,043.69
	1/12/2018	NM	110.48	NA	NA	3,043.73
	4/2/2018	NM	110.55	NA	NA	3,043.66
	07/02/18	NM	110.38	NA	NA	3,043.83
	10/1/2018	NM	110.44	NA	NA	3,043.77



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**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>NM-MW-5</b>						
3,109.14	12/2/2015	NM	DRY	NA	NA	DRY
	1/25/2016	115.00	99.95	NA	NA	3,009.19
	7/22/2016	NM	99.78	NA	NA	3,009.36
	1/12/2017	NM	99.70	NA	NA	3,009.44
	4/7/2017	114.92	99.66	NA	NA	3,009.48
	7/13/2017	NM	99.80	NA	NA	3,009.34
	10/3/2017	NM	99.69	NA	NA	3,009.45
	1/12/2018	NM	99.80	NA	NA	3,009.34
	4/2/2018	NM	99.76	NA	NA	3,009.38
	07/02/18	NM	99.82	NA	NA	3,009.32
	10/1/2018	NM	99.89	NA	NA	3,009.25
<b>NM-MW-6</b>						
3,093.23	12/2/2015	NM	86.98	NA	NA	3,006.25
	1/25/2016	123.21	86.93	NA	NA	3,006.30
	7/22/2016	NM	87.10	NA	NA	3,006.13
	1/12/2017	NM	87.35	NA	NA	3,005.88
	4/7/2017	123.16	87.42	NA	NA	3,005.81
	7/13/2017	NM	87.47	NA	NA	3,005.76
	10/3/2017	NM	87.47	NA	NA	3,005.76
	1/12/2018	NM	87.57	NA	NA	3,005.66
	4/2/2018	NM	87.53	NA	NA	3,005.70
	07/02/18	NM	87.66	NA	NA	3,005.57
	10/1/2018	NM	87.70	NA	NA	3,005.53
<b>NM-MW-7</b>						
3,147.67	12/2/2015	NM	96.71	NA	NA	3,050.96
	1/25/2016	105.52	96.79	NA	NA	3,050.88
	7/22/2016	NM	96.91	NA	NA	3,050.76
	1/12/2017	NM	96.80	NA	NA	3,050.87
	4/7/2017	105.89	97.20	NA	NA	3,050.47
	7/13/2017	NM	97.12	NA	NA	3,050.55
	10/3/2017	NM	96.73	NA	NA	3,050.94
	1/12/2018	NM	96.40	NA	NA	3,051.27
	4/2/2018	NM	96.26	NA	NA	3,051.41
	07/02/18	NM	96.13	NA	NA	3,051.54
	10/1/2018	NM	96.07	NA	NA	3,051.60
<b>NM-MW-8</b>						
3,138.62	4/7/2017	108.33	98.63	NA	NA	3,039.99
	7/13/2017	NM	98.49	NA	NA	3,040.13
	10/3/2017	NM	98.42	NA	NA	3,040.20
	1/12/2018	NM	98.34	NA	NA	3,040.28
	4/2/2018	NM	98.35	NA	NA	3,040.27
	07/02/18	NM	98.22	NA	NA	3,040.40
	10/1/2018	NM	98.16	NA	NA	3,040.46
<b>NM-MW-9</b>						
3,118.18	4/7/2017	96.79	96.73	NA	NA	3,021.45
	7/13/2017	NM	95.58	NA	NA	3,022.60
	10/3/2017	NM	95.37	NA	NA	3,022.81
	1/12/2018	NM	94.94	NA	NA	3,023.24
	4/2/2018	NM	94.71	NA	NA	3,023.47
	07/02/18	NM	94.60	NA	NA	3,023.58
	10/1/2018	NM	94.60	NA	NA	3,023.58
<b>NM-MW-10</b>						
3,066.32	1/10/2017	NM	78.94	NA	NA	2,987.38
	4/7/2017	108.10	79.02	NA	NA	2,987.30
	7/13/2017	NM	79.09	NA	NA	2,987.23
	10/3/2017	NM	79.12	NA	NA	2,987.20
	1/12/2018	NM	79.15	NA	NA	2,987.17
	4/2/2018	NM	79.23	NA	NA	2,987.09
	07/02/18	NM	79.24	NA	NA	2,987.08
	10/1/2018	NM	79.32	NA	NA	2,987.00



**Appendix A**  
**Historical Groundwater Elevation Measurements**  
**Chevron Dollarhide Unit**  
**Dollarhide, Texas**

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
<b>Recovery Wells</b>						
<b>NM-MW-11</b>						
3,075.44	1/10/2017	NM	150.11	NA	NA	2,925.33
	4/7/2017	163.56	127.16	NA	NA	2,948.28
	7/13/2017	NM	107.66	NA	NA	2,967.78
	10/3/2017	NM	97.78	NA	NA	2,977.66
	1/12/2018	NM	90.89	NA	NA	2,984.55
	4/2/2018	NM	87.75	NA	NA	2,987.69
	07/02/18	NM	86.07	NA	NA	2,989.37
	10/1/2018	NM	84.80	NA	NA	2,990.64
<b>NM-MW-12</b>						
3,105.47	4/7/2017	98.54	96.70	NA	NA	3,008.77
	7/13/2017	NM	96.72	NA	NA	3,008.75
	10/3/2017	NM	96.69	NA	NA	3,008.78
	1/12/2018	NM	96.67	NA	NA	3,008.80
	4/2/2018	NM	96.71	NA	NA	3,008.76
	07/02/18	NM	96.68	NA	NA	3,008.79
	10/1/2018	NM	96.67	NA	NA	3,008.80
<b>NM-MW-13</b>						
3,051.17	4/7/2017	111.80	84.04	NA	NA	2,967.13
	7/13/2017	NM	84.05	NA	NA	2,967.12
	10/3/2017	NM	84.10	NA	NA	2,967.07
	1/12/2018	NM	84.12	NA	NA	2,967.05
	4/2/2018	NM	84.15	NA	NA	2,967.02
	07/02/18	NM	84.15	NA	NA	2,967.02
	10/1/2018	NM	84.24	NA	NA	2,966.93
<b>Non-Remedial Wells</b>						
<b>Livermore</b>						
NM	12/07/06	111.60	95.96	NA	NA	NA
	02/13/07	110.72	95.08	NA	NA	NA
	02/28/07	NM	95.08	NA	NA	NA
	07/30/07	110.72	95.71	NA	NA	NA
	07/09/08	110.72	94.89	NA	NA	NA
	01/28/09	110.81	94.81	NA	NA	NA
	08/28/09	111.11	95.08	NA	NA	NA
	02/19/10	NM	94.70	NA	NA	NA
	08/16/10	NM	94.67	NA	NA	NA
	02/11/11	NM	95.00	NA	NA	NA
	07/31/13	104.21	95.29	NA	NA	NA
	07/16/14	NM	95.85	NA	NA	NA
	01/25/16	104.23	95.20	NA	NA	NA
	07/21/16	NM	95.30	NA	NA	NA
	01/11/17	NM	95.10	NA	NA	NA
	07/13/17	NM	95.17	NA	NA	NA
	10/03/17	NM	95.27	NA	NA	NA
	01/12/18	NM	94.97	NA	NA	NA
	04/02/18	NM	94.97	NA	NA	NA
	07/02/18	NM	95.19	NA	NA	NA
	10/1/2018	NM	95.26	NA	NA	NA
<b>Pure Water Tower</b>						
3,154.43	06/18/11	137.00	87.30	NA	NA	3,067.13
<b>Pure Water Well</b>						
3,151.80	08/16/12	104.80	88.00	NA	NA	3,063.80
	08/30/13	100.50	88.35	NA	NA	3,063.45
	07/14/15	NM	88.35	NA	NA	3,063.45
<b>RRR Ranch Windmill</b>						
NM	08/28/09	117.05	95.05	NA	NA	NA
	07/22/16	NM	94.36	NA	NA	NA
	01/12/17	NM	94.28	NA	NA	NA
	07/13/17	99.61	94.37	NA	NA	NA
	10/03/17	NM	94.34	NA	NA	NA
	01/12/18	NM	94.24	NA	NA	NA
	04/02/18	NM	94.24	NA	NA	NA
	07/02/18	NM	94.14	NA	NA	NA
	10/1/2018	NM	94.08	NA	NA	NA



Appendix A  
Historical Groundwater Elevation Measurements  
Chevron Dollarhide Unit  
Dollarhide, Texas

TOC Elevation (ft NAVD)	Date	Total Depth (ft below TOC)	Depth to Water (ft below TOC)	Depth to LNAPL (ft below TOC)	LNAPL Thickness (ft)	Groundwater Elevation (ft NAVD) <sup>(1)</sup>
Recovery Wells						
TRAC-4						
NM	NA	NM	NM	NA	NA	NA
TRAC-8						
NM	NA	NM	NM	NA	NA	NA
Wilson Ranch Well						
NM	NA	NM	NM	NA	NA	NA

Notes:  
<sup>(1)</sup> Formula for Adjusted Groundwater Elevation: TOC - Depth to Water + 0.75(LNAPL thickness).  
ft = feet  
NAVD = North American Vertical Datum  
TOC = top of casing  
LNAPL = light non-aqueous phase liquid  
NM = Not Measured  
NA = Not Applicable



## **Appendix B**

# **Groundwater Sample Analytical Laboratory Reports**



# **Analytical Report 573507**

## **for GHD Services, INC- Midland**

**Project Manager: Chris Knight**

**Dollarhide**

**055270-2017-01**

**22-JAN-18**

Collected By: Client



**1211 W. Florida Ave, Midland TX 79701**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):

Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)

Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)





22-JAN-18

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

Reference: XENCO Report No(s): **573507**

**Dollarhide**

Project Address: Andrews County, TX and Lea County, NM

**Chris Knight:**

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) 573507. 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. 573507 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,

**Kelsey Brooks**

Project Manager

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## Sample Cross Reference 573507



GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-28-W-180112	W	01-12-18 13:40		573507-001
MW-29-W-180112	W	01-12-18 13:30		573507-002
NM-MW-1-W-180112	W	01-12-18 12:00		573507-003
NM-MW-2-W-180112	W	01-12-18 11:50		573507-004
NM-MW-3-W-180112	W	01-12-18 11:40		573507-005
NM-MW-4-W-180112	W	01-12-18 11:15		573507-006
NM-MW-5-W-180112	W	01-12-18 12:10		573507-007
NM-MW-6-W-180112	W	01-12-18 12:15		573507-008
NM-MW-7-W-180112	W	01-12-18 11:05		573507-009
NM-MW-8-W-180112	W	01-12-18 11:25		573507-010
NM-MW-10-W-180112	W	01-12-18 12:25		573507-011
NM-MW-11-W-180112	W	01-12-18 12:35		573507-012
NM-MW-13-W-180112	W	01-12-18 13:00		573507-013
58-B-3-MW-W-180112	W	01-12-18 13:20		573507-014





## CASE NARRATIVE

*Client Name: GHD Services, INC- Midland*

*Project Name: Dollarhide*

Project ID: 055270-2017-01  
Work Order Number(s): 573507

Report Date: 22-JAN-18  
Date Received: 01/15/2018

---

**Sample receipt non conformances and comments:**

Revision to correct sample name

---

**Sample receipt non conformances and comments per sample:**

None





# Certificate of Analysis Summary 573507

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270-2017-01

Contact: Chris Knight

Project Location: Andrews County,TX and Lea County,NM

Date Received in Lab: Mon Jan-15-18 09:41 am

Report Date: 22-JAN-18

Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	573507-001	573507-002	573507-003	573507-004	573507-005	573507-006
	<b>Field Id:</b>	MW-28-W-180112	MW-29-W-180112	NM-MW-1-W-180112	NM-MW-2-W-180112	NM-MW-3-W-180112	NM-MW-4-W-180112
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jan-12-18 13:40	Jan-12-18 13:30	Jan-12-18 12:00	Jan-12-18 11:50	Jan-12-18 11:40	Jan-12-18 11:15
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jan-17-18 12:00	Jan-17-18 12:00	Jan-17-18 12:00	Jan-17-18 12:00	Jan-17-18 12:00	Jan-17-18 12:00
	<b>Analyzed:</b>	Jan-17-18 16:09	Jan-17-18 16:30	Jan-17-18 16:37	Jan-17-18 16:44	Jan-17-18 16:51	Jan-17-18 17:05
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		1470 10.0	397 2.50	271 2.50	639 2.50	221 2.50	39.3 0.500
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jan-15-18 10:00	Jan-15-18 10:00	Jan-15-18 10:00	Jan-15-18 10:00	Jan-15-18 10:00	Jan-15-18 10:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		1280 5.00	601 5.00	933 5.00	990 5.00	501 5.00	217 5.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use.  
The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories.  
XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented.  
Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Kelsey Brooks  
Project Manager





# Certificate of Analysis Summary 573507

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270-2017-01

Contact: Chris Knight

Project Location: Andrews County, TX and Lea County, NM

Date Received in Lab: Mon Jan-15-18 09:41 am

Report Date: 22-JAN-18

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	573507-007	573507-008	573507-009	573507-010	573507-011	573507-012
	<i>Field Id:</i>	NM-MW-5-W-180112	NM-MW-6-W-180112	NM-MW-7-W-180112	NM-MW-8-W-180112	NM-MW-10-W-180112	NM-MW-11-W-180112
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Jan-12-18 12:10	Jan-12-18 12:15	Jan-12-18 11:05	Jan-12-18 11:25	Jan-12-18 12:25	Jan-12-18 12:35
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Jan-17-18 12:00	Jan-17-18 12:00	Jan-17-18 12:00	Jan-17-18 12:00	Jan-17-18 12:00	Jan-17-18 12:00
	<i>Analyzed:</i>	Jan-19-18 09:28	Jan-17-18 17:26	Jan-17-18 17:33	Jan-17-18 17:54	Jan-17-18 18:01	Jan-17-18 18:08
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		133 2.50	137 2.50	2110 10.0	5260 25.0	314 5.00	155 5.00
TDS by SM2540C	<i>Extracted:</i>						
	<i>Analyzed:</i>	Jan-15-18 10:00	Jan-15-18 10:00	Jan-15-18 10:00	Jan-15-18 10:00	Jan-15-18 10:00	Jan-15-18 10:00
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		893 5.00	468 5.00	2370 5.00	5240 5.00	1050 5.00	1710 5.00

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Kelsey Brooks  
Project Manager





# Certificate of Analysis Summary 573507

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270-2017-01

Contact: Chris Knight

Project Location: Andrews County, TX and Lea County, NM

Date Received in Lab: Mon Jan-15-18 09:41 am

Report Date: 22-JAN-18

Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	573507-013	573507-014				
	<b>Field Id:</b>	NM-MW-13-W-180112	58-B-3-MW-W-180112				
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER				
	<b>Sampled:</b>	Jan-12-18 13:00	Jan-12-18 13:20				
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jan-17-18 12:00	Jan-17-18 12:00				
	<b>Analyzed:</b>	Jan-17-18 18:15	Jan-17-18 18:22				
	<b>Units/RL:</b>	mg/L	mg/L				
		RL	RL				
Chloride		188	791				
		2.50	5.00				
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jan-15-18 10:00	Jan-15-18 10:00				
	<b>Units/RL:</b>	mg/L	mg/L				
		RL	RL				
Total Dissolved Solids		965	1290				
		5.00	5.00				

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Kelsey Brooks  
Project Manager



- 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

+ NELAC certification not offered for this compound.

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

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 5332 Blackberry Drive, San Antonio TX 78238  
 1211 W Florida Ave, Midland, TX 79701  
 2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(432) 563-1800	(432) 563-1713
(602) 437-0330	





# Blank Spike Recovery

Project Name: Dollarhide



Work Order #: 573507

Project ID: 055270-2017-01

Lab Batch #: 3038368

Sample: 3038368-1-BKS

Matrix: Water

Date Analyzed: 01/15/2018

Date Prepared: 01/15/2018

Analyst: LRI

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

TDS by SM2540C  Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Total Dissolved Solids	<5.00	1000	1040	104	80-120	

Blank Spike Recovery [D] =  $100 * [C] / [B]$

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit





## BS / BSD Recoveries



**Project Name: Dollarhide**

**Work Order #:** 573507

**Project ID:** 055270-2017-01

**Analyst:** OJS

**Date Prepared:** 01/17/2018

**Date Analyzed:** 01/17/2018

**Lab Batch ID:** 3038656

**Sample:** 7637622-1-BKS

**Batch #:** 1

**Matrix:** Water

**Units:** mg/L

### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<0.500	25.0	25.9	104	25.0	26.1	104	1	90-110	20	

Relative Percent Difference RPD =  $200 * |(C-F)/(C+F)|$

Blank Spike Recovery [D] =  $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes





# Form 3 - MS / MSD Recoveries



Project Name: Dollarhide

Work Order #: 573507

Project ID: 055270-2017-01

Lab Batch ID: 3038656

QC- Sample ID: 573507-006 S

Batch #: 1 Matrix: Ground Water

Date Analyzed: 01/17/2018

Date Prepared: 01/17/2018

Analyst: OJS

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	39.3	25.0	63.5	97	25.0	63.5	97	0	90-110	20	

Lab Batch ID: 3038656

QC- Sample ID: 573644-001 S

Batch #: 1 Matrix: Drinking Water

Date Analyzed: 01/17/2018

Date Prepared: 01/17/2018

Analyst: OJS

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	22.8	25.0	48.7	104	25.0	48.3	102	1	90-110	20	

Matrix Spike Percent Recovery  $[D] = 100 * (C - A) / B$   
Relative Percent Difference  $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



**Project Name: Dollarhide**

**Work Order #: 573507**

**Lab Batch #: 3038368**

**Project ID: 055270-2017-01**

**Date Analyzed: 01/15/2018 10:00**

**Date Prepared: 01/15/2018**

**Analyst: LRI**

**QC- Sample ID: 573507-014 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

## SAMPLE / SAMPLE DUPLICATE RECOVERY

TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total Dissolved Solids	1290	1280	1	10	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$   
All Results are based on MDL and validated for QC purposes.  
BRL - Below Reporting Limit



# CHAIN OF CUSTODY

Page 1 of 2

Setting the Standard since 1990

Stafford, Texas (281-240-4200)

Dallas Texas (214-902-0300)

Service Center - San Antonio, Texas (210-509-3334)

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Odessa, Texas (432-563-1800)

Norcross, Georgia (770-449-8800)

Lakeland, Florida (863-646-8526)  
Tampa, Florida (813-620-2000)

Xenco Quote #

Xenco Job #

573507

## Client / Reporting Information

Company Name / Branch:

GHD-Midland

Company Address:

2135 S Loop 250 W, Midland, TX 79703

Phone No:

512-506-8803

Email:

christopher.knight@ghd.com

Project Contact:

Chris Knight

Project Name:

Joe Purples Chem Quinney

Field ID / Point of Collection

No.

Sample Depth

Date

Time

Matrix

# of bottles

HCI

NaOH/Zn Acetate

HNO3

H2SO4

NaOH

NaHSO4

MEOH

NONE

TDS

Chloride

Notes:

Field Comments

Matrix Codes

S = Soil/Sed/Solid

GW = Ground Water

DW = Drinking Water

P = Product

SL = Surface water

SW = Sludge

OW = Ocean/Sea Water

W = Wipe

WW = Waste Water

A = Air

Project Name/Number:

Dollarhide/055270-2017-01

Project Location:

Andrews County, TX and Lea County, NM

Invoice To:

PO Number:

Number of preserved bottles

Level II Std QC

Level III Std QC+ Forms

Level 3 (CLP Forms)

TRRP Checklist

TRRP Level IV

TRRP Level IV (Full Data Pkg /raw data)

Level II Std QC

Level III Std QC+ Forms

Level 3 (CLP Forms)

TRRP Checklist

TAT Starts Day received by Lab, if received by 5:00 pm

Relinquished by Sampler:

Relinquished by:

Relinquished by:

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Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to XENCO Laboratories and its affiliates, subcontractors and assigns XENCO's standard terms and conditions of service unless previously negotiated under a fully executed client contract.



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**Odessa, Texas (432-563-1800)**

**Norcross, Georgia (770-449-8800)**

**Lakeland, Florida (863-646-8526)**

Xenco Quote #

Kenco Job #

573567

Client / Reporting Information						Project Information							Analytical Information								Matrix Codes														
Company Name / Branch: GHD-Midland Company Address: 2135 S Loop 250 W, Midland, TX 79703 Email: <a href="mailto:christopher.knight@ghd.com">christopher.knight@ghd.com</a> Phone No: 512-506-8803 Project Contact: Chris Knight						Project Name/Number: Dollahide/055270-2017-01 Project Location: Andrews County, TX and Lea County, NM Invoice To:																													
Sampler's Name <i>Joe Morales - Chem Recovery</i>						PO Number:																													
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCI	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TDS	Chloride																			
1	<i>MM-MW-10-W-180112</i>	-	<i>1/12</i>	<i>1225 PM</i>	<i>1</i>										<i>X X X</i>																				
2	<i>MM-MW-11-W-180112</i>	-	<i>1/12</i>	<i>1235 PM</i>	<i>1</i>										<i>X X X</i>																				
3	<i>MM-MW-13-W-180112</i>	-	<i>1/12</i>	<i>1300 PM</i>	<i>1</i>										<i>X X X</i>																				
4	<i>SB-B-3-MW-W-180112</i>	-	<i>1/12</i>	<i>1330 PM</i>	<i>1</i>										<i>X X X</i>																				
5																																			
6																																			
7																																			
8																																			
9																																			
10																																			
Turnaround Time (Business days)						Data Deliverable Information										Notes:																			
<input type="checkbox"/> Same Day TAT						<input type="checkbox"/> 5 Day TAT						<input type="checkbox"/> Level II Std QC						<input type="checkbox"/> Level IV (Full Data Pkg /raw data)																	
<input type="checkbox"/> Next Day EMERGENCY						<input type="checkbox"/> 7 Day TAT						<input type="checkbox"/> Level III Std QC+ Forms						<input type="checkbox"/> TRRP Level IV																	
<input type="checkbox"/> 2 Day EMERGENCY						<input checked="" type="checkbox"/> Contract TAT						<input type="checkbox"/> Level 3 (CLP Forms)						<input type="checkbox"/> UST / RG -411																	
<input type="checkbox"/> 3 Day EMERGENCY												<input type="checkbox"/> TRRP Checklist																							
TAT Starts Day received by Lab, if received by 5:00 pm																																			
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																FED-EX / UPS: Tra																			
Relinquished by Sampler:																Date Time: <i>1/15/18 0835</i>					Received By: <i>[Signature]</i>					Date Time: <i>1/15/18 9:41</i>					Receive				
Relinquished by:																Date Time:					Received By:					Date Time:					Receive				
Relinquished by:																Date Time:					Received By:					Date Time:					Receive				
Relinquished by:																Date Time:					Received By:					Date Time:					Receive				
On Ice <input checked="" type="checkbox"/>																Cooler Temp.					Thermo Corr. Factor														
Temp: <i>-1.4</i>																IR ID: R-8																			
CF: (0-6: -0.2°C) (6-23: +0.2°C)																																			
Corrected Temp: <i>-1.6</i>																																			



# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: GHD Services, INC- Midland

Date/ Time Received: 01/15/2018 09:41:00 AM

Work Order #: 573507

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)?	-1.2
#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)?	Yes Houston
#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: ch

PH Device/Lot#: 213315

Checklist completed by:

Connie Hernandez

Date: 01/15/2018

Checklist reviewed by:

Kelsey Brooks

Date: 01/15/2018



# **Analytical Report 573667**

**for  
GHD Services, INC- Midland**

**Project Manager: Chris Knight**

**Dollarhide**

**055270**

**30-JAN-18**

Collected By: Client



**1211 W. Florida Ave, Midland TX 79701**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):

Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)

Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)



30-JAN-18

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

Reference: XENCO Report No(s): **573667**  
**Dollarhide**  
Project Address: Andrews County, TX and Lea County, NM

**Chris Knight:**

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) 573667. 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. 573667 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,

**Kelsey Brooks**

Project Manager

***Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.***

*Certified and approved by numerous States and Agencies.*

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## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
58-B-1-MW-W-180115	W	01-15-18 13:55		573667-001
58-B-2-MW-W-180115	W	01-15-18 13:40		573667-002
MW-8-W-180115	W	01-15-18 14:30		573667-003
MW-9-W-180115	W	01-15-18 14:15		573667-004
NM-MW-9-W-180115	W	01-15-18 11:20		573667-005
NM-MW-12-W-180115	W	01-15-18 11:45		573667-006
RRR Ranch Windmill-W-180115	W	01-15-18 11:00		573667-007
Smith Residence-W-180115	W	01-15-18 13:20		573667-008
RRR Ranch Windmill-WD-180115	W	01-15-18 00:00		573667-009
58-B-2-MW-WD-180115	W	01-15-18 00:00		573667-010
Wilson Ranch Well-W-180115	W	01-15-18 12:00		573667-011
43-K-1-MW-W-180116	W	01-16-18 14:00		573667-012
44-I-1-MW-W-180116	W	01-16-18 12:50		573667-013
44-J-1-MW-W-180116	W	01-16-18 12:55		573667-014
44-J-2-MW-W-180116	W	01-16-18 13:15		573667-015
44-J-3-MW-W-180116	W	01-16-18 13:10		573667-016
44-J-4-MW-W-180116	W	01-16-18 13:15		573667-017
44-J-5-MW-W-180116	W	01-16-18 13:00		573667-018
45-E-1-MW-W-180116	W	01-16-18 12:35		573667-019
45-E-2-MW-W-180116	W	01-16-18 12:30		573667-020
45-E-3-MW-W-180116	W	01-16-18 13:45		573667-021
45-F-1-MW-W-180116	W	01-16-18 12:20		573667-022
45-FF-MW-W-180116	W	01-16-18 12:25		573667-023
MW-10-W-180116	W	01-16-18 10:15		573667-024
MW-12-W-180116	W	01-16-18 10:35		573667-025
MW-18-W-180116	W	01-16-18 10:40		573667-026
MW-19-W-180116	W	01-16-18 10:50		573667-027
MW-20-W-180116	W	01-16-18 10:00		573667-028
MW-24-W-180116	W	01-16-18 10:25		573667-029
MW-26-W-180116	W	01-16-18 10:10		573667-030
MW-27-W-180116	W	01-16-18 09:40		573667-031
DHU-FWS-W-180116	W	01-16-18 13:35		573667-032



## CASE NARRATIVE

*Client Name: GHD Services, INC- Midland*

*Project Name: Dollarhide*

Project ID: 055270  
Work Order Number(s): 573667

Report Date: 30-JAN-18  
Date Received: 01/17/2018

---

**Sample receipt non conformance and comments:**

Revision to correct sample names

---

**Sample receipt non conformance and comments per sample:**

None

**Analytical non conformance and comments:**

Batch: LBA-3039007 Inorganic Anions by EPA 300/300.1

Lab Sample ID 573667-011 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: 573667-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017.

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





# Certificate of Analysis Summary 573667

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: Andrews County,TX and Lea County,NM

Date Received in Lab: Wed Jan-17-18 09:07 am  
Report Date: 30-JAN-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	573667-001	573667-002	573667-003	573667-004	573667-005	573667-006
	<b>Field Id:</b>	58-B-1-MW-W-180115	58-B-2-MW-W-180115	MW-8-W-180115	MW-9-W-180115	NM-MW-9-W-180115	NM-MW-12-W-180115
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jan-15-18 13:55	Jan-15-18 13:40	Jan-15-18 14:30	Jan-15-18 14:15	Jan-15-18 11:20	Jan-15-18 11:45
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jan-22-18 09:00	Jan-22-18 09:00	Jan-22-18 09:00	Jan-22-18 09:00	Jan-22-18 09:00	Jan-22-18 09:00
	<b>Analyzed:</b>	Jan-22-18 11:25	Jan-22-18 11:32	Jan-22-18 11:39	Jan-22-18 11:46	Jan-22-18 11:53	Jan-22-18 12:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		5250 25.0	3470 25.0	813 10.0	2540 25.0	221 2.50	663 5.00
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jan-18-18 09:00	Jan-18-18 09:00	Jan-18-18 09:00	Jan-18-18 09:00	Jan-18-18 09:00	Jan-18-18 09:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		8620 5.00	5860 5.00	2250 5.00	4380 5.00	717 5.00	1470 5.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use.  
The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories.  
XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented.  
Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 573667

GHD Services, INC- Midland, Midland, TX



Project Name: Dollarhide

Project Id: 055270  
Contact: Chris Knight  
Project Location: Andrews County,TX and Lea County,NM

Date Received in Lab: Wed Jan-17-18 09:07 am  
Report Date: 30-JAN-18  
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	573667-007	573667-008	573667-009	573667-010	573667-011	573667-012
	<i>Field Id:</i>	RRR Ranch Windmill-W-180115	Smith Residence-W-180115	RRR Ranch Windmill-WD-180115	58-B-2-MW-WD-180115	Wilson Ranch Well-W-180115	43-K-1-MW-W-180116
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Jan-15-18 11:00	Jan-15-18 13:20	Jan-15-18 00:00	Jan-15-18 00:00	Jan-15-18 12:00	Jan-16-18 14:00
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Jan-22-18 09:00	Jan-22-18 09:00	Jan-22-18 09:00	Jan-22-18 09:00	Jan-22-18 09:00	Jan-22-18 09:00
	<i>Analyzed:</i>	Jan-22-18 12:42	Jan-22-18 10:15	Jan-22-18 12:49	Jan-22-18 12:56	Jan-22-18 12:07	Jan-22-18 13:03
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		1600 25.0	650 5.00	1570 25.0	3600 25.0	673 5.00	8020 50.0
TDS by SM2540C	<i>Extracted:</i>						
	<i>Analyzed:</i>	Jan-18-18 09:00	Jan-18-18 09:00	Jan-18-18 09:00	Jan-18-18 09:00	Jan-18-18 09:00	Jan-18-18 09:00
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		3130 5.00	1500 5.00	3240 5.00	5940 5.00	1600 5.00	10500 5.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Kelsey Brooks  
Project Manager





# Certificate of Analysis Summary 573667

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: Andrews County, TX and Lea County, NM

Date Received in Lab: Wed Jan-17-18 09:07 am  
Report Date: 30-JAN-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	573667-013	573667-014	573667-015	573667-016	573667-017	573667-018
	<b>Field Id:</b>	44-I-1-MW-W-180116	44-J-1-MW-W-180116	44-J-2-MW-W-180116	44-J-3-MW-W-180116	44-J-4-MW-W-180116	44-J-5-MW-W-180116
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jan-16-18 12:50	Jan-16-18 12:55	Jan-16-18 13:15	Jan-16-18 13:10	Jan-16-18 13:15	Jan-16-18 13:00
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jan-22-18 09:00	Jan-22-18 09:00	Jan-22-18 09:00	Jan-22-18 09:00	Jan-22-18 09:00	Jan-22-18 12:00
	<b>Analyzed:</b>	Jan-22-18 13:10	Jan-22-18 13:17	Jan-22-18 13:24	Jan-22-18 13:31	Jan-22-18 13:38	Jan-22-18 14:40
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		2940 25.0	3410 25.0	4560 25.0	4800 25.0	3660 25.0	3500 25.0
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jan-18-18 09:00	Jan-18-18 09:00	Jan-18-18 09:00	Jan-18-18 09:00	Jan-18-18 09:00	Jan-18-18 09:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		5030 5.00	6190 5.00	7820 5.00	8420 5.00	7250 5.00	6230 5.00

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Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 573667

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: Andrews County,TX and Lea County,NM

Date Received in Lab: Wed Jan-17-18 09:07 am  
Report Date: 30-JAN-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	573667-019	573667-020	573667-021	573667-022	573667-023	573667-024
	<b>Field Id:</b>	45-E-1-MW-W-180116	45-E-2-MW-W-180116	45-E-3-MW-W-180116	45-F-1-MW-W-180116	45-FF-MW-W-180116	MW-10-W-180116
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jan-16-18 12:35	Jan-16-18 12:30	Jan-16-18 13:45	Jan-16-18 12:20	Jan-16-18 12:25	Jan-16-18 10:15
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jan-22-18 12:00	Jan-22-18 12:00	Jan-22-18 12:00	Jan-22-18 12:00	Jan-22-18 12:00	Jan-22-18 12:00
	<b>Analyzed:</b>	Jan-22-18 14:47	Jan-22-18 14:54	Jan-22-18 15:01	Jan-22-18 15:22	Jan-22-18 15:29	Jan-22-18 15:36
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		2300 25.0	718 10.0	2990 25.0	896 10.0	4820 25.0	5350 25.0
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jan-18-18 09:00	Jan-18-18 09:00	Jan-18-18 10:00	Jan-18-18 10:00	Jan-18-18 10:00	Jan-18-18 10:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		4650 5.00	3050 5.00	4940 5.00	1990 5.00	8280 5.00	9650 5.00

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Kelsey Brooks  
Project Manager





# Certificate of Analysis Summary 573667

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: Andrews County,TX and Lea County,NM

Date Received in Lab: Wed Jan-17-18 09:07 am  
Report Date: 30-JAN-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	573667-025	573667-026	573667-027	573667-028	573667-029	573667-030
	<b>Field Id:</b>	MW-12-W-180116	MW-18-W-180116	MW-19-W-180116	MW-20-W-180116	MW-24-W-180116	MW-26-W-180116
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jan-16-18 10:35	Jan-16-18 10:40	Jan-16-18 10:50	Jan-16-18 10:00	Jan-16-18 10:25	Jan-16-18 10:10
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jan-22-18 12:00	Jan-22-18 12:00	Jan-22-18 12:00	Jan-22-18 12:00	Jan-22-18 12:00	Jan-22-18 12:00
	<b>Analyzed:</b>	Jan-22-18 15:43	Jan-22-18 15:50	Jan-22-18 16:18	Jan-22-18 16:25	Jan-22-18 16:46	Jan-22-18 16:53
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		13100 D 100	18800 100	6160 25.0	1130 10.0	4060 25.0	1160 10.0
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jan-18-18 10:00	Jan-18-18 10:00	Jan-18-18 10:00	Jan-18-18 10:00	Jan-18-18 10:00	Jan-18-18 10:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		21400 5.00	30300 5.00	10300 5.00	2410 5.00	8170 5.00	2860 5.00

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Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 573667

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: Andrews County, TX and Lea County, NM

Date Received in Lab: Wed Jan-17-18 09:07 am  
Report Date: 30-JAN-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	573667-031	573667-032				
	<b>Field Id:</b>	MW-27-W-180116	DHU-FWS-W-180116				
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER				
	<b>Sampled:</b>	Jan-16-18 09:40	Jan-16-18 13:35				
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jan-22-18 12:00	Jan-22-18 12:00				
	<b>Analyzed:</b>	Jan-22-18 17:00	Jan-22-18 14:19				
	<b>Units/RL:</b>	mg/L RL	mg/L RL				
Chloride		2260 25.0	615 10.0				
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jan-18-18 10:00	Jan-18-18 10:00				
	<b>Units/RL:</b>	mg/L RL	mg/L RL				
Total Dissolved Solids		4220 5.00	2820 5.00				

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Project Manager



- 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      **SQL** Method Quantitation Limit      **LOQ** Limit of Quantitation

**DL** Method Detection Limit

**NC** Non-Calculable

+ NELAC certification not offered for this compound.

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

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(602) 437-0330	



# Blank Spike Recovery

Project Name: Dollarhide



Work Order #: 573667

Project ID:

055270

Lab Batch #: 3039007

Sample: 7637856-1-BKS

Matrix: Water

Date Analyzed: 01/22/2018

Date Prepared: 01/22/2018

Analyst: OJS

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Analytes						
Chloride	<0.500	25.0	25.2	101	90-110	

Lab Batch #: 3038638

Sample: 3038638-1-BKS

Matrix: Water

Date Analyzed: 01/18/2018

Date Prepared: 01/18/2018

Analyst: LRI

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

TDS by SM2540C	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Analytes						
Total Dissolved Solids	<5.00	1000	1030	103	80-120	

Lab Batch #: 3038640

Sample: 3038640-1-BKS

Matrix: Water

Date Analyzed: 01/18/2018

Date Prepared: 01/18/2018

Analyst: LRI

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

TDS by SM2540C	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Analytes						
Total Dissolved Solids	<5.00	1000	1040	104	80-120	

Blank Spike Recovery [D] =  $100 \times [C] / [B]$

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit





## BS / BSD Recoveries



**Project Name: Dollarhide**

**Work Order #:** 573667, 573667

**Project ID:** 055270

**Analyst:** OJS

**Date Prepared:** 01/22/2018

**Date Analyzed:** 01/22/2018

**Lab Batch ID:** 3039028

**Sample:** 7637858-1-BKS

**Batch #:** 1

**Matrix:** Water

**Units:** mg/L

### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<0.500	25.0	23.5	94	25.0	23.5	94	0	90-110	20	

Relative Percent Difference RPD =  $200 * |(C-F)/(C+F)|$

Blank Spike Recovery [D] =  $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes



# Form 3 - MS / MSD Recoveries



Project Name: Dollarhide

Work Order #: 573667

Project ID: 055270

Lab Batch ID: 3039007

QC- Sample ID: 573667-008 S

Batch #: 1 Matrix: Ground Water

Date Analyzed: 01/22/2018

Date Prepared: 01/22/2018

Analyst: OJS

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	650	250	933	113	250	933	113	0	90-110	20	X

Lab Batch ID: 3039007

QC- Sample ID: 573667-011 S

Batch #: 1 Matrix: Ground Water

Date Analyzed: 01/22/2018

Date Prepared: 01/22/2018

Analyst: OJS

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	673	250	946	109	250	951	111	1	90-110	20	X

Lab Batch ID: 3039028

QC- Sample ID: 573667-032 S

Batch #: 1 Matrix: Ground Water

Date Analyzed: 01/22/2018

Date Prepared: 01/22/2018

Analyst: OJS

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	615	500	1100	97	500	1100	97	0	90-110	20	

Matrix Spike Percent Recovery  $[D] = 100 * (C - A) / B$   
Relative Percent Difference  $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.





# Form 3 - MS / MSD Recoveries



Project Name: Dollarhide

Work Order # : 573667

Project ID: 055270

Lab Batch ID: 3039028

QC- Sample ID: 573809-001 S

Batch #: 1 Matrix: Ground Water

Date Analyzed: 01/22/2018

Date Prepared: 01/22/2018

Analyst: OJS

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	566	250	830	106	250	838	109	1	90-110	20	

Matrix Spike Percent Recovery  $[D] = 100 * (C - A) / B$   
Relative Percent Difference  $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

**Project Name: Dollarhide**

**Work Order #: 573667**

**Lab Batch #: 3038638**

**Project ID: 055270**

**Date Analyzed: 01/18/2018 09:00**

**Date Prepared: 01/18/2018**

**Analyst: LRI**

**QC- Sample ID: 573667-008 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total Dissolved Solids	1500	1510	1	10	

**Lab Batch #: 3038638**

**Date Analyzed: 01/18/2018 09:00**

**Date Prepared: 01/18/2018**

**Analyst: LRI**

**QC- Sample ID: 573667-011 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total Dissolved Solids	1600	1680	5	10	

**Lab Batch #: 3038640**

**Date Analyzed: 01/18/2018 10:00**

**Date Prepared: 01/18/2018**

**Analyst: LRI**

**QC- Sample ID: 573667-032 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total Dissolved Solids	2820	2770	2	10	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$   
 All Results are based on MDL and validated for QC purposes.  
 BRL - Below Reporting Limit





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# CHAIN OF CUSTODY

Page 1 of 4

JM 1-18-18

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Tampa, Florida (813-620-2000)

Xenco Quote #

Xenco Job #

573605 573607

Client / Reporting Information				Project Information				Analytical Information				Matrix Codes					
Company Name / Branch:				Project Name/Number:													
GHD-Midland				Dollartide/055270-2017-01													
Company Address:				Project Location:													
2135 S Loop 250 W, Midland, TX 79703				Andrews County, TX and Lea County, NM													
Email: christopher.knight@ghd.com				Phone No: 512-506-8803													
Project Contact: Chris Knight				Invoice To:													
PO Number:																	
Sampler's Name: Joe Phares (Steve Quinney)																	
No.	Field ID / Point of Collection	Sample Depth	Collection Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MeOH	NONE	TDS	Chloride	Field Comments
1	58-B-1-MW-W-180115	-	1/15	1355	GW	1									X	X	
2	58-B-2-MW-W-180115	-	1/15	1340	GW	1									X	X	
3	MW-8-W-180115	-	1/15	1430	GW	1									X	X	
4	MW-9-W-180115	-	1/15	1445	GW	1									X	X	
5	MW-MW-9-W-180115	-	1/15	1120	GW	1									X	X	
6	MW-MW-12-W-180115	-	1/15	1145	GW	1									X	X	
7	R/R Roundbail-W-180115	-	1/15	1100	GW	1									X	X	
8	Smith Residence-W-180115	-	1/15	1320	GW	3									X	X	MS/MS D
9	R/R Ranch Windmill-W-180115	-	1/15	-	GW	1									X	X	
10	58-B-2-MW-W-180115	-	1/15	-	GW	1									X	X	
Turnaround Time (Business days)																	
Data Deliverable Information																	
Notes:																	
Temp: -3 IR ID: R-8																	
CF: (0-6: -0.2°C)																	
(6-23: +0.2°C)																	
Corrected Temp: -5																	

<input type="checkbox"/> Same Day TAT	<input type="checkbox"/> 5 Day TAT	<input type="checkbox"/> Level II Std QC	<input type="checkbox"/> Level IV (Full Data Pkg /raw data)
<input type="checkbox"/> Next Day EMERGENCY	<input type="checkbox"/> 7 Day TAT	<input type="checkbox"/> Level III Std QC+ Forms	<input type="checkbox"/> TRRP Level IV
<input type="checkbox"/> 2 Day EMERGENCY	<input checked="" type="checkbox"/> Contract TAT	<input type="checkbox"/> Level 3 (CLP Forms)	<input type="checkbox"/> UST / RG 411
<input type="checkbox"/> 3 Day EMERGENCY		<input type="checkbox"/> TRRP Checklist	

TAT Starts Day received by Lab, if received by 5:00 pm

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

Relinquished by Sampler:	Date Time:	Received By:	Date Time:
1 Joe Phares	1/17/18 0907	2 [Signature]	2
Relinquished by:	Date Time:	Received By:	Date Time:
3 [Signature]	1/17/18 0907	4 [Signature]	4
Relinquished by:	Date Time:	Received By:	Date Time:
5 [Signature]	1/17/18 0907	6 [Signature]	6

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Lampa, Florida (813-620-2000)  
573445 573441

Client / Reporting Information						Project Information							Analytical Information								Matrix Codes										
Company Name / Branch: GHD-Midland Company Address: 2135 S Loop 250 W, Midland, TX 79703 Email: <a href="mailto:christopher.knight@ghd.com">christopher.knight@ghd.com</a> Phone No: 512-506-8803						Project Name/Number: Dollarhide/O55270-2017-01 Project Location: Andrews County, TX and Lea County, NM Invoice To:																									
Project Contact: Chris Knight						PO Number:																									
Samplers Name <i>Clem Quinney Joe Mixes</i>																															
No.	Field ID / Point of Collection					Collection				Number of preserved bottles																					
	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TDS	Chloride																
1	<i>Wilson Road well-W-180115</i>	<i>-</i>	<i>1/15</i>	<i>1200</i>	<i>GW 3</i>									<i>X X X</i>																	
2	<i>43-K-1-MW-W-180116</i>	<i>-</i>	<i>1/16</i>	<i>1400</i>	<i>GW 1</i>									<i>Y X X</i>																	
3	<i>44-I-1-MW-W-180116</i>	<i>-</i>	<i>1/16</i>	<i>1250</i>	<i>GW 1</i>									<i>X X X</i>																	
4	<i>44-J-1-MW-W-180116</i>	<i>-</i>	<i>1/16</i>	<i>1255</i>	<i>Pw 1</i>									<i>X X X</i>																	
5	<i>44-J-2-MW-W-180116</i>	<i>-</i>	<i>1/16</i>	<i>1315</i>	<i>GW 1</i>									<i>X X Y</i>																	
6	<i>44-J-3-MW-W-180116</i>	<i>-</i>	<i>1/16</i>	<i>1310</i>	<i>GW 1</i>									<i>X X X</i>																	
7	<i>44-J-4-MW-W-180116</i>	<i>-</i>	<i>1/16</i>	<i>1315</i>	<i>GW 1</i>									<i>X X X</i>																	
8	<i>44-J-5-MW-W-180116</i>	<i>-</i>	<i>1/16</i>	<i>1300</i>	<i>GW 1</i>									<i>X X X</i>																	
9	<i>45-E-1-MW-W-180116</i>	<i>-</i>	<i>1/16</i>	<i>1235</i>	<i>GW 1</i>									<i>X X X</i>																	
10	<i>45-E-2-MW-W-180116</i>	<i>-</i>	<i>1/16</i>	<i>1230</i>	<i>GW 1</i>									<i>X X X</i>																	
Turnaround Time (Business days)						Data Deliverable Information						Notes:																			
<input type="checkbox"/> Same Day TAT						<input type="checkbox"/> Level II Std QC						<input type="checkbox"/> Level IV (Full Data Pkg / raw data)																			
<input type="checkbox"/> Next Day EMERGENCY						<input type="checkbox"/> 7 Day TAT						<input type="checkbox"/> Level III Std QC+ Forms						<input type="checkbox"/> TRRP Level IV													
<input type="checkbox"/> 2 Day EMERGENCY						<input checked="" type="checkbox"/> Contract TAT						<input type="checkbox"/> Level 3 (CLP Forms)						<input type="checkbox"/> UST / RG -411													
<input type="checkbox"/> 3 Day EMERGENCY												<input type="checkbox"/> TRRP Checklist																			
TAT Starts Day received by Lab, if received by 5:00 pm																															
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																															
Relinquished by Sampler:						Date Time:						Received By:						Date Time:													
<i>Chris Knight</i>						<i>1/20/18 0907</i>						<i>[Signature]</i>						<i>[Signature]</i>													
Relinquished by:						Date Time:						Received By:						Date Time:													
<i>[Signature]</i>						<i>1/20/18 0907</i>						<i>[Signature]</i>						<i>[Signature]</i>													
Relinquished by:						Date Time:						Received By:						Date Time:													
<i>[Signature]</i>						<i>1/20/18 0907</i>						<i>[Signature]</i>						<i>[Signature]</i>													
Custody Seal #						Preserved where applicable						On Ice						Cooler Temp. Thermo. Corr. Factor													
<i>5</i>						<i>[X]</i>						<i>[X]</i>						<i>[X]</i>													



Setting the Standard since 1990

Stafford, Texas (281-240-4200)

**Dallas Texas (214-902-0300)**

**Service Center - San Antonio, Texas (210-509-3334)**

[www.xenco.com](http://www.xenco.com)

**Odessa, Texas (432-563-1800)**

**Norcross, Georgia (770-449-8800)**

Lakeland, Florida (863-646-8526)  
Tampa, Florida (813-620-2000)

Xenco Quote #	Xe
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Tampa, Florida (813-620-2000)

Client / Reporting Information						Project Information							Analytical Information								Matrix Codes						
Company Name / Branch: GHD-Midland						Project Name/Number: Dollahide/055270-2017-01																					
Company Address: 2135 S Loop 250 W, Midland, TX 79703						Project Location: Andrews County, TX and Lea County, NM																					
Email: <a href="mailto:christopher.knight@ghd.com">christopher.knight@ghd.com</a>						Phone No: 512-506-8803							Invoice To:														
Project Contact: Chris Knight						PO Number:																					
Sampler's Name Joe Miralles						Clean Quantity																					
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TDS	Chloride	Field Comments										
1	45-E-3-MW-W-180116	-	1/16	1345	CW	1									X	X											
2	45-F-1-MW-W-180116	-	1/16	1230	CW	1									X	X											
3	45-FE-MW-W-180116	-	1/16	1235	CW	1									X	X											
4	MW-10-W-180116	-	1/16	1015	CW	1									X	X											
5	MW-12-W-180116	-	1/16	1035	CW	1									X	X											
6	MW-18-W-180116	-	1/16	1040	CW	1									X	X											
7	MW-19-W-180116	-	1/16	1050	CW	1									X	X											
8	MW-20-W-180116	-	1/16	1000	CW	1									X	X											
9	MW-24-W-180116	-	1/16	1025	CW	1									X	X											
10	MW-26-W-180116	-	1/16	1010	CW	1									X	X											
Turnaround Time (Business days)																		Data Deliverable Information									
<input type="checkbox"/> Same Day TAT						<input type="checkbox"/> Level II Std QC						<input type="checkbox"/> Level IV (Full Data Pkg /raw data)						Temp: -3 IR ID:R-8									
<input type="checkbox"/> Next Day EMERGENCY						<input type="checkbox"/> 7 Day TAT						<input type="checkbox"/> Level III Std QC+ Forms						<input type="checkbox"/> TRRP Level IV						CF:(0-6: -0.2°C)			
<input type="checkbox"/> 2 Day EMERGENCY						<input checked="" type="checkbox"/> Contract TAT						<input type="checkbox"/> Level 3 (CLP Forms)						<input type="checkbox"/> UST / RG -411						(6-23: +0.2°C)			
<input type="checkbox"/> 3 Day EMERGENCY												<input type="checkbox"/> TRRP Checklist												Corrected Temp: -5			
TAT Starts Day received by Lab, if received by 5:00 pm																		FED-EX / UPS: Tracking #									
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																											
Relinquished by Sampler:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:											
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:											
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:											
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:											
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:											
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:											
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:											
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:											
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:											
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:											
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:											
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Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:											
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:											
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Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:											
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:											
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:																	





Tampa, Florida (813-620-2000)





# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: GHD Services, INC- Midland

Date/ Time Received: 01/17/2018 09:07:00 AM

Work Order #: 573667

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)?	-5
#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: ss

PH Device/Lot#: 213315

Checklist completed by:

Shawnee Smith

Date: 01/17/2018

Checklist reviewed by:

Kelsey Brooks

Date: 01/17/2018

# Analytical Report 573809

for  
**GHD Services, INC- Midland**

**Project Manager: Chris Knight**

**Dollarhide**

**055270**

**25-JAN-18**

Collected By: Client



**1211 W. Florida Ave, Midland TX 79701**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):

Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)

Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)





25-JAN-18

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

Reference: XENCO Report No(s): **573809**  
**Dollarhide**  
Project Address: New Mexico

**Chris Knight:**

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) 573809. 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. 573809 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,

**Kelsey Brooks**

Project Manager

***Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.***

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



## Sample Cross Reference 573809



GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-3-W-180117	W	01-17-18 11:00		573809-001
MW-4-W-180117	W	01-17-18 11:30		573809-002
MW-5-W-180117	W	01-17-18 10:50		573809-003
MW-6-W-180117	W	01-17-18 10:40		573809-004
MW-11-W-180117	W	01-17-18 10:25		573809-005
MW-13-W-180117	W	01-17-18 12:00		573809-006
MW-14-W-180117	W	01-17-18 11:15		573809-007
MW-15-W-180117	W	01-17-18 13:00		573809-008
MW-16-W-180117	W	01-17-18 12:50		573809-009
MW-17-W-180117	W	01-17-18 12:30		573809-010
MW-21-W-180117	W	01-17-18 12:40		573809-011
MW-22-W-180117	W	01-17-18 12:20		573809-012
MW-23-W-180117	W	01-17-18 12:25		573809-013
MW-25-W-180117	W	01-17-18 10:15		573809-014
MW-30-W-180117	W	01-17-18 12:05		573809-015
MW-31-W-180117	W	01-17-18 09:50		573809-016
Livermore-W-180117	W	01-17-18 12:10		573809-017
Trac-4-W-180117	W	01-17-18 11:10		573809-018
Trac-4-WD-180117	W	01-17-18 00:00		573809-019





## CASE NARRATIVE

*Client Name: GHD Services, INC- Midland*

*Project Name: Dollarhide*

Project ID: 055270  
Work Order Number(s): 573809

Report Date: 25-JAN-18  
Date Received: 01/18/2018

---

**Sample receipt non conformances and comments:**

---

**Sample receipt non conformances and comments per sample:**

None



# Certificate of Analysis Summary 573809

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: New Mexico

Date Received in Lab: Thu Jan-18-18 10:18 am  
Report Date: 25-JAN-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	573809-001	573809-002	573809-003	573809-004	573809-005	573809-006
	<b>Field Id:</b>	MW-3-W-180117	MW-4-W-180117	MW-5-W-180117	MW-6-W-180117	MW-11-W-180117	MW-13-W-180117
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jan-17-18 11:00	Jan-17-18 11:30	Jan-17-18 10:50	Jan-17-18 10:40	Jan-17-18 10:25	Jan-17-18 12:00
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jan-22-18 12:00	Jan-22-18 12:00	Jan-22-18 12:00	Jan-22-18 12:00	Jan-22-18 12:00	Jan-22-18 13:55
	<b>Analyzed:</b>	Jan-22-18 15:57	Jan-22-18 17:07	Jan-22-18 17:14	Jan-22-18 17:21	Jan-22-18 17:28	Jan-22-18 18:31
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		566 5.00	345 5.00	293 5.00	408 5.00	8120 50.0	1750 25.0
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jan-19-18 12:00	Jan-19-18 12:00	Jan-19-18 12:00	Jan-19-18 12:00	Jan-19-18 12:00	Jan-19-18 12:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		1410 5.00	968 5.00	1130 5.00	1490 5.00	12700 5.00	3920 5.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use.  
The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories.  
XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented.  
Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Kelsey Brooks  
Project Manager





# Certificate of Analysis Summary 573809

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: New Mexico

Date Received in Lab: Thu Jan-18-18 10:18 am  
Report Date: 25-JAN-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	573809-007	573809-008	573809-009	573809-010	573809-011	573809-012
	<b>Field Id:</b>	MW-14-W-180117	MW-15-W-180117	MW-16-W-180117	MW-17-W-180117	MW-21-W-180117	MW-22-W-180117
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jan-17-18 11:15	Jan-17-18 13:00	Jan-17-18 12:50	Jan-17-18 12:30	Jan-17-18 12:40	Jan-17-18 12:20
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jan-22-18 13:55	Jan-22-18 13:55	Jan-22-18 13:55	Jan-22-18 13:55	Jan-22-18 13:55	Jan-22-18 13:55
	<b>Analyzed:</b>	Jan-22-18 18:38	Jan-22-18 18:45	Jan-22-18 18:10	Jan-22-18 18:52	Jan-22-18 19:13	Jan-22-18 19:20
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		1590 25.0	873 10.0	364 5.00	10100 50.0	6800 25.0	10400 50.0
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jan-19-18 12:00	Jan-19-18 12:00	Jan-19-18 12:00	Jan-19-18 12:00	Jan-19-18 12:00	Jan-19-18 12:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		2910 5.00	1770 5.00	1100 5.00	15300 5.00	10900 5.00	16200 5.00

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Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 573809

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: New Mexico

Date Received in Lab: Thu Jan-18-18 10:18 am  
Report Date: 25-JAN-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	573809-013	573809-014	573809-015	573809-016	573809-017	573809-018
	<b>Field Id:</b>	MW-23-W-180117	MW-25-W-180117	MW-30-W-180117	MW-31-W-180117	Livermore-W-180117	Trac-4-W-180117
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jan-17-18 12:25	Jan-17-18 10:15	Jan-17-18 12:05	Jan-17-18 09:50	Jan-17-18 12:10	Jan-17-18 11:10
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jan-22-18 13:55	Jan-22-18 13:55	Jan-22-18 13:55	Jan-22-18 13:55	Jan-22-18 13:55	Jan-22-18 13:55
	<b>Analyzed:</b>	Jan-22-18 19:26	Jan-22-18 19:33	Jan-22-18 19:40	Jan-22-18 20:08	Jan-22-18 20:15	Jan-22-18 20:36
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		5230 25.0	20900 100	2350 25.0	10700 50.0	2700 25.0	335 5.00
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jan-19-18 12:00	Jan-19-18 12:00	Jan-19-18 12:00	Jan-19-18 12:00	Jan-19-18 12:00	Jan-19-18 12:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		9340 5.00	31400 5.00	4160 5.00	16400 5.00	4830 5.00	1120 5.00

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Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Kelsey Brooks  
Project Manager





# Certificate of Analysis Summary 573809

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: New Mexico

Date Received in Lab: Thu Jan-18-18 10:18 am  
Report Date: 25-JAN-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	573809-019					
	<b>Field Id:</b>	Trac-4-WD-180117					
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER					
	<b>Sampled:</b>	Jan-17-18 00:00					
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jan-22-18 13:55					
	<b>Analyzed:</b>	Jan-22-18 20:43					
	<b>Units/RL:</b>	mg/L RL					
Chloride		336 5.00					
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jan-19-18 12:00					
	<b>Units/RL:</b>	mg/L RL					
Total Dissolved Solids		1150 5.00					

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Kelsey Brooks  
Project Manager

- 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

+ NELAC certification not offered for this compound.

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

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(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(432) 563-1800	(432) 563-1713
(602) 437-0330	





# Blank Spike Recovery

Project Name: Dollarhide



Work Order #: 573809

Project ID:

055270

Lab Batch #: 3038750

Sample: 3038750-1-BKS

Matrix: Water

Date Analyzed: 01/19/2018

Date Prepared: 01/19/2018

Analyst: LRI

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

TDS by SM2540C  Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Total Dissolved Solids	<5.00	1000	1000	100	80-120	

Blank Spike Recovery [D] =  $100 * [C] / [B]$

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



# BS / BSD Recoveries



Project Name: Dollarhide

Work Order #: 573809

Project ID: 055270

Analyst: OJS

Date Prepared: 01/22/2018

Date Analyzed: 01/22/2018

Lab Batch ID: 3039028

Sample: 7637858-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

## BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<0.500	25.0	23.5	94	25.0	23.5	94	0	90-110	20	

Analyst: OJS

Date Prepared: 01/22/2018

Date Analyzed: 01/22/2018

Lab Batch ID: 3039246

Sample: 7637859-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

## BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<0.500	25.0	23.5	94	25.0	23.4	94	0	90-110	20	

Relative Percent Difference RPD =  $200 * |(C-F)/(C+F)|$

Blank Spike Recovery [D] =  $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes





# Form 3 - MS / MSD Recoveries



Project Name: Dollarhide

Work Order #: 573809

Project ID: 055270

Lab Batch ID: 3039028

QC- Sample ID: 573667-032 S

Batch #: 1 Matrix: Ground Water

Date Analyzed: 01/22/2018

Date Prepared: 01/22/2018

Analyst: OJS

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	615	500	1100	97	500	1100	97	0	90-110	20	

Lab Batch ID: 3039028

QC- Sample ID: 573809-001 S

Batch #: 1 Matrix: Ground Water

Date Analyzed: 01/22/2018

Date Prepared: 01/22/2018

Analyst: OJS

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	566	250	830	106	250	838	109	1	90-110	20	

Lab Batch ID: 3039246

QC- Sample ID: 573809-009 S

Batch #: 1 Matrix: Ground Water

Date Analyzed: 01/22/2018

Date Prepared: 01/22/2018

Analyst: OJS

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	364	250	617	101	250	628	106	2	90-110	20	

Matrix Spike Percent Recovery  $[D] = 100 * (C - A) / B$   
Relative Percent Difference  $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



# Form 3 - MS / MSD Recoveries



Project Name: Dollarhide

Work Order # : 573809

Project ID: 055270

Lab Batch ID: 3039246

QC- Sample ID: 573933-002 S

Batch #: 1 Matrix: Water

Date Analyzed: 01/22/2018

Date Prepared: 01/22/2018

Analyst: OJS

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	857	250	1090	93	250	1080	89	1	90-110	20	X

Matrix Spike Percent Recovery  $[D] = 100 * (C - A) / B$   
Relative Percent Difference  $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



**Project Name: Dollarhide**

**Work Order #: 573809**

**Lab Batch #: 3038750**

**Project ID: 055270**

**Date Analyzed: 01/19/2018 12:00**

**Date Prepared: 01/19/2018**

**Analyst: LRI**

**QC- Sample ID: 573809-011 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

## SAMPLE / SAMPLE DUPLICATE RECOVERY

TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total Dissolved Solids	10900	10800	1	10	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$   
All Results are based on MDL and validated for QC purposes.  
BRL - Below Reporting Limit



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Norcross, Georgia (770-449-8800)

Lakeland, Florida (863-646-8526)

Tampa, Florida (813-620-2000)

# CHAIN OF CUSTODY

Page 1 of 2

Client / Reporting Information		Project Information		Analytical Information		Matrix Codes												
Company Name / Branch: GHD-Midland		Project Name/Number: Dollartide/055270-2017-01																
Company Address: 2135 S Loop 250 W, Midland, TX 79703		Project Location: Andrews County, TX and Lea County, NM																
Email: christopher.knight@ghd.com		Phone No: 512-506-8803		Invoice To:														
Project Contact: Chris Knight		PO Number:																
Sampler's Name Chris Knight Joe Morales																		
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MeOH	NONE	TDS	Chloride	Field Comments	
1	MW-3-W-180117	-	1/17	1100	FW	1									X	X		
2	MW-4-W-180117	-	1/17	1130	FW	1									X	X		
3	MW-5-W-180117	-	1/17	1050	FW	1									X	X		
4	MW-6-W-180117	-	1/17	1040	FW	1									X	X		
5	MW-11-W-180117	-	1/17	1025	FW	1									X	X		
6	MW-13-W-180117	-	1/17	1200	FW	1									X	X		
7	MW-14-W-180117	-	1/17	1115	FW	1									X	X		
8	MW-15-W-180117	-	1/17	1300	FW	1									X	X		
9	MW-16-W-180117	-	1/17	1250	FW	1									X	X		
10	MW-17-W-180117	-	1/17	1230	FW	1									X	X		
Turnaround Time (Business days)																		Notes:
<input type="checkbox"/> Same Day TAT		<input type="checkbox"/> 6 Day TAT																Temp: -0.7 IR ID: R-8 CF: (0-6: -0.2°C) (6-23: +0.2°C) Corrected Temp: -0.5
<input type="checkbox"/> Next Day EMERGENCY		<input type="checkbox"/> 7 Day TAT																
<input type="checkbox"/> 2 Day EMERGENCY		<input checked="" type="checkbox"/> Contract TAT																
<input type="checkbox"/> 3 Day EMERGENCY																		
TAT Starts Day received by Lab, if received by 5:00 pm																		FED-EX / UPS: Tracking #
Relinquished by Sampler:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		On Ice
Relinquished by:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		Cooler Temp.
Relinquished by:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		Thermo. Corr. Factor
Relinquished by:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to XENCO Laboratories and its affiliates, subcontractors and assigns XENCO's standard terms and conditions of service unless previously negotiated under a fully executed client contract.



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Lakeland, Florida (863-646-8526)  
Tampa, Florida (813-620-2000)

**Norcross, Georgia (770-449-8800)**

Xenco Quote #

Xenco Job #

573809

[illegible]



**XENCO Laboratories**  
**Prelogin/Nonconformance Report- Sample Log-In**



**Client:** GHD Services, INC- Midland

**Date/ Time Received:** 01/18/2018 10:18:00 AM

**Work Order #:** 573809

**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)?	-5
#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: ss

PH Device/Lot#: 213315

**Checklist completed by:**

Shawnee Smith

Date: 01/18/2018

**Checklist reviewed by:**

Kelsey Brooks

Date: 01/18/2018



# Analytical Report 581708

for  
**GHD Services, INC- Midland**

**Project Manager: Chris Knight**

**Dollarhide**

**055270**

**13-APR-18**

Collected By: Client



**1211 W. Florida Ave, Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-18-24), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (T104704295-17-16), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-17-12)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-17-16)

Xenco-Odessa (EPA Lab Code: TX00158): Texas (T104704400-18-14)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)

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)

Xenco-Lakeland: Florida (E84098)



13-APR-18

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

Reference: XENCO Report No(s): **581708**  
**Dollarhide**  
Project Address: Andrews County, TX and Lea County, NM

**Chris Knight:**

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) 581708. 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. 581708 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,

**Kelsey Brooks**

Project Manager

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## Sample Cross Reference 581708



GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Livermore-W-180406	W	04-06-18 10:30		581708-001
MW-30-W-180406	W	04-06-18 10:50		581708-002
MW-13-W-180406	W	04-06-18 11:00		581708-003
MW-4-W-180406	W	04-06-18 11:10		581708-004
MW-14-W-180406	W	04-06-18 11:20		581708-005
Trac-4-W-180406	W	04-06-18 11:30		581708-006
MW-15-W-180406	W	04-06-18 11:40		581708-007
MW-16-W-180406	W	04-06-18 11:50		581708-008
MW-21-W-180406	W	04-06-18 12:10		581708-009
MW-17-W-180406	W	04-06-18 12:20		581708-010
MW-22-W-180406	W	04-06-18 12:30		581708-011
MW-23-W-180406	W	04-06-18 12:40		581708-012
Wilson Ranch-W-180406	W	04-06-18 13:00		581708-013



## CASE NARRATIVE

*Client Name: GHD Services, INC- Midland*

*Project Name: Dollarhide*

Project ID: 055270  
Work Order Number(s): 581708

Report Date: 13-APR-18  
Date Received: 04/06/2018

---

**Sample receipt non conformances and comments:**

None

---

**Sample receipt non conformances and comments per sample:**

None

**Analytical non conformances and comments:**

Batch: LBA-3046106 Inorganic Anions by EPA 300/300.1

Lab Sample ID 581708-006 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 581708-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013.

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





# Certificate of Analysis Summary 581708

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: Andrews County, TX and Lea County, N

Date Received in Lab: Fri Apr-06-18 03:15 pm  
Report Date: 13-APR-18  
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	581708-001	581708-002	581708-003	581708-004	581708-005	581708-006
	<i>Field Id:</i>	Livermore-W-180406	MW-30-W-180406	MW-13-W-180406	MW-4-W-180406	MW-14-W-180406	Trac-4-W-180406
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Apr-06-18 10:30	Apr-06-18 10:50	Apr-06-18 11:00	Apr-06-18 11:10	Apr-06-18 11:20	Apr-06-18 11:30
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Apr-09-18 09:00	Apr-09-18 09:00	Apr-09-18 09:00	Apr-09-18 09:00	Apr-09-18 09:00	Apr-09-18 09:00
	<i>Analyzed:</i>	Apr-09-18 14:56	Apr-09-18 15:02	Apr-09-18 15:07	Apr-09-18 15:31	Apr-09-18 15:37	Apr-09-18 15:13
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		2530 25.0	2240 25.0	1780 25.0	350 5.00	1720 25.0	401 5.00
TDS by SM2540C	<i>Extracted:</i>						
	<i>Analyzed:</i>	Apr-09-18 11:00	Apr-09-18 11:00	Apr-09-18 11:00	Apr-09-18 11:00	Apr-09-18 11:00	Apr-10-18 09:00
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		1430 5.00	1310 5.00	664 5.00	413 5.00	1270 5.00	1040 5.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use.  
The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories.  
XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented.  
Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 581708

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: Andrews County, TX and Lea County, N

Date Received in Lab: Fri Apr-06-18 03:15 pm  
Report Date: 13-APR-18  
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	581708-007	581708-008	581708-009	581708-010	581708-011	581708-012
	<i>Field Id:</i>	MW-15-W-180406	MW-16-W-180406	MW-21-W-180406	MW-17-W-180406	MW-22-W-180406	MW-23-W-180406
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Apr-06-18 11:40	Apr-06-18 11:50	Apr-06-18 12:10	Apr-06-18 12:20	Apr-06-18 12:30	Apr-06-18 12:40
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Apr-09-18 09:00	Apr-09-18 09:00	Apr-09-18 09:00	Apr-09-18 09:00	Apr-09-18 09:00	Apr-09-18 09:00
	<i>Analyzed:</i>	Apr-09-18 15:43	Apr-09-18 15:49	Apr-09-18 16:07	Apr-09-18 16:13	Apr-09-18 16:19	Apr-09-18 16:25
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		877 10.0	432 5.00	7630 50.0	9590 50.0	10500 50.0	6830 50.0
TDS by SM2540C	<i>Extracted:</i>						
	<i>Analyzed:</i>	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		1900 5.00	1310 5.00	11000 5.00	14800 5.00	17200 5.00	10100 5.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use.  
The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories.  
XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented.  
Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Kelsey Brooks  
Project Manager





# Certificate of Analysis Summary 581708

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: Andrews County, TX and Lea County, N

Date Received in Lab: Fri Apr-06-18 03:15 pm  
Report Date: 13-APR-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	581708-013					
	<b>Field Id:</b>	Wilson Ranch-W-180406					
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER					
	<b>Sampled:</b>	Apr-06-18 13:00					
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Apr-09-18 09:00					
	<b>Analyzed:</b>	Apr-09-18 16:31					
	<b>Units/RL:</b>	mg/L RL					
Chloride		1360 25.0					
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Apr-10-18 09:00					
	<b>Units/RL:</b>	mg/L RL					
Total Dissolved Solids		2950 5.00					

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Kelsey Brooks  
Project Manager

- 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

**SQL** 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





# Blank Spike Recovery

Project Name: Dollarhide



Work Order #: 581708

Project ID:

055270

Lab Batch #: 3046235

Sample: 3046235-1-BKS

Matrix: Water

Date Analyzed: 04/09/2018

Date Prepared: 04/09/2018

Analyst: LRI

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

TDS by SM2540C	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Analytes						
Total Dissolved Solids	<5.00	1000	988	99	80-120	

Lab Batch #: 3046321

Sample: 3046321-1-BKS

Matrix: Water

Date Analyzed: 04/10/2018

Date Prepared: 04/10/2018

Analyst: LRI

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

TDS by SM2540C	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Analytes						
Total Dissolved Solids	<5.00	1000	995	100	80-120	

Blank Spike Recovery [D] =  $100 \times [C]/[B]$

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



## BS / BSD Recoveries



**Project Name: Dollarhide**

**Work Order #: 581708**

**Project ID: 055270**

**Analyst: OJS**

**Date Prepared: 04/09/2018**

**Date Analyzed: 04/09/2018**

**Lab Batch ID: 3046106**

**Sample: 7642270-1-BKS**

**Batch #: 1**

**Matrix: Water**

**Units: mg/L**

### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<0.500	25.0	24.9	100	25.0	24.3	97	2	90-110	20	

Relative Percent Difference RPD =  $200 * |(C-F)/(C+F)|$

Blank Spike Recovery [D] =  $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes





# Form 3 - MS / MSD Recoveries



Project Name: Dollarhide

Work Order #: 581708

Project ID: 055270

Lab Batch ID: 3046106

QC- Sample ID: 581663-004 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/09/2018

Date Prepared: 04/09/2018

Analyst: OJS

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	15.8	25.0	39.0	93	25.0	39.1	93	0	90-110	20	

Lab Batch ID: 3046106

QC- Sample ID: 581708-006 S

Batch #: 1 Matrix: Ground Water

Date Analyzed: 04/09/2018

Date Prepared: 04/09/2018

Analyst: OJS

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	401	250	562	64	250	613	85	9	90-110	20	X

Matrix Spike Percent Recovery  $[D] = 100 \times (C-A)/B$   
Relative Percent Difference  $RPD = 200 \times |(C-F)/(C+F)|$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 \times (F-A)/E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

**Project Name: Dollarhide**

**Work Order #: 581708**

**Lab Batch #: 3046235**

**Project ID: 055270**

**Date Analyzed: 04/09/2018 11:00**

**Date Prepared: 04/09/2018**

**Analyst: LRI**

**QC- Sample ID: 581708-005 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total Dissolved Solids	1270	1290	2	10	

**Lab Batch #: 3046235**

**Date Analyzed: 04/09/2018 11:00**

**Date Prepared: 04/09/2018**

**Analyst: LRI**

**QC- Sample ID: 581717-004 D**

**Batch #: 1**

**Matrix: Water**

**Reporting Units: mg/L**

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total Dissolved Solids	529	540	2	10	

**Lab Batch #: 3046321**

**Date Analyzed: 04/10/2018 09:00**

**Date Prepared: 04/10/2018**

**Analyst: LRI**

**QC- Sample ID: 581708-006 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total Dissolved Solids	1040	1040	0	10	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$   
 All Results are based on MDL and validated for QC purposes.  
 BRL - Below Reporting Limit





# CHAIN OF CUSTODY

Page 1 of 2

Setting the Standard since 1990

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Lakeland, Florida (883-646-8526)

Tampa, Florida (813-620-2000)

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Xenco Quote #

Xenco Job #

581708

Client / Reporting Information				Project Information				Analytical Information				Matrix Codes					
Company Name / Branch:				Project Name/Number:													
GHD-Midland				Dollard/055270													
Company Address:				Project Location:													
2135 S Loop 250 W, Midland, TX 79703				Andrews County, TX and Lea County, NM													
Email: christopher.knight@ghd.com				Invoice To:													
Phone No: 512-506-8803																	
Project Contact: Chris Knight				PO Number:													
Sampler's Name: Joe Miller, Chem Quincy																	
No.	Field ID / Point of Collection	Sample Depth	Collection Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MeOH	NONE	TDS	Chloride	Field Comments
1	Livermore-180406		4/6	1050	661	1									X	X	
2	MW-30-W-180406		4/6	1050											X	X	
3	MW-13-W-180406		4/6	1100													
4	MW-4-W-180406		4/6	1100													
5	MW-14-W-180406		4/6	1120													
6	Trac-4-W-180406		4/6	1130													
7	MW-15-W-180406		4/6	1140													
8	MW-16-W-180406		4/6	1150													
9	MW-21-W-180406		4/6	1210													
10	MW-17-W-180406		4/6	1220													
Turnaround Time (Business days)																	
Data Deliverable Information																	
Notes:																	
Same Day TAT																	
Level II Std QC																	
Level IV (Full Data Pkg / raw data)																	
Next Day EMERGENCY																	
Level III Std QC+ Forms																	
TRRP Level IV																	
2 Day EMERGENCY																	
Level 3 (CLP Forms)																	
UST / RG -411																	
3 Day EMERGENCY																	
TRRP Checklist																	
TAT Starts Day received by Lab, if received by 5:00 pm																	
FED-EX																	
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																	
Relinquished by Sampler:																	
Date Time: 4/6/18 1515																	
Received By:																	
Relinquished By:																	
Date Time:																	
Received By:																	
Custody Seal #																	
Preserved where applicab																	
Temp: 1.6 IR ID: R-8																	
CF: (0-6: -0.2°C)																	
(6-23: +0.2°C)																	
Corrected Temp: 1.4																	

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to XENCO Laboratories and its affiliates, subcontractors and assigns XENCO's standard terms and conditions of service unless previously negotiated under a fully executed client contract.





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**Service Center - San Antonio, Texas (210-509-3334)**

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Lakeland, Florida (863-646-8526)  
Tampa, Florida (813-620-2000)

Xenco Quote #

Xenco Job #

501700

### Matrix Codes

Service Center - San Antonio, Texas (210-509-3334)						www.xenco.com		Xenco Quote #	Xenco Job #	581708											
Client / Reporting Information				Project Information				Analytical Information				Matrix Codes									
Company Name / Branch: GHD-Midland				Project Name/Number: Dollahide/055270																	
Company Address: 2135 S Loop 250 W, Midland, TX 79703 Email: christopher.knight@ghd.com				Project Location: Andrews County, TX and Lea County, NM																	
Phone No: 512-506-8803				Invoice To:																	
Project Contact: Chris Knight				PO Number:																	
Sampler's Name: Christopher Knight																					
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TDS	Chloride					
1	MW-22-W-180402e	4ft	1230	600	1										X	X	X				
2	MW-23-W-180404	4ft	1240												X	X	X				
3	Wilson Ranch-W-180404	4ft	1300												X	X	X				
4																					
5																					
6																					
7																					
8																					
9																					
10																					
Turnaround Time (Business days)				Data Deliverable Information				Notes:													
<input type="checkbox"/> Same Day TAT				<input type="checkbox"/> 6 Day TAT				<input type="checkbox"/> Level II Std QC				<input type="checkbox"/> Level IV (Full Data Pkg/raw data)									
<input type="checkbox"/> Next Day EMERGENCY				<input type="checkbox"/> 7 Day TAT				<input type="checkbox"/> Level III Std QC+ Forms				<input type="checkbox"/> TRRP Level IV									
<input type="checkbox"/> 2 Day EMERGENCY				<input checked="" type="checkbox"/> Contract TAT				<input type="checkbox"/> Level 3 (CLP Forms)				<input type="checkbox"/> UST / RG-411									
<input type="checkbox"/> 3 Day EMERGENCY				<input type="checkbox"/> TRRP Checklist																	
TAT Starts Day received by Lab, if received by 5:00 pm																					
Relinquished by Sampler:				Date Time:				Received By:				Date Time:									
1				4/16/18 1515				1				2									
Relinquished by:				Date Time:				Received By:				Date Time:									
3								3				4									
Relinquished by:				Date Time:				Received By:				Date Time:									
5								5													
Temp: 1.6				IR ID: R-8																	
CF: (0-6; -0.2°C)																					
Corrected Temp: 1.4																					





# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: GHD Services, INC- Midland

Date/ Time Received: 04/06/2018 03:15:00 PM

Work Order #: 581708

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)?	1.4
#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)?	N/A
#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: KL

PH Device/Lot#: 213315

Checklist completed by:

Katie Lowe

Date: 04/06/2018

Checklist reviewed by:

Kelsey Brooks

Date: 04/12/2018

# Analytical Report 581714

for  
**GHD Services, INC- Midland**

**Project Manager: Chris Knight**

**Dollarhide**

**055270**

**13-APR-18**

Collected By: Client



**1211 W. Florida Ave, Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-18-24), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (T104704295-17-16), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-17-12)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-17-16)

Xenco-Odessa (EPA Lab Code: TX00158): Texas (T104704400-18-14)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)

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)

Xenco-Lakeland: Florida (E84098)





13-APR-18

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

Reference: XENCO Report No(s): **581714**  
**Dollarhide**  
Project Address: New Mexico

**Chris Knight:**

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) 581714. 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. 581714 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,

**Kelsey Brooks**

Project Manager

***Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.***

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## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
NM-MW-1-W-180405	W	04-05-18 12:50		581714-001
NM-MW-2-W-180405	W	04-05-18 13:15		581714-002
NM-MW-3-W-180405	W	04-05-18 13:25		581714-003
NM-MW-4-W-180405	W	04-05-18 14:10		581714-004
NM-MW-5-W-180405	W	04-05-18 12:40		581714-005
NM-MW-6-W-180405	W	04-05-18 13:00		581714-006
NM-MW-7-W-180405	W	04-05-18 14:00		581714-007
NM-MW-8-W-180405	W	04-05-18 14:15		581714-008
NM-MW-9-W-180405	W	04-05-18 12:05		581714-009
NM-MW-10-W-180405	W	04-05-18 11:30		581714-010
NM-MW-11-W-180405	W	04-05-18 11:10		581714-011
NM-MW-12-W-180405	W	04-05-18 11:55		581714-012
NM-MW-13-W-180405	W	04-05-18 10:45		581714-013
NM-MW-11-WD-180405	W	04-05-18 00:00		581714-014
RRR Ranch Windmill-WW-180405	W	04-05-18 13:45		581714-015
Smith Ranch House-WW-W-180405	W	04-05-18 12:30		581714-016
MW-18-W-180405	W	04-05-18 10:20		581714-017
MW-19-W-180405	W	04-05-18 10:30		581714-018
MW-12-W-180405	W	04-05-18 10:40		581714-019
MW-31-W-180405	W	04-05-18 10:50		581714-020
MW-24-W-180405	W	04-05-18 11:00		581714-021
MW-26-W-180405	W	04-05-18 11:10		581714-022
MW-20-W-180405	W	04-05-18 11:20		581714-023
MW-27-W-180405	W	04-05-18 11:35		581714-024
DHU-FWS-180405	W	04-05-18 11:40		581714-025
MW-8-W-180405	W	04-05-18 11:50		581714-026
MW-9-W-180405	W	04-05-18 12:00		581714-027
MW-29-W-180405	W	04-05-18 12:25		581714-028
MW-28-W-180405	W	04-05-18 12:35		581714-029
MW-10-W-180405	W	04-05-18 12:50		581714-030
MW-10-WD-180405	W	04-05-18 00:00		581714-031
MW-11-W-180405	W	04-05-18 13:00		581714-032
MW-6-W-180405	W	04-05-18 13:10		581714-033
MW-5-W-180405	W	04-05-18 13:20		581714-034
MW-3-W-180405	W	04-05-18 13:40		581714-035
MW-25-W-180405	W	04-05-18 14:00		581714-036





## CASE NARRATIVE

*Client Name: GHD Services, INC- Midland*

*Project Name: Dollarhide*

Project ID: 055270  
Work Order Number(s): 581714

Report Date: 13-APR-18  
Date Received: 04/06/2018

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**Sample receipt non conformances and comments:**

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**Sample receipt non conformances and comments per sample:**

None



# Certificate of Analysis Summary 581714

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: New Mexico

Date Received in Lab: Fri Apr-06-18 03:15 pm  
Report Date: 13-APR-18  
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	581714-001	581714-002	581714-003	581714-004	581714-005	581714-006
	<i>Field Id:</i>	NM-MW-1-W-180405	NM-MW-2-W-180405	NM-MW-3-W-180405	NM-MW-4-W-180405	NM-MW-5-W-180405	NM-MW-6-W-180405
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Apr-05-18 12:50	Apr-05-18 13:15	Apr-05-18 13:25	Apr-05-18 14:10	Apr-05-18 12:40	Apr-05-18 13:00
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Apr-10-18 10:00	Apr-10-18 10:00	Apr-10-18 10:00	Apr-10-18 10:00	Apr-10-18 10:00	Apr-10-18 10:00
	<i>Analyzed:</i>	Apr-10-18 10:56	Apr-10-18 11:02	Apr-10-18 11:08	Apr-10-18 11:14	Apr-10-18 11:32	Apr-10-18 11:38
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		263 5.00	610 5.00	180 2.50	34.1 2.50	134 5.00	127 5.00
TDS by SM2540C	<i>Extracted:</i>						
	<i>Analyzed:</i>	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		1400 5.00	1210 5.00	601 5.00	410 5.00	1300 5.00	836 5.00

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Kelsey Brooks  
Project Manager





# Certificate of Analysis Summary 581714

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: New Mexico

Date Received in Lab: Fri Apr-06-18 03:15 pm  
Report Date: 13-APR-18  
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	581714-007	581714-008	581714-009	581714-010	581714-011	581714-012
	<i>Field Id:</i>	NM-MW-7-W-180405	NM-MW-8-W-180405	NM-MW-9-W-180405	NM-MW-10-W-180405	NM-MW-11-W-180405	NM-MW-12-W-180405
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Apr-05-18 14:00	Apr-05-18 14:15	Apr-05-18 12:05	Apr-05-18 11:30	Apr-05-18 11:10	Apr-05-18 11:55
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Apr-10-18 10:00	Apr-10-18 10:00	Apr-10-18 10:00	Apr-10-18 10:00	Apr-10-18 10:00	Apr-10-18 10:00
	<i>Analyzed:</i>	Apr-10-18 11:44	Apr-10-18 11:50	Apr-10-18 11:56	Apr-10-18 15:24	Apr-10-18 15:30	Apr-10-18 15:48
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		2090 25.0	5110 25.0	234 5.00	301 5.00	699 10.0	656 10.0
TDS by SM2540C	<i>Extracted:</i>						
	<i>Analyzed:</i>	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		4270 5.00	9160 5.00	807 5.00	1620 5.00	1920 5.00	1430 5.00

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Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 581714

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: New Mexico

Date Received in Lab: Fri Apr-06-18 03:15 pm  
Report Date: 13-APR-18  
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	581714-013	581714-014	581714-015	581714-016	581714-017	581714-018
	<i>Field Id:</i>	NM-MW-13-W-180405	NM-MW-11-WD-180405	RRR Ranch Windmill-WW-	Smith Ranch House-WW-W	MW-18-W-180405	MW-19-W-180405
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Apr-05-18 10:45	Apr-05-18 00:00	Apr-05-18 13:45	Apr-05-18 12:30	Apr-05-18 10:20	Apr-05-18 10:30
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Apr-10-18 10:00	Apr-10-18 10:00	Apr-10-18 10:00	Apr-10-18 10:00	Apr-10-18 10:00	Apr-10-18 10:00
	<i>Analyzed:</i>	Apr-10-18 15:54	Apr-10-18 16:00	Apr-10-18 16:06	Apr-10-18 12:02	Apr-10-18 16:12	Apr-10-18 16:18
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		180 5.00	135 10.0	1620 25.0	1280 25.0	20000 100	6600 50.0
TDS by SM2540C	<i>Extracted:</i>						
	<i>Analyzed:</i>	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		1090 5.00	1600 5.00	3110 5.00	2670 5.00	30400 5.00	9880 5.00

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Kelsey Brooks  
Project Manager





# Certificate of Analysis Summary 581714

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: New Mexico

Date Received in Lab: Fri Apr-06-18 03:15 pm  
Report Date: 13-APR-18  
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	581714-019	581714-020	581714-021	581714-022	581714-023	581714-024
	<i>Field Id:</i>	MW-12-W-180405	MW-31-W-180405	MW-24-W-180405	MW-26-W-180405	MW-20-W-180405	MW-27-W-180405
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Apr-05-18 10:40	Apr-05-18 10:50	Apr-05-18 11:00	Apr-05-18 11:10	Apr-05-18 11:20	Apr-05-18 11:35
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Apr-10-18 10:00	Apr-11-18 10:30	Apr-11-18 10:30	Apr-11-18 10:30	Apr-11-18 10:30	Apr-11-18 10:30
	<i>Analyzed:</i>	Apr-10-18 16:24	Apr-11-18 12:52	Apr-11-18 12:58	Apr-11-18 13:04	Apr-11-18 13:22	Apr-11-18 13:28
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		13300 100	11700 50.0	3980 25.0	1230 25.0	1100 10.0	2400 25.0
TDS by SM2540C	<i>Extracted:</i>						
	<i>Analyzed:</i>	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		19400 5.00	17700 5.00	7080 5.00	2730 5.00	2130 5.00	4250 5.00

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Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 581714

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: New Mexico

Date Received in Lab: Fri Apr-06-18 03:15 pm  
Report Date: 13-APR-18  
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	581714-025	581714-026	581714-027	581714-028	581714-029	581714-030
	<i>Field Id:</i>	DHU-FWS-180405	MW-8-W-180405	MW-9-W-180405	MW-29-W-180405	MW-28-W-180405	MW-10-W-180405
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Apr-05-18 11:40	Apr-05-18 11:50	Apr-05-18 12:00	Apr-05-18 12:25	Apr-05-18 12:35	Apr-05-18 12:50
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Apr-11-18 10:30	Apr-11-18 10:30	Apr-11-18 10:30	Apr-11-18 10:30	Apr-11-18 10:30	Apr-11-18 10:30
	<i>Analyzed:</i>	Apr-11-18 13:34	Apr-11-18 13:40	Apr-11-18 13:46	Apr-11-18 14:10	Apr-11-18 14:16	Apr-11-18 14:45
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		572 25.0	839 10.0	2930 25.0	396 5.00	1540 25.0	5470 25.0
TDS by SM2540C	<i>Extracted:</i>						
	<i>Analyzed:</i>	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		2640 5.00	2300 5.00	4690 5.00	1100 5.00	2660 5.00	8630 5.00

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Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 581714

GHD Services, INC- Midland, Midland, TX



Project Name: Dollarhide

Project Id: 055270  
Contact: Chris Knight  
Project Location: New Mexico

Date Received in Lab: Fri Apr-06-18 03:15 pm  
Report Date: 13-APR-18  
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	581714-031	581714-032	581714-033	581714-034	581714-035	581714-036
	<i>Field Id:</i>	MW-10-WD-180405	MW-11-W-180405	MW-6-W-180405	MW-5-W-180405	MW-3-W-180405	MW-25-W-180405
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Apr-05-18 00:00	Apr-05-18 13:00	Apr-05-18 13:10	Apr-05-18 13:20	Apr-05-18 13:40	Apr-05-18 14:00
<b>Inorganic Anions by EPA 300/300.1</b>	<i>Extracted:</i>	Apr-11-18 10:30	Apr-11-18 10:30	Apr-11-18 10:30	Apr-11-18 10:30	Apr-11-18 10:30	Apr-11-18 10:30
	<i>Analyzed:</i>	Apr-11-18 14:51	Apr-11-18 14:57	Apr-11-18 15:03	Apr-11-18 15:09	Apr-11-18 15:15	Apr-11-18 15:21
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		5420 25.0	7990 50.0	411 5.00	289 5.00	589 5.00	22400 100
<b>TDS by SM2540C</b>	<i>Extracted:</i>						
	<i>Analyzed:</i>	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00	Apr-10-18 09:00
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		8540 5.00	11000 5.00	1430 5.00	1140 5.00	1300 5.00	32800 5.00

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Project Manager



- 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



# Blank Spike Recovery

Project Name: Dollarhide



Work Order #: 581714

Project ID:

055270

Lab Batch #: 3046321

Sample: 3046321-1-BKS

Matrix: Water

Date Analyzed: 04/10/2018

Date Prepared: 04/10/2018

Analyst: LRI

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

TDS by SM2540C Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Total Dissolved Solids	<5.00	1000	995	100	80-120	

Lab Batch #: 3046384

Sample: 3046384-1-BKS

Matrix: Water

Date Analyzed: 04/10/2018

Date Prepared: 04/10/2018

Analyst: LRI

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

TDS by SM2540C Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Total Dissolved Solids	<5.00	1000	1000	100	80-120	

Lab Batch #: 3046385

Sample: 3046385-1-BKS

Matrix: Water

Date Analyzed: 04/10/2018

Date Prepared: 04/10/2018

Analyst: LRI

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

TDS by SM2540C Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Total Dissolved Solids	5.00	1000	982	98	80-120	

Blank Spike Recovery [D] =  $100 \times [C] / [B]$

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



# BS / BSD Recoveries



Project Name: Dollarhide

Work Order #: 581714

Project ID: 055270

Analyst: SCM

Date Prepared: 04/10/2018

Date Analyzed: 04/10/2018

Lab Batch ID: 3046282

Sample: 7642340-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

## BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<0.500	25.0	23.3	93	25.0	23.0	92	1	90-110	20	

Analyst: SCM

Date Prepared: 04/11/2018

Date Analyzed: 04/11/2018

Lab Batch ID: 3046419

Sample: 7642453-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

## BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<0.500	25.0	23.0	92	25.0	23.2	93	1	90-110	20	

Relative Percent Difference RPD =  $200 * |(C-F)/(C+F)|$

Blank Spike Recovery [D] =  $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes





# Form 3 - MS / MSD Recoveries



Project Name: Dollarhide

Work Order #: 581714

Project ID: 055270

Lab Batch ID: 3046282

QC- Sample ID: 581714-016 S

Batch #: 1 Matrix: Ground Water

Date Analyzed: 04/10/2018

Date Prepared: 04/10/2018

Analyst: SCM

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	1280	1250	2480	96	1250	2560	102	3	90-110	20	

Lab Batch ID: 3046282

QC- Sample ID: 581837-001 S

Batch #: 1 Matrix: Drinking Water

Date Analyzed: 04/10/2018

Date Prepared: 04/10/2018

Analyst: SCM

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	18.2	25.0	41.7	94	25.0	41.2	92	1	90-110	20	

Lab Batch ID: 3046419

QC- Sample ID: 581936-001 S

Batch #: 1 Matrix: Drinking Water

Date Analyzed: 04/11/2018

Date Prepared: 04/11/2018

Analyst: SCM

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	1.46	25.0	26.5	100	25.0	25.8	97	3	90-110	20	

Matrix Spike Percent Recovery  $[D] = 100 * (C - A) / B$   
Relative Percent Difference  $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



# Form 3 - MS / MSD Recoveries



Project Name: Dollarhide

Work Order # : 581714

Project ID: 055270

Lab Batch ID: 3046419

QC- Sample ID: 581938-001 S

Batch #: 1 Matrix: Drinking Water

Date Analyzed: 04/11/2018

Date Prepared: 04/11/2018

Analyst: SCM

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	25.4	25.0	50.1	99	25.0	50.2	99	0	90-110	20	

Matrix Spike Percent Recovery  $[D] = 100 * (C - A) / B$   
Relative Percent Difference  $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

**Project Name: Dollarhide**

**Work Order #: 581714**

**Lab Batch #: 3046321**

**Project ID: 055270**

**Date Analyzed: 04/10/2018 09:00**

**Date Prepared: 04/10/2018**

**Analyst: LRI**

**QC- Sample ID: 581708-006 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total Dissolved Solids	1040	1040	0	10	

**Lab Batch #: 3046384**

**Date Analyzed: 04/10/2018 09:00**

**Date Prepared: 04/10/2018**

**Analyst: LRI**

**QC- Sample ID: 581714-016 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total Dissolved Solids	2670	2540	5	10	

**Lab Batch #: 3046384**

**Date Analyzed: 04/10/2018 09:00**

**Date Prepared: 04/10/2018**

**Analyst: LRI**

**QC- Sample ID: 581714-032 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total Dissolved Solids	11000	11500	4	10	

**Lab Batch #: 3046385**

**Date Analyzed: 04/10/2018 09:00**

**Date Prepared: 04/10/2018**

**Analyst: LRI**

**QC- Sample ID: 581714-036 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total Dissolved Solids	32800	33000	1	10	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$   
 All Results are based on MDL and validated for QC purposes.  
 BRL - Below Reporting Limit



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**Norcross, Georgia (770-449-8800)**

**Tampa, Florida (813-620-2000)**

Tampa, Florida (813-620-2000)

Xencro Quote #

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581714

**Service Center - San Antonio, Texas (210-509-3334)**

[www.xenco.com](http://www.xenco.com)

Xenco Quote #

Xenco Job #

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**Client / Reporting Information**

Company Name / Branch: **GHD-Midland**

Company Address: **2135 S Loop 250 W, Midland, TX 79703**

Email: **christopher.knight@ghd.com**

Project Contact: **Chris Knight**

**Project Information**

Project Name/Number: **Dollarhide/055270**

Project Location: **Andrews County, TX and Lea County, NM**

Invoice To: **Andrews County, TX and Lea County, NM**

Phone No: **512-506-8903**

PO Number: **505270 Sherry May Longblin**

---

No.	Field ID / Point of Collection	Collection		Matrix	# of bottles	Number of preserved bottles							TDS	Chloride	Field Comments	
		Sample Depth	Date			Time	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4				MEOH
1	NM-MW-1-W-180405	—	04/05/18	1250	CW	1								X	X	
2	NM-MW-2-W-180405	—		1315										X		
3	NM-MW-3-W-180405	—		1325										X		
4	NM-MW-4-W-180405	—		1410										X		
5	NM-MW-5-W-180405	—		1240										X		
6	NM-MW-6-W-180405	—		1300										X		
7	NM-MW-7-W-180405	—		1400										X		
8	NM-MW-8-W-180405	—		1415										X		
9	NM-MW-9-W-180405	—		1205										X		
10	NM-MW-10-W-180405	—		1330										X		

**Turnaround Time (Business days)**

☐ Same Day TAT

☐ Next Day EMERGENCY

☐ 2 Day EMERGENCY

☐ 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 5:00 pm

**Data Deliverable Information**

☐ Level II Std QC

☐ Level III Std QC+ Forms

☐ Level 3 (CLP Forms)

☐ TRRP Checklist

☐ 5 Day TAT

☐ 7 Day TAT

☒ Contract TAT

☐ TRRP Level IV

☐ UST / RG 411

**Notes:**

Temp: **1.6** IR ID: R-8

CF: (0.6: -0.2°C)

(6-23: +0.2°C)

Corrected Temp: **1.4**

**Relinquished by:** **Chris Knight** Date Time: **4/16/18 1515** Received By: **[Signature]**

**Relinquished by:** **[Signature]** Date Time: **4/16/18 1515** Received By: **[Signature]**

**Relinquished by:** **[Signature]** Date Time: **4/16/18 1515** Received By: **[Signature]**

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**Relinquished by:** **[Signature]** Date Time: **4/16/18 1515** Received By: **[Signature]**

**Relinquished by:** **[Signature]</**



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**Norcross, Georgia (770-449-8800)**

Tampa, Florida (813-620-2000)

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Service Center - San Antonio, Texas (210-509-3334)

[www.xenco.com](http://www.xenco.com)

Xenco Quote #

Xenco Job #

581714

Matrix Codes

Client / Reporting Information				Project Information				Analytical Information				Matrix Codes					
Company Name / Branch: GHD-Midland				Project Name/Number: Dollartide/055270													
Company Address: 2135 S Loop 250 W, Midland, TX 79703				Project Location: Andrews County, TX and Lea County, NM													
Email: <a href="mailto:christopher.knight@ghd.com">christopher.knight@ghd.com</a>				Invoice To:													
Phone No: 512-506-8803																	
Project Contact: Chris Knight				PO Number:													
Sampler's Name Steven Swartzley Matt Laughlin																	
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	NaHSO <sub>4</sub>	MeOH	NONE	TDS	Chloride	Field Comments
1	NM-NW-11-W-180405	-	04/28/14	1110	GW	4								X	X	X	
2	NM-NW-12-W-180405	-		1155											X	X	
3	NM-NW-13-W-180405	-		1045											X	X	
4	NM-NW-11-WD-180405	-													X	X	
5	RPR Ranch w/palm-well-W-180405	-		1345											X	X	
6	S.Wish Ranchhouse-WW-W-180405	-		1230											X	X	MSC PMSD
7																	
8																	
9																	
10																	
Turnaround Time (Business days)																	
Data Deliverable Information																	
<input type="checkbox"/> Same Day TAT				<input type="checkbox"/> 6 Day TAT				<input type="checkbox"/> Level II Std QC				<input type="checkbox"/> Level IV (Full Data Pkg/raw data)					
<input type="checkbox"/> Next Day EMERGENCY				<input type="checkbox"/> 7 Day TAT				<input type="checkbox"/> Level III Std QC+Forms				<input type="checkbox"/> TRRP Level IV					
<input type="checkbox"/> 2 Day EMERGENCY				<input checked="" type="checkbox"/> Contract TAT				<input type="checkbox"/> Level 3 (CLP Forms)				<input type="checkbox"/> UST / RG -411					
<input type="checkbox"/> 3 Day EMERGENCY								<input type="checkbox"/> TRRP Checklist									
TAT Starts Day received by Lab, if received by 5:00 pm																	
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																	
Relinquished by Sampler: Joe Muelen				Date Time: 4/6/14 1519				Received By: [Signature]				Date Time: 2					
Relinquished by:				Date Time:				Received By:				Date Time:					
3				3				4				4					
Relinquished by:				Date Time:				Custody Seal #				Preserved where applicable					
5				5								On Ice					
												Cooler Temp.					
												Thermo. Corr. Factor					

Temp: 1.6 IR ID: R-8  
CF: (0.6: -0.2°C)  
(6-23: +0.2°C)  
Corrected Temp: 1.4



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**Norcross, Georgia (770-449-8800)**

Lakeland, Florida (863-646-8526)

Tampa, Florida (813-620-2000)

[illegible]



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**Norcross, Georgia (770-449-8800)**

Lakeland, Florida (863-646-8526)

Xenco Quote #

Xenco Job #

Tampa, Florida (813-620-2000)

[illegible]



# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: GHD Services, INC- Midland

Date/ Time Received: 04/06/2018 03:15:00 PM

Work Order #: 581714

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)?	1.4
#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)?	N/A
#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: KL

PH Device/Lot#: 213315

Checklist completed by:

*Jessica Kramer*

Jessica Kramer

Date: 04/06/2018

Checklist reviewed by:

*Kelsey Brooks*

Kelsey Brooks

Date: 04/09/2018

# Analytical Report 591257

## for GHD Services, INC- Midland

**Project Manager: Chris Knight**

**Dollarhide**

**055270**

**18-JUL-18**

Collected By: Client



**1211 W. Florida Ave, Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-18-26), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (T104704295-17-16), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-17-12)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-17-16)

Xenco-Odessa (EPA Lab Code: TX00158): Texas (T104704400-18-15)

Xenco-San Antonio (EPA Lab Code: TNi02385): Texas (T104704534-17-3)

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)

Xenco-Lakeland: Florida (E84098)





18-JUL-18

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

Reference: XENCO Report No(s): **591257**  
**Dollarhide**  
Project Address: Lea County, NM

**Chris Knight:**

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) 591257. 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. 591257 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,

**Kelsey Brooks**

Project Manager

***Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.***

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



## Sample Cross Reference 591257



GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-15-180703	W	07-03-18 09:05		591257-001
MW-16-180703	W	07-03-18 09:20		591257-002
MW-21-180703	W	07-03-18 09:30		591257-003
MW-17-180703	W	07-03-18 09:40		591257-004
MW-22-180703	W	07-03-18 10:00		591257-005
MW-23-180703	W	07-03-18 09:55		591257-006
MW-13-180703	W	07-03-18 10:05		591257-007
MW-14-180703	W	07-03-18 10:25		591257-008
Trac-4-180703	W	07-03-18 10:30		591257-009
MW-3	W	07-03-18 10:50		591257-010
MW-4	W	07-03-18 11:05		591257-011
MW-5	W	07-03-18 11:20		591257-012
MW-6	W	07-03-18 11:30		591257-013
MW-11	W	07-03-18 11:40		591257-014
MW-25	W	07-03-18 11:55		591257-015
Livermore	W	07-03-18 12:10		591257-016
MW-30	W	07-03-18 12:30		591257-017
MW-27	W	07-03-18 13:45		591257-018
MW-10	W	07-03-18 14:00		591257-019
MW-24	W	07-03-18 14:10		591257-020
MW-31	W	07-03-18 14:25		591257-021
MW-12	W	07-03-18 14:35		591257-022
MW-18	W	07-03-18 14:45		591257-023
DUP-1	W	07-03-18 00:00		591257-024
DUP-2	W	07-03-18 00:00		591257-025



## CASE NARRATIVE

*Client Name: GHD Services, INC- Midland*

*Project Name: Dollarhide*

Project ID: 055270  
Work Order Number(s): 591257

Report Date: 18-JUL-18  
Date Received: 07/05/2018

---

**Sample receipt non conformances and comments:**

Revision to correct sample name on 591257-015-- KB

---

**Sample receipt non conformances and comments per sample:**

None





# Certificate of Analysis Summary 591257

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: Lea County, NM

Date Received in Lab: Thu Jul-05-18 08:59 am  
Report Date: 18-JUL-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	591257-001	591257-002	591257-003	591257-004	591257-005	591257-006
	<b>Field Id:</b>	MW-15-180703	MW-16-180703	MW-21-180703	MW-17-180703	MW-22-180703	MW-23-180703
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jul-03-18 09:05	Jul-03-18 09:20	Jul-03-18 09:30	Jul-03-18 09:40	Jul-03-18 10:00	Jul-03-18 09:55
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jul-06-18 16:00	Jul-06-18 16:00	Jul-06-18 16:00	Jul-06-18 16:00	Jul-06-18 16:00	Jul-06-18 16:00
	<b>Analyzed:</b>	Jul-06-18 17:37	Jul-06-18 17:48	Jul-06-18 17:58	Jul-06-18 18:08	Jul-06-18 18:39	Jul-06-18 18:50
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		914 10.0	430 5.00	6860 50.0	8570 50.0	10300 50.0	4390 25.0
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jul-06-18 10:00	Jul-06-18 10:00	Jul-06-18 10:00	Jul-06-18 10:00	Jul-06-18 10:00	Jul-06-18 10:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		1650 5.00	1160 5.00	11100 5.00	15000 5.00	16300 5.00	6870 5.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use.  
The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories.  
XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented.  
Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 591257

GHD Services, INC- Midland, Midland, TX



Project Name: Dollarhide

Project Id: 055270  
Contact: Chris Knight  
Project Location: Lea County, NM

Date Received in Lab: Thu Jul-05-18 08:59 am  
Report Date: 18-JUL-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	591257-007	591257-008	591257-009	591257-010	591257-011	591257-012
	<b>Field Id:</b>	MW-13-180703	MW-14-180703	Trac-4-180703	MW-3	MW-4	MW-5
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jul-03-18 10:05	Jul-03-18 10:25	Jul-03-18 10:30	Jul-03-18 10:50	Jul-03-18 11:05	Jul-03-18 11:20
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jul-06-18 16:00	Jul-06-18 16:00	Jul-06-18 16:00	Jul-06-18 16:00	Jul-06-18 16:00	Jul-06-18 16:00
	<b>Analyzed:</b>	Jul-06-18 19:00	Jul-06-18 19:10	Jul-06-18 19:21	Jul-06-18 20:13	Jul-06-18 20:44	Jul-06-18 20:54
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		2280 25.0	1540 25.0	343 5.00	593 5.00	338 5.00	274 5.00
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jul-06-18 10:00	Jul-06-18 10:00	Jul-06-18 10:00	Jul-06-18 10:00	Jul-06-18 10:00	Jul-06-18 10:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		4560 5.00	2660 5.00	1040 5.00	1310 5.00	831 5.00	1020 5.00

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Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 591257

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: Lea County, NM

Date Received in Lab: Thu Jul-05-18 08:59 am  
Report Date: 18-JUL-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	591257-013	591257-014	591257-015	591257-016	591257-017	591257-018
	<b>Field Id:</b>	MW-6	MW-11	MW-25	Livermore	MW-30	MW-27
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jul-03-18 11:30	Jul-03-18 11:40	Jul-03-18 11:55	Jul-03-18 12:10	Jul-03-18 12:30	Jul-03-18 13:45
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jul-06-18 16:00	Jul-06-18 16:00	Jul-06-18 16:00	Jul-06-18 16:00	Jul-06-18 16:00	Jul-10-18 10:30
	<b>Analyzed:</b>	Jul-06-18 21:04	Jul-06-18 21:15	Jul-06-18 21:25	Jul-06-18 21:35	Jul-06-18 21:46	Jul-10-18 13:10
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		402 5.00	7940 50.0	23600 100	2560 25.0	2280 25.0	2510 25.0
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jul-06-18 10:00	Jul-06-18 10:00	Jul-06-18 10:00	Jul-06-18 10:00	Jul-06-18 10:00	Jul-06-18 10:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		1340 5.00	11800 5.00	37600 5.00	4580 5.00	3650 5.00	4790 5.00

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Kelsey Brooks  
Project Manager





# Certificate of Analysis Summary 591257

GHD Services, INC- Midland, Midland, TX



Project Name: Dollarhide

Project Id: 055270  
Contact: Chris Knight  
Project Location: Lea County, NM

Date Received in Lab: Thu Jul-05-18 08:59 am  
Report Date: 18-JUL-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	591257-019	591257-020	591257-021	591257-022	591257-023	591257-024
	<b>Field Id:</b>	MW-10	MW-24	MW-31	MW-12	MW-18	DUP-1
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jul-03-18 14:00	Jul-03-18 14:10	Jul-03-18 14:25	Jul-03-18 14:35	Jul-03-18 14:45	Jul-03-18 00:00
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jul-10-18 10:30	Jul-10-18 10:30	Jul-10-18 10:30	Jul-10-18 10:30	Jul-10-18 10:30	Jul-10-18 10:30
	<b>Analyzed:</b>	Jul-10-18 13:20	Jul-10-18 13:30	Jul-10-18 14:01	Jul-10-18 14:12	Jul-10-18 14:22	Jul-10-18 14:32
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		5340 25.0	4140 25.0	12100 50.0	13200 100	22000 100	6050 25.0
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jul-06-18 10:00	Jul-06-18 10:00	Jul-06-18 13:00	Jul-06-18 13:00	Jul-06-18 13:00	Jul-06-18 13:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		11000 5.00	8210 5.00	19800 5.00	20200 5.00	38500 5.00	10000 5.00

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Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 591257

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: Lea County, NM

Date Received in Lab: Thu Jul-05-18 08:59 am  
Report Date: 18-JUL-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	591257-025					
	<b>Field Id:</b>	DUP-2					
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER					
	<b>Sampled:</b>	Jul-03-18 00:00					
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jul-10-18 10:30					
	<b>Analyzed:</b>	Jul-10-18 14:43					
	<b>Units/RL:</b>	mg/L RL					
Chloride		327 5.00					
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jul-06-18 13:00					
	<b>Units/RL:</b>	mg/L RL					
Total Dissolved Solids		1060 5.00					

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Kelsey Brooks  
Project Manager

- 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





# Blank Spike Recovery

Project Name: Dollarhide



Work Order #: 591257

Project ID:

055270

Lab Batch #: 3055643

Sample: 3055643-1-BKS

Matrix: Water

Date Analyzed: 07/06/2018

Date Prepared: 07/06/2018

Analyst: OJS

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

TDS by SM2540C Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Total Dissolved Solids	<5.00	1000	976	98	80-120	

Lab Batch #: 3055862

Sample: 3055862-1-BKS

Matrix: Water

Date Analyzed: 07/06/2018

Date Prepared: 07/06/2018

Analyst: OJS

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

TDS by SM2540C Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Total Dissolved Solids	<5.00	1000	986	99	80-120	

Blank Spike Recovery [D] =  $100 \times [C] / [B]$

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



## BS / BSD Recoveries



Project Name: Dollarhide

Work Order #: 591257, 591257

Project ID: 055270

Analyst: SCM

Date Prepared: 07/06/2018

Date Analyzed: 07/06/2018

Lab Batch ID: 3055786

Sample: 7657995-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<0.500	25.0	23.3	93	25.0	23.4	94	0	90-110	20	

Analyst: SCM

Date Prepared: 07/10/2018

Date Analyzed: 07/10/2018

Lab Batch ID: 3056077

Sample: 7658126-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<0.500	25.0	25.0	100	25.0	25.1	100	0	90-110	20	

Relative Percent Difference RPD =  $200 * |(C-F)/(C+F)|$

Blank Spike Recovery [D] =  $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes



# Form 3 - MS / MSD Recoveries



Project Name: Dollarhide

Work Order #: 591257

Project ID: 055270

Lab Batch ID: 3055786

QC- Sample ID: 591344-001 S

Batch #: 1 Matrix: Drinking Water

Date Analyzed: 07/06/2018

Date Prepared: 07/06/2018

Analyst: SCM

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	18.2	25.0	42.9	99	25.0	43.0	99	0	90-110	20	

Lab Batch ID: 3055786

QC- Sample ID: 591445-001 S

Batch #: 1 Matrix: Water

Date Analyzed: 07/06/2018

Date Prepared: 07/06/2018

Analyst: SCM

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	186	125	316	104	125	317	105	0	90-110	20	

Lab Batch ID: 3056077

QC- Sample ID: 591445-003 S

Batch #: 1 Matrix: Water

Date Analyzed: 07/10/2018

Date Prepared: 07/10/2018

Analyst: SCM

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	14.3	25.0	38.5	97	25.0	38.6	97	0	90-110	20	

Matrix Spike Percent Recovery  $[D] = 100 \times (C-A)/B$   
Relative Percent Difference  $RPD = 200 \times |(C-F)/(C+F)|$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 \times (F-A)/E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.





# Form 3 - MS / MSD Recoveries



Project Name: Dollarhide

Work Order # : 591257

Project ID: 055270

Lab Batch ID: 3056077

QC- Sample ID: 591602-001 S

Batch #: 1 Matrix: Drinking Water

Date Analyzed: 07/10/2018

Date Prepared: 07/10/2018

Analyst: SCM

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	8.87	25.0	33.5	99	25.0	33.6	99	0	90-110	20	

Matrix Spike Percent Recovery  $[D] = 100 * (C - A) / B$   
Relative Percent Difference  $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

**Project Name: Dollarhide**

**Work Order #: 591257**

**Lab Batch #: 3055643**

**Project ID: 055270**

**Date Analyzed: 07/06/2018 10:00**

**Date Prepared: 07/06/2018**

**Analyst: OJS**

**QC- Sample ID: 591257-001 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

**SAMPLE / SAMPLE DUPLICATE RECOVERY**

TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	%RPD	RPD Limit	Flag
Analyte					
Total Dissolved Solids	1650	1680	2	10	

**Lab Batch #: 3055643**

**Date Analyzed: 07/06/2018 10:00**

**Date Prepared: 07/06/2018**

**Analyst: OJS**

**QC- Sample ID: 591257-020 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

**SAMPLE / SAMPLE DUPLICATE RECOVERY**

TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	%RPD	RPD Limit	Flag
Analyte					
Total Dissolved Solids	8210	8860	8	10	

**Lab Batch #: 3055862**

**Date Analyzed: 07/06/2018 13:00**

**Date Prepared: 07/06/2018**

**Analyst: OJS**

**QC- Sample ID: 591257-021 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

**SAMPLE / SAMPLE DUPLICATE RECOVERY**

TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	%RPD	RPD Limit	Flag
Analyte					
Total Dissolved Solids	19800	19500	2	10	

**Lab Batch #: 3055862**

**Date Analyzed: 07/06/2018 13:00**

**Date Prepared: 07/06/2018**

**Analyst: OJS**

**QC- Sample ID: 591377-015 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

**SAMPLE / SAMPLE DUPLICATE RECOVERY**

TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	%RPD	RPD Limit	Flag
Analyte					
Total Dissolved Solids	5750	5560	3	10	

Log Difference  $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

Spike Relative Difference  $\text{RPD } 200 * |(B-A)/(B+A)|$

All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

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**Odessa, Texas (432-563-1800)**

**Lakeland, Florida (863-646-8526)**

**Dallas Texas (214-902-0300)**

**Norcross, Georgia (770-449-8800)**

**Tampa, Florida (813-620-2000)**

**Service Center - San Antonio, Texas (210-509-3334)**

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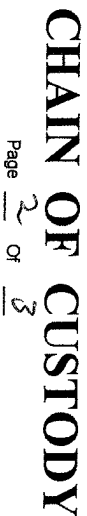
Xenco Quote #

Job #

五

Client / Reporting Information						Project Information						Analytical Information							Matrix Codes				
Company Name / Branch: <b>GHD-Midland</b>						Project Name/Number: Dollahide/056270																	
Company Address: 2135 S Loop 250 W, Midland, TX 79703						Project Location: Lea County, NM																	
Email: christopher.knight@gnd.com						Phone No: 512-506-8803																	
Project Contact: Chris Knight						Invoice To:																	
Samples Name <b>58544 GWR#14 Green Quarry</b>						PO Number:																	
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TDS	Chloride	Field Comments						
1	MW-15 - 180703	-	07/23/18	0905	EW	2								X	X	X							
2	MW-16 - 180703	-		0920										X	X	X							
3	MW-21 - 180703	-		0930										X	X	X							
4	MW-17 - 180703	-		0940										X	X	X							
5	MW-22 - 180703	-		1000										X	X	X							
6	MW-23 - 180703	-		0955										X	X	X							
7	MW-13 - 180703	-		1005										X	X	X							
8	MW-14 - 180703	-		1025										X	X	X							
9	Trac-4 - 180703	-		1030										X	X	X							
10	<del>MW-2</del> <b>(35) at</b>	-																					
Turnaround Time (Business days)						Data Deliverable Information						Notes:											
<input type="checkbox"/> Same Day TAT						<input checked="" type="checkbox"/> 5 Day TAT						<input type="checkbox"/> Level II Std QC						<input type="checkbox"/> Level IV (Full Data Pkg /raw data)					
<input type="checkbox"/> Next Day EMERGENCY						<input type="checkbox"/> 7 Day TAT						<input type="checkbox"/> Level III Std QC+ Forms						<input type="checkbox"/> TRRP Level IV					
<input type="checkbox"/> 2 Day EMERGENCY						<input type="checkbox"/> Contract TAT						<input type="checkbox"/> Level 3 (CLP Forms)						<input type="checkbox"/> UST / RG 411					
<input type="checkbox"/> 3 Day EMERGENCY												<input type="checkbox"/> TRRP Checklist											
TAT Starts Day received by Lab, if received by 5:00 pm																							
SAMPLE CUSTODY MUST BE DOCUMENTED BEFORE EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																							
Relinquished By Sample: <b>Schwartz Thornberry</b>						Date Time: <b>07/05/18 0830</b>						Received By: <b>JOHN LARSEN 7/5/2018</b>						Date Time: <b>7/5/2018</b>					
Relinquished By:						Date Time:						Received By:						Date Time:					
3						3						4						4					
Relinquished by:						Date Time:						Custody Seal #						Preserved Where applicable					
5						5												On Ice <input checked="" type="checkbox"/>					
																		Cooler Temp. <b>23</b> Thermo Corr. Factor <b>1.00</b>					



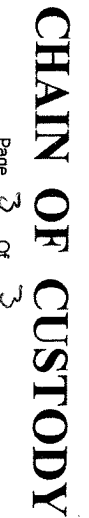


**Service Center - San Antonio, Texas (210-509-3334)**

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**Lakeland, Florida (863-646-8526)**  
**Tampa, Florida (813-620-2000)**

Final 1.001



# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: GHD Services, INC- Midland

Date/ Time Received: 07/05/2018 08:59:00 AM

Work Order #: 591257

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)?	2.3
#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)?	N/A
#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#: 213315

Checklist completed by:

*Brianna Teel*

Brianna Teel

Date: 07/05/2018

Checklist reviewed by:

*Kelsey Brooks*

Kelsey Brooks

Date: 07/06/2018



# Analytical Report 591377

## for GHD Services, INC- Midland

**Project Manager: Chris Knight**

**Dollarhide**

**055270**

**18-JUL-18**

Collected By: Client



**1211 W. Florida Ave, Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-18-26), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (T104704295-17-16), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-17-12)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-17-16)

Xenco-Odessa (EPA Lab Code: TX00158): Texas (T104704400-18-15)

Xenco-San Antonio (EPA Lab Code: TNi02385): Texas (T104704534-17-3)

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)

Xenco-Lakeland: Florida (E84098)



18-JUL-18

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

Reference: XENCO Report No(s): **591377**  
**Dollarhide**  
Project Address: Las County, NM

**Chris Knight:**

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) 591377. 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. 591377 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,

**Kelsey Brooks**

Project Manager

***Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.***

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

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## Sample Cross Reference 591377



GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-19-W-180705	W	07-05-18 10:50		591377-001
MW-26-W-180705	W	07-05-18 11:00		591377-002
MW-20-W-180705	W	07-05-18 11:20		591377-003
45-F-1-MW-W-180705	W	07-05-18 11:35		591377-004
45-FF-MW-W-180705	W	07-05-18 11:40		591377-005
45-E-2-MW-W-180705	W	07-05-18 11:45		591377-006
45-E-1-MW-W-180705	W	07-05-18 11:55		591377-007
44-J-3-MW-W-180705	W	07-05-18 12:05		591377-008
44-J-5-MW-W-180705	W	07-05-18 12:15		591377-009
44-J-4-MW-W-180705	W	07-05-18 11:25		591377-010
44-J-1-MW-W-180705	W	07-05-18 12:35		591377-011
44-I-1-MW-W-180705	W	07-05-18 12:45		591377-012
44-J-2-MW-W-180705	W	07-05-18 13:00		591377-013
43-K-1-MW-W-180705	W	07-05-18 13:05		591377-014
45-E-3-MW-W-180705	W	07-05-18 13:15		591377-015
DHU-FWS-W-180705	W	07-05-18 14:00		591377-016
MW-8-W-180705	W	07-05-18 14:15		591377-017
MW-9-W-180705	W	07-05-18 14:30		591377-018
58-B-2-MW-W-18705	W	07-05-18 14:40		591377-019
58-B-1-MW-W-180705	W	07-05-18 00:00		591377-020
DUP-3-W-180705	W	07-05-18 00:00		591377-021





## CASE NARRATIVE

*Client Name: GHD Services, INC- Midland*

*Project Name: Dollarhide*

Project ID: 055270  
Work Order Number(s): 591377

Report Date: 18-JUL-18  
Date Received: 07/06/2018

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**Sample receipt non conformances and comments:**

None

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**Sample receipt non conformances and comments per sample:**

None



# Certificate of Analysis Summary 591377

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: Las County, NM

Date Received in Lab: Fri Jul-06-18 09:00 am  
Report Date: 18-JUL-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	591377-001	591377-002	591377-003	591377-004	591377-005	591377-006
	<b>Field Id:</b>	MW-19-W-180705	MW-26-W-180705	MW-20-W-180705	45-F-1-MW-W-180705	45-FF-MW-W-180705	45-E-2-MW-W-180705
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jul-05-18 10:50	Jul-05-18 11:00	Jul-05-18 11:20	Jul-05-18 11:35	Jul-05-18 11:40	Jul-05-18 11:45
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jul-10-18 10:30	Jul-10-18 10:30	Jul-10-18 10:30	Jul-10-18 14:30	Jul-10-18 14:30	Jul-10-18 14:30
	<b>Analyzed:</b>	Jul-10-18 17:01	Jul-10-18 17:12	Jul-10-18 17:22	Jul-10-18 18:55	Jul-10-18 19:05	Jul-10-18 19:16
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		6580 50.0	1210 25.0	1150 10.0	923 10.0	5310 25.0	1790 25.0
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jul-06-18 13:00	Jul-06-18 13:00	Jul-06-18 13:00	Jul-06-18 13:00	Jul-06-18 13:00	Jul-06-18 13:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		11500 5.00	2810 5.00	2160 5.00	1840 5.00	9090 5.00	3130 5.00

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Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 591377

GHD Services, INC- Midland, Midland, TX



**Project Name:** Dollarhide

**Project Id:** 055270  
**Contact:** Chris Knight  
**Project Location:** Las County, NM

**Date Received in Lab:** Fri Jul-06-18 09:00 am  
**Report Date:** 18-JUL-18  
**Project Manager:** Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	591377-007	591377-008	591377-009	591377-010	591377-011	591377-012
	<i>Field Id:</i>	45-E-1-MW-W-180705	44-J-3-MW-W-180705	44-J-5-MW-W-180705	44-J-4-MW-W-180705	44-J-1-MW-W-180705	44-I-1-MW-W-180705
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Jul-05-18 11:55	Jul-05-18 12:05	Jul-05-18 12:15	Jul-05-18 11:25	Jul-05-18 12:35	Jul-05-18 12:45
<b>Inorganic Anions by EPA 300/300.1</b>	<i>Extracted:</i>	Jul-10-18 14:30	Jul-10-18 14:30	Jul-10-18 14:30	Jul-10-18 14:30	Jul-10-18 14:30	Jul-10-18 14:30
	<i>Analyzed:</i>	Jul-10-18 19:26	Jul-10-18 19:57	Jul-10-18 20:07	Jul-10-18 20:18	Jul-10-18 20:28	Jul-10-18 20:38
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		2530 25.0	5290 25.0	4060 25.0	4520 25.0	4300 25.0	3170 25.0
<b>TDS by SM2540C</b>	<i>Extracted:</i>						
	<i>Analyzed:</i>	Jul-06-18 13:00	Jul-06-18 13:00	Jul-06-18 13:00	Jul-06-18 13:00	Jul-06-18 13:00	Jul-06-18 13:00
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		4220 5.00	9230 5.00	6600 5.00	7430 5.00	6910 5.00	5450 5.00

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Kelsey Brooks  
Project Manager





# Certificate of Analysis Summary 591377

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: Las County, NM

Date Received in Lab: Fri Jul-06-18 09:00 am  
Report Date: 18-JUL-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	591377-013	591377-014	591377-015	591377-016	591377-017	591377-018
	<b>Field Id:</b>	44-J-2-MW-W-180705	43-K-1-MW-W-180705	45-E-3-MW-W-180705	DHU-FWS-W-180705	MW-8-W-180705	MW-9-W-180705
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jul-05-18 13:00	Jul-05-18 13:05	Jul-05-18 13:15	Jul-05-18 14:00	Jul-05-18 14:15	Jul-05-18 14:30
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jul-10-18 14:30	Jul-10-18 14:30	Jul-10-18 14:30	Jul-10-18 14:30	Jul-10-18 14:30	Jul-10-18 14:30
	<b>Analyzed:</b>	Jul-10-18 21:20	Jul-10-18 21:30	Jul-10-18 22:01	Jul-10-18 22:12	Jul-10-18 22:22	Jul-10-18 22:32
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		5050 25.0	7840 50.0	3360 25.0	593 25.0	868 10.0	2880 25.0
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jul-06-18 13:00	Jul-06-18 13:00	Jul-06-18 13:00	Jul-09-18 11:00	Jul-09-18 11:00	Jul-09-18 11:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		8000 5.00	12700 5.00	5750 5.00	2710 5.00	2350 5.00	4250 5.00

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Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 591377

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: Las County, NM

Date Received in Lab: Fri Jul-06-18 09:00 am  
Report Date: 18-JUL-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	591377-019	591377-020	591377-021			
	<b>Field Id:</b>	58-B-2-MW-W-18705	58-B-1-MW-W-180705	DUP-3-W-180705			
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER			
	<b>Sampled:</b>	Jul-05-18 14:40	Jul-05-18 00:00	Jul-05-18 00:00			
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jul-10-18 14:30	Jul-10-18 14:30	Jul-10-18 14:30			
	<b>Analyzed:</b>	Jul-10-18 22:43	Jul-10-18 22:53	Jul-10-18 23:03			
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL			
Chloride		3900 25.0	6440 25.0	593 25.0			
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jul-09-18 11:00	Jul-09-18 11:00	Jul-09-18 11:00			
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL			
Total Dissolved Solids		6410 5.00	10000 5.00	2860 5.00			

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Kelsey Brooks  
Project Manager

- 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

**SQL** 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





# Blank Spike Recovery

Project Name: Dollarhide



Work Order #: 591377

Project ID:

055270

Lab Batch #: 3055862

Sample: 3055862-1-BKS

Matrix: Water

Date Analyzed: 07/06/2018

Date Prepared: 07/06/2018

Analyst: OJS

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

TDS by SM2540C	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Analytes						
Total Dissolved Solids	<5.00	1000	986	99	80-120	

Lab Batch #: 3055900

Sample: 3055900-1-BKS

Matrix: Water

Date Analyzed: 07/09/2018

Date Prepared: 07/09/2018

Analyst: OJS

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

TDS by SM2540C	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Analytes						
Total Dissolved Solids	<5.00	1000	977	98	80-120	

Blank Spike Recovery [D] =  $100 \times [C] / [B]$

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



## BS / BSD Recoveries



Project Name: Dollarhide

Work Order #: 591377

Project ID: 055270

Analyst: SCM

Date Prepared: 07/10/2018

Date Analyzed: 07/10/2018

Lab Batch ID: 3056077

Sample: 7658126-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<0.500	25.0	25.0	100	25.0	25.1	100	0	90-110	20	

Analyst: SCM

Date Prepared: 07/10/2018

Date Analyzed: 07/10/2018

Lab Batch ID: 3056068

Sample: 7658127-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<0.500	25.0	24.3	97	25.0	24.4	98	0	90-110	20	

Relative Percent Difference RPD =  $200 * |(C-F)/(C+F)|$

Blank Spike Recovery [D] =  $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes



# Form 3 - MS / MSD Recoveries



Project Name: Dollarhide

Work Order #: 591377

Project ID: 055270

Lab Batch ID: 3056068

QC- Sample ID: 591600-001 S

Batch #: 1 Matrix: Drinking Water

Date Analyzed: 07/10/2018

Date Prepared: 07/10/2018

Analyst: SCM

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	16.7	25.0	40.4	95	25.0	40.5	95	0	90-110	20	

Lab Batch ID: 3056068

QC- Sample ID: 591601-001 S

Batch #: 1 Matrix: Drinking Water

Date Analyzed: 07/10/2018

Date Prepared: 07/10/2018

Analyst: SCM

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	13.9	25.0	39.2	101	25.0	39.2	101	0	90-110	20	

Lab Batch ID: 3056077

QC- Sample ID: 591445-003 S

Batch #: 1 Matrix: Water

Date Analyzed: 07/10/2018

Date Prepared: 07/10/2018

Analyst: SCM

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	14.3	25.0	38.5	97	25.0	38.6	97	0	90-110	20	

Matrix Spike Percent Recovery  $[D] = 100 * (C - A) / B$   
Relative Percent Difference  $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.





# Form 3 - MS / MSD Recoveries



Project Name: Dollarhide

Work Order # : 591377

Project ID: 055270

Lab Batch ID: 3056077

QC- Sample ID: 591602-001 S

Batch #: 1 Matrix: Drinking Water

Date Analyzed: 07/10/2018

Date Prepared: 07/10/2018

Analyst: SCM

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	8.87	25.0	33.5	99	25.0	33.6	99	0	90-110	20	

Matrix Spike Percent Recovery  $[D] = 100 * (C - A) / B$   
Relative Percent Difference  $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

**Project Name: Dollarhide**

**Work Order #: 591377**

**Lab Batch #: 3055862**

**Project ID: 055270**

**Date Analyzed: 07/06/2018 13:00**

**Date Prepared: 07/06/2018**

**Analyst: OJS**

**QC- Sample ID: 591257-021 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

**SAMPLE / SAMPLE DUPLICATE RECOVERY**

TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	%RPD	RPD Limit	Flag
Analyte					
Total Dissolved Solids	19800	19500	2	10	

**Lab Batch #: 3055862**

**Date Analyzed: 07/06/2018 13:00**

**Date Prepared: 07/06/2018**

**Analyst: OJS**

**QC- Sample ID: 591377-015 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

**SAMPLE / SAMPLE DUPLICATE RECOVERY**

TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	%RPD	RPD Limit	Flag
Analyte					
Total Dissolved Solids	5750	5560	3	10	

**Lab Batch #: 3055900**

**Date Analyzed: 07/09/2018 11:00**

**Date Prepared: 07/09/2018**

**Analyst: OJS**

**QC- Sample ID: 591377-016 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

**SAMPLE / SAMPLE DUPLICATE RECOVERY**

TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	%RPD	RPD Limit	Flag
Analyte					
Total Dissolved Solids	2710	2860	5	10	

**Lab Batch #: 3055900**

**Date Analyzed: 07/09/2018 11:00**

**Date Prepared: 07/09/2018**

**Analyst: OJS**

**QC- Sample ID: 591503-014 D**

**Batch #: 1**

**Matrix: Ground Water**

**Reporting Units: mg/L**

**SAMPLE / SAMPLE DUPLICATE RECOVERY**

TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	%RPD	RPD Limit	Flag
Analyte					
Total Dissolved Solids	1160	1130	3	10	

Log Difference  $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

Spike Relative Difference  $\text{RPD } 200 * |(B-A)/(B+A)|$

All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

# CHAIN OF CUSTODY

Page 1 of 3

## Setting the Standard since 1990

**Stafford, Texas (281-240-4200)**

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**Service Center - San Antonio, Texas (210-509-3334)**

[www.xenco.com](http://www.xenco.com)

**Odessa, Texas (432-563-1800)**

**Norcross, Georgia (770-449-8800)**

**Xenoco Quote #**

Xenco Job #

**Tampa, Florida (813-620-2000)**

**Lakeland, Florida (863-646-8526)**

Client / Reporting Information				Project Information				Analytical Information				Matrix Codes	
<b>Client / Reporting Information</b> Company Name / Branch: <b>GHD-Midland</b> Company Address: <b>2135 S Loop 250 W, Midland, TX 79703</b> Email: <b>christopher.knight@ghd.com</b> Phone No: <b>512-506-8803</b> Project Contact: <b>Chris Knight</b>				<b>Project Information</b> Project Name/Number: <b>Dollarhide/055270</b> Dollarhide/055270 Project Location: <b>Lea County, NM</b> Invoice To: <b>Lea County, NM</b> PO Number: <b>1</b>				<b>Analytical Information</b> Matrix Codes: <b>S = Soil/Sed/Solid</b> <b>GW = Ground Water</b> <b>DW = Drinking Water</b> <b>P = Product</b> <b>SW = Surface water</b> <b>SL = Sludge</b> <b>OW = Ocean/Sea Water</b> <b>W = Wipe</b> <b>O = Oil</b> <b>WW = Waste Water</b> <b>A = Air</b>					
<b>Field ID / Point of Collection</b> No. <b>1</b> <b>MW-19-W-180705</b> <b>2</b> <b>MW-26-W-180705</b> <b>3</b> <b>MW-20-W-180705</b> <b>4</b> <b>45-F-1-MW-W-180705</b> <b>5</b> <b>45-FF-MW-W-180705</b> <b>6</b> <b>45-E-2-MW-W-180705</b> <b>7</b> <b>45-E-1-MW-W-180705</b> <b>8</b> <b>44-J-3-MW-W-180705</b> <b>9</b> <b>44-J-5-MW-W-180705</b> <b>10</b> <b>44-J-4-MW-W-180705</b>				<b>Collection</b> Sample Depth <b>100</b> Date <b>07/25/18</b> Time <b>10:00</b> Matrix <b>GW</b> # of bottles <b>2</b> HCl <b>1</b> NaOH/Zn Acetate <b>1</b> HNO3 <b>1</b> H2SO4 <b>1</b> NaOH <b>1</b> NaHSO4 <b>1</b> MEQH <b>1</b> NONE <b>1</b> TDS <b>1</b> Chloride <b>1</b>				<b>Number of preserved bottles</b> TDS <b>1</b> Chloride <b>1</b>				<b>Field Comments</b> On lot 1.4 100 0.0	
<b>Turnaround Time (Business days)</b> <input type="checkbox"/> Same Day TAT <input checked="" type="checkbox"/> 5 Day TAT <input type="checkbox"/> 7 Day TAT				<b>Data Deliverable Information</b> <input type="checkbox"/> Level II Std QC <input type="checkbox"/> Level IV (Full Data Pkg /raw data) <input type="checkbox"/> Next Day EMERGENCY <input type="checkbox"/> Level III Std QC+ Forms <input type="checkbox"/> TRRP Level IV <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> Contract TAT <input type="checkbox"/> Level 3 (CLP Forms) <input type="checkbox"/> UST / RG 411 <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> TRRP Checklist				<b>Notes:</b>					
<b>TAT Starts Day received by Lab, if received by 5:00 pm</b> Relinquished by Sample: <b>1</b> <b>Joshua Stalkey</b> Date Time: <b>07-06-18 0900</b> Relinquished by: <b>1</b> <b>Joshua Stalkey</b> Date Time: <b>07-06-18 0900</b> Relinquished by: <b>3</b> <b>Joshua Stalkey</b> Date Time: <b>07-06-18 0900</b> Relinquished by: <b>5</b> <b>Joshua Stalkey</b> Date Time: <b>07-06-18 0900</b>				<b>SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY</b> Relinquished By: <b>1</b> <b>Joshua Stalkey</b> Date Time: <b>07-06-18 0900</b> Relinquished By: <b>2</b> <b>Joshua Stalkey</b> Date Time: <b>07-06-18 0900</b> Relinquished By: <b>3</b> <b>Joshua Stalkey</b> Date Time: <b>07-06-18 0900</b> Relinquished By: <b>4</b> <b>Joshua Stalkey</b> Date Time: <b>07-06-18 0900</b>				<b>FED-EX / UPS, Tracking #</b> Relinquished By: <b>1</b> <b>Joshua Stalkey</b> Date Time: <b>07-06-18 0900</b> Relinquished By: <b>2</b> <b>Joshua Stalkey</b> Date Time: <b>07-06-18 0900</b> Relinquished By: <b>3</b> <b>Joshua Stalkey</b> Date Time: <b>07-06-18 0900</b> Relinquished By: <b>4</b> <b>Joshua Stalkey</b> Date Time: <b>07-06-18 0900</b>					





# CHAIN OF CUSTODY

Page 2 of 3

Setting the Standard since 1990  
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Norcross, Georgia (770-449-8800)

Lakeland, Florida (863-646-8526)  
Tampa, Florida (813-620-2000)

Client / Reporting Information				Project Information				Analytical Information				Matrix Codes												
Company Name / Branch: <b>GHD-Midland</b>				Project Name/Number: <b>Dollarhide/055270</b>																				
Company Address: <b>2135 S Loop 250 W, Midland, TX 79703</b>				Project Location: <b>Lea County, NM</b>																				
Email: <b>christopher.knight@ghd.com</b> Phone No: <b>512-506-8803</b>				Invoice To:																				
Project Contact: <b>Chris Knight</b>				PO Number:																				
Sampler's Name: <b>Eileen Quinley TOSKWA SYRINITY</b>																								
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCI	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MeOH	NONE	TDS	Chloride	Field Comments							
1	44-J-1-MW-W-180705	~	07/05/14	1235	6W	4									X	X								
2	44-J-1-MW-W-180705	~		1245																				
3	44-J-2-MW-W-180705	~		1300																				
4	43-K-1-MW-W-180705	~		1305																				
5	44-E-3-MW-W-180705	~		1315																				
6	MW-7-W-180705 (53)	~																						
7	PHU-FWS-W-180705	~		1400																				
8	MW-8-W-180705	~		1415																				
9	MW-9-W-180705	~		1430																				
10	S&-B-2-MW-W-180705	~		1440																				
Turnaround Time (Business days)																	Data Deliverable Information		Notes:					
<input type="checkbox"/> Same Day TAT																	<input type="checkbox"/> Level II Std QC		<input type="checkbox"/> Level IV (Full Data Pkg /raw data)					
<input type="checkbox"/> Next Day EMERGENCY																	<input type="checkbox"/> 7 Day TAT		<input type="checkbox"/> Level III Std QC+ Forms		<input type="checkbox"/> TRRP Level IV			
<input type="checkbox"/> 2 Day EMERGENCY																	<input type="checkbox"/> Contract TAT		<input type="checkbox"/> Level 3 (CLP Forms)		<input type="checkbox"/> UST / RG -411			
<input type="checkbox"/> 3 Day EMERGENCY																			<input type="checkbox"/> TRRP Checklist					
TAT Starts Day received by Lab, if received by 5:00 pm																								
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																								
Relinquished By Sampler:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:								
1. Eileen Quinley		07-06-14		Chris Knight		07-06-14		Eileen Quinley		07-06-14		Chris Knight		07-06-14		Eileen Quinley								
Relinquished By:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:								
3.				3				4				4				4								
Relinquished By:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:								
5.				5				5				5				5								
Relinquished By:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:								
5.				5				5				5				5								
FED-EX / UPS, Tracking #																								
On Ice <input checked="" type="checkbox"/> Cooler Temp. <input checked="" type="checkbox"/> Thermo Corr. Factor <input checked="" type="checkbox"/>																								

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to XENCO Laboratories and its affiliates, subcontractors and assigns XENCO's standard terms and conditions of service unless previously negotiated under a fully executed client contract.

## CHAIN OF CUSTODY

Page 3 of 3

## Sattine the Standard since 1000

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**Norcross, Georgia (770-449-8800)**

**Lakeland, Florida (863-646-8526)**  
**Tampa, Florida (813-620-2000)**

**Xenoco Quote #**

**Xenco Job #**

591377

## Matrix Codes

Client / Reporting Information						Project Information							Analytical Information								Matrix Codes				
Company Name / Branch: GHD Midland Company Address: 2136 S Loop 250 W, Midland, TX 79703 Email: christopher.knight@ghd.com						Project Name/Number: Dollartide/D55270 Project Location: Lea County, NM Phone No: 512-506-8803 Invoice To:																			
Project Contact: Chris Knight						PO Number:																			
Sampler's Name: Clean Driveway Subura Shukla																									
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TDS	Chloride									
1	58-B-1-MW-W-180705	-	07/05/18	1450	GW	1									X	X									
2	DUP-3-W-180705	-	07/05/18	-	GW	1									X	X									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
Turnaround Time (Business days)						Data Deliverable Information						Notes:													
<input type="checkbox"/> Same Day TAT						<input checked="" type="checkbox"/> 5 Day TAT						<input type="checkbox"/> Level II Std QC						<input type="checkbox"/> Level IV (Full Data Plg / raw data)							
<input type="checkbox"/> Next Day EMERGENCY						<input type="checkbox"/> 7 Day TAT						<input type="checkbox"/> Level III Std QC + Forms						<input type="checkbox"/> TRRP Level IV							
<input type="checkbox"/> 2 Day EMERGENCY						<input type="checkbox"/> Contract TAT						<input type="checkbox"/> Level 3 (CLP Forms)						<input type="checkbox"/> UST / RG -411							
<input type="checkbox"/> 3 Day EMERGENCY												<input type="checkbox"/> TRRP Checklist													
TAT Starts Day received by Lab, if received by 5:00 pm																		FED-EX / UPS Tracking #							
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																									
Relinquished by Sampler:						Date Time: 07-06-18 0900						Received By: [Signature]						Relinquished By: 2							
Relinquished by: [Signature]						Date Time:						Received By:						Relinquished By:							
3						Date Time:						Received By: 3						Custody Seal #: 4							
Relinquished by:						Date Time:						Received By: 5						Preserved where applicable							
6																		Office Cooler Temp. Thermo Corr. Factor							



# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: GHD Services, INC- Midland

Date/ Time Received: 07/06/2018 09:00:00 AM

Work Order #: 591377

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)?	1.4
#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)?	N/A
#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#: 213315

Checklist completed by:

Brianna Teel

Date: 07/06/2018

Checklist reviewed by:

Kelsey Brooks

Date: 07/06/2018



# Analytical Report 591503

for  
**GHD Services, INC- Midland**

**Project Manager: Chris Knight**

**Dollarhide**

**055270**

**18-JUL-18**

Collected By: Client



**1211 W. Florida Ave, Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-18-26), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (T104704295-17-16), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-17-12)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-17-16)

Xenco-Odessa (EPA Lab Code: TX00158): Texas (T104704400-18-15)

Xenco-San Antonio (EPA Lab Code: TNi02385): Texas (T104704534-17-3)

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)

Xenco-Lakeland: Florida (E84098)



18-JUL-18

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

Reference: XENCO Report No(s): **591503**  
**Dollarhide**  
Project Address: New Mexico

**Chris Knight:**

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) 591503. 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. 591503 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,

**Kelsey Brooks**

Project Manager

***Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.***

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



## Sample Cross Reference 591503



GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
58-B-3-MW-W-180706	W	07-06-18 11:15		591503-001
MW-29-W-180706	W	07-06-18 11:30		591503-002
MW-28-W-180706	W	07-06-18 11:40		591503-003
NM-MW-11-W-180706	W	07-06-18 12:00		591503-004
NM-MW-13-W-180706	W	07-06-18 12:20		591503-005
NM-MW-10-W-180706	W	07-06-18 12:40		591503-006
NM-MW-12-W-180706	W	07-06-18 13:00		591503-007
Wilson Ranch Well-W-180706	W	07-06-18 13:10		591503-008
Smith Residence-W-180706	W	07-06-18 13:20		591503-009
NM-MW-9-W-180706	W	07-06-18 13:30		591503-010
NM-MW-6-W-180706	W	07-06-18 12:45		591503-011
NM-MW-5-W-180706	W	07-06-18 13:50		591503-012
NM-MW-1-W-180706	W	07-06-18 13:55		591503-013
NM-MW-2-W-180706	W	07-06-18 14:00		591503-014
NM-MW-3-W-180706	W	07-06-18 14:10		591503-015
NM-MW-7-W-180706	W	07-06-18 14:20		591503-016
RRR Ranch Windmill-W-180706	W	07-06-18 14:30		591503-017
NM-MW-4-W-180706	W	07-06-18 14:45		591503-018
NM-MW-8-W-180706	W	07-06-18 15:00		591503-019
DUP-4-W 180706	W	07-06-18 00:00		591503-020
Dup-5-W-180706	W	07-06-18 00:00		591503-021





## CASE NARRATIVE

*Client Name: GHD Services, INC- Midland*

*Project Name: Dollarhide*

Project ID: 055270  
Work Order Number(s): 591503

Report Date: 18-JUL-18  
Date Received: 07/09/2018

---

**Sample receipt non conformances and comments:**

None

---

**Sample receipt non conformances and comments per sample:**

None



# Certificate of Analysis Summary 591503

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: New Mexico

Date Received in Lab: Mon Jul-09-18 09:30 am  
Report Date: 18-JUL-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	591503-001	591503-002	591503-003	591503-004	591503-005	591503-006
	<b>Field Id:</b>	58-B-3-MW-W-180706	MW-29-W-180706	MW-28-W-180706	NM-MW-11-W-180706	NM-MW-13-W-180706	NM-MW-10-W-180706
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jul-06-18 11:15	Jul-06-18 11:30	Jul-06-18 11:40	Jul-06-18 12:00	Jul-06-18 12:20	Jul-06-18 12:40
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jul-11-18 08:30	Jul-11-18 08:30	Jul-11-18 08:30	Jul-11-18 08:30	Jul-11-18 08:30	Jul-11-18 08:30
	<b>Analyzed:</b>	Jul-11-18 11:26	Jul-11-18 11:36	Jul-11-18 11:47	Jul-11-18 11:57	Jul-11-18 12:28	Jul-11-18 12:38
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		976 10.0	397 5.00	1610 25.0	143 5.00	184 5.00	308 5.00
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jul-09-18 11:00	Jul-09-18 11:00	Jul-09-18 11:00	Jul-09-18 11:00	Jul-09-18 11:00	Jul-09-18 11:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		1580 5.00	860 5.00	2540 5.00	1820 5.00	1050 5.00	1450 5.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use.  
The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories.  
XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented.  
Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 591503

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: New Mexico

Date Received in Lab: Mon Jul-09-18 09:30 am  
Report Date: 18-JUL-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	591503-007	591503-008	591503-009	591503-010	591503-011	591503-012
	<b>Field Id:</b>	NM-MW-12-W-180706	Wilson Ranch Well-W-180706	Smith Residence-W-180706	NM-MW-9-W-180706	NM-MW-6-W-180706	NM-MW-5-W-180706
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Jul-06-18 13:00	Jul-06-18 13:10	Jul-06-18 13:20	Jul-06-18 13:30	Jul-06-18 12:45	Jul-06-18 13:50
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jul-11-18 08:30	Jul-11-18 08:30	Jul-11-18 08:30	Jul-11-18 08:30	Jul-11-18 08:30	Jul-11-18 08:30
	<b>Analyzed:</b>	Jul-11-18 12:49	Jul-11-18 12:59	Jul-11-18 13:09	Jul-11-18 13:51	Jul-11-18 14:01	Jul-11-18 14:32
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		665 5.00	1330 10.0	1340 10.0	252 2.50	134 2.50	140 5.00
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jul-09-18 11:00	Jul-09-18 11:00	Jul-09-18 11:00	Jul-09-18 11:00	Jul-09-18 11:00	Jul-09-18 11:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		1250 5.00	2190 5.00	2140 5.00	785 5.00	801 5.00	1240 5.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use.  
The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories.  
XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented.  
Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Kelsey Brooks  
Project Manager





# Certificate of Analysis Summary 591503

GHD Services, INC- Midland, Midland, TX



Project Name: Dollarhide

Project Id: 055270  
Contact: Chris Knight  
Project Location: New Mexico

Date Received in Lab: Mon Jul-09-18 09:30 am  
Report Date: 18-JUL-18  
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	591503-013	591503-014	591503-015	591503-016	591503-017	591503-018
	<i>Field Id:</i>	NM-MW-1-W-180706	NM-MW-2-W-180706	NM-MW-3-W-180706	NM-MW-7-W-180706	RRR Ranch Windmill-W-180706	NM-MW-4-W-180706
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Jul-06-18 13:55	Jul-06-18 14:00	Jul-06-18 14:10	Jul-06-18 14:20	Jul-06-18 14:30	Jul-06-18 14:45
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Jul-11-18 08:30	Jul-11-18 08:30	Jul-11-18 08:30	Jul-11-18 08:30	Jul-11-18 08:30	Jul-11-18 08:30
	<i>Analyzed:</i>	Jul-11-18 14:42	Jul-11-18 14:53	Jul-11-18 15:03	Jul-11-18 15:13	Jul-11-18 15:24	Jul-11-18 15:34
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		275 5.00	679 5.00	220 2.50	2330 25.0	1670 25.0	40.6 2.50
TDS by SM2540C	<i>Extracted:</i>						
	<i>Analyzed:</i>	Jul-09-18 11:00	Jul-09-18 11:00	Jul-09-18 17:00	Jul-09-18 17:00	Jul-09-18 17:00	Jul-09-18 17:00
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		1350 5.00	1160 5.00	625 5.00	3780 5.00	3030 5.00	414 5.00

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Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 591503

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Chris Knight  
Project Location: New Mexico

Date Received in Lab: Mon Jul-09-18 09:30 am  
Report Date: 18-JUL-18  
Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	591503-019	591503-020	591503-021			
	<b>Field Id:</b>	NM-MW-8-W-180706	DUP-4-W 180706	Dup-5-W-180706			
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER			
	<b>Sampled:</b>	Jul-06-18 15:00	Jul-06-18 00:00	Jul-06-18 00:00			
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Jul-11-18 12:15	Jul-11-18 12:15	Jul-11-18 12:15			
	<b>Analyzed:</b>	Jul-11-18 17:33	Jul-11-18 17:43	Jul-11-18 17:53			
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL			
Chloride		5960 25.0	1370 10.0	213 2.50			
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Jul-09-18 17:00	Jul-09-18 17:00	Jul-09-18 17:00			
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL			
Total Dissolved Solids		9620 5.00	2220 5.00	631 5.00			

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Kelsey Brooks  
Project Manager

- 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





# Blank Spike Recovery

Project Name: Dollarhide



Work Order #: 591503

Project ID:

055270

Lab Batch #: 3055900

Sample: 3055900-1-BKS

Matrix: Water

Date Analyzed: 07/09/2018

Date Prepared: 07/09/2018

Analyst: OJS

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

TDS by SM2540C Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Total Dissolved Solids	<5.00	1000	977	98	80-120	

Lab Batch #: 3056059

Sample: 3056059-1-BKS

Matrix: Water

Date Analyzed: 07/09/2018

Date Prepared: 07/09/2018

Analyst: OJS

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

TDS by SM2540C Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Total Dissolved Solids	<5.00	1000	979	98	80-120	

Blank Spike Recovery [D] =  $100 \times [C] / [B]$

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



## BS / BSD Recoveries



**Project Name: Dollarhide**

**Work Order #:** 591503, 591503

**Project ID:** 055270

**Analyst:** SCM

**Date Prepared:** 07/11/2018

**Date Analyzed:** 07/11/2018

**Lab Batch ID:** 3056215

**Sample:** 7658207-1-BKS

**Batch #:** 1

**Matrix:** Water

**Units:** mg/L

### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<0.500	25.0	24.3	97	25.0	24.3	97	0	90-110	20	

**Analyst:** SCM

**Date Prepared:** 07/11/2018

**Date Analyzed:** 07/11/2018

**Lab Batch ID:** 3056219

**Sample:** 7658209-1-BKS

**Batch #:** 1

**Matrix:** Water

**Units:** mg/L

### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<0.500	25.0	25.0	100	25.0	25.0	100	0	90-110	20	

Relative Percent Difference RPD =  $200 * |(C-F)/(C+F)|$

Blank Spike Recovery [D] =  $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes



# Form 3 - MS / MSD Recoveries



Project Name: Dollarhide

Work Order #: 591503

Project ID: 055270

Lab Batch ID: 3056215

QC- Sample ID: 591603-001 S

Batch #: 1 Matrix: Drinking Water

Date Analyzed: 07/11/2018

Date Prepared: 07/11/2018

Analyst: SCM

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	21.5	25.0	47.9	106	25.0	48.0	106	0	90-110	20	

Lab Batch ID: 3056215

QC- Sample ID: 591745-001 S

Batch #: 1 Matrix: Drinking Water

Date Analyzed: 07/11/2018

Date Prepared: 07/11/2018

Analyst: SCM

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	4.82	25.0	29.1	97	25.0	29.2	98	0	90-110	20	

Lab Batch ID: 3056219

QC- Sample ID: 591747-001 S

Batch #: 1 Matrix: Drinking Water

Date Analyzed: 07/11/2018

Date Prepared: 07/11/2018

Analyst: SCM

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	5.66	25.0	31.5	103	25.0	31.5	103	0	90-110	20	

Matrix Spike Percent Recovery  $[D] = 100 \times (C-A)/B$   
Relative Percent Difference  $RPD = 200 \times |(C-F)/(C+F)|$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 \times (F-A)/E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



## Project Name: Dollarhide

Work Order #: 591503

Lab Batch #: 3055900

Project ID: 055270

Date Analyzed: 07/09/2018 11:00

Date Prepared: 07/09/2018

Analyst: OJS

QC- Sample ID: 591377-016 D

Batch #: 1

Matrix: Ground Water

Reporting Units: mg/L

### SAMPLE / SAMPLE DUPLICATE RECOVERY

TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	%RPD	RPD Limit	Flag
Analyte					
Total Dissolved Solids	2710	2860	5	10	

Lab Batch #: 3055900

Date Analyzed: 07/09/2018 11:00

Date Prepared: 07/09/2018

Analyst: OJS

QC- Sample ID: 591503-014 D

Batch #: 1

Matrix: Ground Water

Reporting Units: mg/L

### SAMPLE / SAMPLE DUPLICATE RECOVERY

TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	%RPD	RPD Limit	Flag
Analyte					
Total Dissolved Solids	1160	1130	3	10	

Lab Batch #: 3056059

Date Analyzed: 07/09/2018 17:00

Date Prepared: 07/09/2018

Analyst: OJS

QC- Sample ID: 591503-015 D

Batch #: 1

Matrix: Ground Water

Reporting Units: mg/L

### SAMPLE / SAMPLE DUPLICATE RECOVERY

TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	%RPD	RPD Limit	Flag
Analyte					
Total Dissolved Solids	625	614	2	10	

Log Difference  $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

Spike Relative Difference  $\text{RPD } 200 * |(B-A)/(B+A)|$

All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



## Setting the Standard since 1990

**Stafford, Texas (281-240-4200)**

**Dallas Texas (214-902-0300)**

**Service Center - San Antonio, Texas (210-509-3334)**

[www.xenco.com](http://www.xenco.com)

**Odessa, Texas (432-563-1800)**

**Norcross, Georgia (770-449-8800)**

Tampa, Florida (813-620-2000)

**Lakeland, Florida (863-646-8526)**

<b>Client / Reporting Information</b>				<b>Project Information</b>				<b>Analytical Information</b>				<b>Matrix Codes</b>											
Company Name / Branch: <b>GHD-Midland</b>				Project Name/Number: Dollartide/055270				<div style="display: flex; justify-content: space-between;"> <div> S = Soil/Sed/Solid  GW = Ground Water  DW = Drinking Water  P = Product  SW = Surface water  SL = Sludge  OW = Ocean/Sea Water  W = Wipe  O = Oil  WW = Waste Water  A = Air </div> <div> 591505 </div> </div>				Company Address: 2136 S Loop 250 W, Midland, TX 79703				Project Location: Lea County, NM							
Email: christopher.knight@ghd.com				Phone No: 512-506-8803								Invoice To:											
Project Contact: <b>Chris Knight</b>				PO Number:																			
Sampler's Name: <b>Clem Quinacy 13554 Sha Wky</b>																							

No.	Field ID / Point of Collection	Collection			Number of preserved bottles										TDS	Chloride	Field Comments
		Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MeOH	NONE			
1	SG-8-3-MW-W-180706	-	7/6/18	1115	GW	1									X		
2	MW-24-W-180706	-		1130											X		
3	MW-28-W-180706	-		1140											X		
4	NM-MW-11-W-180706	-		1200											X		
5	NM-MW-13-W-180706	-		1220											X		
6	NM-MW-1D-W-180706	-		1240											X		
7	NM-MW-12-W-180706	-		1300											X		
8	Watson Ranch Well-W-180706	-		1310											X		
9	Smith Residence-W-180706	-		1326											X		
10	NM-MW-9-W-180706	-		1330											X		

<b>Data Deliverable Information</b>				<b>Notes:</b>			
Turnaround Time (Business days)							
<input type="checkbox"/> Same Day TAT <input type="checkbox"/> Next Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 3 Day EMERGENCY		<input checked="" type="checkbox"/> 5 Day TAT <input type="checkbox"/> 7 Day TAT <input type="checkbox"/> Contract TAT		<input type="checkbox"/> Level II Std QC <input type="checkbox"/> Level III Std QC+ Forms <input type="checkbox"/> Level 3 (CLP Forms) <input type="checkbox"/> TRRP Checklist		<input type="checkbox"/> Level IV (Full Data Pkg /raw data) <input type="checkbox"/> TRRP Level IV <input type="checkbox"/> UST / RG 411	

<b>TAT Starts Day received by Lab, if received by 5:00 pm</b>				<b>FED-EX / UPS, Tracking #</b>			
Relinquished by Sample:				Relinquished by:			
Relinquished by: <b>John Sharkey</b>				Relinquished by: <b>[Signature]</b>			
Date Time: <b>7-1-18 0930</b>				Date Time: <b>[Signature]</b>			
Relinquished by:				Relinquished by:			
Date Time:				Date Time:			
Received By:				Received By:			
Custody Seal #				Preserved where applicable			
On Ice <input checked="" type="checkbox"/>				Temp. <b>2.5 deg C</b>			

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to XENCO Laboratories and its affiliates, subcontractors and assigns XENCO's standard terms and conditions of service, unless otherwise indicated under a full executed and signed contract.



591503





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**Dallas Texas (214-902-0300)**

**Service Center - San Antonio, Texas (210-509-3334)**

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**Odessa, Texas (432-563-1800)**

**Norcross, Georgia (770-449-8800)**

Tampa, Florida (813-620-2000)

**Xenco Quote #**

Xenco Job #

50505

S = Soil/Sed/Solid  
GW = Ground Water  
DW = Drinking Water  
P = Product  
SW = Surface water  
SL = Sludge  
OW = Ocean/Sea Water  
W = Wipe  
O = Oil  
WW = Waste Water  
A = Air



# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: GHD Services, INC- Midland

Date/ Time Received: 07/09/2018 09:30:00 AM

Work Order #: 591503

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)?	2.5
#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)?	N/A
#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#: 213315

Checklist completed by:

Brianna Teel

Date: 07/09/2018

Checklist reviewed by:

Kelsey Brooks

Date: 07/09/2018

# Analytical Report 601428

for  
**GHD Services, INC- Midland**

**Project Manager: Nick Casten**

**Dollarhide**

**055270**

**15-OCT-18**

Collected By: Client



**1211 W. Florida Ave, Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-18-27), 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 (T104704221-18-13)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-17)

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)

Xenco-Lakeland: Florida (E84098)



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Chain of Custody	70
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15-OCT-18

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

Reference: XENCO Report No(s): **601428**  
**Dollarhide**  
Project Address: New Mexico

**Nick Casten:**

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) 601428. 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. 601428 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**

Project Manager

***Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.***

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



## Sample Cross Reference 601428



GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
NM-MW-8-W-181003	W	10-03-18 09:25		601428-001
NM-MW-4-W-181003	W	10-03-18 09:35		601428-002
RRR-Ranch-W-181003	W	10-03-18 09:55		601428-003
NM-MW-7-W-181003	W	10-03-18 10:05		601428-004
NM-MW-3-W-181003	W	10-03-18 10:15		601428-005
NM-MW-2-W-181003	W	10-03-18 10:30		601428-006
NM-MW-1-W-181003	W	10-03-18 10:35		601428-007
NM-MW-5-W-181003	W	10-03-18 10:45		601428-008
NM-MW-6-W-181003	W	10-03-18 11:00		601428-009
NM-MW-11-W-181003	W	10-03-18 11:10		601428-010
NM-MW-13-W-181003	W	10-03-18 11:40		601428-011
NM-MW-10-W-181003	W	10-03-18 12:05		601428-012
NM-MW-12-W-181003	W	10-03-18 12:25		601428-013
Wilson-W-181003	W	10-03-18 12:35		601428-014
NM-MW-9-W-181003	W	10-03-18 12:50		601428-015
Smith-W-181003	W	10-03-18 13:00		601428-016
MW-29-W-181003	W	10-03-18 13:15		601428-017
MW-28-W-181003	W	10-03-18 13:25		601428-018
MW-9-W-181003	W	10-03-18 14:00		601428-019
Wilson-WD-181003	W	10-03-18 00:00		601428-020
MW-8-W-181003	W	10-03-18 14:15		601428-021
DHU-FWS-W-181003	W	10-03-18 14:25		601428-022
MW-27-W-181003	W	10-03-18 14:30		601428-023
MW-20-W-181003	W	10-03-18 14:40		601428-024
MW-10-W-181003	W	10-03-18 14:55		601428-025
MW-19-W-181004	W	10-04-18 09:35		601428-026
MW-18-W-181004	W	10-04-18 09:45		601428-027
MW-12-W-181004	W	10-04-18 09:55		601428-028
MW-24-W-181004	W	10-04-18 10:05		601428-029
MW-26-W-181004	W	10-04-18 10:15		601428-030
MW-31-W-181004	W	10-04-18 10:25		601428-031
MW-25-W-181004	W	10-04-18 10:35		601428-032
MW-11-W-181004	W	10-04-18 10:45		601428-033
MW-6-W-181004	W	10-04-18 10:55		601428-034
MW-5-W-181004	W	10-04-18 11:05		601428-035
MW-3-W-181004	W	10-04-18 11:15		601428-036
TRACT-4-W-181004	W	10-04-18 11:25		601428-037
MW-14-W-181004	W	10-04-18 11:40		601428-038
MW-4-W-181004	W	10-04-18 11:50		601428-039
TRACT-4-WD-181004	W	10-04-18 00:00		601428-040
MW-13-W-181004	W	10-04-18 12:15		601428-041
MW-30-W-181004	W	10-04-18 12:25		601428-042
Livermore-W-181004	W	10-04-18 12:35		601428-043





## Sample Cross Reference 601428



### GHD Services, INC- Midland, Midland, TX

Dollarhide

MW-23-W-181004	W	10-04-18 12:45	601428-044
MW-22-W-181004	W	10-04-18 12:50	601428-045
MW-17-W-181004	W	10-04-18 13:00	601428-046
MW-21-W-181004	W	10-04-18 13:05	601428-047
MW-16-W-181004	W	10-04-18 13:20	601428-048
MW-15-W-181004	W	10-04-18 13:30	601428-049



## CASE NARRATIVE

*Client Name: GHD Services, INC- Midland*

*Project Name: Dollarhide*

Project ID: 055270  
Work Order Number(s): 601428

Report Date: 15-OCT-18  
Date Received: 10/04/2018

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**Sample receipt non conformances and comments:**

None

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**Sample receipt non conformances and comments per sample:**

None

**Analytical non conformances and comments:**

Batch: LBA-3065715 Inorganic Anions by EPA 300/300.1

Lab Sample ID 601428-017 and 601428-034 were 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: 601428-016, -017, -018, -019, -020, -021, -022, -023, -024, -025, -026, -027, -028, -029, -030, -031, -032, -033, -034, -035.

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

Batch: LBA-3065955 Inorganic Anions by EPA 300/300.1

Lab Sample ID 601428-048 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: 601428-036, -037, -038, -039, -040, -041, -042, -043, -044, -045, -046, -047, -048, -049.

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



# Certificate of Analysis Summary 601428

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Nick Casten  
Project Location: New Mexico

Date Received in Lab: Thu Oct-04-18 03:30 pm  
Report Date: 15-OCT-18  
Project Manager: Debbie Simmons

<b>Analysis Requested</b>	<b>Lab Id:</b>	601428-001	601428-002	601428-003	601428-004	601428-005	601428-006
	<b>Field Id:</b>	NM-MW-8-W-181003	NM-MW-4-W-181003	RRR-Ranch-W-181003	NM-MW-7-W-181003	NM-MW-3-W-181003	NM-MW-2-W-181003
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Oct-03-18 09:25	Oct-03-18 09:35	Oct-03-18 09:55	Oct-03-18 10:05	Oct-03-18 10:15	Oct-03-18 10:30
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00
	<b>Analyzed:</b>	Oct-05-18 14:43	Oct-05-18 15:14	Oct-05-18 15:25	Oct-05-18 15:35	Oct-05-18 15:45	Oct-05-18 15:56
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		6260 25.0	39.7 2.50	1660 25.0	2380 25.0	246 2.50	674 5.00
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		11000 5.00	411 5.00	3000 5.00	4050 5.00	708 5.00	1270 5.00

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Debbie Simmons  
Project Manager





# Certificate of Analysis Summary 601428

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Nick Casten  
Project Location: New Mexico

Date Received in Lab: Thu Oct-04-18 03:30 pm  
Report Date: 15-OCT-18  
Project Manager: Debbie Simmons

<i>Analysis Requested</i>	<i>Lab Id:</i>	601428-007	601428-008	601428-009	601428-010	601428-011	601428-012
	<i>Field Id:</i>	NM-MW-1-W-181003	NM-MW-5-W-181003	NM-MW-6-W-181003	NM-MW-11-W-181003	NM-MW-13-W-181003	NM-MW-10-W-181003
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Oct-03-18 10:35	Oct-03-18 10:45	Oct-03-18 11:00	Oct-03-18 11:10	Oct-03-18 11:40	Oct-03-18 12:05
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00
	<i>Analyzed:</i>	Oct-05-18 16:37	Oct-05-18 16:47	Oct-05-18 17:18	Oct-05-18 17:29	Oct-05-18 17:39	Oct-05-18 17:50
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		279 5.00	138 5.00	138 2.50	152 10.0	185 5.00	315 5.00
TDS by SM2540C	<i>Extracted:</i>						
	<i>Analyzed:</i>	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		1460 5.00	1290 5.00	833 5.00	1920 5.00	1110 5.00	1520 5.00

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GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Nick Casten  
Project Location: New Mexico

Date Received in Lab: Thu Oct-04-18 03:30 pm  
Report Date: 15-OCT-18  
Project Manager: Debbie Simmons

<b>Analysis Requested</b>	<b>Lab Id:</b>	601428-013	601428-014	601428-015	601428-016	601428-017	601428-018
	<b>Field Id:</b>	NM-MW-12-W-181003	Wilson-W-181003	NM-MW-9-W-181003	Smith-W-181003	MW-29-W-181003	MW-28-W-181003
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Oct-03-18 12:25	Oct-03-18 12:35	Oct-03-18 12:50	Oct-03-18 13:00	Oct-03-18 13:15	Oct-03-18 13:25
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-08-18 15:30	Oct-08-18 15:30	Oct-08-18 15:30
	<b>Analyzed:</b>	Oct-05-18 18:00	Oct-05-18 18:10	Oct-05-18 18:21	Oct-08-18 17:54	Oct-08-18 17:23	Oct-08-18 18:04
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		668 5.00	1380 10.0	258 2.50	1310 10.0	409 X 5.00	1760 25.0
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-04-18 16:10	Oct-04-18 16:10	Oct-04-18 16:10
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		1390 5.00	2680 5.00	799 5.00	2260 5.00	1070 5.00	3020 5.00

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# Certificate of Analysis Summary 601428

GHD Services, INC- Midland, Midland, TX



Project Name: Dollarhide

Project Id: 055270  
Contact: Nick Casten  
Project Location: New Mexico

Date Received in Lab: Thu Oct-04-18 03:30 pm  
Report Date: 15-OCT-18  
Project Manager: Debbie Simmons

<i>Analysis Requested</i>	<i>Lab Id:</i>	601428-019	601428-020	601428-021	601428-022	601428-023	601428-024
	<i>Field Id:</i>	MW-9-W-181003	Wilson-WD-181003	MW-8-W-181003	DHU-FWS-W-181003	MW-27-W-181003	MW-20-W-181003
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Oct-03-18 14:00	Oct-03-18 00:00	Oct-03-18 14:15	Oct-03-18 14:25	Oct-03-18 14:30	Oct-03-18 14:40
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Oct-08-18 15:30	Oct-08-18 15:30	Oct-08-18 15:30	Oct-08-18 15:30	Oct-08-18 15:30	Oct-08-18 15:30
	<i>Analyzed:</i>	Oct-08-18 18:14	Oct-08-18 18:25	Oct-08-18 18:56	Oct-08-18 19:06	Oct-08-18 19:16	Oct-08-18 19:27
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		2910 25.0	1380 10.0	888 10.0	596 10.0	3030 25.0	1340 10.0
TDS by SM2540C	<i>Extracted:</i>						
	<i>Analyzed:</i>	Oct-04-18 16:10	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00	Oct-05-18 12:00
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		4270 5.00	2590 5.00	2490 5.00	2830 5.00	4700 5.00	2490 5.00

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GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Nick Casten  
Project Location: New Mexico

Date Received in Lab: Thu Oct-04-18 03:30 pm  
Report Date: 15-OCT-18  
Project Manager: Debbie Simmons

<b>Analysis Requested</b>	<b>Lab Id:</b>	601428-025	601428-026	601428-027	601428-028	601428-029	601428-030
	<b>Field Id:</b>	MW-10-W-181003	MW-19-W-181004	MW-18-W-181004	MW-12-W-181004	MW-24-W-181004	MW-26-W-181004
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Oct-03-18 14:55	Oct-04-18 09:35	Oct-04-18 09:45	Oct-04-18 09:55	Oct-04-18 10:05	Oct-04-18 10:15
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Oct-08-18 15:30	Oct-08-18 15:30	Oct-08-18 15:30	Oct-08-18 15:30	Oct-08-18 15:30	Oct-08-18 15:30
	<b>Analyzed:</b>	Oct-08-18 19:37	Oct-08-18 20:18	Oct-08-18 20:29	Oct-08-18 21:00	Oct-08-18 21:10	Oct-08-18 21:20
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		5880 25.0	6980 50.0	21100 100	15000 50.0	4850 25.0	1340 25.0
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Oct-08-18 17:30	Oct-08-18 17:30	Oct-08-18 17:30	Oct-08-18 17:30	Oct-08-18 17:30	Oct-08-18 17:30
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		8570 5.00	11600 5.00	31600 5.00	24400 5.00	8870 5.00	2750 5.00

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Project Name: Dollarhide



Project Id: 055270  
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Project Location: New Mexico

Date Received in Lab: Thu Oct-04-18 03:30 pm  
Report Date: 15-OCT-18  
Project Manager: Debbie Simmons

<b>Analysis Requested</b>	<b>Lab Id:</b>	601428-031	601428-032	601428-033	601428-034	601428-035	601428-036
	<b>Field Id:</b>	MW-31-W-181004	MW-25-W-181004	MW-11-W-181004	MW-6-W-181004	MW-5-W-181004	MW-3-W-181004
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<b>Sampled:</b>	Oct-04-18 10:25	Oct-04-18 10:35	Oct-04-18 10:45	Oct-04-18 10:55	Oct-04-18 11:05	Oct-04-18 11:15
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Oct-08-18 15:30	Oct-08-18 15:30	Oct-08-18 15:30	Oct-08-18 15:30	Oct-08-18 15:30	Oct-09-18 16:00
	<b>Analyzed:</b>	Oct-08-18 21:31	Oct-08-18 21:41	Oct-08-18 21:52	Oct-08-18 19:47	Oct-08-18 22:02	Oct-09-18 17:58
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		12800 50.0	26500 100	8310 50.0	404 X 5.00	278 5.00	626 5.00
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Oct-08-18 17:30	Oct-08-18 17:30	Oct-08-18 17:30	Oct-08-18 17:30	Oct-08-18 17:30	Oct-08-18 17:30
	<b>Units/RL:</b>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		19500 5.00	39000 5.00	12000 5.00	1450 5.00	1050 5.00	1310 5.00

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Debbie Simmons  
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GHD Services, INC- Midland, Midland, TX



**Project Name:** Dollarhide

**Project Id:** 055270  
**Contact:** Nick Casten  
**Project Location:** New Mexico

**Date Received in Lab:** Thu Oct-04-18 03:30 pm  
**Report Date:** 15-OCT-18  
**Project Manager:** Debbie Simmons

<i>Analysis Requested</i>	<i>Lab Id:</i>	601428-037	601428-038	601428-039	601428-040	601428-041	601428-042
	<i>Field Id:</i>	TRACT-4-W-181004	MW-14-W-181004	MW-4-W-181004	TRACT-4-WD-181004	MW-13-W-181004	MW-30-W-181004
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Oct-04-18 11:25	Oct-04-18 11:40	Oct-04-18 11:50	Oct-04-18 00:00	Oct-04-18 12:15	Oct-04-18 12:25
<b>Inorganic Anions by EPA 300/300.1</b>	<i>Extracted:</i>	Oct-09-18 16:00	Oct-09-18 16:00	Oct-09-18 16:00	Oct-09-18 16:00	Oct-09-18 16:00	Oct-09-18 16:00
	<i>Analyzed:</i>	Oct-09-18 18:08	Oct-09-18 18:18	Oct-09-18 18:49	Oct-09-18 19:00	Oct-09-18 19:10	Oct-09-18 19:21
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		347 5.00	1690 25.0	350 5.00	392 5.00	2200 25.0	2550 25.0
<b>TDS by SM2540C</b>	<i>Extracted:</i>						
	<i>Analyzed:</i>	Oct-08-18 17:30	Oct-08-18 17:30	Oct-08-18 17:30	Oct-08-18 17:30	Oct-08-18 17:30	Oct-08-18 17:30
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		1070 5.00	2620 5.00	883 5.00	1110 5.00	3900 5.00	3820 5.00

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Project Manager





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GHD Services, INC- Midland, Midland, TX



Project Name: Dollarhide

Project Id: 055270  
Contact: Nick Casten  
Project Location: New Mexico

Date Received in Lab: Thu Oct-04-18 03:30 pm  
Report Date: 15-OCT-18  
Project Manager: Debbie Simmons

<i>Analysis Requested</i>	<i>Lab Id:</i>	601428-043	601428-044	601428-045	601428-046	601428-047	601428-048
	<i>Field Id:</i>	Livermore-W-181004	MW-23-W-181004	MW-22-W-181004	MW-17-W-181004	MW-21-W-181004	MW-16-W-181004
	<i>Depth:</i>						
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	Oct-04-18 12:35	Oct-04-18 12:45	Oct-04-18 12:50	Oct-04-18 13:00	Oct-04-18 13:05	Oct-04-18 13:20
<b>Inorganic Anions by EPA 300/300.1</b>	<i>Extracted:</i>	Oct-09-18 16:00	Oct-09-18 16:00	Oct-09-18 16:00	Oct-09-18 16:00	Oct-09-18 16:00	Oct-09-18 16:00
	<i>Analyzed:</i>	Oct-09-18 19:31	Oct-09-18 20:12	Oct-09-18 20:23	Oct-09-18 20:54	Oct-09-18 21:04	Oct-09-18 19:41
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Chloride		2710 25.0	6090 25.0	14200 50.0	11300 50.0	7400 50.0	474 X 5.00
<b>TDS by SM2540C</b>	<i>Extracted:</i>						
	<i>Analyzed:</i>	Oct-08-18 17:30	Oct-08-18 17:30	Oct-09-18 10:30	Oct-09-18 10:30	Oct-09-18 10:30	Oct-09-18 10:30
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		4020 5.00	8980 5.00	18700 5.00	17700 5.00	11400 5.00	1210 5.00

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Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Debbie Simmons  
Project Manager



# Certificate of Analysis Summary 601428

GHD Services, INC- Midland, Midland, TX

Project Name: Dollarhide



Project Id: 055270  
Contact: Nick Casten  
Project Location: New Mexico

Date Received in Lab: Thu Oct-04-18 03:30 pm  
Report Date: 15-OCT-18  
Project Manager: Debbie Simmons

<b>Analysis Requested</b>	<b>Lab Id:</b>	601428-049					
	<b>Field Id:</b>	MW-15-W-181004					
	<b>Depth:</b>						
	<b>Matrix:</b>	GROUND WATER					
	<b>Sampled:</b>	Oct-04-18 13:30					
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Oct-09-18 16:00					
	<b>Analyzed:</b>	Oct-09-18 21:14					
	<b>Units/RL:</b>	mg/L RL					
Chloride		1030 10.0					
<b>TDS by SM2540C</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Oct-09-18 10:30					
	<b>Units/RL:</b>	mg/L RL					
Total Dissolved Solids		1740 5.00					

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Debbie Simmons  
Project Manager



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **NM-MW-8-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-001

Date Collected: 10.03.18 09.25

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.05.18 12.00

Seq Number: 3065632

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6260	25.0	4.29	mg/L	10.05.18 14.43		50

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	11000	5.00	5.00	mg/L	10.05.18 12.00		1





# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **NM-MW-4-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-002

Date Collected: 10.03.18 09.35

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.05.18 12.00

Seq Number: 3065632

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	39.7	2.50	0.429	mg/L	10.05.18 15.14		5

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	411	5.00	5.00	mg/L	10.05.18 12.00		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **RRR-Ranch-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-003

Date Collected: 10.03.18 09.55

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.05.18 12.00

Seq Number: 3065632

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1660	25.0	4.29	mg/L	10.05.18 15.25		50

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	3000	5.00	5.00	mg/L	10.05.18 12.00		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: NM-MW-7-W-181003

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-004

Date Collected: 10.03.18 10.05

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.05.18 12.00

Seq Number: 3065632

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2380	25.0	4.29	mg/L	10.05.18 15.35		50

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	4050	5.00	5.00	mg/L	10.05.18 12.00		1





# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: NM-MW-3-W-181003

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-005

Date Collected: 10.03.18 10.15

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.05.18 12.00

Seq Number: 3065632

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	246	2.50	0.429	mg/L	10.05.18 15.45		5

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	708	5.00	5.00	mg/L	10.05.18 12.00		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: NM-MW-2-W-181003

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-006

Date Collected: 10.03.18 10.30

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.05.18 12.00

Seq Number: 3065632

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	674	5.00	0.858	mg/L	10.05.18 15.56		10

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	1270	5.00	5.00	mg/L	10.05.18 12.00		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: NM-MW-1-W-181003

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-007

Date Collected: 10.03.18 10.35

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.05.18 12.00

Seq Number: 3065632

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	279	5.00	0.858	mg/L	10.05.18 16.37		10

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	1460	5.00	5.00	mg/L	10.05.18 12.00		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: NM-MW-5-W-181003

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-008

Date Collected: 10.03.18 10.45

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.05.18 12.00

Seq Number: 3065632

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	138	5.00	0.858	mg/L	10.05.18 16.47		10

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	1290	5.00	5.00	mg/L	10.05.18 12.00		1





# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **NM-MW-6-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-009

Date Collected: 10.03.18 11.00

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.05.18 12.00

Seq Number: 3065632

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	138	2.50	0.429	mg/L	10.05.18 17.18		5

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	833	5.00	5.00	mg/L	10.05.18 12.00		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **NM-MW-11-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-010

Date Collected: 10.03.18 11.10

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.05.18 12.00

Seq Number: 3065632

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	152	10.0	1.72	mg/L	10.05.18 17.29		20

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	1920	5.00	5.00	mg/L	10.05.18 12.00		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **NM-MW-13-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-011

Date Collected: 10.03.18 11.40

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.05.18 12.00

Seq Number: 3065632

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	185	5.00	0.858	mg/L	10.05.18 17.39		10

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	1110	5.00	5.00	mg/L	10.05.18 12.00		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **NM-MW-10-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-012

Date Collected: 10.03.18 12.05

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.05.18 12.00

Seq Number: 3065632

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	315	5.00	0.858	mg/L	10.05.18 17.50		10

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	1520	5.00	5.00	mg/L	10.05.18 12.00		1





# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **NM-MW-12-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-013

Date Collected: 10.03.18 12.25

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.05.18 12.00

Seq Number: 3065632

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	668	5.00	0.858	mg/L	10.05.18 18.00		10

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	1390	5.00	5.00	mg/L	10.05.18 12.00		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **Wilson-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-014

Date Collected: 10.03.18 12.35

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.05.18 12.00

Seq Number: 3065632

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1380	10.0	1.72	mg/L	10.05.18 18.10		20

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	2680	5.00	5.00	mg/L	10.05.18 12.00		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **NM-MW-9-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-015

Date Collected: 10.03.18 12.50

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.05.18 12.00

Seq Number: 3065632

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	258	2.50	0.429	mg/L	10.05.18 18.21		5

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	799	5.00	5.00	mg/L	10.05.18 12.00		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **Smith-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-016

Date Collected: 10.03.18 13.00

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1310	10.0	1.72	mg/L	10.08.18 17.54		20

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065594

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	2260	5.00	5.00	mg/L	10.04.18 16.10		1





# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-29-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-017

Date Collected: 10.03.18 13.15

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	409	5.00	0.858	mg/L	10.08.18 17.23	X	10

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065594

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	1070	5.00	5.00	mg/L	10.04.18 16.10		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-28-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-018

Date Collected: 10.03.18 13.25

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1760	25.0	4.29	mg/L	10.08.18 18.04		50

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065594

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	3020	5.00	5.00	mg/L	10.04.18 16.10		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-9-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-019

Date Collected: 10.03.18 14.00

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2910	25.0	4.29	mg/L	10.08.18 18.14		50

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065594

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	4270	5.00	5.00	mg/L	10.04.18 16.10		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **Wilson-WD-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-020

Date Collected: 10.03.18 00.00

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1380	10.0	1.72	mg/L	10.08.18 18.25		20

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	2590	5.00	5.00	mg/L	10.05.18 12.00		1





# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-8-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-021

Date Collected: 10.03.18 14.15

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	888	10.0	1.72	mg/L	10.08.18 18.56		20

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	2490	5.00	5.00	mg/L	10.05.18 12.00		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **DHU-FWS-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-022

Date Collected: 10.03.18 14.25

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	596	10.0	1.72	mg/L	10.08.18 19.06		20

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	2830	5.00	5.00	mg/L	10.05.18 12.00		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-27-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-023

Date Collected: 10.03.18 14.30

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3030	25.0	4.29	mg/L	10.08.18 19.16		50

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	4700	5.00	5.00	mg/L	10.05.18 12.00		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-20-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-024

Date Collected: 10.03.18 14.40

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1340	10.0	1.72	mg/L	10.08.18 19.27		20

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065597

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	2490	5.00	5.00	mg/L	10.05.18 12.00		1





# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-10-W-181003**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-025

Date Collected: 10.03.18 14.55

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5880	25.0	4.29	mg/L	10.08.18 19.37		50

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	8570	5.00	5.00	mg/L	10.08.18 17.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-19-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-026

Date Collected: 10.04.18 09.35

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<b>6980</b>	50.0	8.58	mg/L	10.08.18 20.18		100

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	<b>11600</b>	5.00	5.00	mg/L	10.08.18 17.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-18-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-027

Date Collected: 10.04.18 09.45

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	21100	100	17.2	mg/L	10.08.18 20.29		200

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	31600	5.00	5.00	mg/L	10.08.18 17.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-12-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-028

Date Collected: 10.04.18 09.55

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	15000	50.0	8.58	mg/L	10.08.18 21.00		100

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	24400	5.00	5.00	mg/L	10.08.18 17.30		1





# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-24-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-029

Date Collected: 10.04.18 10.05

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4850	25.0	4.29	mg/L	10.08.18 21.10		50

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	8870	5.00	5.00	mg/L	10.08.18 17.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-26-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-030

Date Collected: 10.04.18 10.15

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1340	25.0	4.29	mg/L	10.08.18 21.20		50

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	2750	5.00	5.00	mg/L	10.08.18 17.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-31-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-031

Date Collected: 10.04.18 10.25

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	12800	50.0	8.58	mg/L	10.08.18 21.31		100

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	19500	5.00	5.00	mg/L	10.08.18 17.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-25-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-032

Date Collected: 10.04.18 10.35

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	26500	100	17.2	mg/L	10.08.18 21.41		200

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	39000	5.00	5.00	mg/L	10.08.18 17.30		1





# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-11-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-033

Date Collected: 10.04.18 10.45

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	8310	50.0	8.58	mg/L	10.08.18 21.52		100

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	12000	5.00	5.00	mg/L	10.08.18 17.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-6-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-034

Date Collected: 10.04.18 10.55

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	404	5.00	0.858	mg/L	10.08.18 19.47	X	10

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	1450	5.00	5.00	mg/L	10.08.18 17.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-5-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-035

Date Collected: 10.04.18 11.05

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SCM

Date Prep: 10.08.18 15.30

Seq Number: 3065715

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	278	5.00	0.858	mg/L	10.08.18 22.02		10

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	1050	5.00	5.00	mg/L	10.08.18 17.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-3-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-036

Date Collected: 10.04.18 11.15

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.09.18 16.00

Seq Number: 3065955

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	626	5.00	0.858	mg/L	10.09.18 17.58		10

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	1310	5.00	5.00	mg/L	10.08.18 17.30		1





# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **TRACT-4-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-037

Date Collected: 10.04.18 11.25

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.09.18 16.00

Seq Number: 3065955

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	347	5.00	0.858	mg/L	10.09.18 18.08		10

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	1070	5.00	5.00	mg/L	10.08.18 17.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-14-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-038

Date Collected: 10.04.18 11.40

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.09.18 16.00

Seq Number: 3065955

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1690	25.0	4.29	mg/L	10.09.18 18.18		50

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	2620	5.00	5.00	mg/L	10.08.18 17.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-4-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-039

Date Collected: 10.04.18 11.50

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.09.18 16.00

Seq Number: 3065955

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	350	5.00	0.858	mg/L	10.09.18 18.49		10

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	883	5.00	5.00	mg/L	10.08.18 17.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **TRACT-4-WD-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-040

Date Collected: 10.04.18 00.00

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.09.18 16.00

Seq Number: 3065955

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	392	5.00	0.858	mg/L	10.09.18 19.00		10

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	1110	5.00	5.00	mg/L	10.08.18 17.30		1





# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-13-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-041

Date Collected: 10.04.18 12.15

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.09.18 16.00

Seq Number: 3065955

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2200	25.0	4.29	mg/L	10.09.18 19.10		50

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	3900	5.00	5.00	mg/L	10.08.18 17.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-30-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-042

Date Collected: 10.04.18 12.25

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.09.18 16.00

Seq Number: 3065955

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2550	25.0	4.29	mg/L	10.09.18 19.21		50

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	3820	5.00	5.00	mg/L	10.08.18 17.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **Livermore-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-043

Date Collected: 10.04.18 12.35

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.09.18 16.00

Seq Number: 3065955

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2710	25.0	4.29	mg/L	10.09.18 19.31		50

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	4020	5.00	5.00	mg/L	10.08.18 17.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-23-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-044

Date Collected: 10.04.18 12.45

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.09.18 16.00

Seq Number: 3065955

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<b>6090</b>	25.0	4.29	mg/L	10.09.18 20.12		50

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065737

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	<b>8980</b>	5.00	5.00	mg/L	10.08.18 17.30		1





# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-22-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-045

Date Collected: 10.04.18 12.50

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.09.18 16.00

Seq Number: 3065955

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14200	50.0	8.58	mg/L	10.09.18 20.23		100

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065889

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	18700	5.00	5.00	mg/L	10.09.18 10.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-17-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-046

Date Collected: 10.04.18 13.00

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.09.18 16.00

Seq Number: 3065955

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	11300	50.0	8.58	mg/L	10.09.18 20.54		100

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065889

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	17700	5.00	5.00	mg/L	10.09.18 10.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-21-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-047

Date Collected: 10.04.18 13.05

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.09.18 16.00

Seq Number: 3065955

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<b>7400</b>	50.0	8.58	mg/L	10.09.18 21.04		100

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065889

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	<b>11400</b>	5.00	5.00	mg/L	10.09.18 10.30		1



# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-16-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-048

Date Collected: 10.04.18 13.20

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.09.18 16.00

Seq Number: 3065955

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	474	5.00	0.858	mg/L	10.09.18 19.41	X	10

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065889

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	1210	5.00	5.00	mg/L	10.09.18 10.30		1





# Certificate of Analytical Results 601428



## GHD Services, INC- Midland, Midland, TX

Dollarhide

Sample Id: **MW-15-W-181004**

Matrix: Ground Water

Date Received: 10.04.18 15.30

Lab Sample Id: 601428-049

Date Collected: 10.04.18 13.30

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 10.09.18 16.00

Seq Number: 3065955

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1030	10.0	1.72	mg/L	10.09.18 21.14		20

Analytical Method: TDS by SM2540C

Tech: OJS

% Moisture:

Analyst: OJS

Seq Number: 3065889

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	1740	5.00	5.00	mg/L	10.09.18 10.30		1

- 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 601428

### GHD Services, INC- Midland Dollarhide

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

Seq Number: 3065632

Matrix: Water

Prep Method: E300P

MB Sample Id: 7663627-1-BLK

LCS Sample Id: 7663627-1-BKS

Date Prep: 10.05.18

LCSD Sample Id: 7663627-1-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	25.3	101	25.2	101	90-110	0	20	mg/L	10.05.18 13:21	

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

Seq Number: 3065715

Matrix: Water

Prep Method: E300P

MB Sample Id: 7663760-1-BLK

LCS Sample Id: 7663760-1-BKS

Date Prep: 10.08.18

LCSD Sample Id: 7663760-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.0858	25.0	25.1	100	25.1	100	90-110	0	20	mg/L	10.08.18 17:02	

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

Seq Number: 3065955

Matrix: Water

Prep Method: E300P

MB Sample Id: 7663856-1-BLK

LCS Sample Id: 7663856-1-BKS

Date Prep: 10.09.18

LCSD Sample Id: 7663856-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.0858	25.0	25.9	104	25.9	104	90-110	0	20	mg/L	10.09.18 16:56	

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

Seq Number: 3065632

Matrix: Water

Prep Method: E300P

Parent Sample Id: 601373-015

MS Sample Id: 601373-015 S

Date Prep: 10.05.18

MSD Sample Id: 601373-015 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	59.4	125	195	108	195	108	90-110	0	20	mg/L	10.05.18 16:16	

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

Seq Number: 3065632

Matrix: Drinking Water

Prep Method: E300P

Parent Sample Id: 601442-001

MS Sample Id: 601442-001 S

Date Prep: 10.05.18

MSD Sample Id: 601442-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	34.3	25.0	60.9	106	60.8	106	90-110	0	20	mg/L	10.05.18 13:52	

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 601428

### GHD Services, INC- Midland Dollarhide

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

Seq Number: 3065715

Matrix: Ground Water

Prep Method: E300P

Parent Sample Id: 601428-017

MS Sample Id: 601428-017 S

Date Prep: 10.08.18

MSD Sample Id: 601428-017 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	409	250	709	120	712	121	90-110	0	20	mg/L	10.08.18 17:33	X

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

Seq Number: 3065715

Matrix: Ground Water

Prep Method: E300P

Parent Sample Id: 601428-034

MS Sample Id: 601428-034 S

Date Prep: 10.08.18

MSD Sample Id: 601428-034 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	404	250	710	122	711	123	90-110	0	20	mg/L	10.08.18 19:58	X

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

Seq Number: 3065955

Matrix: Ground Water

Prep Method: E300P

Parent Sample Id: 601428-048

MS Sample Id: 601428-048 S

Date Prep: 10.09.18

MSD Sample Id: 601428-048 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	474	250	775	120	783	124	90-110	1	20	mg/L	10.09.18 19:52	X

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

Seq Number: 3065955

Matrix: Water

Prep Method: E300P

Parent Sample Id: 601754-002

MS Sample Id: 601754-002 S

Date Prep: 10.09.18

MSD Sample Id: 601754-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	175	125	325	120	325	120	90-110	0	20	mg/L	10.09.18 17:27	X

**Analytical Method: TDS by SM2540C**

Seq Number: 3065594

Matrix: Water

MB Sample Id: 3065594-1-BLK

LCS Sample Id: 3065594-1-BKS

LCSD Sample Id: 3065594-1-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	<5.00	1000	962	96	972	97	80-120	1	10	mg/L	10.04.18 16:10	

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

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

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 601428

### GHD Services, INC- Midland Dollarhide

**Analytical Method: TDS by SM2540C**

Seq Number: 3065597

MB Sample Id: 3065597-1-BLK

Matrix: Water

LCS Sample Id: 3065597-1-BKS

LCSD Sample Id: 3065597-1-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	<5.00	1000	982	98	976	98	80-120	1	10	mg/L	10.05.18 12:00	

**Analytical Method: TDS by SM2540C**

Seq Number: 3065737

MB Sample Id: 3065737-1-BLK

Matrix: Water

LCS Sample Id: 3065737-1-BKS

LCSD Sample Id: 3065737-1-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	<5.00	1000	987	99	961	96	80-120	3	10	mg/L	10.08.18 17:30	

**Analytical Method: TDS by SM2540C**

Seq Number: 3065889

MB Sample Id: 3065889-1-BLK

Matrix: Water

LCS Sample Id: 3065889-1-BKS

LCSD Sample Id: 3065889-1-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	<5.00	1000	968	97	959	96	80-120	1	10	mg/L	10.09.18 10:30	

**Analytical Method: TDS by SM2540C**

Seq Number: 3065594

Parent Sample Id: 601368-001

Matrix: Water

MD Sample Id: 601368-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Total Dissolved Solids	3080	3130	2	10	mg/L	10.04.18 16:10	

**Analytical Method: TDS by SM2540C**

Seq Number: 3065594

Parent Sample Id: 601428-019

Matrix: Ground Water

MD Sample Id: 601428-019 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Total Dissolved Solids	4270	4320	1	10	mg/L	10.04.18 16:10	

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 601428

### GHD Services, INC- Midland Dollarhide

**Analytical Method: TDS by SM2540C**

Seq Number: 3065597

Parent Sample Id: 601428-001

Matrix: Ground Water

MD Sample Id: 601428-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Total Dissolved Solids	11000	10600	4	10	mg/L	10.05.18 12:00	

**Analytical Method: TDS by SM2540C**

Seq Number: 3065597

Parent Sample Id: 601428-024

Matrix: Ground Water

MD Sample Id: 601428-024 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Total Dissolved Solids	2490	2640	6	10	mg/L	10.05.18 12:00	

**Analytical Method: TDS by SM2540C**

Seq Number: 3065737

Parent Sample Id: 601428-025

Matrix: Ground Water

MD Sample Id: 601428-025 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Total Dissolved Solids	8570	8790	3	10	mg/L	10.08.18 17:30	

**Analytical Method: TDS by SM2540C**

Seq Number: 3065737

Parent Sample Id: 601428-044

Matrix: Ground Water

MD Sample Id: 601428-044 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Total Dissolved Solids	8980	9280	3	10	mg/L	10.08.18 17:30	

**Analytical Method: TDS by SM2540C**

Seq Number: 3065889

Parent Sample Id: 601428-045

Matrix: Ground Water

MD Sample Id: 601428-045 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Total Dissolved Solids	18700	19700	5	10	mg/L	10.09.18 10:30	

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



# Chain of Custody

Work Order No: 1001420

Houston, TX (281) 240-4200 Dallas, TX (214) 302-0300 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)

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Project Manager:	Nick Casten	Bill to: (if different)	
Company Name:	GHD	Company Name:	
Address:	2135 S. Loop 250 West	Address:	
City, State ZIP:	Midland, TX, 79703	City, State ZIP:	
Phone:	225-292-9007	Email:	Nick Casten@ghd.com & Christopher.Knight@ghd.com

Program: <input type="checkbox"/> PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>	
State of Project:	
Reporting Level: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input checked="" type="checkbox"/> Level IV <input type="checkbox"/>	
Deliverables: <input type="checkbox"/> EDD <input type="checkbox"/> ADAPT <input type="checkbox"/> Other:	

Project Name:	Dollarhide	Turn Around		Work Order Notes
Project Number:	055270-2018-001	Routine	<input checked="" type="checkbox"/>	
P.O. Number:	34023156	Rush:		
Sampler's Name:	Joe Mirsky Joshua Stark	Due Date:		

SAMPLE RECEIPT	Temp Blank:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Wet Ice:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	Temperature (°C):	0.0	Thermometer ID:	110
	Received Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Correction Factor:	0.0
	Cooler Custody Seals:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
	Sample Custody Seals:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Total Containers:	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers											Sample Comments			
					Chloride	TDS													
NM-MW-8-W-181003	GW	10-3	0925	1	X	X													
NM-MW-8-W-181003	GW	10-3	0935	1	X	X													
RRR-Ramach-4-W-181003	GW	10-3	0955	1	X	X													
NM-MW-7-W-181003	GW	10-3	1005	1	X	X													
NM-MW-3-W-181003	GW	10-3	1015	1	X	X													
NM-MW-2-W-181003	GW	10-3	1030	1	X	X													
NM-MW-1-W-181003	GW	10-3	1035	1	X	X													
NM-MW-5-W-181003	GW	10-3	1045	1	X	X													
NM-MW-6-W-181003	GW	10-3	1100	1	X	X													
NM-MW-11-W-181003	GW	10-3	1100	1	X	X													

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 Ti 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 Ti U 1631 / 245.1 / 7470 / 7471 : Hg

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenoco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenoco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenoco. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenoco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Joe Mirsky	Joshua Stark	10-4-18 1530 <sup>2</sup>			
3		4			
5		6			



# Chain of Custody

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

Work Order No:

601428

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Project Manager:	Nick Casten	Bill to: (if different)	
Company Name:	GHD	Company Name:	
Address:	2135 S. Loop 250 West	Address:	
City, State ZIP:	Midland, TX 79703	City, State ZIP:	
Phone:	225-292-9007	Email:	Nick Casten@ghd.com & Christopher.Knight@ghd.com

Program: <input type="checkbox"/> PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>	
State of Project:	
Reporting Level: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input checked="" type="checkbox"/> Level IV <input type="checkbox"/>	Deliverables: <input type="checkbox"/> EDD <input type="checkbox"/> ADAPT <input type="checkbox"/> Other:

Project Name:	Dollarhide	Turn Around	
Project Number:	055270-2018-001	Routine	<input checked="" type="checkbox"/>
P.O. Number:	34023156	Rush:	
Sampler's Name:	Joe Mirvelles	Due Date:	
<b>SAMPLE RECEIPT</b>			
Temp Blank:	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	Wet Ice:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Temperature (°C):	0.0	Thermometer ID:	100
Received In tact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Correction Factor:	0.0
Cooler Custody Seals:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Total Containers:	
Sample Custody Seals:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		

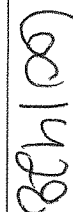
Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers											Sample Comments
					Chlorides	TDS										
MM-MW-13-W-1810 03	GW	10-3	1140	—	1	X										
MM-MW-10-W-1810 03	GW	10-3	1205	—	1	X										
MM-MW-12-W-1810 03	GW	10-3	1235	—	1	X										
Wilson-W-1810 03	GW	10-3	1235	—	1	X										
MM-MW-9-W-1810 03	GW	10-3	1250	—	1	X										
Smith-W-1410 03	GW	10-3	1300	—	1	X										
MM-29-W-1810 03	GW	10-3	1315	—	1	X										
MM-28-W-1410 03	GW	10-3	1325	—	1	X										
MM-9-W-1810 03	GW	10-3	1400	—	1	X										
Wilson-W-1810 03	GW	10-3	—	—	1	X										

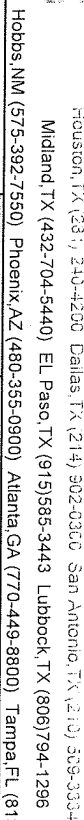
Total 200.7 / 6010	200.8 / 6020:	8RCRA 13PPM	Texas 11	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	SiO2	Na	Sr	Ti	Sn	U	V	Zn					
Circle Method(s) and Metal(s) to be analyzed		TCLP / SPLP 6010: 8RCRA		Sb		As	Ba	Be	Cd	Cr	Co	Cu	Pb	Mn	Mo	Ni	Se	Ag	Ti	U																

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenon, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenon will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenon. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenon, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Joe Mirvelles	Nick Casten	10-4-18 1536			



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Work Order No:

28/10/08

Hobbs, NM (5/5-392-7550) Phoenix, AZ (480-355-0900) Atlanta, GA (770-449-8800) Tampa, FL (813-620-2000)

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Work Order Comments			
Program:	UST/PST <input type="checkbox"/>	PRP <input type="checkbox"/>	Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>
State of Project:			
Reporting Level II	Level III <input type="checkbox"/>	PST/UST <input type="checkbox"/>	TRRP <input checked="" type="checkbox"/> Level IV <input type="checkbox"/>
Deliverables:	EDD <input type="checkbox"/>	ADAPT <input type="checkbox"/>	Other:

SAMPLE RECEIPT		Temp Blank:	Yes	No	Wet Ice:	Yes	No
Temperature (°C):		0-0			Thermometer ID		
Received intact:		Yes	No				
Cooler Custody Seals:	Yes	No	N/A		Correction Factor:		0-0
Sample Custody Seals:	Yes	No	N/A		Total Containers:		

Number of Containers

Yes

TAT starts the day received by the lab. If received by 4:30pm

[illegible]

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 Ti 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 Ti U 1631 / 245.1 / 7470 / 7471 : Hg

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 <i>[Signature]</i>	<i>[Signature]</i>	10-4-18 1530	2		
3			4		
5			6		

Houston, TX (281) 240-4200 Dallas, TX (214) 302-0300 San Antonio, TX (210) 509-0303  
Midland, TX (432) 704-5440 El Paso, TX (915) 585-3443 Lubbock, TX (806) 794-1296  
Phoenix, AZ (480) 335-0900 Atlanta, GA (770) 449-8800 Tampa, FL (813) 575-392-7550  
Hobbs, NM (575) 392-7550

## Chain of Custody

Work Order No:

601428

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Page 5 of 5

Project Manager:	Nick Casten	Bill to: (if different)	
Company Name:	GHD	Company Name:	
Address:	2135 S. Loop 250 West	Address:	
City, State ZIP:	Midland, TX 79703	City, State ZIP:	
Phone:	225-292-9007	Email:	Nick Casten@ghd.com & Christopher.Knight@ghd.com

Work Order Comments			
Program:	UST/PST <input type="checkbox"/>	PRP <input type="checkbox"/>	Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>
State of Project:			
Reporting Level:	Level II <input type="checkbox"/>	Level III <input type="checkbox"/>	PST/UST <input type="checkbox"/> TRRP <input checked="" type="checkbox"/> Level IV <input type="checkbox"/>
Deliverables:	EDD <input type="checkbox"/>	ADAPT <input type="checkbox"/>	Other: <input type="checkbox"/>

Project Name:	Dollarhide	Turn Around
Project Number:	055270-2018-001	Routine <i>VP</i>
P.O. Number:	34023156	Rush:
Sampler's Name:	<i>Joshua Shumway Socinians</i>	Due Date:

SAMPLE RECEIPT		Temp Blank	Yes	No	Well Ice	Yes	No
Temperature (°C):		0.2					
Received Intact:		Yes	No		Thermometer ID		
Cooler Custody Seals:	Yes	No			Correction Factor:	0.0	
Sample Custody Seals:	Yes	No	N/A		Total Containers:		

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number	Chloride	TDS	Sample Comments
MW-13-W-181004	GW	10-4	1215	—	1	X	X	
MW-30-W-181004	GW	10-4	1225	—	1	X	X	
Live more-W-181004	GW	10-4	1235	—	1	X	X	
MW-23-W-181004	GW	10-4	1245	—	1	X	X	
MW-22-W-181004	GW	10-4	1250	—	1	X	X	
MW-17-W-181004	GW	10-4	1300	—	1	X	X	
MW-21-W-181004	GW	10-4	1305	—	1	X	X	
MW-16-W-181004	GW	10-4	1320	—	1	X	X	
MW-15-W-181004	GW	10-4	1330	—	1	X	X	

Total	200.7 / 6010	200.8 / 6020:
Circle Method(s) and Metal(s) to be analyzed	8RCRA TCLP / SPLP 6010:	Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO <sub>2</sub> Na Sr Ti Sn U V Zn 13PPM Texas 11 Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U
		1631 / 245.1 / 7470 / 7471 : Hd

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xencio, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xencio will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xencio. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xencio, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 <i>John Smith</i>	<i>[Signature]</i>	10-4-18 1530	2		
3			4		
5			6		



# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: GHD Services, INC- Midland

Date/ Time Received: 10/04/2018 03:30:00 PM

Work Order #: 601428

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)?	.2
#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)?	N/A
#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#: A032690

Checklist completed by:   
Katie Lowe

Date: 10/04/2018

Checklist reviewed by:   
Debbie Simmons

Date: 10/08/2018



## **Appendix C**

# **Historical Groundwater Analytical Data**

Appendix C  
Historical Groundwater Analytical Results Summary  
Chevron Dollarhide Unit  
Dollarhide, Texas

Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
Recovery Wells			
10-V-WW			
	01/06	NS	NS
	03/06	1,310	2,415
	6/14/2006	1,040	2,690
	9/11/2006	1,210	2,600
	7/26/2007	1,750	3,130
	1/21/2008	1,580	2,880
	7/7/2008	1,490	3,090
	1/26/2009	1,790	3,250
	8/21/2009	1,620	2,680
	2/17/2010	NA	2,840
	2/18/2010	1,370	NA
	8/16/2010	1,670	2,890
	2/10/2011	1,760	3,170
	8/4/2011	1,890	3,430
	1/31/2012	1,870	3,500
	7/31/2013	1,530	2,840
	7/16/2014	1,900	4,870
	7/17/2015	699	1,760
	1/29/2016	1,750	3,330
	7/19/2016	1,850	3,860
	1/13/2017	2,200	4,130
	4/10/2017	NS	NS
	7/14/2017	1,840	3,730
10-W-WW			
	01/06	NS	NS
	03/06	1,154	2,166
	6/14/2006	1,160	2,520
	9/11/2006	1,210	2,500
	12/6/2006	1,380	2,540
	2/27/2007	1,250	2,450
	7/23/2007	1,420	3,090
	1/21/2008	1,240	2,080
	7/7/2008	1,380	2,820
	1/26/2009	1,480	2,680
	8/21/2009	1,360	2,440
	2/17/2010	NA	2,460
	2/18/2010	1,220	NA
	8/16/2010	1,780	2,690
	2/10/2011	1,180	2,300
	8/4/2011	1,480	2,680
	1/31/2012	1,460	2,290
	1/30/2013	1,370	2,580
	1/13/2014	1,450	3,000
	1/13/2015	1,230	3,330
	1/29/2016	NS	NS
	7/19/2016	1,100	2,990
	1/13/2017	1,620	3,000
	4/10/2017	NS	NS
	7/14/2017	1,150	2,650
10-X-WW			
	01/06	NS	NS
	03/06	1,343	2,603
	6/14/2006	1,340	2,910
	9/11/2006	1,240	2,830
	12/6/2006	1,440	2,870
	2/27/2007	1,300	2,970
	7/23/2007	1,500	2,710
	1/21/2008	1,220	2,300
	7/7/2008	1,300	2,640
	7/7/2008	1,290	2,540
	8/21/2009	1,160	2,410
	2/17/2010	NA	2,600
	8/16/2010	1,520	2,790
	2/10/2011	1,360	2,300
	8/4/2011	1,090	2,140
	1/31/2012	905	1,960
	8/2/2012	736	NS
	1/29/2016	NS	NS
	7/19/2016	399	1,070
	1/13/2017	580	1,130
	4/10/2017	NS	NS
	7/14/2017	499	1,230

Appendix C  
Historical Groundwater Analytical Results Summary  
Chevron Dollarhide Unit  
Dollarhide, Texas

Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
11-U-WW			
	01/06	NS	NS
	04/06	1,038	2,023
	6/14/2006	1,030	2,190
	9/11/2006	1,250	2,330
	12/6/2006	1,200	2,330
	2/27/2007	1,100	2,330
	7/23/2007	1,250	2,130
	2/27/2007	1,100	2,330
	7/23/2007	1,250	2,130
	1/21/2008	1,290	2,330
	7/7/2008	1,220	2,270
	1/26/2009	1,520	2,350
	8/21/2009	1,230	2,180
	2/17/2010	NA	2,130
	2/18/2010	1,110	NA
	8/16/2010	1,350	2,370
	2/10/2011	1,300	2,310
	8/4/2011	1,570	2,640
	1/31/2012	1,260	2,690
	8/2/2012	1,240	NA
	1/30/2013	1,290	2,190
	1/13/2014	1,230	2,880
	1/13/2015	1,650	4,350
12-S-WW			
	01/06	1,205	2,281
	04/06	1,008	1,994
	6/14/2006	995	2,160
	9/11/2006	1,020	2,160
	12/6/2006	1,270	2,370
	2/27/2007	1,060	2,070
	7/23/2007	956	2,050
	2/27/2007	1,060	2,070
	7/23/2007	956	2,050
	1/21/2008	1,120	2,060
	7/7/2008	1,000	1,920
	1/26/2009	1,370	2,090
	8/21/2009	NS	NS
	2/17/2010	NA	2,120
	2/18/2010	986	NA
	8/16/2010	1,250	2,360
	2/15/2011	382	896
	8/4/2011	1,290	2,180
	1/31/2012	1,240	2,380
	8/2/2012	1,010	NS
	1/30/2013	1,190	2,100
	1/13/2014	1,060	2,290
	1/13/2015	1,130	2,680
	1/29/2016	1,140	2,110
12-T-WW			
	01/06	1,123	2,125
	04/06	1,111	2,098
	6/14/2006	1,140	2,370
	9/11/2006	1,120	2,770
	12/6/2006	1,210	2,490
	2/27/2007	1,180	2,740
	7/23/2007	1,320	2,890
	1/21/2008	1,290	2,140
	7/7/2008	1,300	2,410
	1/26/2009	1,430	2,570
	8/21/2009	1,340	2,340
	2/17/2010	NA	2,470
	2/18/2010	1,230	NA
	8/16/2010	1,480	2,660
	2/24/2011	1,310	2,660
	8/4/2011	1,520	3,090
	1/31/2012	1,020	2,620
	8/2/2012	1,260	3,020
	7/31/2013	1,290	2,700
	1/13/2014	1,170	2,620
	7/16/2014	1,540	4,630
	1/13/2015	1,490	3,760
	7/17/2015	1,620	3,900
	1/29/2016	NS	NS
	7/19/2016	1,690	3,390

Appendix C  
Historical Groundwater Analytical Results Summary  
Chevron Dollarhide Unit  
Dollarhide, Texas

Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
29-Q-WW			
	01/06	2,171	3,851
	04/06	2,225	3,950
	6/14/2006	2,260	5,050
	9/11/2006	1,180	2,410
	12/6/2006	2,560	5,620
	2/27/2007	2,430	4,240
	7/23/2007	2,500	5,040
	1/21/2008	2,670	3,750
	7/7/2008	2,210	3,920
	1/26/2009	2,190	4,740
	8/21/2009	2,110	4,570
	2/17/2010	NA	3,730
	2/18/2010	1,790	NA
	8/16/2010	2,190	4,620
	8/4/2011	2,260	4,190
	1/31/2012	2,070	3,910
	8/2/2012	1,820	NA
	7/31/2013	2,050	4,300
	1/13/2014	1,880	3,570
	1/13/2015	1,950	4,400
	1/29/2016	1,910	3,190
	7/19/2016	1,870	3,490
	1/13/2017	1,150	2,200
29-R-WW			
	01/06	1,043	2,099
	04/06	990	1,975
	6/14/2006	1,000	2,410
	9/11/2006	1,430	2,550
	12/6/2006	1,480	2,430
	2/27/2007	923	1,800
	7/23/2007	1,100	2,390
	1/21/2008	1,100	2,010
	7/7/2008	1,070	2,120
	1/26/2009	1,040	2,010
	8/21/2009	1,530	2,320
	2/17/2010	NA	1,800
	2/18/2010	867	NA
	8/16/2010	1,200	2,190
	2/10/2011	920	1,960
	8/4/2011	956	1,930
	1/31/2012	1,210	2,360
	8/2/2012	895	2,240
	10/25/2013	708	1,770
30-O-WW			
	01/06	1,369	2,338
	04/06	1,368	2,373
	6/14/2006	1,430	3,290
	9/11/2006	2,690	4,710
	2/27/2007	1,420	2,650
	7/23/2007	1,390	3,190
	1/21/2008	1,280	2,090
	7/7/2008	1,190	2,280
	1/26/2009	1,330	2,700
	8/21/2009	1,390	2,820
	2/17/2010	NA	2,100
	2/18/2010	1,010	NA
	8/16/2010	1,540	2,750
	2/10/2011	1,240	2,210
	8/4/2011	1,420	2,500
	1/31/2012	1,210	2,760
	8/2/2012	1,160	NA
	1/30/2013	1,240	2,200
	7/31/2013	1,020	2,430
	1/13/2014	1,080	2,450
	7/16/2014	1,160	4,160
	1/13/2015	1,130	2,870
	7/17/2015	1,140	2,700
	1/29/2016	1,100	2,210
	7/19/2016	1,230	3,050
	1/13/2017	1,330	2,530



Appendix C  
Historical Groundwater Analytical Results Summary  
Chevron Dollarhide Unit  
Dollarhide, Texas

Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
31-N-WW			
	01/06	1,172	2,213
	04/06	1,143	2,184
	5/1/2006	1,157	2,195
	6/14/2006	1,120	2,670
	9/11/2006	1,310	2,530
	12/6/2006	1,290	2,920
	2/27/2007	1,170	1,870
	7/23/2007	1,290	2,750
	1/21/2008	1,250	2,110
	7/7/2008	1,200	2,520
	1/26/2009	1,260	2,450
	8/21/2009	1,110	2,800
	2/17/2010	NA	2,300
	2/18/2010	973	NA
	8/16/2010	1,350	2,460
	2/24/2011	1,120	2,320
	8/8/2011	1,390	2,710
	1/31/2012	1,370	2,200
	8/2/2012	1,150	NA
	1/30/2013	1,290	2,290
	7/31/2013	1,320	2,730
	1/13/2014	1,370	2,690
	7/16/2014	1,840	4,480
	1/13/2015	1,380	3,690
	7/17/2015	1,060	2,230
	1/29/2016	1,410	2,670
	7/19/2016	1,820	3,760
	1/13/2017	1,860	3,240
43-K-WW			
	01/06	5,414	9,613
	04/06	5,611	10,045
	6/14/2006	5,850	12,300
	9/12/2006	7,100	11,100
	12/6/2006	3,230	6,290
	2/27/2007	5,660	10,800
	7/23/2007	6,360	12,800
	1/21/2008	6,310	10,900
	7/7/2008	6,480	11,600
	1/26/2009	6,600	13,300
	8/24/2009	6,910	12,200
	2/17/2010	NA	12,900
	2/18/2010	6,250	NA
	8/16/2010	8,560	14,600
	2/10/2011	8,780	15,400
	8/5/2011	9,310	16,900
	1/31/2012	8,730	15,000
	8/2/2012	7,880	NA
43-L-WW			
	01/06	8,803	15,562
	04/06	12,931	22,519
	6/14/2006	8,920	18,600
	9/12/2006	9,120	17,800
	12/6/2006	9,380	19,300
	2/27/2007	9,970	17,000
	3/1/2007	NS	NS
	1/21/2008	10,300	17,700
	7/7/2008	12,400	23,000
	1/26/2009	13,000	40,800
	8/24/2009	9,650	16,800
	2/17/2010	NA	17,700
	2/18/2010	8,560	NA
	8/16/2010	10,300	19,100
	8/5/2011	7,590	14,400
	1/31/2012	8,340	13,900
	8/2/2012	7,220	NA
	1/30/2013	7,820	13,100
	10/25/2013	6,170	12,000
	1/14/2014	6,470	9,880
	7/17/2014	6,180	12,200
	1/14/2015	5,500	5,140
	1/29/2016	5,200	8,100
	7/19/2016	4,240	9,290
	1/13/2017	5,990	8,800
	4/10/2017	NS	NS
	7/14/2017	4,770	8,990

Appendix C  
Historical Groundwater Analytical Results Summary  
Chevron Dollarhide Unit  
Dollarhide, Texas

Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
43-M-WW			
	01/06	3,464	6,920
	04/06	3,557	7,107
	6/14/2006	4,070	7,440
	9/12/2006	3,360	7,680
	12/6/2006	3,950	7,650
	2/27/2007	3,880	6,890
	3/1/2007	NS	NS
	7/23/2007	4,920	8,380
	1/21/2008	4,690	8,410
	7/7/2008	4,680	8,660
	1/26/2009	4,730	9,580
	8/24/2009	4,980	9,500
	2/17/2010	NA	9,980
	2/18/2010	5,180	NA
	8/16/2010	5,940	11,300
	2/10/2011	6,250	10,900
	8/4/2011	6,530	11,900
	1/31/2012	5,700	11,400
	8/2/2012	5,600	11,500
	1/30/2013	5,840	10,300
	10/25/2013	5,890	11,200
	1/14/2014	5,550	9,610
	7/17/2014	4,680	9,480
	1/14/2015	4,350	8,270
	1/29/2016	4,210	7,020
	7/19/2016	NS	NS
	1/13/2017	4,500	7,300
	4/10/2017	NS	NS
	7/14/2017	3,770	6,700
44-H-WW			
	01/06	3,066	5,714
	04/06	3,207	5,803
	6/13/2006	3,460	6,870
	9/12/2006	3,380	7,280
	12/6/2006	4,170	7,220
	2/27/2007	3,980	7,810
	7/23/2007	4,280	9,340
	1/21/2008	4,550	7,560
	7/7/2008	4,680	9,360
	1/26/2009	4,200	8,220
	8/24/2009	4,130	7,160
	2/17/2010	NA	7,440
	2/18/2010	3,710	NA
	2/22/2010	NA	7,560
	8/16/2010	4,560	7,640
	1/29/2016	NS	NS
	7/20/2016	2,870	6,030
44-I-WW			
	01/06	3,101	5,699
	04/06	2,948	5,425
	6/13/2006	3,060	6,150
	12/6/2006	3,930	7,110
	2/27/2007	2,040	4,290
	7/23/2007	3,310	5,550
	1/21/2008	NS	NS
	7/7/2008	3,070	6,310
	1/26/2009	2,800	5,340
	8/24/2009	2,600	5,610
	2/17/2010	NA	5,250
	2/18/2010	2,240	NA
	8/2/2012	1,660	NA
44-II-WW			
	01/06	3,586	6,549
	04/06	3,735	6,793
	6/13/2006	3,860	7,360
	9/12/2006	3,800	6,640
	12/6/2006	4,170	7,220
	2/27/2007	3,780	7,320
	7/23/2007	4,130	6,860
	1/21/2008	3,900	6,490
	1/26/2009	4,010	7,760
	8/24/2009	4,010	9,080
	2/17/2010	NA	7,940
	2/18/2010	3,870	NA
	8/16/2010	4,750	9,020

Appendix C  
Historical Groundwater Analytical Results Summary  
Chevron Dollarhide Unit  
Dollarhide, Texas

Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
44-J-WW			
	01/06	2,746	5,244
	04/06	2,683	5,192
	6/13/2006	2,680	5,630
	9/12/2006	2,590	5,850
	12/6/2006	2,920	5,640
	2/27/2007	2,630	5,370
	7/23/2007	3,000	5,540
	1/21/2008	2,990	5,410
	7/7/2008	3,200	6,380
	1/26/2009	3,260	6,500
	8/24/2009	3,150	6,010
	1/29/2016	NS	NS
	7/20/2016	1,880	4,220
45-EE-WW			
	01/06	1,865	3,210
	03/06	1,855	3,195
	6/13/2006	1,970	3,580
	9/12/2006	1,910	3,970
	12/7/2006	2,140	4,320
	2/24/2007	1,700	4,010
	7/23/2007	2,210	3,590
	1/21/2008	2,110	3,360
	7/7/2008	2,090	3,710
	1/26/2009	2,170	5,190
	8/24/2009	2,060	4,910
	2/17/2010	NA	3,970
	2/18/2010	1,810	NA
	8/16/2010	2,570	4,170
	2/10/2011	2,480	5,600
	8/5/2011	2,630	5,220
	1/31/2012	2,410	4,370
	1/31/2012	2,460	4,120
	8/2/2012	2,050	NA
	1/30/2013	2,390	4,070
	1/14/2014	2,230	4,380
	1/14/2015	2,170	5,340
	1/29/2016	2,120	3,860
	7/19/2016	2,560	4,310
	1/13/2017	2,600	4,690
	4/10/2017	NS	NS
	7/14/2017	2,300	4,330
45-ER-WW			
	01/06	1,829	3,138
	03/06	1,870	3,201
	6/13/2006	2,000	3,910
	9/12/2006	2,270	3,720
	12/6/2006	2,190	3,820
	7/26/2007	2,250	5,690
	1/21/2008	NS	NS
	7/7/2008	2,430	4,550
	1/26/2009	2,610	4,700
	8/24/2009	2,550	4,490
	2/17/2010	NA	4,480
	2/18/2010	2,020	NA
	8/16/2010	2,870	6,030
	2/10/2011	2,450	5,930
	8/5/2011	3,160	7,210
	1/31/2012	2,840	6,190
	8/2/2012	2,650	6,690
	1/30/2013	2,950	5,070
	7/17/2014	3,450	9,240
	1/14/2015	2,660	9,520
	1/29/2016	3,190	6,350
	7/19/2016	3,590	8,980
	1/13/2017	4,390	5,960
	4/10/2017	NS	NS
	7/14/2017	3,370	6,120

Appendix C  
Historical Groundwater Analytical Results Summary  
Chevron Dollarhide Unit  
Dollarhide, Texas

Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
45-F-WW			
	01/06	3,597	6,087
	03/06	3,577	6,177
	6/13/2006	3,900	9,020
	9/12/2006	3,820	8,090
	12/6/2006	4,260	7,520
	2/27/2007	4,010	8,380
	7/23/2007	4,460	10,200
	1/21/2008	4,480	7,000
	7/7/2008	4,370	8,640
	1/26/2009	4,380	8,340
	8/24/2009	4,070	8,060
	2/17/2010	NA	8,140
	2/18/2010	4,260	NA
	2/22/2010	NA	7,980
	8/16/2010	4,200	8,420
	8/5/2011	5,040	10,900
	1/31/2012	4,750	9,520
	8/2/2012	4,030	NA
	7/31/2013	4,060	9,620
	7/17/2015	3,910	8,490
	1/29/2016	4,280	13,600
	7/19/2016	4,370/3,720	7,610/8,680
	1/13/2017	NS	NS
	4/10/2017	NS	NS
	7/14/2017	3,990	7,660
45-G-WW			
	01/06	2,386	4,328
	03/06	2,246	4,100
	6/13/2006	2,100	4,010
	9/12/2006	2,490	4,870
	12/6/2006	2,490	5,130
	2/27/2007	2,430	5,440
	7/23/2007	2,090	3,590
	1/21/2008	3,330	5,480
	7/7/2008	2,680	5,270
	1/26/2009	2,730	4,030
	8/24/2009	2,950	7,260
	2/17/2010	NA	6,840
	2/18/2010	3,340	NA
	8/16/2010	3,990	7,760
	2/10/2011	3,270	6,570
	8/5/2011	3,630	7,290
	1/31/2012	3,600	7,940
	8/2/2012	3,510	8,310
	1/30/2013	3,310	5,510
	10/25/2013	3,390	7,280
	1/14/2014	3,900	7,870
	1/14/2015	3,320	8,010
	7/17/2015	3,460	7,970
	1/29/2016	3,450	7,610
58-A-WW			
	01/06	2,117	3,590
	03/06	2,102	3,556
	6/14/2006	1,990	NA
	7/24/2007	2,500	5,170
	1/21/2008	2,410	5,710
	7/7/2008	2,080	4,800
	8/21/2009	2,120	3,720
	2/17/2010	NA	3,810
	2/18/2010	1,700	NA
	8/16/2010	2,060	5,390
	2/10/2011	1,950	3,500
	8/2/2011	2,060	4,210
	2/2/2012	1,560	4,440
	7/31/2013	1,740	4,260
	7/17/2014	1,610	10,600
	7/17/2015	1,850	3,990
	1/29/2016	1,600	2,840
	7/19/2016	1,650	3,490
	1/13/2017	1,960	3,130



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Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
58-B-WW			
	01/06	1,287	2,406
	03/06	1,295	2,379
	6/14/2006	2,500	3,260
	9/12/2006	1,500	2,500
	12/6/2006	1,640	3,260
	12/6/2006	1,730	3,300
	2/27/2007	1,590	3,600
	7/24/2007	1,770	3,720
	1/21/2008	1,670	2,570
	7/7/2008	1,520	3,480
	1/26/2009	1,620	3,560
58-BB-WW			
	01/06	4,256	6,732
	03/06	4,368	6,993
	6/14/2006	4,820	10,800
	9/12/2006	5,080	7,760
	12/6/2006	5,510	10,800
	7/24/2007	5,120	9,980
	1/21/2008	5,460	7,940
	7/7/2008	4,970	9,880
	1/26/2009	5,390	11,200
	8/21/2009	5,290	8,700
	8/16/2010	6,300	13,500
	2/10/2011	5,430	9,900
	8/2/2011	5,910	14,400
	1/31/2012	5,080	10,000
	8/2/2012	4,600	14,200
	7/31/2013	4,130	10,400
	7/17/2014	4,440	12,500
	7/17/2015	4,060	7,140
58-C-WW			
	01/06	2,179	3,623
	03/06	2,173	3,562
	6/14/2006	NS	NS
	12/6/2006	2,600	5,300
	2/27/2007	2,290	6,220
	7/24/2007	2,890	4,640
	1/21/2008	2,870	4,040
	7/7/2008	2,760	5,530
	2/17/2010	NA	6,930
	2/18/2010	3,600	NA
	8/16/2010	4,570	8,380
	2/10/2011	3,960	7,740
	8/2/2011	5,270	12,800
	3/19/2012	1,170	3,200
	8/2/2012	4,600	NA
	1/30/2013	6,010	10,300
	1/14/2014	4,640	8,310
	1/14/2015	4,660	12,000
	1/29/2016	NS	NS
	7/19/2016	4,300	11,100
58-D-WW			
	01/06	2,133	3,595
	03/06	2,169	3,634
	6/14/2006	2,220	5,230
	9/12/2006	2,380	3,620
	12/6/2006	2,520	5,240
	2/27/2007	2,230	5,060
	7/24/2007	2,970	4,760
	1/21/2008	2,730	4,010
	7/7/2008	2,560	4,960
	1/26/2009	2,860	6,070
	8/21/2009	NS	NS
	2/17/2010	NA	5,280
	2/18/2010	2,140	NA
	8/16/2010	2,930	7,760
	8/2/2011	3,790	7,230
	3/19/2012	3,730	7,460
	7/31/2013	3,170	8,550
	7/17/2014	3,580	10,500
	7/17/2015	5,180	10,800
	1/29/2016	NS	NS
	7/19/2016	3,280	9,600
	1/13/2017	NS	NS
	4/10/2017	NS	NS
	7/14/2017	4,020	7,050

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Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
Monitor Wells			
43-K-1-MW			
	2/28/2007	6,200	11,400
	7/26/2007	7,250	13,500
	1/22/2008	7,360	12,500
	7/7/2008	7,460	14,300
	1/28/2009	8,210	14,500
	8/26/2009	9,140	16,700
	2/19/2010	7,560	15,000
	8/18/2010	10,600	17,900
	2/15/2011	11,900	15,400
	8/4/2011	11,600	19,800
	2/3/2012	9,560	19,900
	7/17/2015	8,870	16,700
	1/29/2016	NS	NS
	7/20/2016	8,470	13,800
	1/11/2017	8,360	15,400
	4/10/2017	NS	NS
	7/14/2017	8,550	14,000
	1/12/2018	8,020	10,500
	7/5/2018	7,840	12,700
44-I-1-MW			
	01/06	1,909	3,728
	04/06	1,349	2,823
	6/13/2006	1,300	2,930
	9/13/2006	1,340	2,620
	12/8/2006	1,370	3,010
	2/28/2007	1,310	2,840
	7/30/2007	1,440	3,010
	1/22/2008	1,630	2,730
	7/7/2008	1,480	2,910
	1/29/2009	1,510	2,870
	8/27/2009	1,500	2,850
	2/18/2010	1,140	2,800
	8/19/2010	1,610	2,840
	2/15/2011	1,970	2,850
	8/4/2011	1,770	3,060
	2/2/2012	1,550	3,470
	1/29/2013	1,850	3,300
	7/30/2013	1,640	3,550
	1/15/2014	1,860	3,730
	7/16/2014	2,100	5,180
	1/14/2015	2,000	4,690
	1/28/2016	2,430	3,500
	7/20/2016	2,620	6,220
	1/12/2017	3,290	6,250
	4/10/2017	NS	NS
	7/14/2017	2,750	6,700
	1/12/2018	2,940	5,030
	7/5/2018	3,170	5,450
44-J-1-MW			
	01/06	1,382	2,835
	03/06	1,551	3,139
	6/13/2006	1,550	3,570
	9/13/2006	1,910	3,270
	12/8/2006	1,810	3,090
	2/28/2007	1,600	3,530
	7/30/2007	1,830	3,480
	1/22/2008	2,090	3,390
	7/7/2008	1,960	3,780
	1/29/2009	1,870	4,070
	8/28/2009	2,480	4,050
	2/19/2010	1,850	4,480
	8/19/2010	2,600	4,440
	2/15/2011	2,630	4,960
	8/4/2011	2,890	5,740
	2/2/2012	2,740	5,900
	1/28/2016	NS	NS
	7/20/2016	2,440	5,980
	1/12/2017	NS	NS
	4/10/2017	NS	NS
	7/14/2017	3,650	8,630
	1/12/2018	3,410	6,190
	7/5/2018	4,300	6,910

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Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
44-J-2-MW			
	01/06	1,380	2,870
	03/06	1,911	3,745
	6/13/2006	1,760	3,910
	9/13/2006	2,230	3,790
	12/8/2006	2,270	3,660
	2/28/2007	1,820	3,770
	7/30/2007	2,090	4,050
	1/22/2008	2,040	3,800
	7/7/2008	2,130	4,290
	1/29/2009	2,260	4,800
	8/28/2009	2,820	5,030
	2/18/2010	2,280	5,840
	8/20/2010	2,930	5,900
	2/15/2011	3,000	5,780
	8/5/2011	3,090	13,200
	2/2/2012	3,200	7,600
	1/28/2016	NS	NS
	7/20/2016	3,990	8,680
	1/12/2017	NS	NS
	4/10/2017	NS	NS
	7/14/2017	4,160	10,000
	1/12/2018	4,560	7,820
	7/5/2018	5,050	8,000
44-J-3-MW			
	9/13/2006	2,580	4,850
	12/8/2006	2,690	4,790
	8/28/2009	3,330	5,820
	2/18/2010	2,580	4,980
	8/20/2010	3,430	5,940
	2/15/2011	3,660	6,340
	8/2/2011	3,090	5,970
	2/2/2012	2,810	5,640
	1/28/2016	NS	NS
	7/20/2016	3,630	7,810
	1/12/2017	NS	NS
	4/10/2017	NS	NS
	7/20/2017	3,960	9,150
	1/12/2018	4,800	8,420
	7/5/2018	5,290	9,230
44-J-4-MW			
	9/13/2006	1,820	3,620
	12/8/2006	2,220	3,880
	8/27/2009	2,090	3,810
	2/18/2010	1,730	4,160
	8/20/2010	2,300	4,500
	2/15/2011	2,400	4,500
	8/2/2011	2,510	4,300
	2/3/2012	2,160	5,150
	1/28/2016	NS	NS
	7/20/2016	3,080	6,110
	1/12/2017	NS	NS
	4/10/2017	NS	NS
	7/20/2017	2,750	6,260
	1/12/2018	3,660	7,250
	7/5/2018	4,520	7,430
44-J-5-MW			
	9/13/2006	1,740	3,360
	12/8/2006	1,570	3,260
	8/27/2009	1,650	3,870
	2/19/2010	1,660	3,940
	8/20/2010	2,150	4,260
	2/15/2011	2,530	4,030
	8/4/2011	2,430	4,320
	2/2/2012	2,260	4,920
	1/28/2016	NS	NS
	7/20/2016	2,710	5,470
	1/12/2017	NS	NS
	4/10/2017	NS	NS
	7/20/2017	2,930	6,780
	1/12/2018	3,500	6,230
	7/5/2018	4,060	6,600

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Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
45-E-1-MW			
	01/06	994	1,795
	03/06	1,686	2,951
	6/14/2006	2,580	5,290
	9/12/2006	1,990	4,110
	12/7/2006	3,740	7,960
	2/28/2007	3,650	8,130
	7/30/2007	3,770	9,480
	1/22/2008	3,850	6,250
	7/7/2008	3,770	7,140
	1/28/2009	3,810	8,230
	8/27/2009	3,710	6,780
	2/18/2010	3,150	6,720
	8/17/2010	4,090	6,520
	2/15/2011	4,150	6,800
	8/2/2011	1,960	8,390
	2/2/2012	3,520	9,160
	1/28/2016	NS	NS
	7/20/2016	2,690	6,540
	1/12/2017	2,860	3,340
	4/10/2017	NS	NS
	7/20/2017	2,580	5,020
	1/12/2018	2,300	4,650
	7/5/2018	2,530	4,220
45-E-2-MW			
	01/06	98	601
	03/06	76	600
	6/14/2006	85	576
	9/12/2006	81	529
	12/7/2006	82	560
	2/28/2007	1,170	2,210
	7/30/2007	1,260	2,290
	1/22/2008	1,240	2,100
	7/7/2008	1,310	2,300
	1/28/2009	1,280	2,540
	8/26/2009	322	880
	2/18/2010	460	1,160
	8/18/2010	144	612
	2/15/2011	124	629
	8/2/2011	1,450	3,290
	2/2/2012	738	1,620
	1/28/2016	NS	NS
	7/20/2016	170	676
	1/12/2017	2,370	4,320
	4/10/2017	NS	NS
	7/20/2017	1,720	3,780
	1/12/2018	718	3,050
	7/5/2018	1,790	3,130
45-E-3-MW			
	2/28/2007	3,360	6,800
	7/26/2007	3,780	9,560
	1/22/2008	3,660	6,030
	7/7/2008	3,590	7,750
	1/28/2009	3,820	8,410
	8/26/2009	3,520	6,870
	2/18/2010	3,270	7,990
	8/18/2010	4,060	6,590
	2/15/2011	4,320	6,820
	8/2/2011	1,960	8,490
	2/3/2012	3,920	8,480
	1/28/2016	NS	NS
	7/20/2016	2,870	6,790
	1/11/2017	2,920	6,030
	4/10/2017	NS	NS
	7/20/2017	2,870	5,620
	1/12/2018	2,990	4,940
	7/5/2018	3,360	5,750



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Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
45-F-1-MW			
	01/06	619	1,270
	03/06	714	1,394
	6/13/2006	1,500	3,620
	9/12/2006	983	1,650
	12/8/2006	1,300	2,840
	2/28/2007	1,430	3,160
	7/30/2007	1,550	2,610
	1/22/2008	1,530	2,400
	7/7/2008	1,380	2,610
	1/29/2009	1,420	2,450
	8/27/2009	1,380	2,140
	2/18/2010	655	1,980
	8/18/2010	1,160	1,960
	2/15/2011	1,020	1,690
	8/2/2011	1,270	2,650
	2/3/2012	1,090	2,500
	1/28/2016	NS	NS
	7/20/2016	632	1,760
	1/12/2017	1,010	1,900
	4/10/2017	NS	NS
	7/20/2017	751	1,700
	1/12/2018	896	1,990
	7/5/2018	923	1,840
45-FF-MW			
	01/06	613	1,277
	03/06	3,090	5,086
	6/13/2006	3,870	11,500
	9/12/2006	4,610	7,280
	12/7/2006	4,910	10,600
	2/28/2007	5,060	8,960
	2/28/2007	4,890	11,100
	7/30/2007	5,020	8,780
	1/22/2008	5,160	9,100
	7/7/2008	5,220	9,870
	1/28/2009	4,900	8,540
	8/27/2009	5,760	9,120
	2/18/2010	3,210	7,340
	8/18/2010	5,830	9,360
	2/15/2011	6,000	10,200
	8/4/2011	5,510	12,100
	2/2/2012	4,360	9,680
	1/28/2016	NS	NS
	7/20/2016	3,990	9,940
	1/12/2017	4,800	11,200
	4/10/2017	NS	NS
	7/20/2017	4,170	8,030
	1/12/2018	4,820	8,280
	7/5/2018	5,310	9,090
58-B-1-MW			
	01/06	836	1,624
	03/06	1,874	3,138
	6/14/2006	976	2,310
	9/12/2006	3,440	5,290
	12/7/2006	3,230	7,600
	2/28/2007	3,350	7,370
	7/26/2007	4,680	8,890
	1/22/2008	3,220	5,110
	7/7/2008	2,980	6,110
	1/28/2009	3,150	6,330
	8/26/2009	3,320	5,820
	2/18/2010	2,850	6,710
	8/19/2010	4,120	9,970
	2/15/2011	4,180	6,850
	8/2/2011	5,240	11,700
	2/6/2012	5,510	10,000
	1/28/2016	NS	NS
	7/22/2016	3,550	8,460
	1/13/2017	7,510	9,410
	4/10/2017	NS	NS
	7/20/2017	5,480	9,230
	1/12/2018	5,250	8,620
	7/5/2018	6,440	10,000

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Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
58-B-2-MW			
	01/06	1,103	2,024
	03/06	650	1,329
	6/14/2006	4,510	8,700
	9/12/2006	8,220	19,000
	12/7/2006	4,700	10,700
	2/28/2007	5,900	10,800
	7/26/2007	6,270	12,200
	1/22/2008	6,200	11,300
	7/7/2008	5,830	11,600
	1/28/2009	5,260	10,600
	8/26/2009	6,260	10,800
	2/18/2010	4,870	9,680
	8/19/2010	6,640	10,200
	2/15/2011	4,100	7,390
	8/2/2011	1,410	13,600
	2/6/2012	5,480	13,600
	1/28/2016	3,550	7,440
	7/22/2016	2,740	6,130
	1/13/2017	4,190	8,700
	4/10/2017	NS	NS
	7/20/2017	3,340	5,910
	1/12/2018	3,470	5,860
	7/5/2018	3,900	6,410
58-B-3-MW			
	2/28/2007	607	2,150
	7/26/2007	1,200	2,340
	1/22/2008	1,250	2,010
	7/7/2008	1,140	2,480
	1/28/2009	1,300	2,400
	8/26/2009	1,370	2,320
	2/19/2010	1,070	2,570
	8/19/2010	1,450	2,340
	2/15/2011	1,680	2,500
	8/2/2011	1,450	2,920
	2/3/2012	1,330	2,660
	1/29/2013	1,360	2,370
	7/30/2013	1,230	2,540
	1/15/2014	1,250	2,920
	7/16/2014	1,450	4,360
	1/14/2015	312	938
	7/15/2015	715	1,770
	1/28/2016	688	1,660
	7/22/2016	570	1,290
	1/10/2017	683	1,830
	4/10/2017	NS	NS
	7/20/2017	666	1,440
	1/12/2018	791	1,290
	7/6/2018	976	1,580
MW-2			
	8/10/2015	204	1,950
	1/28/2016	NS	NS
	7/21/2016	NS	NS
	1/12/2017	NS	NS
	4/10/2017	NS	NS
	7/19/2017	NS	NS
	10/5/2017	NS	NS
	1/12/2018	NS	NS
	4/5/2018	NS	NS
	7/6/2018	NS	NS
	10/4/2018	NS	NS
MW-3			
	8/10/2015	249	1,100
	1/27/2016	484	1,070
	7/21/2016	486	1,430
	1/11/2017	564	1,410
	4/10/2017	605	1,960
	7/19/2017	572	1,400
	10/5/2017	569	1,520
	1/12/2018	566	1,410
	4/5/2018	589	1,300
	7/3/2018	593	1,310
	10/4/2018	626	1,310

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Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
MW-4			
	8/10/2015	240	1,850
	1/27/2016	250	941
	7/21/2016	355	2,260
	1/11/2017	353	1,260
	4/10/2017	NS	NS
	7/20/2017	325	1,000
	10/5/2017	347	1,010
	1/12/2018	345	968
	4/6/2018	350	413
	7/3/2018	338	831
	10/4/2018	350	883
MW-5			
	8/10/2015	837	2,960
	1/28/2016	459	2,130
	7/21/2016	397	1,690
	1/11/2017	364	1,400
	4/10/2017	346	1,560
	7/19/2017	309	1,170
	10/5/2017	302	1,040
	1/12/2018	293	1,130
	4/5/2018	289	1,140
	7/3/2018	274	1,020
	10/4/2018	278	1,050
MW-6			
	8/10/2015	578	2,180
	1/28/2016	484	2,090
	7/21/2016	450	1,590
	1/11/2017	441	1,330
	4/10/2017	468	1,760
	7/18/2017	439	1,650
	10/5/2017	407	1,530
	1/12/2018	408	1,490
	4/5/2018	411	1,430
	7/3/2018	402	1,340
	10/4/2018	404	1,450
MW-7			
	8/10/2015	772	3,230
	1/28/2016	260	2,620
	7/21/2016	524/508	2,510/2,410
	1/12/2017	NS	NS
	4/10/2017	NS	NS
	7/19/2017	NS	NS
	10/5/2017	NS	NS
	1/12/2018	NS	NS
	4/5/2018	NS	NS
	7/3/2018	NS	NS
	10/4/2018	NS	NS
MW-8			
	8/10/2015	711	2,430
	1/28/2016	763	2,310
	7/21/2016	758	2,140
	1/13/2017	985	2,410
	4/7/2017	933	2,120
	7/17/2017	845	2,280
	10/4/2017	803	2,210
	1/12/2018	813	2,250
	4/5/2018	839	2,300
	7/5/2018	868	2,350
	10/3/2018	888	2,490
MW-9			
	8/10/2015	1,650	3,390
	1/28/2016	2,160	4,410
	7/21/2016	2,140	6,790
	1/13/2017	3,520	4,540
	4/7/2017	3,070	6,760
	7/17/2017	2,830	4,930
	10/4/2017	2,230	4,730
	1/12/2018	2,540	4,380
	4/5/2018	2,930	4,690
	7/5/2018	2,880	4,250
	10/3/2018	2,910	4,270

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Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
MW-10			
	8/10/2015	3,480	7,980
	1/28/2016	5,320	9,850
	7/20/2016	5,920	12,400
	1/12/2017	6,360	10,500
	4/7/2017	5,930	12,700
	7/18/2017	5,320	9,720
	10/5/2017	5,190	8,560
	1/12/2018	5,350	9,650
	4/5/2018	5,470	8,630
	7/3/2018	5,340	11,000
	10/3/2018	5,880	8,570
MW-11			
	8/10/2015	458	3,260
	1/28/2016	5,280	5,720
	7/21/2016	6,830	16,100
	1/11/2017	7,310	18,800
	4/10/2017	7,760	17,100
	7/18/2017	7,620	12,700
	10/5/2017	7,110	12,600
	1/12/2018	8,120	12,700
	4/5/2018	7,990	11,000
	7/3/2018	7,940	11,800
	10/4/2018	8,310	12,000
MW-12			
	8/10/2015	7,680	20,500
	1/28/2016	12,800	24,400
	7/20/2016	12,000	27,500
	1/11/2017	16,400	24,100
	4/7/2017	13,900	28,900
	7/18/2017	13,600	23,000
	10/5/2017	14,000	23,000
	1/12/2018	13,100	21,400
	4/5/2018	13,300	19,400
	7/3/2018	13,200	20,200
	10/4/2018	15,000	24,400
MW-13			
	8/10/2015	1,740	4,100
	1/28/2016	1,850	4,110
	7/21/2016	1,650	5,300
	1/11/2017	1,270	1,660
	4/10/2017	1,890	4,760
	7/19/2017	1,730	4,010
	10/5/2017	1,910	5,260
	1/12/2018	1,750	3,920
	4/6/2018	1,750	3,920
	7/3/2018	2,280	4,560
	10/4/2018	2,200	3,900
MW-14			
	8/11/2015	989	3,040
	1/27/2016	1,420	2,560
	7/21/2016	1,480	3,800
	1/11/2017	1,470	2,890
	4/10/2017	1,530	4,400
	7/19/2017	1,500	3,330
	10/5/2017	1,510	3,460
	1/12/2018	1,590	2,910
	4/6/2018	1,720	1,270
	7/3/2018	1,540	2,660
	10/4/2018	1,690	2,620
MW-15			
	8/11/2015	600	1,730
	1/28/2016	617	1,180
	7/21/2016	554	1,370
	1/11/2017	710	1,640
	4/10/2017	785	2,030
	7/19/2017	652	1,220
	10/5/2017	831	1,690
	1/12/2018	873	1,770
	4/6/2018	877	1,900
	7/3/2018	914	1,650
	10/4/2018	1,030	1,740



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Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
MW-16			
	8/11/2015	435	1,410
	1/28/2016	323	1,020
	7/21/2016	195	776
	1/11/2017	472	1,180
	4/10/2017	396	1,400
	7/19/2017	444	1,100
	10/5/2017	426	1,210
	1/12/2018	364	1,100
	4/6/2018	432	1,310
	7/3/2018	430	1,160
	10/4/2018	474	1,210
MW-17			
	8/12/2015	5,800	13,400
	1/28/2016	4,400	823
	7/21/2016	3,370	7,900
	1/11/2017	9,760	16,200
	4/10/2017	9,620	20,400
	7/19/2017	8,160	14,400
	10/6/2017	11,400	18,800
	1/12/2018	10,100	15,300
	4/6/2018	9,590	14,800
	7/3/2018	8,570	15,000
	10/4/2018	11,300	17,700
MW-18			
	8/12/2015	13,400	26,600
	1/28/2016	13,900	25,300
	7/20/2016	8,000	18,900
	1/12/2017	14,200	33,700
	4/7/2017	19,100	37,800
	7/18/2017	13,900	23,500
	10/6/2017	19,000	52,900
	1/12/2018	18,800	30,300
	4/5/2018	20,000	30,400
	7/3/2018	22,000	38,500
	10/4/2018	21,100	31,600
MW-19			
	8/12/2015	4,780	11,300
	1/28/2016	5,130	10,100
	7/20/2016	5,160	10,200
	1/12/2017	6,370	9,560
	4/7/2017	6,000	13,600
	7/18/2017	5,310	9,840
	10/6/2017	5,290	9,620
	1/12/2018	6,160	10,300
	4/5/2018	6,600	9,880
	7/5/2018	6,580	11,500
	10/4/2018	6,980	11,600
MW-20			
	8/12/2015	995	2,760
	1/28/2016	1,200	2,390
	7/20/2016	1,060	2,920
	1/12/2017	1,500	1,970
	4/7/2017	1,200	3,300
	7/18/2017	1,110	2,540
	10/6/2017	1,100	2,220
	1/12/2018	1,130	2,410
	4/5/2018	1,100	2,130
	7/5/2018	1,150	2,160
	10/3/2018	1,340	2,490
MW-21			
	7/21/2016	7,920	19,400
	1/11/2017	7,360	11,800
	4/10/2017	6,600	17,900
	7/19/2017	5,480	12,200
	10/6/2017	7,210	13,500
	1/12/2018	6,800	10,900
	4/6/2018	7,630	11,000
	7/3/2018	6,860	11,100
	10/4/2018	7,400	11,400

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Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
MW-22			
	3/3/2017	12,100	19,000
	4/10/2017	14,000	33,000
	7/19/2017	8,720	17,400
	10/6/2017	11,400	20,200
	1/12/2018	10,400	16,200
	4/6/2018	10,500	17,200
	7/3/2018	10,300	16,300
	10/4/2018	14,200	18,700
MW-23			
	7/21/2016	1,430	3,050
	1/11/2017	2,120	4,130
	4/10/2017	3,010	8,750
	7/19/2017	1,680	3,550
	10/6/2017	4,520	7,370
	1/12/2018	5,230	9,340
	4/6/2018	6,830	10,100
	7/3/2018	4,390	6,870
	10/4/2018	6,090	8,980
MW-24			
	7/20/2016	3,720	8,910
	1/12/2017	4,740	8,690
	4/7/2017	4,520	11,200
	7/18/2017	3,880	8,600
	10/6/2017	3,930	8,500
	1/12/2018	4,060	8,170
	4/5/2018	3,980	7,080
	7/3/2018	4,140	8,210
	10/4/2018	4,850	8,870
MW-25			
	7/21/2016	560	1,510
	1/11/2017	24,400	29,700
	4/10/2017	23,100	49,600
	7/18/2017	18,800	32,800
	10/6/2017	18,300	33,200
	1/12/2018	20,900	31,400
	4/5/2018	22,400	32,800
	7/3/2018	23,600	37,600
	10/4/2018	26,500	39,000
MW-26			
	1/12/2017	1,220	2,840
	4/7/2017	1,190	3,160
	7/18/2017	1,140	3,060
	10/6/2017	1,120	2,570
	1/12/2018	1,160	2,860
	4/5/2018	1,230	2,730
	7/5/2018	1,210	2,810
	10/4/2018	1,340	2,750
MW-27			
	7/20/2016	1,340	3,080
	1/11/2017	2,400	4,160
	4/7/2017	2,380	4,520
	7/18/2017	2,110	4,150
	10/6/2017	2,280	4,610
	1/12/2018	2,260	4,220
	4/5/2018	2,400	4,250
	7/3/2018	2,510	4,790
	10/3/2018	3,030	4,700
MW-28			
	1/10/2017	917	2,520
	4/7/2017	1,090	2,650
	7/17/2017	1,190	2,730
	10/6/2017	1,240	3,270
	1/12/2018	1,470	1,280
	4/5/2018	1,540	2,660
	7/6/2018	1,610	2,540
	10/3/2018	1,760	3,020
MW-29			
	1/10/2017	354	946
	4/7/2017	386	1,160
	7/17/2017	393	1,060
	10/6/2017	374	1,100
	1/12/2018	397	601
	4/5/2018	396	1,100
	7/6/2018	397	860
	10/3/2018	409	1,070

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Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
MW-30			
	7/19/2017	2,360	4,540
	10/6/2017	2,420	5,270
	1/12/2018	2,350	4,160
	4/6/2018	2,240	1,310
	7/3/2018	2,280	3,650
	10/4/2018	2,550	3,820
MW-31			
	7/18/2017	7,980	13,600
	10/6/2017	8,540	16,600
	1/12/2018	10,700	16,400
	4/5/2018	11,700	17,700
	7/3/2018	12,100	19,800
	10/4/2018	12,800	19,500
NM-MW-1			
	12/3/2015	266	1,540
	1/28/2016	283	1,470
	7/22/2016	294	1,420
	1/12/2017	383	1,570
	4/7/2017	291	1,510
	7/13/2017	287	1,520
	10/6/2017	271	1,500
	1/12/2018	271	933
	4/5/2018	263	1,400
	7/6/2018	275	1,350
	10/3/2018	279	1,460
NM-MW-2			
	12/3/2015	640	2,620
	1/28/2016	658	1,920
	7/22/2016	638	858
	1/12/2017	790	1,770
	4/7/2017	656	1,590
	7/13/2017	653	1,340
	10/6/2017	650	1,410
	1/12/2018	639	990
	4/5/2018	610	1,210
	7/6/2018	679	1,160
	10/3/2018	674	1,270
NM-MW-3			
	12/3/2015	648	3,900
	1/28/2016	327	1,870
	7/22/2016	121	524
	1/12/2017	224	581
	4/7/2017	161	564
	7/13/2017	186	592
	10/6/2017	276	626
	1/12/2018	221	501
	4/5/2018	180	601
	7/6/2018	220	625
	10/3/2018	246	708
NM-MW-4			
	12/3/2015	739	2,960
	1/28/2016	22.8	821
	7/22/2016	40.9	444
	1/12/2017	48.7	379
	4/7/2017	35.0	410
	7/13/2017	36.1	422
	10/6/2017	42.0	468
	1/12/2018	39	217
	4/5/2018	34	410
	7/6/2018	40.6	414
	10/3/2018	39.7	411
NM-MW-5			
	12/3/2015	DRY	DRY
	1/28/2016	144	1,250
	7/22/2016	129	1,270
	1/12/2017	182	1,320
	4/7/2017	145	1,260
	7/13/2017	147	1,340
	10/6/2017	144	1,090
	1/12/2018	133	893
	4/5/2018	134	1,300
	7/6/2018	140	1,240
	10/3/2018	138	1,290

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Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
NM-MW-6			
	12/2/2015	188	1,240
	1/28/2016	183	1,060
	7/22/2016	121	817
	1/12/2017	168	825
	4/7/2017	143	852
	7/13/2017	138	818
	10/6/2017	132	742
	1/12/2018	137	468
	4/5/2018	127	836
	7/6/2018	134	801
	10/3/2018	138	833
NM-MW-7			
	12/3/2015	696	3,200
	1/28/2016	1,840	3,150
	7/22/2016	1,890	5,320
	1/12/2017	2,390	3,770
	4/7/2017	2,180	4,770
	7/13/2017	2,120	4,100
	10/6/2017	2,070	4,200
	1/12/2018	2,110	2,370
	4/5/2018	2,090	4,270
	7/6/2018	2,330	3,780
	10/3/2018	2,380	4,050
NM-MW-8			
	3/3/2017	4,870	9,740
	4/7/2017	4,870	12,800
	7/13/2017	5,010	9,040
	10/4/2017	5,000	10,900
	1/12/2018	5,260	5,240
	4/5/2018	5,110	9,160
	7/6/2018	5,960	9,620
	10/3/2018	6,260	11,000
NM-MW-9			
	1/13/2017	NS	NS
	4/10/2017	NS	NS
	7/17/2017	224	776
	10/4/2017	263	813
	1/12/2018	221	717
	4/5/2018	234	804
	7/6/2018	252	785
	10/3/2018	258	799
NM-MW-10			
	1/10/2017	314	1,550
	4/7/2017	355	1,570
	7/17/2017	308	1,600
	10/4/2017	302	1,550
	1/12/2018	314	1,050
	4/5/2018	301	1,620
	7/6/2018	308	1,450
	10/3/2018	315	1,520
NM-MW-11			
	1/10/2017	190	2,100
	4/7/2017	158	1,980
	7/17/2017	135	2,020
	10/4/2017	154	1,940
	1/12/2018	155	1,710
	4/5/2018	699	1,920
	7/6/2018	143	1,820
	10/3/2018	152	1,920
NM-MW-12			
	3/3/2017	760	1,460
	4/7/2017	725	2,230
	7/17/2017	726	1,540
	10/4/2017	643	1,590
	1/12/2018	663	1,470
	4/5/2018	656	1,430
	7/6/2018	665	1,250
	10/3/2018	668	1,390
NM-MW-13			
	3/3/2017	183	1,020
	4/7/2017	192	1,110
	7/17/2017	185	1,100
	10/4/2017	183	1,100
	1/12/2018	188	965
	4/5/2018	180	1,090
	7/6/2018	184	1,050
	10/3/2018	185	1,110



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Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
Non-Remedial Wells			
DHU-FWS			
	01/06	564	3,082
	03/06	581	3,181
	6/14/2006	553	3,020
	9/12/2006	584	2,650
	12/6/2006	636	3,070
	7/30/2007	646	3,010
	1/21/2008	637	3,140
	7/7/2008	546	3,050
	1/26/2009	610	3,040
	8/21/2009	580	3,000
	2/17/2010	NA	3,000
	2/18/2010	401	NA
	8/16/2010	771	3,060
	2/10/2011	577	2,840
	8/2/2011	612	2,960
	1/31/2012	866	2,910
	7/19/2016	629	2,810
	1/11/2017	670	3,060
	4/10/2017	NS	NS
	7/14/2017	587	3,020
	10/9/2017	565	2,990
	1/12/2018	615	2,820
	4/5/2018	572	2,640
	7/5/2018	593	2,710
	10/3/2018	593	2,830
DHU-Office			
	04/06	376	2,434
DHU- Office (CHRM)			
	04/06	382	2,460
Livermore			
	01/06	NS	NS
	03/06	6,946	11,381
	6/14/2006	8,320	14,300
	9/12/2006	7,400	12,000
	12/7/2006	5,750	12,000
	2/28/2007	5,770	11,200
	7/30/2007	5,910	12,600
	7/7/2008	5,280	9,340
	1/29/2009	4,670	8,200
	8/25/2009	4,630	8,260
	2/18/2010	3,700	7,560
	8/20/2010	4,390	7,920
	2/15/2011	4,400	7,430
	8/5/2011	4,230	7,230
	2/3/2012	3,310	6,790
	8/7/2012	3,730	NA
	1/30/2013	3,810	6,080
	7/31/2013	3,630	6,240
	1/15/2014	3,450	5,580
	7/16/2014	3,190	6,830
	1/14/2015	3,200	6,490
	7/17/2015	5,380	11,500
	1/29/2016	3,110	4,530
	7/21/2016	3,040	5,710
	1/11/2017	2,940	4,970
	4/10/2017	NS	NS
	7/19/2017	2,870	4,800
	10/9/2017	2,700	4,200
	1/12/2018	2,700	4,830
	4/6/2018	2,530	1,430
	7/3/2018	2,560	4,580
	10/4/2018	2,710	4,020

Appendix C  
Historical Groundwater Analytical Results Summary  
Chevron Dollarhide Unit  
Dollarhide, Texas

Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
Pure Water Tower			
	01/06	6,976	12,456
	03/06	NS	NS
	6/14/2006	7,890	16,200
	9/12/2006	8,200	13,100
	12/6/2006	8,070	14,600
	2/27/2007	6,400	12,800
	7/30/2007	7,450	15,400
	1/21/2008	11,800	20,100
	1/26/2009	5,010	12,100
	8/21/2009	6,920	12,900
	2/17/2010	NA	19,800
	2/18/2010	9,880	NA
	8/16/2010	11,800	23,000
	6/28/2011	9,260	20,500
	8/5/2011	6,470	12,900
	1/31/2012	5,380	11,500
Pure Water Well			
	01/06	NS	NS
	03/06	NS	NS
	6/14/2006	5,820	11,200
	9/12/2006	6,260	13,900
	12/6/2006	2,790	5,680
	7/23/2007	4,060	9,500
	1/21/2008	2,560	4,590
	7/7/2008	1,030	2,320
	1/26/2009	4,390	10,400
	8/21/2009	5,240	9,840
	2/17/2010	NA	9,160
	2/18/2010	1,810	NA
	2/10/2011	5,070	12,900
	8/5/2011	5,430	12,900
	8/21/2012	4,650	10,200
	1/30/2013	4,880	8,800
	10/25/2013	5,340	11,100
	1/13/2014	4,830	10,700
	7/17/2015	754	1,890
RRR Ranch Windmill			
	01/06	NS	NS
	03/06	1,693	3,527
	6/14/2006	1,760	3,640
	1/28/2016	1,430	2,760
	7/22/2016	1,460	3,940
	1/12/2017	1,760	3,030
	4/10/2017	NS	NS
	7/17/2017	1,570	3,300
	10/9/2017	2,620	3,870
	1/12/2018	650	1,500
	4/5/2018	1,620	3,110
	7/6/2018	1,670	3,030
	10/3/2018	1,660	3,000

Appendix C  
Historical Groundwater Analytical Results Summary  
Chevron Dollarhide Unit  
Dollarhide, Texas

Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
TRAC-4			
	01/06	432	1,237
	03/06	581	3,181
	6/14/2006	402	1,270
	9/11/2006	428	1,310
	12/7/2006	456	1,300
	2/27/2007	435	1,240
	7/30/2007	493	1,320
	1/21/2008	421	1,220
	7/7/2008	461	1,290
	1/26/2009	546	1,320
	8/21/2009	471	1,330
	2/17/2010	NA	1,320
	2/18/2010	469	NA
	2/15/2011	549	1,340
	8/4/2011	455	1,250
	1/31/2012	445	1,150
	8/2/2012	433	NA
	7/31/2013	427	1,170
	7/18/2014	470	1,480
	7/17/2015	425	1,210
	1/28/2016	400	1,280
	7/19/2016	NS	NS
	1/11/2017	377	1,160
	4/10/2017	NS	NS
	7/19/2017	350	1,100
	10/9/2017	348	1,110
	1/12/2018	335	1,120
	4/6/2018	401	1,040
	7/3/2018	343	1,040
	10/4/2018	347	1,070
TRAC-8			
	01/06	2,090	3,786
	03/06	2,090	3,801
	6/14/2006	1,740	3,830
	9/11/2006	1,990	4,630
	12/6/2006	2,130	4,600
	2/27/2007	2,220	4,630
	7/30/2007	2,220	5,110
	1/21/2008	2,100	3,580
	7/7/2008	2,010	4,170
	1/26/2009	2,250	4,280
	8/21/2009	2,260	4,140
	3/8/2010	2,240	4,430
	8/16/2010	2,360	4,350
	2/10/2011	2,880	4,750
	8/4/2011	2,450	5,170
	1/31/2012	2,120	4,600
	8/2/2012	1,600	NA
	1/30/2013	1,920	3,420
	7/31/2013	1,760	4,060
	1/13/2014	1,650	3,270
	7/17/2014	1,770	4,670
	1/13/2015	1,810	4,300
	1/28/2016	NS	NS
	7/19/2016	2,000	4,380

Appendix C  
Historical Groundwater Analytical Results Summary  
Chevron Dollarhide Unit  
Dollarhide, Texas

Sample ID	Sample Date	Chloride (mg/L)	Total Dissolved Solids (mg/L)
TCEQ Secondary Drinking Water Standards (mg/L)		300	1,000
Wilson Ranch			
	01/06	2,243	3,578
	03/06	NS	NS
	6/14/2006	2,410	4,980
	9/12/2006	2,510	4,450
	12/7/2006	2,350	4,750
	2/27/2007	2,110	4,020
	7/30/2007	2,440	5,240
	1/21/2008	2,690	3,880
	7/7/2008	2,030	3,810
	8/25/2009	2,320	5,350
	2/12/2016	888	2,230
	7/19/2016	1,500	3,250
	1/10/2017	1,300	3,130
	4/10/2017	NS	NS
	7/16/2017	1,140	2,380
	10/9/2017	1,200	2,800
	1/12/2018	673	1,600
	4/6/2018	1,360	2,950
	7/6/2018	1,330	2,190
	10/3/2018	1,380	2,680
Smith Residential Well			
	1/13/2017	1,600	2,580
	4/10/2017	NS	NS
	7/17/2017	1,050	2,230
	10/9/2017	1,260	2,660
	1/12/2018	650	1,500
	4/5/2018	1,280	2,670
	7/6/2018	1,340	2,140
	10/3/2018	1,310	2,260

- Notes:
- 1. Constituent concentrations are reported in milligrams per liter (mg/L).
  - 2. Bold font and shading indicates that a detected result exceeded the TCEQ Secondary Drinking Water Standard.
- NS = Not Sampled  
NA = Not Applicable



## **Appendix D**

# **Data Validation Reports**



# Memorandum

February 13, 2018

To: Nick Casten, Brittany White

Ref. No.: 055270

From: <sup>CK</sup> Chris G. Knight/eew/18-NF

Tel: 512-506-8803

**Subject: Analytical Results and Reduced Validation  
Groundwater Monitoring Well Sampling  
Chevron Environmental Management Company (CEMC) - Dollarhide  
Andrews County, Texas  
January 2018**

## 1. Introduction

The following document details a reduced validation of analytical results for groundwater samples collected at the Chevron Environmental Management Company (CEMC) – Dollarhide site during January 2018. Samples were submitted to Xenco Laboratories, located in Midland, Texas. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody form, finished report forms, method blank data, duplicate data, recovery data from surrogate spikes, blank spikes (BS), matrix spikes (MS), laboratory duplicates, and field QA/QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the document entitled:

- i) "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review", USEPA 540-R-10-011, January 2010.

Item i) will subsequently be referred to as the "Guidelines" in this Memorandum.

## 2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 3. The sample chain of custody document and the analytical reports were used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were delivered on ice and stored by the laboratory at the required temperature (0-6°C).



### 3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

### 4. Blank Spike (BS) Analyses

BS or BS/laboratory control sample duplicate (BSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the BS/BSD recoveries is used to evaluate analytical precision. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, BS or BS/BSD were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The BS or BS/BSD contained all analytes of interest. All BS recoveries and RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision, where applicable.

### 5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1.

The MS/MSD samples were spiked with chloride, and the results were evaluated using the "Guidelines". All percent recoveries and RPD values were within the control limits, demonstrating acceptable analytical accuracy and precision with the following exceptions:

- i) Two MS/MSDs were reported with elevated recoveries for chloride analysis due to matrix interferences and were not assessed. No further action was required.

The laboratory performed additional MS/MSD on non-site samples. These cannot be used to assess accuracy and precision for the site samples.



## 6. Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory as specified in Table 1. The duplicate results were evaluated per the "Guidelines".

All duplicate analyses performed were acceptable, demonstrating acceptable analytical precision.

The laboratory performed additional duplicate analyses on non-site samples. These cannot be used to assess precision for the site samples.

## 7. Field QA/QC Samples

The field QA/QC consisted three field duplicate sample sets.

To assess the analytical and sampling protocol precision, three field duplicate sample sets were collected and submitted to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than fifty percent for water. If the reported concentration in either the investigative sample or its duplicate is less than five times the practical quantitation limit (PQL), the evaluation criterion is one times the PQL value.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

## 8. Analyte Reporting

The laboratory reported detected results down to the laboratory's reporting limit (RL) for each analyte.

## 9. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable without qualification.



Table 1

**Sample Collection and Analysis Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>		Comments
					Chloride	TDS	
NM-MW-7-W-180112	NM-MW-7	Water	01/12/2018	11:05	X	X	MS/MSD
NM-MW-4-W-180112	NM-MW-4	Water	01/12/2018	11:15	X	X	
NM-MW-8-W-180112	NM-MW-8	Water	01/12/2018	11:25	X	X	
NM-MW-3-W-180112	NM-MW-3	Water	01/12/2018	11:40	X	X	
NM-MW-2-W-180112	NM-MW-2	Water	01/12/2018	11:50	X	X	
NM-MW-1-W-180112	NM-MW-1	Water	01/12/2018	12:00	X	X	
NM-MW-5-W-180112	NM-MW-5	Water	01/12/2018	12:10	X	X	
NM-MW-6-W-180112	NM-MW-6	Water	01/12/2018	12:15	X	X	
NM-MW-10-W-180112	NM-MW-10	Water	01/12/2018	12:25	X	X	
NM-MW-11-W-180112	NM-MW-11	Water	01/12/2018	12:35	X	X	
NM-MW-13-W-180112	NM-MW-13	Water	01/12/2018	13:00	X	X	DUP
58-B-3-MW-W-180112	58-B-3	Water	01/12/2018	13:20	X	X	
MW-29-W-180112	MW-29	Water	01/12/2018	13:30	X	X	
MW-28-W-180112	MW-28	Water	01/12/2018	13:40	X	X	
RRR Ranch Windmill-W-180115	Ranch Windmill	Water	01/15/2018	11:00	X	X	Field duplicate of Ranch Windmill
RRR Ranch Windmill-WD-180115	Ranch Windmill	Water	01/15/2018	11:00	X	X	
NM-MW-9-W-180115	NM-MW-9	Water	01/15/2018	11:20	X	X	
NM-MW-12-W-180115	NM-MW-12	Water	01/15/2018	11:45	X	X	
Wilson Ranch Well-W-180115	WILSON RANCH WW	Water	01/15/2018	12:00	X	X	MS/MSD; DUP
Smith Residence-W-180115	SMITH WW WEST	Water	01/15/2018	13:20	X	X	MS/MSD; DUP

Table 1

**Sample Collection and Analysis Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>		Comments
					Chloride	TDS	
58-B-2-MW-W-180115	58-B-2	Water	01/15/2018	13:40	X	X	Field duplicate of 58-B-2
58-B-2-MW-WD-180115	58-B-2	Water	01/15/2018	13:40	X	X	
58-B-1-MW-W-180115	58-B-1	Water	01/15/2018	13:55	X	X	
MW-9-W-180115	MW-9	Water	01/15/2018	14:15	X	X	
MW-8-W-180115	MW-8	Water	01/15/2018	14:30	X	X	
MW-27-W-180116	MW-27	Water	01/16/2018	09:40	X	X	
MW-20-W-180116	MW-20	Water	01/16/2018	10:00	X	X	
MW-26-W-180116	MW-26	Water	01/16/2018	10:10	X	X	
MW-10-W-180116	MW-10	Water	01/16/2018	10:15	X	X	
MW-24-W-180116	MW-24	Water	01/16/2018	10:25	X	X	
MW-12-W-180116	MW-12	Water	01/16/2018	10:35	X	X	
MW-18-W-180116	MW-18	Water	01/16/2018	10:40	X	X	
MW-19-W-180116	MW-19	Water	01/16/2018	10:50	X	X	
45-F-1-MW-W-180116	45-F-1	Water	01/16/2018	12:20	X	X	
45-FF-MW-W-180116	45-FF	Water	01/16/2018	12:25	X	X	
45-E-2-MW-W-180116	45-E-2	Water	01/16/2018	12:30	X	X	
45-E-1-MW-W-180116	45-E-1	Water	01/16/2018	12:35	X	X	
44-I-1-MW-W-180116	44-I-1	Water	01/16/2018	12:50	X	X	
44-J-1-MW-W-180116	44-J-1	Water	01/16/2018	12:55	X	X	
44-J-5-MW-W-180116	44-J-5	Water	01/16/2018	13:00	X	X	

Table 1

**Sample Collection and Analysis Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>		Comments
					Chloride	TDS	
44-J-3-MW-W-180116	44-J-3	Water	01/16/2018	13:10	X	X	
44-J-2-MW-W-180116	44-J-2	Water	01/16/2018	13:15	X	X	
44-J-4-MW-W-180116	44-J-4	Water	01/16/2018	13:15	X	X	
DHU-FWS-W-180116	DHU-FWS	Water	01/16/2018	13:35	X	X	MS/MSD; DUP
45-E-3-MW-W-180116	45-E-3	Water	01/16/2018	13:45	X	X	
43-K-1-MW-W-180116	43-K-1	Water	01/16/2018	14:00	X	X	
MW-31-W-180117	MW-31	Water	01/17/2018	09:50	X	X	
MW-25-W-180117	MW-25	Water	01/17/2018	10:15	X	X	
MW-11-W-180117	MW-11	Water	01/17/2018	10:25	X	X	
MW-6-W-180117	MW-6	Water	01/17/2018	10:40	X	X	
MW-5-W-180117	MW-5	Water	01/17/2018	10:50	X	X	
MW-3-W-180117	MW-3	Water	01/17/2018	11:00	X	X	MS/MSD
Trac-4-W-180117	Trac4	Water	01/17/2018	11:10	X	X	
Trac-4-WD-180117	Trac4	Water	01/17/2018	11:10	X	X	Field duplicate of Trac4
MW-14-W-180117	MW-14	Water	01/17/2018	11:15	X	X	
MW-4-W-180117	MW-4	Water	01/17/2018	11:30	X	X	
MW-13-W-180117	MW-13	Water	01/17/2018	12:00	X	X	
MW-30-W-180117	MW-30	Water	01/17/2018	12:05	X	X	
Livermore-W-180117	Livermore	Water	01/17/2018	12:10	X	X	
MW-22-W-180117	MW-22	Water	01/17/2018	12:20	X	X	

Table 1

**Sample Collection and Analysis Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>		Comments
					Chloride	TDS	
MW-23-W-180117	MW-23	Water	01/17/2018	12:25	X	X	
MW-17-W-180117	MW-17	Water	01/17/2018	12:30	X	X	
MW-21-W-180117	MW-21	Water	01/17/2018	12:40	X	X	DUP
MW-16-W-180117	MW-16	Water	01/17/2018	12:50	X	X	MS/MSD
MW-15-W-180117	MW-15	Water	01/17/2018	13:00	X	X	

## Notes:

TDS            - Total Dissolved Solids  
MS/MSD       - Matrix Spike/ Matrix Spike Duplicate  
DUP            - Laboratory Duplicate



Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

<b>Location ID:</b>	<b>43-K-1</b>	<b>44-I-1</b>	<b>44-J-1</b>	<b>44-J-2</b>	<b>44-J-3</b>	<b>44-J-4</b>
<b>Sample Name:</b>	<b>43-K-1-MW-W-180116</b>	<b>44-I-1-MW-W-180116</b>	<b>44-J-1-MW-W-180116</b>	<b>44-J-2-MW-W-180116</b>	<b>44-J-3-MW-W-180116</b>	<b>44-J-4-MW-W-180116</b>
<b>Sample Date:</b>	<b>01/16/2018</b>	<b>01/16/2018</b>	<b>01/16/2018</b>	<b>01/16/2018</b>	<b>01/16/2018</b>	<b>01/16/2018</b>

Parameters	Unit						
<b>General Chemistry</b>							
Chloride	mg/L	8020	2940	3410	4560	4800	3660
TDS	mg/L	10500	5030	6190	7820	8420	7250

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

<b>Location ID:</b>	<b>44-J-5</b>	<b>45-E-1</b>	<b>45-E-2</b>	<b>45-E-3</b>	<b>45-F-1</b>	<b>45-F-1</b>	<b>45-F-1</b>
<b>Sample Name:</b>	<b>44-J-5-MW-W-180116</b>	<b>45-E-1-MW-W-180116</b>	<b>45-E-2-MW-W-180116</b>	<b>45-E-3-MW-W-180116</b>	<b>45-F-1-MW-W-180116</b>	<b>45-F-1-MW-W-180116</b>	<b>45-F-1-MW-W-180116</b>
<b>Sample Date:</b>	<b>01/16/2018</b>	<b>01/16/2018</b>	<b>01/16/2018</b>	<b>01/16/2018</b>	<b>01/16/2018</b>	<b>01/16/2018</b>	<b>01/16/2018</b>

Parameters	Unit						
<b>General Chemistry</b>							
Chloride	mg/L	3500	2300	718	2990	896	4820
TDS	mg/L	6230	4650	3050	4940	1990	8280

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

<b>Location ID:</b>		<b>58-B-1</b>	<b>58-B-2</b>	<b>58-B-2</b>	<b>58-B-3</b>	<b>DHU-FWS</b>	<b>Livermore</b>
<b>Sample Name:</b>		<b>58-B-1-MW-W-180115</b>	<b>58-B-2-MW-W-180115</b>	<b>58-B-2-MW-WD-180115</b>	<b>58-B-3-MW-W-180112</b>	<b>DHU-FWS-W-180116</b>	<b>Livermore-W-180117</b>
<b>Sample Date:</b>		<b>01/15/2018</b>	<b>01/15/2018</b>	<b>01/15/2018</b> <b>Duplicate</b>	<b>01/12/2018</b>	<b>01/16/2018</b>	<b>01/17/2018</b>
<b>Parameters</b>	<b>Unit</b>						
<b>General Chemistry</b>							
Chloride	mg/L	5250	3470	3600	791	615	2700
TDS	mg/L	8620	5860	5940	1290	2820	4830

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

<b>Location ID:</b>	<b>MW-3</b>	<b>MW-4</b>	<b>MW-5</b>	<b>MW-6</b>	<b>MW-8</b>	<b>MW-9</b>
<b>Sample Name:</b>	<b>MW-3-W-180117</b>	<b>MW-4-W-180117</b>	<b>MW-5-W-180117</b>	<b>MW-6-W-180117</b>	<b>MW-8-W-180115</b>	<b>MW-9-W-180115</b>
<b>Sample Date:</b>	<b>01/17/2018</b>	<b>01/17/2018</b>	<b>01/17/2018</b>	<b>01/17/2018</b>	<b>01/15/2018</b>	<b>01/15/2018</b>

<b>Parameters</b>	<b>Unit</b>						
<b>General Chemistry</b>							
Chloride	mg/L	566	345	293	408	813	2540
TDS	mg/L	1410	968	1130	1490	2250	4380

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

Location ID:		MW-10	MW-11	MW-12	MW-13	MW-14	MW-15
Sample Name:		MW-10-W-180116	MW-11-W-180117	MW-12-W-180116	MW-13-W-180117	MW-14-W-180117	MW-15-W-180117
Sample Date:		01/16/2018	01/17/2018	01/16/2018	01/17/2018	01/17/2018	01/17/2018
Parameters	Unit						
<b>General Chemistry</b>							
Chloride	mg/L	5350	8120	13100	1750	1590	873
TDS	mg/L	9650	12700	21400	3920	2910	1770



Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

Location ID:		MW-16	MW-17	MW-18	MW-19	MW-20	MW-21
Sample Name:		MW-16-W-180117	MW-17-W-180117	MW-18-W-180116	MW-19-W-180116	MW-20-W-180116	MW-21-W-180117
Sample Date:		01/17/2018	01/17/2018	01/16/2018	01/16/2018	01/16/2018	01/17/2018
Parameters	Unit						
<b>General Chemistry</b>							
Chloride	mg/L	364	10100	18800	6160	1130	6800
TDS	mg/L	1100	15300	30300	10300	2410	10900

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

<b>Location ID:</b>	<b>MW-22</b>	<b>MW-23</b>	<b>MW-24</b>	<b>MW-25</b>	<b>MW-26</b>	<b>MW-27</b>
<b>Sample Name:</b>	<b>MW-22-W-180117</b>	<b>MW-23-W-180117</b>	<b>MW-24-W-180116</b>	<b>MW-25-W-180117</b>	<b>MW-26-W-180116</b>	<b>MW-27-W-180116</b>
<b>Sample Date:</b>	<b>01/17/2018</b>	<b>01/17/2018</b>	<b>01/16/2018</b>	<b>01/17/2018</b>	<b>01/16/2018</b>	<b>01/16/2018</b>

<b>Parameters</b>	<b>Unit</b>						
<b>General Chemistry</b>							
Chloride	mg/L	10400	5230	4060	20900	1160	2260
TDS	mg/L	16200	9340	8170	31400	2860	4220

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

<b>Location ID:</b>	<b>MW-28</b>	<b>MW-29</b>	<b>MW-30</b>	<b>MW-31</b>	<b>NM-MW-1</b>	<b>NM-MW-2</b>
<b>Sample Name:</b>	<b>MW-28-W-180112</b>	<b>MW-29-W-180112</b>	<b>MW-30-W-180117</b>	<b>MW-31-W-180117</b>	<b>NM-MW-1-W-180112</b>	<b>NM-MW-2-W-180112</b>
<b>Sample Date:</b>	<b>01/12/2018</b>	<b>01/12/2018</b>	<b>01/17/2018</b>	<b>01/17/2018</b>	<b>01/12/2018</b>	<b>01/12/2018</b>

<b>Parameters</b>	<b>Unit</b>						
<b>General Chemistry</b>							
Chloride	mg/L	1470	397	2350	10700	271	639
TDS	mg/L	1280	601	4160	16400	933	990

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

<b>Location ID:</b>		<b>NM-MW-3</b>	<b>NM-MW-4</b>	<b>NM-MW-5</b>	<b>NM-MW-6</b>	<b>NM-MW-7</b>	<b>NM-MW-8</b>
<b>Sample Name:</b>		<b>NM-MW-3-W-180112</b>	<b>NM-MW-4-W-180112</b>	<b>NM-MW-5-W-180112</b>	<b>NM-MW-6-W-180112</b>	<b>NM-MW-7-W-180112</b>	<b>NM-MW-8-W-180112</b>
<b>Sample Date:</b>		<b>01/12/2018</b>	<b>01/12/2018</b>	<b>01/12/2018</b>	<b>01/12/2018</b>	<b>01/12/2018</b>	<b>01/12/2018</b>
<b>Parameters</b>	<b>Unit</b>						
<b>General Chemistry</b>							
Chloride	mg/L	221	39.3	133	137	2110	5260
TDS	mg/L	501	217	893	468	2370	5240

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

Location ID:		NM-MW-9	NM-MW-10	NM-MW-11	NM-MW-12	NM-MW-13	Ranch Windmill
Sample Name:		NM-MW-9-W-180115	NM-MW-10-W-180112	NM-MW-11-W-180112	NM-MW-12-W-180115	NM-MW-13-W-180112	RRR Ranch Windmill-W-180115
Sample Date:		01/15/2018	01/12/2018	01/12/2018	01/15/2018	01/12/2018	01/15/2018
Parameters	Unit						
<b>General Chemistry</b>							
Chloride	mg/L	221	314	155	663	188	1600
TDS	mg/L	717	1050	1710	1470	965	3130



**Table 2**  
**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

Location ID:		Ranch Windmill	SMITH WW WEST	Trac4	Trac4	WILSON RANCH WW
Sample Name:		RRR Ranch Windmill-WD-180115	Smith Residence-W-180115	Trac-4-W-180117	Trac-4-WD-180117	Wilson Ranch Well-W-180115
Sample Date:		01/15/2018	01/15/2018	01/17/2018	01/17/2018	01/15/2018
		Duplicate			Duplicate	
Parameters	Unit					
<b>General Chemistry</b>						
Chloride	mg/L	1570	650	335	336	673
TDS	mg/L	3240	1500	1120	1150	1600

Notes:

TDS - Total Dissolved Solids

**Table 3**

**Analytical Methods**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**January 2018**

<b>Parameter</b>	<b>Method</b>	<b>Matrix</b>	<b>Holding Time</b>
			<b>Collection to Analysis (Days)</b>
Chloride	EPA 300/300.1	Water	28
TDS	SM 2540C	Water	7

**Notes:**

TDS - Total Dissolved Solids

**Method References:**

- EPA - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions
- SM - "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, with subsequent revisions



# Memorandum

May 1, 2018

To: Nick Casten, Brittany White

Ref. No.: 055270

From: <sup>CK</sup> Chris G. Knight/eew/19-NF

Tel: 512-506-8803

**Subject: Analytical Results and Reduced Validation  
Groundwater Monitoring Well Sampling  
Chevron Environmental Management Company (CEMC) - Dollarhide  
Andrews County, Texas  
April 2018**

## 1. Introduction

The following document details a reduced validation of analytical results for groundwater samples collected at the Chevron Environmental Management Company (CEMC) – Dollarhide site during April 2018. Samples were submitted to Xenco Laboratories, located in Midland, Texas. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody form, finished report forms, method blank data, duplicate data, recovery data from surrogate spikes, blank spikes (BS), matrix spikes/matrix spike duplicates (MS/MSD), laboratory duplicates, and field QA/QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the document entitled:

- i) "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review", USEPA 540-R-10-011, January 2010.

Item i) will subsequently be referred to as the "Guidelines" in this Memorandum.

## 2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 3. The sample chain of custody document and the analytical reports were used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were delivered on ice and stored by the laboratory at the required temperature (0-6°C).



### 3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

### 4. Blank Spike Analyses

BS or BS/laboratory control sample duplicate (BSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the BS/BSD recoveries is used to evaluate analytical precision. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, BS or BS/BSD were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The BS or BS/BSD contained all analytes of interest. All BS recoveries and RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision, where applicable.

### 5. Matrix Spike/Matrix Spike Duplicate Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1.

The MS/MSD samples were spiked with chloride, and the results were evaluated using the "Guidelines". All percent recoveries and RPD values were within the control limits, demonstrating acceptable analytical accuracy and precision with the following exceptions:

- i) One MS/MSD was reported with low recoveries for chloride analysis due to matrix interferences and were not assessed. No further action was required.

The laboratory performed additional MS/MSD on non-site samples. These cannot be used to assess accuracy and precision for the site samples.



## 6. Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory as specified in Table 1. The duplicate results were evaluated per the "Guidelines".

All duplicate analyses performed were acceptable, demonstrating acceptable analytical precision.

The laboratory performed additional duplicate analyses on non-site samples. These cannot be used to assess precision for the site samples.

## 7. Field QA/QC Samples

The field QA/QC consisted two field duplicate sample sets.

To assess the analytical and sampling protocol precision, two field duplicate sample sets were collected and submitted to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than fifty percent for water. If the reported concentration in either the investigative sample or its duplicate is less than five times the practical quantitation limit (PQL), the evaluation criterion is one times the PQL value.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision with the following exception (see Table 4):

- i) NM-MW-11-W-18040 and NM-MW-11-WD-18040 did show some variability in chloride results and were qualified as estimated.

## 8. Analyte Reporting

The laboratory reported detected results down to the laboratory's reporting limit (RL) for each analyte.

## 9. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.



Table 1

**Sample Collection and Analysis Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**April 2018**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>		Comments
					Chloride	TDS	
MW-18-W-180405	MW-18	Water	04/05/2018	10:20	X	X	
MW-19-W-180405	MW-19	Water	04/05/2018	10:30	X	X	
MW-12-W-180405	MW-12	Water	04/05/2018	10:40	X	X	
NM-MW-13-W-180405	NM-MW-13	Water	04/05/2018	10:45	X	X	
MW-31-W-180405	MW-31	Water	04/05/2018	10:50	X	X	
MW-24-W-180405	MW-24	Water	04/05/2018	11:00	X	X	
NM-MW-11-W-180405	NM-MW-11	Water	04/05/2018	11:10	X	X	
NM-MW-11-WD-180405	NM-MW-11	Water	04/05/2018	11:10	X	X	Field duplicate of NM-MW-11
MW-26-W-180405	MW-26	Water	04/05/2018	11:10	X	X	
MW-20-W-180405	MW-20	Water	04/05/2018	11:20	X	X	
NM-MW-10-W-180405	NM-MW-10	Water	04/05/2018	11:30	X	X	
MW-27-W-180405	MW-27	Water	04/05/2018	11:35	X	X	
DHU-FWS-180405	DHU-FWS	Water	04/05/2018	11:40	X	X	
MW-8-W-180405	MW-8	Water	04/05/2018	11:50	X	X	
NM-MW-12-W-180405	NM-MW-12	Water	04/05/2018	11:55	X	X	
MW-9-W-180405	MW-9	Water	04/05/2018	12:00	X	X	
NM-MW-9-W-180405	NM-MW-9	Water	04/05/2018	12:05	X	X	
MW-29-W-180405	MW-29	Water	04/05/2018	12:25	X	X	
Smith Ranch HouseWW180405	SMITH WW WEST	Water	04/05/2018	12:30	X	X	MS/MSD; DUP

Table 1

**Sample Collection and Analysis Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**April 2018**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>		Comments
					Chloride	TDS	
MW-28-W-180405	MW-28	Water	04/05/2018	12:35	X	X	
NM-MW-5-W-180405	NM-MW-5	Water	04/05/2018	12:40	X	X	
NM-MW-1-W-180405	NM-MW-1	Water	04/05/2018	12:50	X	X	
MW-10-W-180405	MW-10	Water	04/05/2018	12:50	X	X	
MW-10-WD-180405	MW-10	Water	04/05/2018	12:50	X	X	Field duplicate of MW-10
NM-MW-6-W-180405	NM-MW-6	Water	04/05/2018	13:00	X	X	
MW-11-W-180405	MW-11	Water	04/05/2018	13:00	X	X	DUP
MW-6-W-180405	MW-6	Water	04/05/2018	13:10	X	X	
NM-MW-2-W-180405	NM-MW-2	Water	04/05/2018	13:15	X	X	
MW-5-W-180405	MW-5	Water	04/05/2018	13:20	X	X	
NM-MW-3-W-180405	NM-MW-3	Water	04/05/2018	13:25	X	X	
MW-3-W-180405	MW-3	Water	04/05/2018	13:40	X	X	
RRR Ranch Windmill-WW-180405	Ranch Windmill	Water	04/05/2018	13:45	X	X	
NM-MW-7-W-180405	NM-MW-7	Water	04/05/2018	14:00	X	X	
MW-25-W-180405	MW-25	Water	04/05/2018	14:00	X	X	DUP
NM-MW-4-W-180405	NM-MW-4	Water	04/05/2018	14:10	X	X	
NM-MW-8-W-180405	NM-MW-8	Water	04/05/2018	14:15	X	X	
Livermore-W-180406	Livermore	Water	04/06/2018	10:30	X	X	
MW-30-W-180406	MW-30	Water	04/06/2018	10:50	X	X	

Table 1

**Sample Collection and Analysis Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**April 2018**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>		Comments
					Chloride	TDS	
MW-13-W-180406	MW-13	Water	04/06/2018	11:00	X	X	DUP MS/MSD; DUP
MW-4-W-180406	MW-4	Water	04/06/2018	11:10	X	X	
MW-14-W-180406	MW-14	Water	04/06/2018	11:20	X	X	
Trac-4-W-180406	Trac4	Water	04/06/2018	11:30	X	X	
MW-15-W-180406	MW-15	Water	04/06/2018	11:40	X	X	
MW-16-W-180406	MW-16	Water	04/06/2018	11:50	X	X	
MW-21-W-180406	MW-21	Water	04/06/2018	12:10	X	X	
MW-17-W-180406	MW-17	Water	04/06/2018	12:20	X	X	
MW-22-W-180406	MW-22	Water	04/06/2018	12:30	X	X	
MW-23-W-180406	MW-23	Water	04/06/2018	12:40	X	X	
Wilson Ranch-W-180406	WILSON RANCH WW	Water	04/06/2018	13:00	X	X	

## Notes:

TDS            - Total Dissolved Solids  
MS/MSD       - Matrix Spike/ Matrix Spike Duplicate  
DUP            - Laboratory Duplicate

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**April 2018**

Location ID:		DHU-FWS	Livermore	MW-3	MW-4	MW-5	MW-6	MW-8
Sample Name:		DHU-FWS-180405	Livermore-W-180406	MW-3-W-180405	MW-4-W-180406	MW-5-W-180405	MW-6-W-180405	MW-8-W-180405
Sample Date:		04/05/2018	04/06/2018	04/05/2018	04/06/2018	04/05/2018	04/05/2018	04/05/2018
Parameters	Unit							
<b>General Chemistry</b>								
Chloride	mg/L	572	2530	589	350	289	411	839
TDS	mg/L	2640	1430	1300	413	1140	1430	2300

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**April 2018**

<b>Location ID:</b>	<b>MW-9</b>	<b>MW-10</b>	<b>MW-10</b>	<b>MW-11</b>	<b>MW-12</b>	<b>MW-13</b>	<b>MW-14</b>
<b>Sample Name:</b>	<b>MW-9-W-180405</b>	<b>MW-10-W-180405</b>	<b>MW-10-WD-180405</b>	<b>MW-11-W-180405</b>	<b>MW-12-W-180405</b>	<b>MW-13-W-180406</b>	<b>MW-14-W-180406</b>
<b>Sample Date:</b>	<b>04/05/2018</b>	<b>04/05/2018</b>	<b>04/05/2018</b>	<b>04/05/2018</b>	<b>04/05/2018</b>	<b>04/06/2018</b>	<b>04/06/2018</b>

Duplicate

**Parameters****Unit****General Chemistry**

Chloride	mg/L	2930	5470	5420	7990	13300	1780	1720
TDS	mg/L	4690	8630	8540	11000	19400	664	1270



Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**April 2018**

Location ID:		MW-15	MW-16	MW-17	MW-18	MW-19	MW-20
Sample Name:		MW-15-W-180406	MW-16-W-180406	MW-17-W-180406	MW-18-W-180405	MW-19-W-180405	MW-20-W-180405
Sample Date:		04/06/2018	04/06/2018	04/06/2018	04/05/2018	04/05/2018	04/05/2018
Parameters	Unit						
<b>General Chemistry</b>							
Chloride	mg/L	877	432	9590	20000	6600	1100
TDS	mg/L	1900	1310	14800	30400	9880	2130

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**April 2018**

<b>Location ID:</b>	<b>MW-21</b>	<b>MW-22</b>	<b>MW-23</b>	<b>MW-24</b>	<b>MW-25</b>	<b>MW-26</b>
<b>Sample Name:</b>	<b>MW-21-W-180406</b>	<b>MW-22-W-180406</b>	<b>MW-23-W-180406</b>	<b>MW-24-W-180405</b>	<b>MW-25-W-180405</b>	<b>MW-26-W-180405</b>
<b>Sample Date:</b>	<b>04/06/2018</b>	<b>04/06/2018</b>	<b>04/06/2018</b>	<b>04/05/2018</b>	<b>04/05/2018</b>	<b>04/05/2018</b>

**Parameters****Unit****General Chemistry**

Chloride	mg/L	7630	10500	6830	3980	22400	1230
TDS	mg/L	11000	17200	10100	7080	32800	2730

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**April 2018**

<b>Location ID:</b>	<b>MW-27</b>	<b>MW-28</b>	<b>MW-29</b>	<b>MW-30</b>	<b>MW-31</b>	<b>NM-MW-1</b>
<b>Sample Name:</b>	<b>MW-27-W-180405</b>	<b>MW-28-W-180405</b>	<b>MW-29-W-180405</b>	<b>MW-30-W-180406</b>	<b>MW-31-W-180405</b>	<b>NM-MW-1-W-180405</b>
<b>Sample Date:</b>	<b>04/05/2018</b>	<b>04/05/2018</b>	<b>04/05/2018</b>	<b>04/06/2018</b>	<b>04/05/2018</b>	<b>04/05/2018</b>

**Parameters****Unit****General Chemistry**

Chloride	mg/L	2400	1540	396	2240	11700	263
TDS	mg/L	4250	2660	1100	1310	17700	1400

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**April 2018**

<b>Location ID:</b>	<b>NM-MW-2</b>	<b>NM-MW-3</b>	<b>NM-MW-4</b>	<b>NM-MW-5</b>	<b>NM-MW-6</b>	<b>NM-MW-7</b>
<b>Sample Name:</b>	<b>NM-MW-2-W-180405</b>	<b>NM-MW-3-W-180405</b>	<b>NM-MW-4-W-180405</b>	<b>NM-MW-5-W-180405</b>	<b>NM-MW-6-W-180405</b>	<b>NM-MW-7-W-180405</b>
<b>Sample Date:</b>	<b>04/05/2018</b>	<b>04/05/2018</b>	<b>04/05/2018</b>	<b>04/05/2018</b>	<b>04/05/2018</b>	<b>04/05/2018</b>

**Parameters****Unit****General Chemistry**

Chloride	mg/L	610	180	34.1	134	127	2090
TDS	mg/L	1210	601	410	1300	836	4270

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**April 2018**

Location ID:		NM-MW-8	NM-MW-9	NM-MW-10	NM-MW-11	NM-MW-11	NM-MW-12
Sample Name:		NM-MW-8-W-180405	NM-MW-9-W-180405	NM-MW-10-W-180405	NM-MW-11-W-180405	NM-MW-11-WD-180405	NM-MW-12-W-180405
Sample Date:		04/05/2018	04/05/2018	04/05/2018	04/05/2018	04/05/2018 Duplicate	04/05/2018
Parameters	Unit						
<b>General Chemistry</b>							
Chloride	mg/L	5110	234	301	699 J	135 J	656
TDS	mg/L	9160	807	1620	1920	1600	1430



**Table 2**

**Analytical Results Summary  
Groundwater Monitoring Well Sampling  
Chevron Environmental Management Company (CEMC) - Dollarhide  
Andrews County, Texas  
April 2018**

<b>Location ID:</b>		<b>NM-MW-13</b>	<b>Ranch Windmill</b>	<b>SMITH WW WEST</b>	<b>Trac4</b>	<b>WILSON RANCH WW</b>
<b>Sample Name:</b>		<b>NM-MW-13-W-180405</b>	<b>RRR Ranch Windmill-WW-180405</b>	<b>Smith Ranch HouseWWW180405</b>	<b>Trac-4-W-180406</b>	<b>Wilson Ranch-W-180406</b>
<b>Sample Date:</b>		<b>04/05/2018</b>	<b>04/05/2018</b>	<b>04/05/2018</b>	<b>04/06/2018</b>	<b>04/06/2018</b>
<b>Parameters</b>	<b>Unit</b>					
<b>General Chemistry</b>						
Chloride	mg/L	180	1620	1280	401	1360
TDS	mg/L	1090	3110	2670	1040	2950

**Notes:**

TDS - Total Dissolved Solids

J - Estimated concentration

**Table 3**

**Analytical Methods**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**April 2018**

<b>Parameter</b>	<b>Method</b>	<b>Matrix</b>	<b>Holding Time</b>
			<b>Collection to Analysis (Days)</b>
Chloride	EPA 300/300.1	Water	28
TDS	SM 2540C	Water	7

**Notes:**

TDS - Total Dissolved Solids

**Method References:**

- EPA - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions
- SM - "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, with subsequent revisions

**Table 4**

**Qualified Sample Data Due to Variability in Field Duplicate Results**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**April 2018**

<b>Parameter</b>	<b>Analyte</b>	<b>RPD</b>	<b>Sample ID</b>	<b>Qualified Result</b>	<b>Field Duplicate Sample ID</b>	<b>Qualified Result</b>	<b>Units</b>
General Chemistry	TDS	135	NM-MW-11-W-180405	699 J	NM-MW-11-WD-180405	135 J	mg/L

## Notes:

RPD - Relative Percent Difference  
 TDS - Total Dissolved Solids  
 J - Estimated concentration



# Memorandum

July 20, 2018

To: Nick Casten, Brittany White

Ref. No.: 055270

From: <sup>CK</sup> Chris G. Knight/eew/20-NF

Tel: 512-506-8803

**Subject: Analytical Results and Reduced Validation  
Groundwater Monitoring Well Sampling  
Chevron Environmental Management Company (CEMC) - Dollarhide  
Andrews County, Texas  
July 2018**

## 1. Introduction

The following document details a reduced validation of analytical results for groundwater samples collected at the Chevron Environmental Management Company (CEMC) – Dollarhide site during July 2018. Samples were submitted to Xenco Laboratories, located in Midland, Texas. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody form, finished report forms, method blank data, duplicate data, recovery data from surrogate spikes, blank spikes (BS), matrix spikes/matrix spike duplicates (MS/MSD), laboratory duplicates, and field QA/QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the document entitled:

- i) "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review", USEPA 540-R-10-011, January 2010.

Item i) will subsequently be referred to as the "Guidelines" in this Memorandum.

## 2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 3. The sample chain of custody document and the analytical reports were used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were delivered on ice and stored by the laboratory at the required temperature (0-6°C).



### 3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

### 4. Blank Spike Analyses

BS or BS/laboratory control sample duplicate (BSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the BS/BSD recoveries is used to evaluate analytical precision. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, BS or BS/BSD were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The BS or BS/BSD contained all analytes of interest. All BS recoveries and RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision, where applicable.

### 5. Matrix Spike/Matrix Spike Duplicate Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

The laboratory performed MS/MSD on non-site samples. These cannot be used to assess accuracy and precision for the site samples.

### 6. Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory as specified in Table 1. The duplicate results were evaluated per the "Guidelines".

All duplicate analyses performed were acceptable, demonstrating acceptable analytical precision.

The laboratory performed additional duplicate analyses on non-site samples. These cannot be used to assess precision for the site samples.





## 7. Field QA/QC Samples

The field QA/QC consisted five field duplicate sample sets.

To assess the analytical and sampling protocol precision, five field duplicate sample sets were collected and submitted to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than fifty percent for water. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criterion is one times the RL value.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

## 8. Analyte Reporting

The laboratory reported detected results down to the laboratory's RL for each analyte.

## 9. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable without qualification.

Table 1

**Sample Collection and Analysis Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>		Comments
					Chloride	TDS	
MW-15-180703	MW-15	Water	07/03/2018	09:05	X	X	DUP
MW-16-180703	MW-16	Water	07/03/2018	09:20	X	X	
MW-21-180703	MW-21	Water	07/03/2018	09:30	X	X	
DUP-1	MW-21	Water	07/03/2018	09:30	X	X	Field duplicate of MW-21
MW-17-180703	MW-17	Water	07/03/2018	09:40	X	X	
MW-23-180703	MW-23	Water	07/03/2018	09:55	X	X	
MW-22-180703	MW-22	Water	07/03/2018	10:00	X	X	Field duplicate of Trac4
MW-13-180703	MW-13	Water	07/03/2018	10:05	X	X	
MW-14-180703	MW-14	Water	07/03/2018	10:25	X	X	
Trac-4-180703	Trac4	Water	07/03/2018	10:30	X	X	
DUP-2	Trac4	Water	07/03/2018	10:30	X	X	
MW-3	MW-3	Water	07/03/2018	10:50	X	X	
MW-4	MW-4	Water	07/03/2018	11:05	X	X	
MW-5	MW-5	Water	07/03/2018	11:20	X	X	
MW-6	MW-6	Water	07/03/2018	11:30	X	X	
MW-11	MW-11	Water	07/03/2018	11:40	X	X	
MW-25	MW-25	Water	07/03/2018	11:55	X	X	
Livermore	Livermore	Water	07/03/2018	12:10	X	X	
MW-30	MW-30	Water	07/03/2018	12:30	X	X	

Table 1

**Sample Collection and Analysis Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>		Comments
					Chloride	TDS	
MW-27	MW-27	Water	07/03/2018	13:45	X	X	
MW-10	MW-10	Water	07/03/2018	14:00	X	X	
MW-24	MW-24	Water	07/03/2018	14:10	X	X	DUP
MW-31	MW-31	Water	07/03/2018	14:25	X	X	DUP
MW-12	MW-12	Water	07/03/2018	14:35	X	X	
MW-18	MW-18	Water	07/03/2018	14:45	X	X	
58-B-1-MW-W-180705	58-B-1	Water	07/05/2018	00:00	X	X	
MW-19-W-180705	MW-19	Water	07/05/2018	10:50	X	X	
MW-26-W-180705	MW-26	Water	07/05/2018	11:00	X	X	
MW-20-W-180705	MW-20	Water	07/05/2018	11:20	X	X	
44-J-4-MW-W-180705	44-J-4	Water	07/05/2018	11:25	X	X	
45-F-I-MW-W-180705	45-F-1	Water	07/05/2018	11:35	X	X	
45-FF-MW-W-180705	45-FF	Water	07/05/2018	11:40	X	X	
45-E-2-MW-W-180705	45-E-2	Water	07/05/2018	11:45	X	X	
45-E-1-MW-W-180705	45-E-1	Water	07/05/2018	11:55	X	X	
44-J-3-MW-W-180705	44-J-3	Water	07/05/2018	12:05	X	X	
44-J-5-MW-W-180705	44-J-5	Water	07/05/2018	12:15	X	X	
44-J-I-MW-W-180705	44-J-1	Water	07/05/2018	12:35	X	X	
44-I-I-MW-W-180705	44-I-1	Water	07/05/2018	12:45	X	X	

Table 1

**Sample Collection and Analysis Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>		Comments
					Chloride	TDS	
44-J-2-MW-W-180705	44-J-2	Water	07/05/2018	13:00	X	X	
43-K-1-MW-W-180705	43-K-1	Water	07/05/2018	13:05	X	X	
45-E-3-MW-W-180705	45-E-3	Water	07/05/2018	13:15	X	X	DUP
DHU-FWS-W-180705	DHU-FWS	Water	07/05/2018	14:00	X	X	DUP
DUP-3-W-180705	DHU-FWS	Water	07/05/2018	14:00	X	X	Field duplicate of DHU-FWS
MW-8-W-180705	MW-8	Water	07/05/2018	14:15	X	X	
MW-9-W-180705	MW-9	Water	07/05/2018	14:30	X	X	
58-B-2-MW-W-180705	58-B-2	Water	07/05/2018	14:40	X	X	
58-B-3-MW-W-180706	58-B-3	Water	07/06/2018	11:15	X	X	
MW-29-W-180706	MW-29	Water	07/06/2018	11:30	X	X	
MW-28-W-180706	MW-28	Water	07/06/2018	11:40	X	X	
NM-MW-11-W-180706	NM-MW-11	Water	07/06/2018	12:00	X	X	
NM-MW-13-W-180706	NM-MW-13	Water	07/06/2018	12:20	X	X	
NM-MW-10-W-180706	NM-MW-10	Water	07/06/2018	12:40	X	X	
NM-MW-6-W-180706	NM-MW-6	Water	07/06/2018	12:45	X	X	
NM-MW-12-W-180706	NM-MW-12	Water	07/06/2018	13:00	X	X	
Wilson Ranch Well-W-180706	WILSON RANCH WW	Water	07/06/2018	13:10	X	X	
DUP-4-W 180706	WILSON RANCH WW	Water	07/06/2018	13:10	X	X	Field duplicate of WILSON RANCH WW
Smith Residence-W-180706	SMITH WW WEST	Water	07/06/2018	13:20	X	X	

Table 1

**Sample Collection and Analysis Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>		Comments
					Chloride	TDS	
NM-MW-9-W-180706	NM-MW-9	Water	07/06/2018	13:30	X	X	
NM-MW-5-W-180706	NM-MW-5	Water	07/06/2018	13:50	X	X	
NM-MW-1-W-180706	NM-MW-1	Water	07/06/2018	13:55	X	X	
NM-MW-2-W-180706	NM-MW-2	Water	07/06/2018	14:00	X	X	DUP
NM-MW-3-W-180706	NM-MW-3	Water	07/06/2018	14:10	X	X	
Dup-5-W-180706	NM-MW-3	Water	07/06/2018	14:10	X	X	Field duplicate of NM-MW-3
NM-MW-7-W-180706	NM-MW-7	Water	07/06/2018	14:20	X	X	
RRR Ranch Windmill-W-180706	Ranch Windmill	Water	07/06/2018	14:30	X	X	
NM-MW-4-W-180706	NM-MW-4	Water	07/06/2018	14:45	X	X	
NM-MW-8-W-180706	NM-MW-8	Water	07/06/2018	15:00	X	X	

## Notes:

TDS            - Total Dissolved Solids  
DUP            - Laboratory Duplicate



Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

Location ID:		43-K-1	44-I-1	44-J-1	44-J-2	44-J-3	44-J-4
Sample Name:		43-K-I-MW-W-180705	44-I-I-MW-W-180705	44-J-I-MW-W-180705	44-J-2-MW-W-180705	44-J-3-MW-W-180705	44-J-4-MW-W-180705
Sample Date:		07/05/2018	07/05/2018	07/05/2018	07/05/2018	07/05/2018	07/05/2018
Parameters	Unit						
<b>General Chemistry</b>							
Chloride	mg/L	7840	3170	4300	5050	5290	4520
TDS	mg/L	12700	5450	6910	8000	9230	7430

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

Location ID:		44-J-5	45-E-1	45-E-2	45-E-3	45-F-1	45-FF
Sample Name:		44-J-5-MW-W-180705	45-E-1-MW-W-180705	45-E-2-MW-W-180705	45-E-3-MW-W-180705	45-F-1-MW-W-180705	45-FF-MW-W-180705
Sample Date:		07/05/2018	07/05/2018	07/05/2018	07/05/2018	07/05/2018	07/05/2018
Parameters	Unit						
<b>General Chemistry</b>							
Chloride	mg/L	4060	2530	1790	3360	923	5310
TDS	mg/L	6600	4220	3130	5750	1840	9090

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

<b>Location ID:</b>		<b>58-B-1</b>	<b>58-B-2</b>	<b>58-B-3</b>	<b>DHU-FWS</b>	<b>DHU-FWS</b>	<b>Livermore</b>
<b>Sample Name:</b>		<b>58-B-1-MW-W-180705</b>	<b>58-B-2-MW-W18705</b>	<b>58-B-3-MW-W-180706</b>	<b>DHU-FWS-W-180705</b>	<b>DUP-3-W-180705</b>	<b>Livermore</b>
<b>Sample Date:</b>		<b>07/05/2018</b>	<b>07/05/2018</b>	<b>07/06/2018</b>	<b>07/05/2018</b>	<b>07/05/2018</b> <b>Duplicate</b>	<b>07/03/2018</b>
<b>Parameters</b>	<b>Unit</b>						
<b>General Chemistry</b>							
Chloride	mg/L	6440	3900	976	593	593	2560
TDS	mg/L	10000	6410	1580	2710	2860	4580

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

<b>Location ID:</b>		<b>MW-3</b>	<b>MW-4</b>	<b>MW-5</b>	<b>MW-6</b>	<b>MW-8</b>	<b>MW-9</b>	<b>MW-10</b>
<b>Sample Name:</b>		<b>MW-3</b>	<b>MW-4</b>	<b>MW-5</b>	<b>MW-6</b>	<b>MW-8-W-180705</b>	<b>MW-9-W-180705</b>	<b>MW-10</b>
<b>Sample Date:</b>		<b>07/03/2018</b>	<b>07/03/2018</b>	<b>07/03/2018</b>	<b>07/03/2018</b>	<b>07/05/2018</b>	<b>07/05/2018</b>	<b>07/03/2018</b>
<b>Parameters</b>	<b>Unit</b>							
<b>General Chemistry</b>								
Chloride	mg/L	593	338	274	402	868	2880	5340
TDS	mg/L	1310	831	1020	1340	2350	4250	11000

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

<b>Location ID:</b>		<b>MW-11</b>	<b>MW-12</b>	<b>MW-13</b>	<b>MW-14</b>	<b>MW-15</b>	<b>MW-16</b>	<b>MW-17</b>
<b>Sample Name:</b>		<b>MW-11</b>	<b>MW-12</b>	<b>MW-13-180703</b>	<b>MW-14-180703</b>	<b>MW-15-180703</b>	<b>MW-16-180703</b>	<b>MW-17-180703</b>
<b>Sample Date:</b>		<b>07/03/2018</b>	<b>07/03/2018</b>	<b>07/03/2018</b>	<b>07/03/2018</b>	<b>07/03/2018</b>	<b>07/03/2018</b>	<b>07/03/2018</b>
<b>Parameters</b>	<b>Unit</b>							
<b>General Chemistry</b>								
Chloride	mg/L	7940	13200	2280	1540	914	430	8570
TDS	mg/L	11800	20200	4560	2660	1650	1160	15000



Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

Location ID: Sample Name: Sample Date:		MW-18 MW-18 07/03/2018	MW-19 MW-19-W-180705 07/05/2018	MW-20 MW-20-W-180705 07/05/2018	MW-21 MW-21-180703 07/03/2018	MW-21 DUP-1 07/03/2018 Duplicate	MW-22 MW-22-180703 07/03/2018	MW-23 MW-23-180703 07/03/2018
Parameters	Unit							
<b>General Chemistry</b>								
Chloride	mg/L	22000	6580	1150	6860	6050	10300	4390
TDS	mg/L	38500	11500	2160	11100	10000	16300	6870

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

<b>Location ID:</b>		<b>MW-24</b>	<b>MW-25</b>	<b>MW-26</b>	<b>MW-27</b>	<b>MW-28</b>	<b>MW-29</b>	<b>MW-30</b>
<b>Sample Name:</b>		<b>MW-24</b>	<b>MW-25</b>	<b>MW-26-W-180705</b>	<b>MW-27</b>	<b>MW-28-W-180706</b>	<b>MW-29-W-180706</b>	<b>MW-30</b>
<b>Sample Date:</b>		<b>07/03/2018</b>	<b>07/03/2018</b>	<b>07/05/2018</b>	<b>07/03/2018</b>	<b>07/06/2018</b>	<b>07/06/2018</b>	<b>07/03/2018</b>
<b>Parameters</b>	<b>Unit</b>							
<b>General Chemistry</b>								
Chloride	mg/L	4140	23600	1210	2510	1610	397	2280
TDS	mg/L	8210	37600	2810	4790	2540	860	3650

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

<b>Location ID:</b>		<b>MW-31</b>	<b>NM-MW-1</b>	<b>NM-MW-2</b>	<b>NM-MW-3</b>	<b>NM-MW-3</b>	<b>NM-MW-4</b>
<b>Sample Name:</b>		<b>MW-31</b>	<b>NM-MW-1-W-180706</b>	<b>NM-MW-2-W-180706</b>	<b>NM-MW-3-W-180706</b>	<b>Dup-5-W-180706</b>	<b>NM-MW-4-W-180706</b>
<b>Sample Date:</b>		<b>07/03/2018</b>	<b>07/06/2018</b>	<b>07/06/2018</b>	<b>07/06/2018</b>	<b>07/06/2018</b> <b>Duplicate</b>	<b>07/06/2018</b>
<b>Parameters</b>	<b>Unit</b>						
<b>General Chemistry</b>							
Chloride	mg/L	12100	275	679	220	213	40.6
TDS	mg/L	19800	1350	1160	625	631	414

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

<b>Location ID:</b>		<b>NM-MW-5</b>	<b>NM-MW-6</b>	<b>NM-MW-7</b>	<b>NM-MW-8</b>	<b>NM-MW-9</b>	<b>NM-MW-10</b>
<b>Sample Name:</b>		<b>NM-MW-5-W-180706</b>	<b>NM-MW-6-W-180706</b>	<b>NM-MW-7-W-180706</b>	<b>NM-MW-8-W-180706</b>	<b>NM-MW-9-W-180706</b>	<b>NM-MW-10-W-180706</b>
<b>Sample Date:</b>		<b>07/06/2018</b>	<b>07/06/2018</b>	<b>07/06/2018</b>	<b>07/06/2018</b>	<b>07/06/2018</b>	<b>07/06/2018</b>
<b>Parameters</b>	<b>Unit</b>						
<b>General Chemistry</b>							
Chloride	mg/L	140	134	2330	5960	252	308
TDS	mg/L	1240	801	3780	9620	785	1450

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

<b>Location ID:</b>		<b>NM-MW-11</b>	<b>NM-MW-12</b>	<b>NM-MW-13</b>	<b>Ranch Windmill</b>	<b>SMITH WW WEST</b>
<b>Sample Name:</b>		<b>NM-MW-11-W-180706</b>	<b>NM-MW-12-W-180706</b>	<b>NM-MW-13-W-180706</b>	<b>RRR Ranch Windmill-W-180706</b>	<b>Smith Residence-W-180706</b>
<b>Sample Date:</b>		<b>07/06/2018</b>	<b>07/06/2018</b>	<b>07/06/2018</b>	<b>07/06/2018</b>	<b>07/06/2018</b>
<b>Parameters</b>	<b>Unit</b>					
<b>General Chemistry</b>						
Chloride	mg/L	143	665	184	1670	1340
TDS	mg/L	1820	1250	1050	3030	2140



Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

Location ID: Sample Name: Sample Date:		Trac4 Trac-4-180703 07/03/2018	Trac4 DUP-2 07/03/2018 Duplicate	WILSON RANCH WW Wilson Ranch Well-W-180706 07/06/2018	WILSON RANCH WW DUP-4-W 180706 07/06/2018 Duplicate
Parameters	Unit				
<b>General Chemistry</b>					
Chloride	mg/L	343	327	1330	1370
TDS	mg/L	1040	1060	2190	2220

## Notes:

TDS - Total Dissolved Solids

J - Estimated concentration

**Table 3**

**Analytical Methods**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**July 2018**

<b>Parameter</b>	<b>Method</b>	<b>Matrix</b>	<b>Holding Time</b>
			<b>Collection to Analysis (Days)</b>
Chloride	EPA 300/300.1	Water	28
TDS	SM 2540C	Water	7

**Notes:**

TDS - Total Dissolved Solids

**Method References:**

- EPA - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions
- SM - "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, with subsequent revisions



# Memorandum

October 19, 2018

To: Nick Casten, Brittany White

Ref. No.: 055270

From: <sup>CK</sup> Chris G. Knight/eew/21-NF

Tel: 512-506-8803

**Subject: Analytical Results and Reduced Validation  
Groundwater Monitoring Well Sampling  
Chevron Environmental Management Company (CEMC) - Dollarhide  
Andrews County, Texas  
October 2018**

## 1. Introduction

The following document details a reduced validation of analytical results for groundwater samples collected at the Chevron Environmental Management Company (CEMC) – Dollarhide site during October 2018. Samples were submitted to Xenco Laboratories, located in Midland, Texas. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody form, finished report forms, method blank data, duplicate data, recovery data from laboratory control samples (LCS), matrix spikes/matrix spike duplicates (MS/MSD), laboratory duplicates, and field QA/QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the document entitled:

- i) "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review", USEPA 540-R-10-011, January 2010.

Item i) will subsequently be referred to as the "Guidelines" in this Memorandum.

## 2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 3. The sample chain of custody document and the analytical reports were used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were delivered on ice and stored by the laboratory at the required temperature (0-6°C).



### 3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

### 4. Laboratory Control Sample Analyses

LCS/laboratory control sample duplicates (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the LCS/LCSD recoveries is used to evaluate analytical precision.

For this study, LCS/LCSD were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS/LCSD contained chloride. LCS recoveries were assessed per the "Guidelines". All LCS recoveries and RPDs were within the control limits, demonstrating acceptable analytical accuracy and precision.

### 5. Matrix Spike/Matrix Spike Duplicate Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1. The MS/MSD samples were spiked with chloride and the results were evaluated using the "Guidelines".

- i) All MS/MSD samples were reported with elevated recoveries for chloride analysis due to possible matrix interferences and were not assessed. No further action was required.

The laboratory performed additional MS/MSD on non-site samples. These cannot be used to assess accuracy and precision for the site samples.

### 6. Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory as specified in Table 1 for total dissolved solids (TDS). The duplicate results were evaluated per the "Guidelines".



All duplicate analyses performed were acceptable, demonstrating acceptable analytical precision.

The laboratory performed additional duplicate analyses on non-site samples. These cannot be used to assess precision for the site samples.

## 7. Field QA/QC Samples

The field QA/QC consisted two field duplicate sample sets.

To assess the analytical and sampling protocol precision, two field duplicate sample sets were collected and submitted to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than fifty percent for water. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criterion is one times the RL value.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

## 8. Analyte Reporting

The laboratory reported detected results down to the laboratory's RL for each analyte.

## 9. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable without qualification.



Table 1

**Sample Collection and Analysis Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**October 2018**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>		Comments
					Chloride	TDS	
NM-MW-8-W-181003	NM-MW-8	Water	10/03/2018	09:25	X	X	DUP
NM-MW-4-W-181003	NM-MW-4	Water	10/03/2018	09:35	X	X	
RRR-Ranch-W-181003	Ranch Windmill	Water	10/03/2018	09:55	X	X	
NM-MW-7-W-181003	NM-MW-7	Water	10/03/2018	10:05	X	X	
NM-MW-3-W-181003	NM-MW-3	Water	10/03/2018	10:15	X	X	
NM-MW-2-W-181003	NM-MW-2	Water	10/03/2018	10:30	X	X	
NM-MW-1-W-181003	NM-MW-1	Water	10/03/2018	10:35	X	X	
NM-MW-5-W-181003	NM-MW-5	Water	10/03/2018	10:45	X	X	
NM-MW-6-W-181003	NM-MW-6	Water	10/03/2018	11:00	X	X	
NM-MW-11-W-181003	NM-MW-11	Water	10/03/2018	11:10	X	X	
NM-MW-13-W-181003	NM-MW-13	Water	10/03/2018	11:40	X	X	
NM-MW-10-W-181003	NM-MW-10	Water	10/03/2018	12:05	X	X	
NM-MW-12-W-181003	NM-MW-12	Water	10/03/2018	12:25	X	X	
Wilson-W-181003	WILSON RANCH WW	Water	10/03/2018	12:35	X	X	
Wilson-WD-181003	WILSON RANCH WW	Water	10/03/2018	12:35	X	X	Field duplicate of WILSON RANCH WW
NM-MW-9-W-181003	NM-MW-9	Water	10/03/2018	12:50	X	X	
Smith-W-181003	SMITH RESIDENCE	Water	10/03/2018	13:00	X	X	
MW-29-W-181003	MW-29	Water	10/03/2018	13:15	X	X	MS/MSD
MW-28-W-181003	MW-28	Water	10/03/2018	13:25	X	X	

Table 1

**Sample Collection and Analysis Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**October 2018**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>		Comments
					Chloride	TDS	
MW-9-W-181003	MW-9	Water	10/03/2018	14:00	X	X	DUP
MW-8-W-181003	MW-8	Water	10/03/2018	14:15	X	X	
DHU-FWS-W-181003	DHU-FWS	Water	10/03/2018	14:25	X	X	
MW-27-W-181003	MW-27	Water	10/03/2018	14:30	X	X	DUP
MW-20-W-181003	MW-20	Water	10/03/2018	14:40	X	X	
MW-10-W-181003	MW-10	Water	10/03/2018	14:55	X	X	
MW-19-W-181004	MW-19	Water	10/04/2018	09:35	X	X	MS/MSD
MW-18-W-181004	MW-18	Water	10/04/2018	09:45	X	X	
MW-12-W-181004	MW-12	Water	10/04/2018	09:55	X	X	
MW-24-W-181004	MW-24	Water	10/04/2018	10:05	X	X	
MW-26-W-181004	MW-26	Water	10/04/2018	10:15	X	X	
MW-31-W-181004	MW-31	Water	10/04/2018	10:25	X	X	
MW-25-W-181004	MW-25	Water	10/04/2018	10:35	X	X	
MW-11-W-181004	MW-11	Water	10/04/2018	10:45	X	X	
MW-6-W-181004	MW-6	Water	10/04/2018	10:55	X	X	
MW-5-W-181004	MW-5	Water	10/04/2018	11:05	X	X	
MW-3-W-181004	MW-3	Water	10/04/2018	11:15	X	X	Field duplicate of Trac4
TRACT-4-W-181004	Trac4	Water	10/04/2018	11:25	X	X	
TRACT-4-WD-181004	Trac4	Water	10/04/2018	11:25	X	X	

Table 1

**Sample Collection and Analysis Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**October 2018**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>		Comments
					Chloride	TDS	
MW-14-W-181004	MW-14	Water	10/04/2018	11:40	X	X	
MW-4-W-181004	MW-4	Water	10/04/2018	11:50	X	X	
MW-13-W-181004	MW-13	Water	10/04/2018	12:15	X	X	
MW-30-W-181004	MW-30	Water	10/04/2018	12:25	X	X	
Livermore-W-181004	Livermore	Water	10/04/2018	12:35	X	X	
MW-23-W-181004	MW-23	Water	10/04/2018	12:45	X	X	DUP
MW-22-W-181004	MW-22	Water	10/04/2018	12:50	X	X	DUP
MW-17-W-181004	MW-17	Water	10/04/2018	13:00	X	X	
MW-21-W-181004	MW-21	Water	10/04/2018	13:05	X	X	
MW-16-W-181004	MW-16	Water	10/04/2018	13:20	X	X	MS/MSD
MW-15-W-181004	MW-15	Water	10/04/2018	13:30	X	X	

## Notes:

TDS            - Total Dissolved Solids  
MS/MSD       - Matrix Spike/Matrix Spike Duplicate  
DUP            - Laboratory Duplicate

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**October 2018**

Location ID:		DHU-FWS	Livermore	MW-3	MW-4	MW-5
Sample Name:		DHU-FWS-W-181003	Livermore-W-181004	MW-3-W-181004	MW-4-W-181004	MW-5-W-181004
Sample Date:		10/03/2018	10/04/2018	10/04/2018	10/04/2018	10/04/2018
Parameters	Unit					
<b>General Chemistry</b>						
Chloride	mg/L	596	2710	626	350	278
TDS	mg/L	2830	4020	1310	883	1050

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**October 2018**

Location ID:		MW-6	MW-8	MW-9	MW-10	MW-11
Sample Name:		MW-6-W-181004	MW-8-W-181003	MW-9-W-181003	MW-10-W-181003	MW-11-W-181004
Sample Date:		10/04/2018	10/03/2018	10/03/2018	10/03/2018	10/04/2018
Parameters	Unit					
<b>General Chemistry</b>						
Chloride	mg/L	404	888	2910	5880	8310
TDS	mg/L	1450	2490	4270	8570	12000



Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**October 2018**

Location ID:		MW-12	MW-13	MW-14	MW-15	MW-16
Sample Name:		MW-12-W-181004	MW-13-W-181004	MW-14-W-181004	MW-15-W-181004	MW-16-W-181004
Sample Date:		10/04/2018	10/04/2018	10/04/2018	10/04/2018	10/04/2018
Parameters	Unit					
<b>General Chemistry</b>						
Chloride	mg/L	15000	2200	1690	1030	474
TDS	mg/L	24400	3900	2620	1740	1210

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**October 2018**

Location ID:		MW-17	MW-18	MW-19	MW-20	MW-21
Sample Name:		MW-17-W-181004	MW-18-W-181004	MW-19-W-181004	MW-20-W-181003	MW-21-W-181004
Sample Date:		10/04/2018	10/04/2018	10/04/2018	10/03/2018	10/04/2018
Parameters	Unit					
<b>General Chemistry</b>						
Chloride	mg/L	11300	21100	6980	1340	7400
TDS	mg/L	17700	31600	11600	2490	11400

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**October 2018**

Location ID:		MW-22	MW-23	MW-24	MW-25	MW-26
Sample Name:		MW-22-W-181004	MW-23-W-181004	MW-24-W-181004	MW-25-W-181004	MW-26-W-181004
Sample Date:		10/04/2018	10/04/2018	10/04/2018	10/04/2018	10/04/2018
Parameters	Unit					
<b>General Chemistry</b>						
Chloride	mg/L	14200	6090	4850	26500	1340
TDS	mg/L	18700	8980	8870	39000	2750

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**October 2018**

Location ID:		MW-27	MW-28	MW-29	MW-30	MW-31
Sample Name:		MW-27-W-181003	MW-28-W-181003	MW-29-W-181003	MW-30-W-181004	MW-31-W-181004
Sample Date:		10/03/2018	10/03/2018	10/03/2018	10/04/2018	10/04/2018
Parameters	Unit					
<b>General Chemistry</b>						
Chloride	mg/L	3030	1760	409	2550	12800
TDS	mg/L	4700	3020	1070	3820	19500

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**October 2018**

<b>Location ID:</b>		<b>NM-MW-1</b>	<b>NM-MW-2</b>	<b>NM-MW-3</b>	<b>NM-MW-4</b>	<b>NM-MW-5</b>
<b>Sample Name:</b>		<b>NM-MW-1-W-181003</b>	<b>NM-MW-2-W-181003</b>	<b>NM-MW-3-W-181003</b>	<b>NM-MW-4-W-181003</b>	<b>NM-MW-5-W-181003</b>
<b>Sample Date:</b>		<b>10/03/2018</b>	<b>10/03/2018</b>	<b>10/03/2018</b>	<b>10/03/2018</b>	<b>10/03/2018</b>
<b>Parameters</b>	<b>Unit</b>					
<b>General Chemistry</b>						
Chloride	mg/L	279	674	246	39.7	138
TDS	mg/L	1460	1270	708	411	1290



Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**October 2018**

<b>Location ID:</b>		<b>NM-MW-6</b>	<b>NM-MW-7</b>	<b>NM-MW-8</b>	<b>NM-MW-9</b>	<b>NM-MW-10</b>
<b>Sample Name:</b>		<b>NM-MW-6-W-181003</b>	<b>NM-MW-7-W-181003</b>	<b>NM-MW-8-W-181003</b>	<b>NM-MW-9-W-181003</b>	<b>NM-MW-10-W-181003</b>
<b>Sample Date:</b>		<b>10/03/2018</b>	<b>10/03/2018</b>	<b>10/03/2018</b>	<b>10/03/2018</b>	<b>10/03/2018</b>
<b>Parameters</b>	<b>Unit</b>					
<b>General Chemistry</b>						
Chloride	mg/L	138	2380	6260	258	315
TDS	mg/L	833	4050	11000	799	1520

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**October 2018**

Location ID:		NM-MW-11	NM-MW-12	NM-MW-13	Ranch Windmill	SMITH RESIDENCE
Sample Name:		NM-MW-11-W-181003	NM-MW-12-W-181003	NM-MW-13-W-181003	RRR-Ranch-W-181003	Smith-W-181003
Sample Date:		10/03/2018	10/03/2018	10/03/2018	10/03/2018	10/03/2018
Parameters	Unit					
<b>General Chemistry</b>						
Chloride	mg/L	152	668	185	1660	1310
TDS	mg/L	1920	1390	1110	3000	2260

Table 2

**Analytical Results Summary**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**October 2018**

<b>Location ID:</b>		<b>Trac4</b>	<b>Trac4</b>	<b>WILSON RANCH WW</b>	<b>WILSON RANCH WW</b>
<b>Sample Name:</b>		<b>TRACT-4-W-181004</b>	<b>TRACT-4-WD-181004</b>	<b>Wilson-W-181003</b>	<b>Wilson-WD-181003</b>
<b>Sample Date:</b>		<b>10/04/2018</b>	<b>10/04/2018</b>	<b>10/03/2018</b>	<b>10/03/2018</b>
			<b>Duplicate</b>		<b>Duplicate</b>
<b>Parameters</b>	<b>Unit</b>				
<b>General Chemistry</b>					
Chloride	mg/L	347	392	1380	1380
TDS	mg/L	1070	1110	2680	2590

Notes:

TDS - Total Dissolved Solids

**Table 3**

**Analytical Methods**  
**Groundwater Monitoring Well Sampling**  
**Chevron Environmental Management Company (CEMC) - Dollarhide**  
**Andrews County, Texas**  
**October 2018**

<b>Parameter</b>	<b>Method</b>	<b>Matrix</b>	<b>Holding Time</b>
			<b>Collection to Analysis (Days)</b>
Chloride	EPA 300/300.1	Water	28
TDS	SM 2540C	Water	7

**Notes:**

TDS - Total Dissolved Solids

**Method References:**

- EPA - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions
- SM - "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, with subsequent revisions



## about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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