2017 Annual Groundwater Monitoring Report

14-Inch Vac to Jal Legacy
Plains SRS Number: 2009-092
Lea County, New Mexico

March 27, 2018
Terracon Project No. AR187005
NMOCD Reference No. 1R-2162

Prepared for:
Plains Marketing, LP
Midland, Texas

Prepared by:
Terracon Consultants, Inc.
Lubbock, Texas

Terracon

March 27, 2018

Plains Marketing, L.P.
577 US Highway 385 North
Seminole, Texas 79360
Attn: Ms. Camille Bryant

Telephone: (575) 441-1099

Re: 2017 Annual Groundwater Monitoring Report
14-Inch Vac to Jal Legacy
U/L "F", Sec. 25, T25S, R37E
Lea County, New Mexico
NMOCD Reference No. 1R – 2162
Plains Marketing, L.P. SRS No. 2009-092
Terracon Project No. AR187005

Dear Ms. Bryant:

Terracon is pleased to submit one electronic copy and one CD attached to the cover page of the 2017 Annual Groundwater Monitoring Report for the above-referenced site.

We appreciate the opportunity to perform these services for Plains Marketing, L.P. (Plains). Please contact either of the undersigned at (806) 300-0140 if you have questions regarding the information provided in the report.

Sincerely,
Terracon

Prepared by:

Brett Dennis
Field Scientist
Lubbock

Reviewed by:

Erin Loyd, P.G.
Senior Associate
Office Manager – Lubbock

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Lea County, New Mexico
NMOCD Reference No. 1R – 2162
Terracon Project No. AR187005

1.0 INTRODUCTION

1.1 Site Description

The legal description of the 14-Inch Vac to Jal Legacy release site is Unit Letter "F" (SE/NW), Section 25, Township 25 South, Range 37 East, in Lea County, New Mexico. The property affected by the release is owned by Concho Resources, Inc. The geographic coordinates of the release site are 32.510302º North latitude and 103.119525º West longitude. A "Site Location Map" is provided as Figure 1 in Appendix A.

Site Name	14-Inch Vac to Jal Legacy
Site Location	Latitude 32.510302º North, Longitude 103.119525º West
General Site Description	The site consists of nine groundwater monitoring wells located in, and adjacent to, a pipeline right-of-way surrounding land used for oil and gas production.
Landowner	Concho Resources, Inc.

1.2 Background Information

Based on information provided by the client, on April 9, 2009, Plains discovered a crude oil release from a 14-inch steel pipeline. The cause of the release was attributed to external corrosion of the pipeline. The release was reported to the New Mexico Oil Conservation Division (NMOCD) on April 9, 2009. During initial response activities, a temporary clamp was installed on the pipeline to mitigate the release. Approximately 250 barrels (bbls) of crude oil was released, with no recovery.

On April 9, 2009, following initial response activities, excavation of hydrocarbon-impacted soil commenced at the site. To facilitate remediation activities, the excavation was divided into two sections: Main Excavation and West Excavation. Excavated soil was stockpiled on-site on a plastic liner to mitigate the potential leaching of contaminants into the vadose zone. Approximately 18,000 cubic yards (cy) of impacted soil was excavated and stockpiled on-site during excavation activities. Final dimensions of the Main Excavation were approximately 400 feet (ft.) in length, approximately 200 ft. in width, and 5 ft. to 14 ft. in depth. Final dimensions of the West Excavation

were approximately 150 ft. in length, approximately 105 ft. in width, and approximately 10 ft. in depth. Due to safety concerns associated with excavating near and supporting two 14-inch diameter pipelines that bisect the release site, Plains requested and received NMOCD approval to leave the soil beneath and adjacent to the pipelines in-situ.

On July 2 and 3, 2009, three soil borings (SB-1, SB-2, and SB-3) were advanced at the release site to evaluate the vertical extent of soil impact. During the advancement of the soil borings, groundwater was encountered at approximately 64 ft. below ground surface (bgs). On July 1, 2009, soil boring SB-1 was converted to monitor well MW-1.

On July 2, 2009, temporary casing was installed in soil borings SB-2 and SB-3 to allow a preliminary groundwater sample to be collected for analysis. Following collection of the preliminary groundwater sample, the temporary casing was removed from soil borings SB-2 and SB-3, and the soil borings were plugged with cement and bentonite, pursuant to NMOCD and New Mexico Office of the State Engineer (NMOSE) standards.

On December 10, 2009, two soil borings (SB-4 and SB-5) were installed up-gradient of the excavation to evaluate the potential groundwater impact from an up-gradient, off-site source. During the advancement of soil borings SB-4 and SB-5, groundwater was encountered at approximately 64 ft. bgs. Temporary casing was installed in soil borings SB-4 and SB-5 to allow a preliminary groundwater sample to be collected for analysis. Following collection of the preliminary groundwater sample, the temporary casing was removed from soil borings SB-4 and SB-5, and the soil borings were plugged with cement and bentonite, pursuant to NMOCD and NMOSE standards.

From May 6 through May 8, 2013, five additional monitor wells (MW-2 through MW-6) were installed to evaluate the status of the groundwater at the site. The monitor wells were installed to total depths of approximately 80 ft. bgs. Monitor well MW-2 is located approximately 380 ft. to the northwest (up-gradient) of monitor well MW-1. Monitor well MW-3 is located approximately 200 ft. to the northeast (cross-gradient) of monitor well MW-1. Monitor well MW-4 is located approximately 100 ft. to the northwest (up-gradient) of monitor well MW-1. Monitor well MW-5 is located approximately 208 ft. to the west-northwest (cross-gradient) of monitor well MW-1. Monitor well MW-6 is located approximately 150 ft. to the southeast (down-gradient) of monitor well MW-1.

PSH was not observed in monitor wells MW-2 through MW-6. Laboratory analytical results of soil samples collected during the installation of the monitor wells indicated benzene, toluene, ethylbenzene, and total xylenes (BTEX), total petroleum hydrocarbons (TPH), and chloride concentrations were less than NMOCD regulatory standards in each of the submitted samples.

From June 25 through June 26, 2014, three additional monitor wells (MW-7, MW-8, and MW-9)

were installed to further monitor the down- and cross-gradient migration of the dissolved-phase plume. The monitor wells were installed to total depths of approximately 80 ft. bgs. Monitor well MW-7 is located approximately 45 ft. to the southeast (down-gradient) of monitor well MW-1. Monitor well MW-8 is located approximately 180 ft. to the east-northeast (cross-gradient) of monitor well MW-1. Monitor well MW-9 is located approximately 150 ft. to the southeast (down-gradient) of monitor well MW-1.

PSH was not observed in monitor wells MW-7 through MW-9. Laboratory analytical results of soil samples collected during the installation of the monitor wells indicated benzene, BTEX, TPH, and chloride concentrations were less than NMOCD regulatory standards in all submitted samples.

The 14-Inch Vac to Jal Legacy release site is located approximately 1,147 ft. to the south-southeast of a documented groundwater remediation site (Arco South Justis Unit F-230). Information regarding this site can be found in the NMOCD imaging system.

Based on laboratory analytical results of groundwater samples collected from monitor well MW-5, which is located approximately 260 ft. to the west-southwest (cross-gradient) of the release point, and the absence of elevated chloride concentrations in the soil columns of monitor wells MW-2 through MW-6, Plains requested permission to cease monitoring of total dissolved solids (TDS) and chloride in the *2013 Annual Monitoring Report*, dated March 2014. The request was subsequently approved by the NMOCD, with the caveat that a chloride sample would be collected from monitor well MW-2 on a quarterly basis. Quarterly chloride monitoring of MW-2 commenced in November 2014.

On October 18, 2016, Terracon assumed oversight of groundwater monitoring activities at the 14-Vac to Jal Legacy release site. There are a total of nine monitor wells located at the site. Monitor wells MW-2 through MW-9 are gauged and sampled on a quarterly schedule; monitor well MW-1 is not sampled due to the presence of PSH.

1.3 Scope of Work

Terracon's scope of work includes oversight of groundwater monitoring activities and preparation of an *Annual Groundwater Monitoring Report* in accordance with the NMOCD letter, dated May 1998, requiring submittal of and *Annual Groundwater Monitoring* Report by April 1st of each year. Groundwater monitoring activities include conducting quarterly groundwater monitoring events at the site. Quarterly groundwater monitoring events include measuring the static water levels in the monitor wells, checking for the presence of PSH, and the collection of groundwater samples from each of the on-site monitor wells not exhibiting a measurable thickness of PSH. In accordance with the approved scope of work, Terracon conducted the quarterly groundwater monitoring events on February 28 , June 29, September 25, and November 16, 2017.

1.4 Standard of Care

Activities conducted prior to Terracon assuming oversight of the project (beginning on October 18, 2016) were performed by previous consultants hired by Plains. As such, Terracon makes no assumptions or warranties regarding the previous consultants services being performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Terracon makes no warranties, either express or implied, regarding the findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of the report.

1.5 Additional Scope Limitations

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, non-detectable or not present during these services, and we cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this remediation activities. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

1.6 Reliance

This report has been prepared for the exclusive use of Plains Marketing, L. P., and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of Plains Marketing, L.P. and Terracon. Any unauthorized distribution or reuse is at the client's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions and limitations stated in this report, and Terracon's Terms and Conditions. The limitation of liability defined in the terms and conditions is the aggregate limit of Terracon's liability to the client and all relying parties unless otherwise agreed in writing.

2.0 FIELD ACTIVITIES

2.1 Product Recovery

A measurable thickness of PSH was detected in monitor well MW-1 during the April 12, 2012, quarterly monitoring event. Monthly gauging and recovery activities of PSH from monitor well MW-1 began in April 2012. In November 2013, the frequency of PSH recovery was increased to twice monthly. The frequency was increased to weekly in June 2014. An estimated 165 gallons (3.9 bbls) of PSH was recovered from monitor well MW-1, by manual recovery, in 2017. The average PSH thickness measuring in monitor well MW-1 during the 2017 reporting period was 0.97 ft. An estimated 1,257 gallons (29.9 bbls) of PSH has been manually recovered from monitor well MW-1 since recovery operations began in April 2012. A Mobile Dual Phase Extraction (MDPE) unit provided by Talon LPE, performed two 12-hour recovery events on monitor well MW-1 on May 4 and September 21, 2017 (see Appendix D). An estimated 9.08 gallons of PSH in the vapor and liquid phase equivalent were recovered in the first event, and an estimated 20.38 gallons of PSH in the vapor and liquid phase equivalent were recovered in the second event.

2.2 Groundwater Recovery

Manual recovery of hydrocarbon-impacted groundwater from monitor wells MW-3 and MW-8 began in November 2014. An estimated 420 gallons (10 bbls) of hydrocarbon impacted groundwater were recovered from monitor well MW-3 during the 2017 reporting period and an estimated 1,217 gallons (28.9 bbls) have been recovered since recovery activities began. An estimated 370 gallons (8.8 bbls) of hydrocarbon impacted groundwater were recovered from monitor well MW-8 during the 2017 reporting period, and an estimated 1,143 gallons (27.2 bbls) have been recovered since recovery activities began.

Manual recovery of hydrocarbon-impacted groundwater from monitor wells MW-4 and MW-7 began in April of 2016. An estimated 542 gallons (12.9 bbls) of hydrocarbon impacted groundwater were recovered from monitor well MW-4 during the 2016 reporting period. An estimated 540 gallons (12.9 bbls) of hydrocarbon impacted groundwater were recovered from monitor well MW-7 during the 2016 reporting period. Manual recovery did not occur on monitor wells MW-4 and MW-7 during the 2017 reporting period.

Recovered fluids are disposed of at an NMOCD-approved disposal facility.

2.3 Groundwater Monitoring

Quarterly groundwater monitoring events were conducted on February 28 (1Q2017), June 29 (2Q2017), September 25 (3Q2017) and November 16, 2017 (4Q2017). Quarterly groundwater monitoring events included measuring the static water level in the on-site monitor wells, checking for the presence of PSH, and the collection of groundwater samples from each of the on-site

monitor wells not exhibiting a measurable thickness of PSH. Groundwater samples were collected utilizing low flow sampling equipment, including a bladder pump and multi-parameter meter. Prior to sample collection, readings on the multi-parameter meter were recorded for four cycles of five minutes each. Each collected sample was placed in laboratory-supplied containers appropriate to the analyses requested and placed on ice in a cooler. The sample coolers and completed chain-of-custody forms were delivered to Xenco Laboratories in Lubbock, Texas for analysis of BTEX using EPA SW-846 Method 8021B. Groundwater samples collected from monitor well MW-2 were also analyzed for chloride concentrations using EPA Method E300. Purged water was placed into a polystyrene aboveground storage tank and disposed of at an NMOCD-approved disposal facility.

Groundwater elevation gauging data collected during the respective quarterly sampling events were used to construct groundwater gradient maps, which are included as Figures 2a through 2d in Appendix A. Groundwater flow direction was relatively consistent during each quarter of 2017 in the southeasterly direction. Groundwater elevation and PSH thickness data is summarized in Table 1 in Appendix B.

3.0 LABORATORY ANALYTICAL METHODS

The groundwater samples collected from the on-site monitor wells were analyzed for BTEX using EPA SW-846 Method 8021B and/or chloride using EPA Method E300. Laboratory results from the analysis of groundwater samples collected from the monitor wells are summarized in Table 2 in Appendix B and presented on Figures 3a through 3d in Appendix A. The executed chain-of-custody forms and laboratory data sheets are provided in Appendix C.

4.0 DATA EVALUATION

4.1 Groundwater Samples

Laboratory analytical results from groundwater samples collected on February 28 (1Q2017), June 29 (2Q2017), September 25 (3Q2017) and November 16, 2017 (4Q2017) were compared to NMOCD regulatory standards based on New Mexico Water Quality Control Commission (NMWQCC) groundwater standards found in Section 20.6.2.3103 of the New Mexico Administrative Code (NMAC).

Monitor Well MW-1

- Monitor Well MW-1 was not sampled during the 2017 reporting period due to the presence of PSH. PSH thicknesses of 0.37 feet, 0.04 feet, 1.48 feet, and 2.00 feet were observed in the monitor well during the 1st, 2nd, 3rd, and 4th quarter of 2017, respectively.

Monitor Well MW-2

- Laboratory analytical results indicated benzene concentrations exceeded the NMOCD regulatory standard during each quarter of 2017. The detected benzene concentrations ranged from 0.0418 milligrams per liter (mg/L) during the 1st Quarter of 2017 to 0.0800 mg/L during the 2nd Quarter of 2017.
- Laboratory analytical results indicated toluene, ethylbenzene and total xylene concentrations were less than the applicable laboratory sample detection limit (SDL) during each quarter of the 2017 reporting period.
- Laboratory analytical results indicated chloride concentrations exceeded the NMOCD regulatory standard during each quarter of 2017. The detected chloride concentrations ranged from 9,100 mg/L during the 2nd Quarter of 2017 to 10,400 mg/L during the 1st and 4th Quarters of 2017.

Monitor Well MW-3

- Laboratory analytical results indicated benzene concentrations exceeded the NMOCD regulatory standard during each quarter of 2017. The detected benzene concentrations ranged from 0.50 mg/L during the 3rt Quarter of 2017 to 6.65 mg/L during the 1st Quarter of 2017.
- Laboratory analytical results indicated toluene, ethylbenzene and total xylene concentrations were less than NMOCD regulatory standards during each quarter of the 2017 reporting period.

Monitor Well MW-4

- Laboratory analytical results indicated BTEX concentrations were less than the applicable laboratory sample detection limit during each quarter of the 2017 reporting period, with one exception. During 2nd Quarter of 2017, laboratory analytical results indicate that benzene concentration was above the sample detection limit, but less than NMOCD regulatory standards.

Monitor Wells MW-5 and MW-6

- Laboratory analytical results indicated BTEX concentrations were less than the applicable laboratory sample detection limit during each quarter of the 2017 reporting period.

Monitor Well MW-7

- Laboratory analytical results indicated BTEX concentrations were less than the applicable laboratory sample detection limit during 1st Quarter and 4th Quarter of the 2017 reporting period.
  Laboratory analytical results indicate benzene and ethylbenzene concentrations were less than NMOCD regulatory standards during 2nd Quarter and 3rd Quarter of the 2017 reporting period. Toluene and total xylenes concentrations were less than the applicable laboratory sample detection limit.

Monitor Well MW-8

- Laboratory analytical results indicated benzene concentrations exceeded the NMOCD regulatory standard during each quarter of 2017. The detected benzene concentrations ranged from 0.0417 mg/L during the 1st Quarter of 2017 to 0.420 mg/L during the 2nd Quarter of 2017.
- Laboratory analytical results indicated toluene, ethylbenzene and total xylene concentrations were less than NMOCD regulatory standards during each quarter of the 2017 reporting period.

Monitor Well MW-9

- Laboratory analytical results indicated BTEX concentrations were less than the applicable laboratory sample detection limit during each quarter of the 2017 reporting period, with the exclusion of benzene concentration in the 2nd Quarter which exceeded the sample detection limit, but was less than the NMOCD regulatory standard.

5.0 SUMMARY

- Currently, there are nine groundwater monitor wells (MW-1 through MW-9) located at the site.
- Monitor well MW-1 was not sampled during the 2017 reporting period due to the presence of PSH.
- Monitor wells MW-2 through MW-9 were sampled during each quarter of 2017.
- The detected chloride concentrations in monitor well MW-2 (up-gradient) exceeded the NMOCD regulatory standard during each quarter of the 2017 reporting period.
- The detected benzene concentrations exceeded the NMOCD regulatory standard in monitor wells MW-2, MW-3 and MW-8 during the each quarter of the 2017 reporting period.
- Toluene, ethylbenzene and total xylene concentrations were less than the NMOCD regulatory standards during each quarter of the 2017 reporting period.
- The average PSH thickness measuring in monitor well MW-1 during the 2017 reporting period was 1.00 ft.

- An estimated 165 gallons (3.9 bbls) of PSH were recovered manually from monitor well MW-1 during the 2017 reporting period.
- An estimated 420 gallons (10 bbls) of hydrocarbon impacted groundwater were recovered manually from monitor well MW-3 during the 2017 reporting period.
- An estimated 370 gallons (8.8 bbls) of hydrocarbon impacted groundwater were recovered manually from monitor well MW-8 during the 2017 reporting period.
- The groundwater flow direction was relatively consistent during the 2016 reporting period, ranging from 0.00004 foot per foot (ft/ft) to 0.0016 ft/ft in the southeasterly direction.

6.0 ANTICIPATED ACTIONS

- Weekly PSH recovery will continue on monitor well MW-1 during the 2018 reporting period.
- Additional MDPE events will be conducted as needed.
- Monitor wells MW-2 through MW-9 will be monitored and sampled quarterly for the presence of BTEX and/or chloride during the 2018 reporting period.
- Monitor wells MW-2 through MW-9 will be sampled for the presence of polynuclear aromatic hydrocarbons.
- Plains installed five (5) additional monitor wells (MW-10 through MW-14) to further evaluate the status of groundwater at the site and to delineate the horizontal extent of the dissolved-phase plume on February 20 and 21, 2018. These monitor wells will be monitored and sampled quarterly. Details of the monitor well installation will be included in the 2018 *Annual Groundwater Monitoring Report*.
- An *Annual Groundwater Monitoring Report* will be prepared detailing field activities and the results of groundwater monitoring activities conducted during the 2017 reporting period.

7.0 DISTRIBUTION

Copy 1: Bradford Billings, Hydrologist
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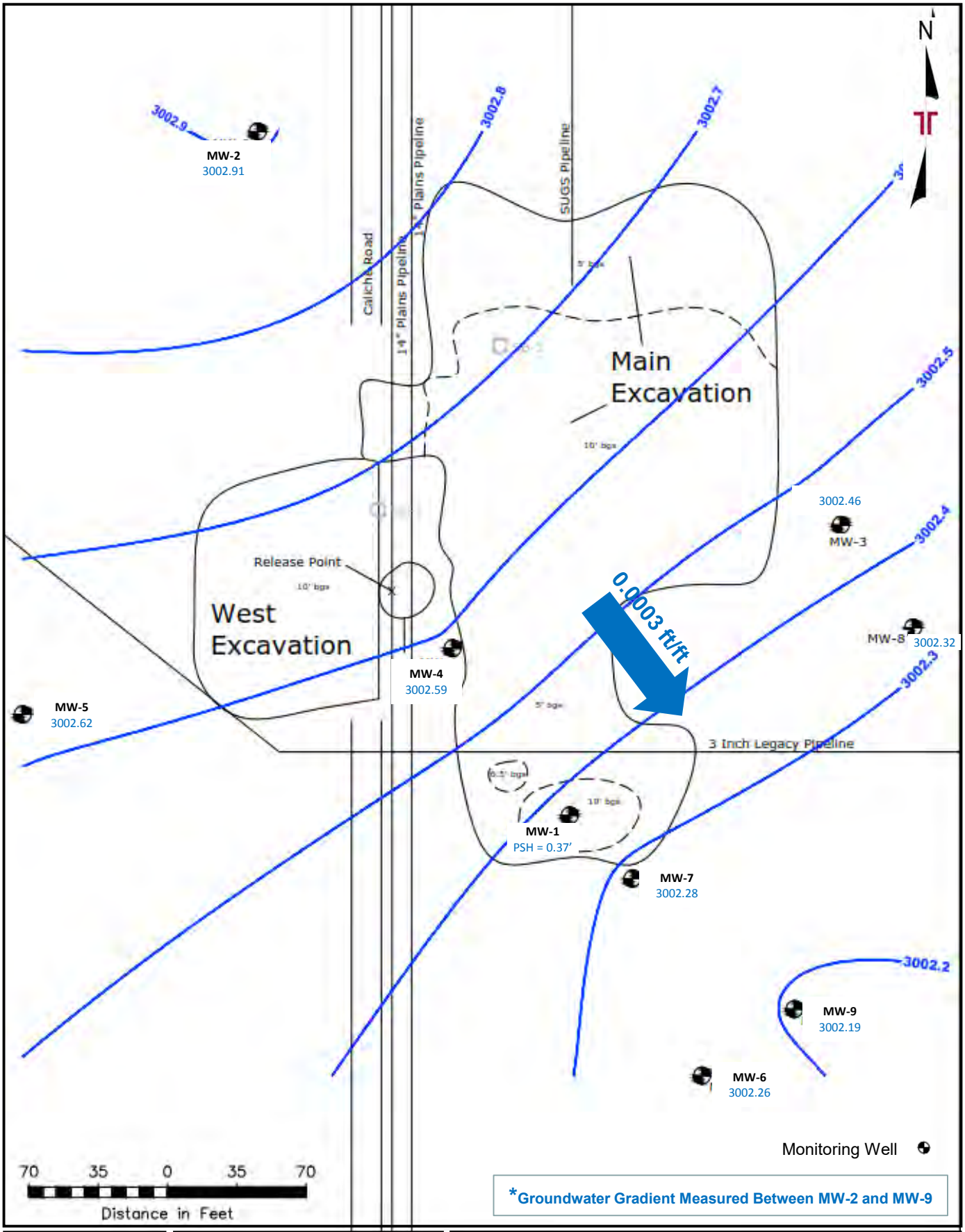
Lubbock, Texas 79424
kris.williams@terracon.com

APPENDIX A

Figure 1– Site Location Map
Figure 2a – Groundwater Gradient Map (1Q2017)
Figure 2b – Groundwater Gradient Map (2Q2017)
Figure 2c – Groundwater Gradient Map (3Q2017)
Figure 2d – Groundwater Gradient Map (4Q2017)
Figure 3a – Groundwater Concentration Map (1Q2017)
Figure 3b – Groundwater Concentration Map (2Q2017)
Figure 3c – Groundwater Concentration Map (3Q2017)
Figure 3d – Groundwater Concentration Map (4Q2017)



Project No.	AR187005
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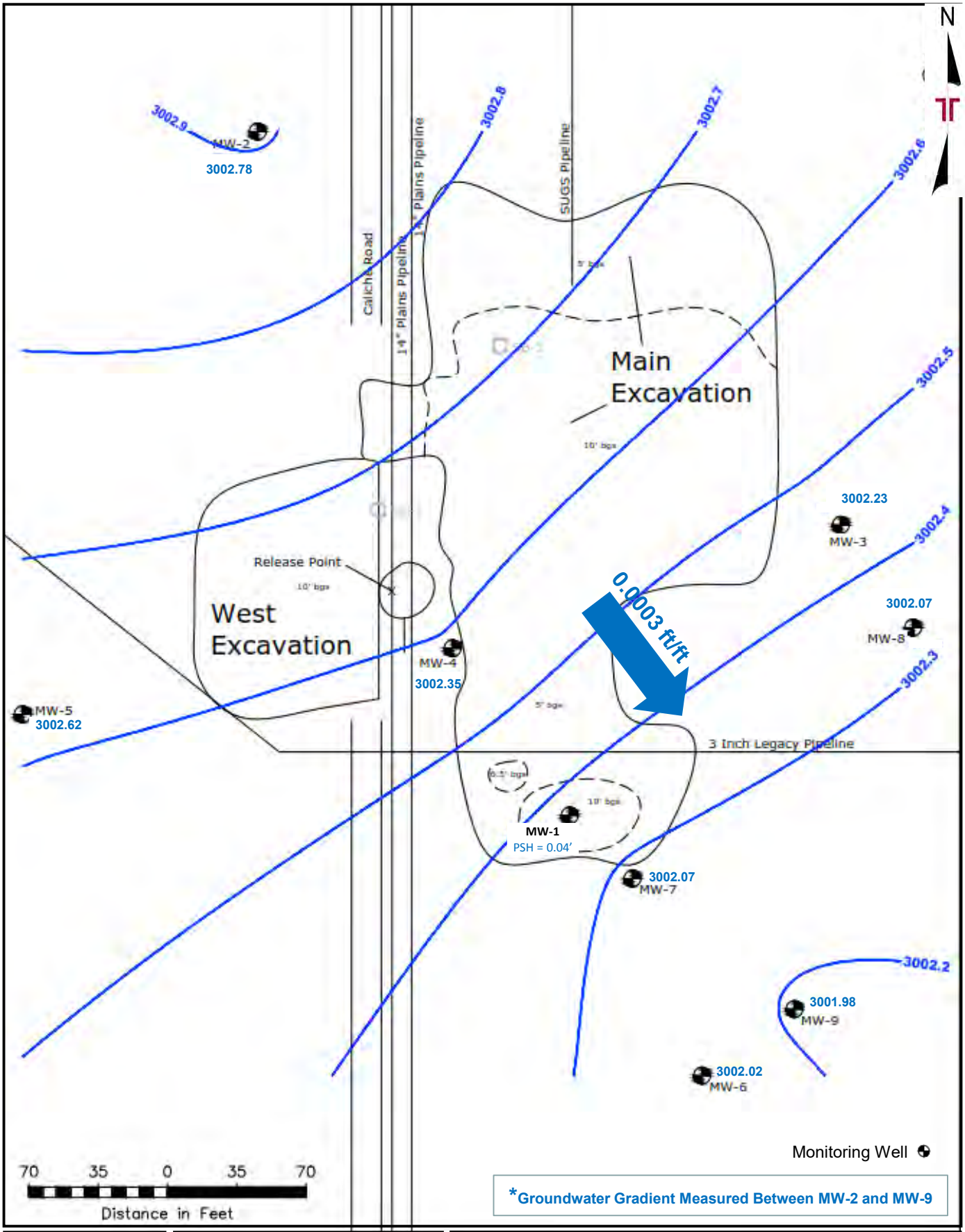
Source:	GoogleEarth
Date:	2014

Terracon
Consulting Engineers & Scientists
5827 50th St. Suite 1 Lubbock, Texas 79424
Phone (806) 300-0140 Fax (806) 797-0947

Figure 2a – Groundwater Gradient Map -1Q2017

14" Vac to Jal Legacy
NMOCD Ref. No. 1R-2162
32.103003° , -103.119540°
Lea County, New Mexico



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Source:	GoogleEarth
Date:	2014

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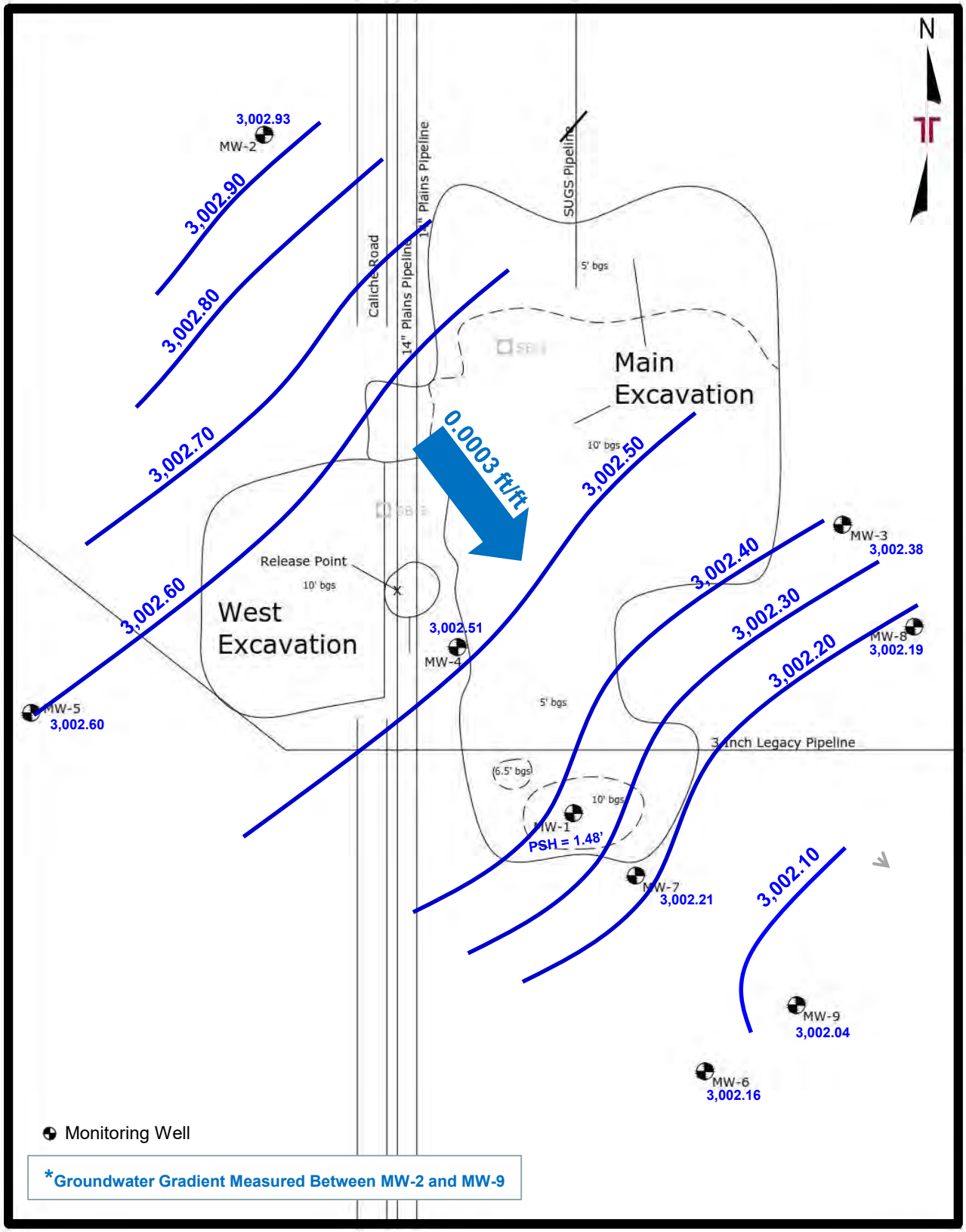
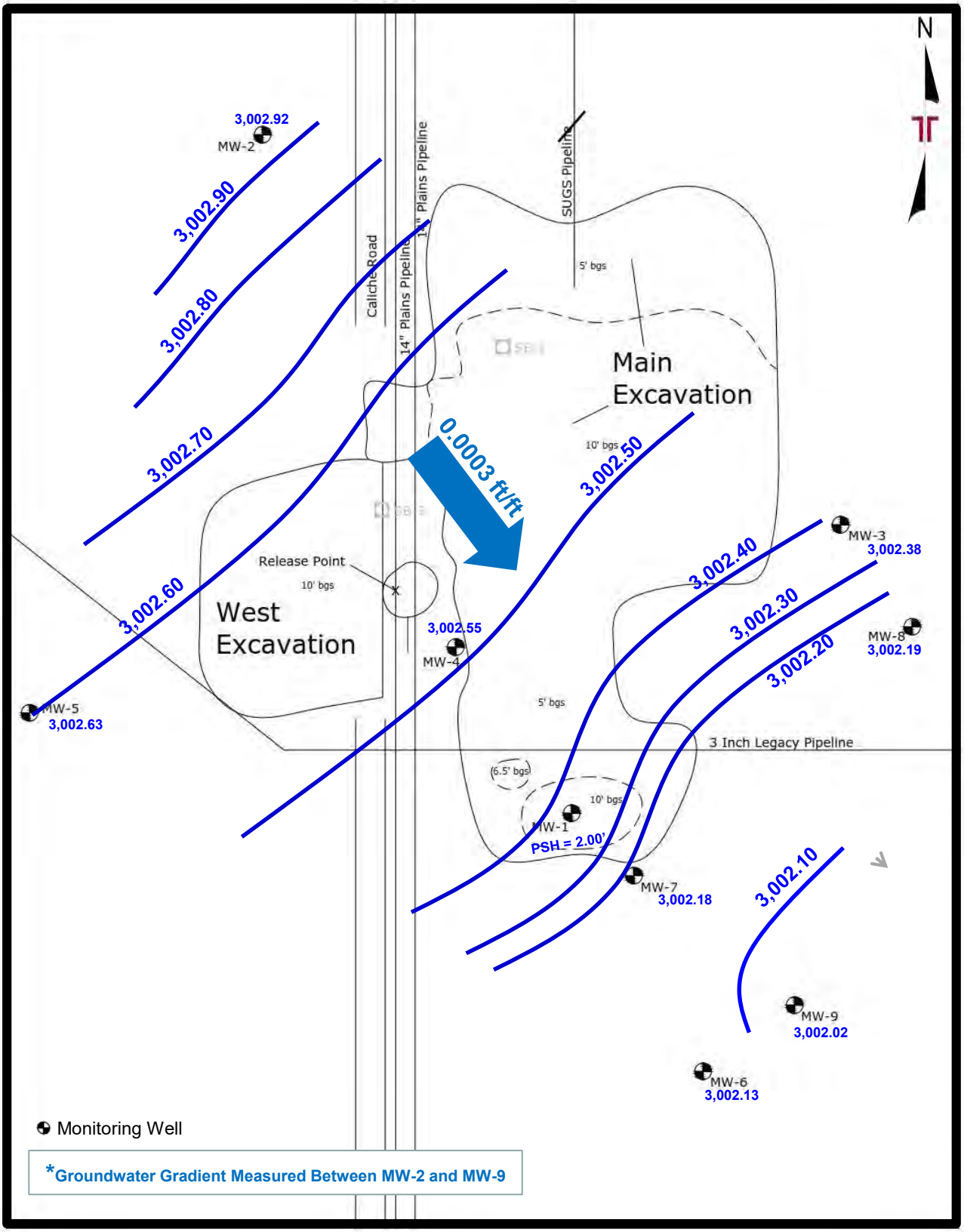
Figure 2b – Groundwater Gradient Map -2Q2017

14" Vac to Jal Legacy
NMOCD Ref. No. 1R-2162
32.103003° , -103.119540°
Lea County, New Mexico



Project Mng: KW	Project No. AR187005	Terracon Consulting Engineers & Scientists 5827 50th St., Suite 1 Lubbock, Texas 79424 PH. (806) 684-9600 FAX. (806) 797-0947	**Groundwater Gradient Map – 3Q2017** 14" Vac to Jal Legacy NMOCD Ref. No. 1R-2162 Lea County, New Mexico Plains SRS No. 2009-092	Figure 2c
Drawn By: SW	Scale: 1"=120'			
Checked By: KA	File Name: 3Q GWGM			
Approved By: EL	Date: 10/13/2017			



Project Mng: KW	Project No. AR187005	Terracon Consulting Engineers & Scientists 15827 50th St., Suite 1 Lubbock, Texas 79424 PH. (806) 300-0140 FAX. (806) 797-0947	**Groundwater Gradient Map – 4Q2017** 14" Vac to Jal Legacy NMOCD Ref. No. 1R-2162 Lea County, New Mexico Plains SRS No. 2009-092	Figure 2d
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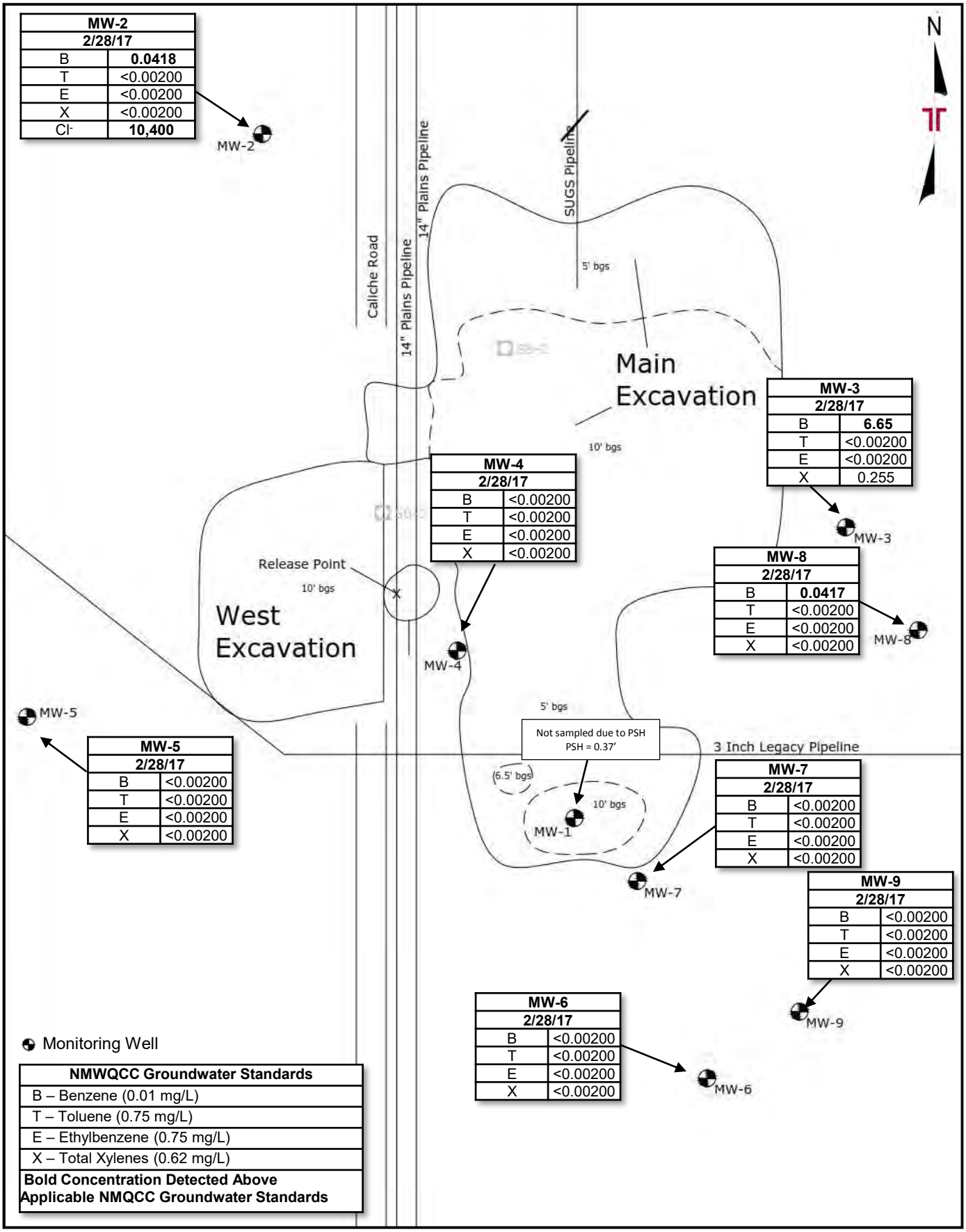
Approved By: EL	Date: 10/13/2017			



Project No.	AR187005
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Source:	GoogleEarth
Date:	2014

Terracon
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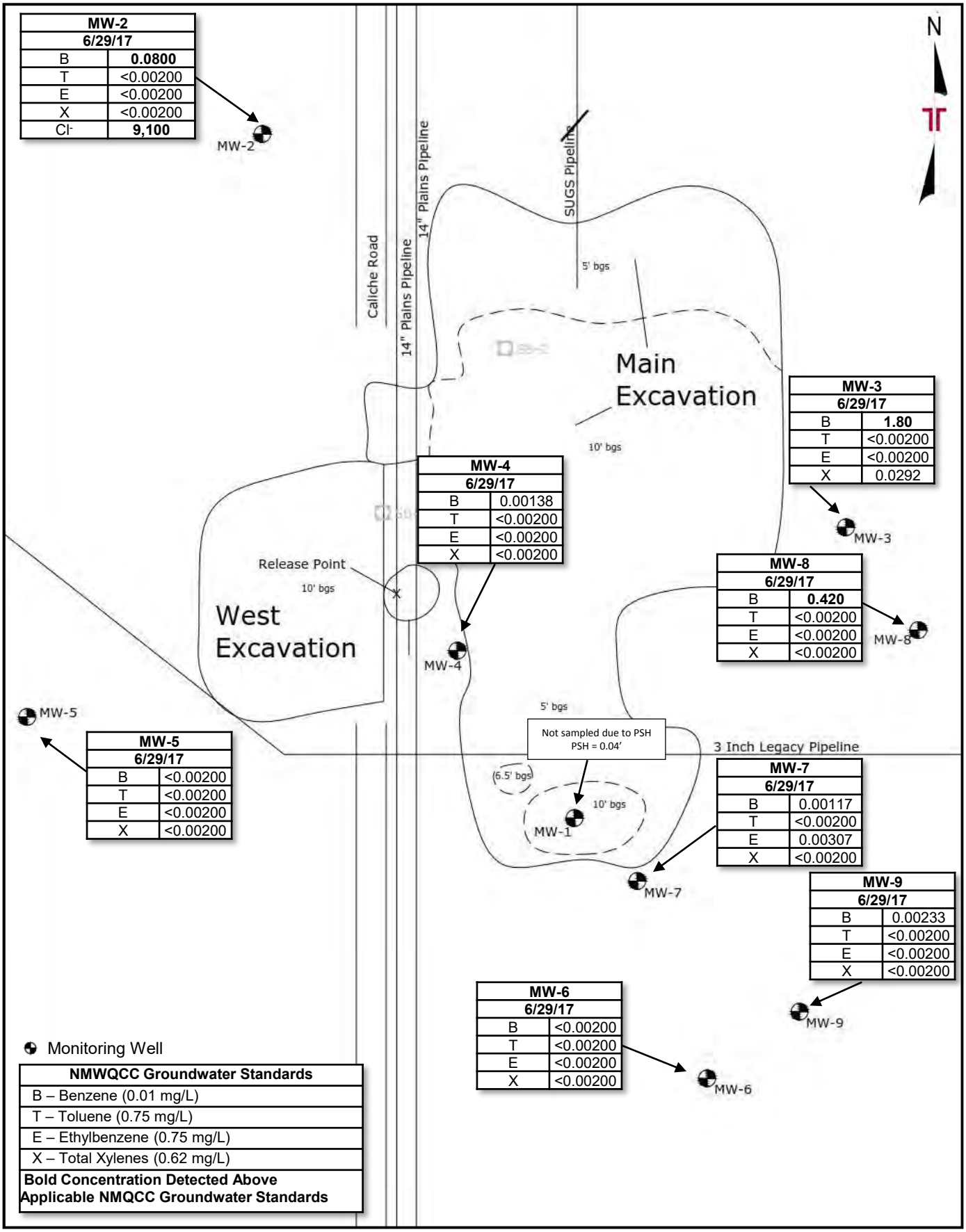
Figure 3a – Groundwater Concentration Map – 2Q2017

14" Vac to Jal Legacy
NMOCD Ref. No. 1R-2162
32.103003° , -103.119540°
Lea County, New Mexico



Project No.	AR187005
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Source:	GoogleEarth
Date:	2014

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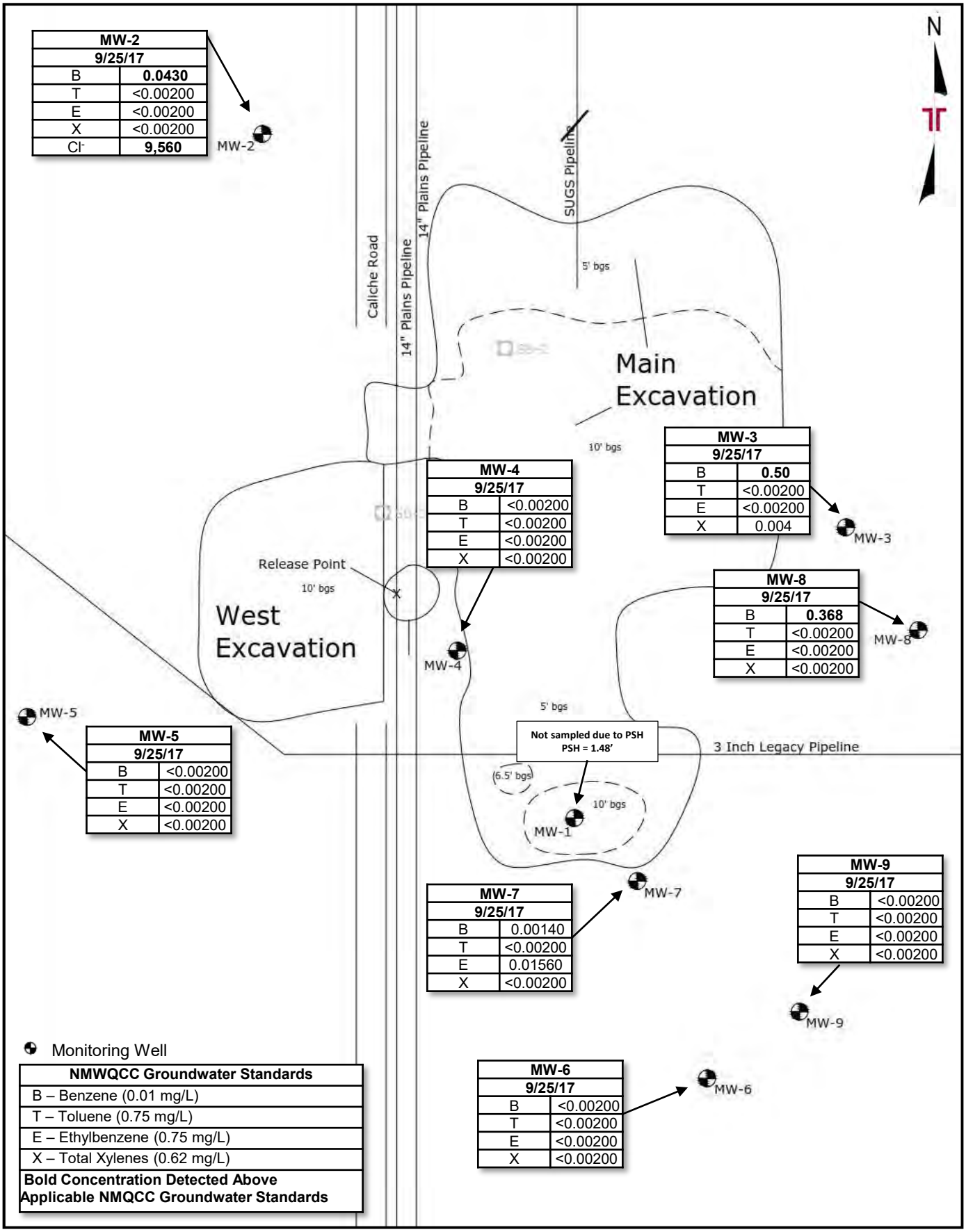
Figure 3b – Groundwater Concentration Map -2Q2017

14" Vac to Jal Legacy
NMOCD Ref. No. 1R-2162
32.103003° , -103.119540°
Lea County, New Mexico



MW-2	
9/25/17	
B	**0.0430**
T	<0.00200
E	<0.00200
X	<0.00200
Cl^-	**9,560**

MW-3	
9/25/17	
B	**0.50**
T	<0.00200
E	<0.00200
X	0.004

MW-4	
9/25/17	
B	<0.00200
T	<0.00200
E	<0.00200
X	<0.00200

MW-5	
9/25/17	
B	<0.00200
T	<0.00200
E	<0.00200
X	<0.00200

MW-6	
9/25/17	
B	<0.00200
T	<0.00200
E	<0.00200
X	<0.00200

MW-7	
9/25/17	
B	0.00140
T	<0.00200
E	0.01560
X	<0.00200

MW-8	
9/25/17	
B	**0.368**
T	<0.00200
E	<0.00200
X	<0.00200

MW-9	
9/25/17	
B	<0.00200
T	<0.00200
E	<0.00200
X	<0.00200

NMWQCC Groundwater Standards
B – Benzene (0.01 mg/L)
T – Toluene (0.75 mg/L)
E – Ethylbenzene (0.75 mg/L)
X – Total Xylenes (0.62 mg/L)
Bold Concentration Detected Above Applicable NMQCC Groundwater Standards

Project No.	AR187005
Scale:	1"=60'
Source:	GoogleEarth
Date:	2014

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Figure 3c – Groundwater Concentration Map - 3Q2017

14" Vac to Jal Legacy
NMOCD Ref. No. 1R-2162
32.103003° , -103.119540°
Lea County, New Mexico

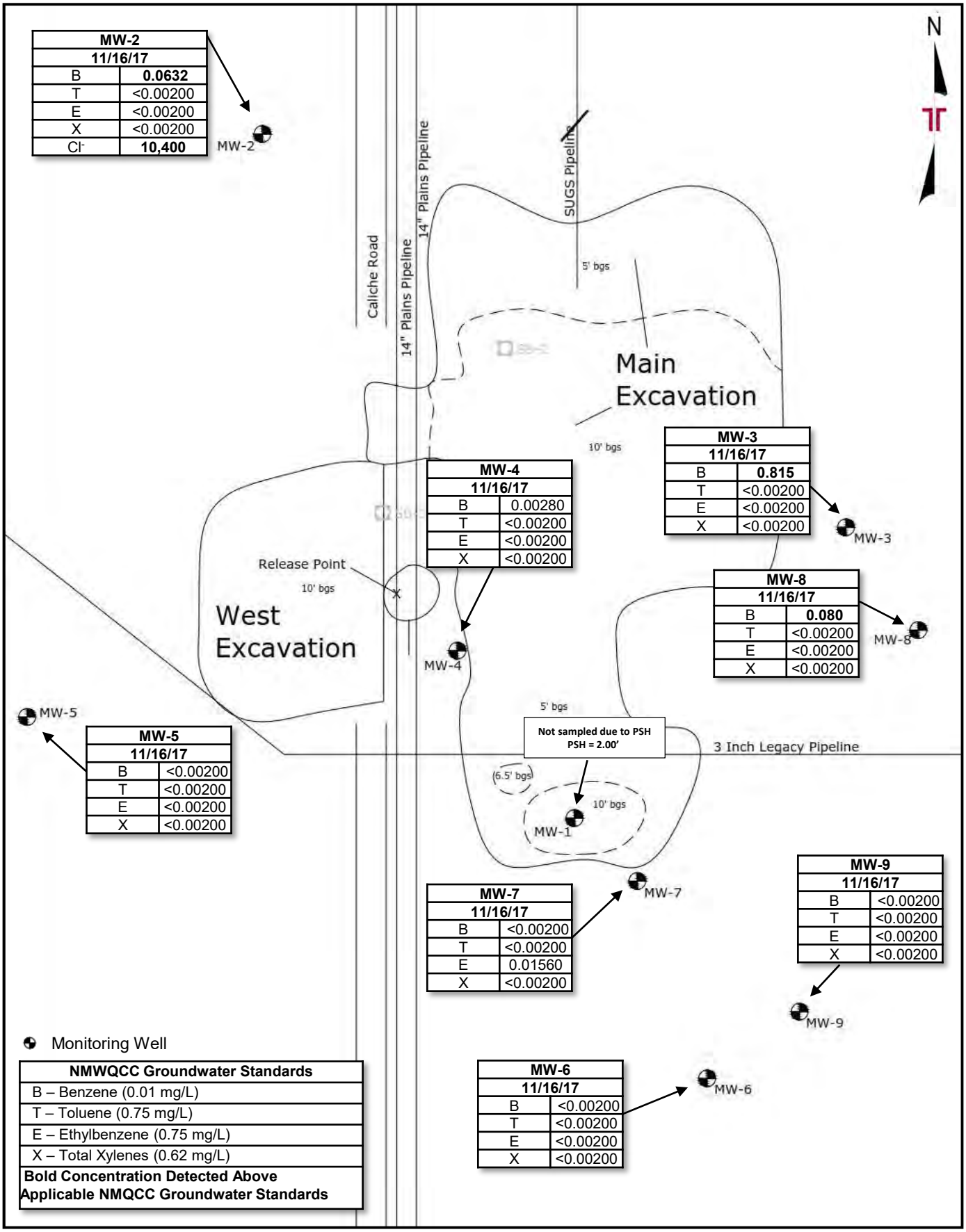

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Figure 3d – Groundwater Concentration Map - 4Q2017

14" Vac to Jal Legacy
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Lea County, New Mexico

APPENDIX B

Table 1 – Groundwater Elevation and PSH Thickness Data
Table 2 – Groundwater Analytical Summary – BTEX

TABLE 1

GROUNDWATER ELEVATION AND PSH THICKNESS DATA
14-INCH VAC TO JAL LEGACY
LEA COUNTY, NEW MEXICO
PLAINS SRS #: 2009-092
NMOCD REFERENCE #: 1RP-2162
TERRACON PROJECT #: AR187005

WELL NUMBER	DATE MEASURED	CASING WELL ELEVATION	DEPTH TO PRODUCT	DEPTH TO WATER	PSH THICKNESS	CORRECTED GROUNDWATER ELEVATION
MW-1	02/02/2016	3,065.33	62.40	63.12	0.72	3,002.82
	05/06/2016	3,065.33	62.50	63.71	1.21	3,002.65
	08/03/2016	3,065.33	62.48	63.70	1.22	3,002.67
	12/22/2016	3,065.33	62.74	63.85	1.11	3,065.16
	02/28/2017	3,065.33	62.90	63.27	0.37	3,065.27
	06/29/2017	3,065.33	63.06	63.10	0.04	3,065.32
	09/28/2017	3,065.33	62.92	64.40	1.48	3,065.11
	12/29/2017	3,065.33	62.69	64.69	2.00	3,065.03
MW-2	02/05/2016	3,065.28	-	62.70	-	3,002.58
	05/06/2016	3,065.28	-	62.20	-	3,003.08
	08/03/2016	3,065.28	-	62.16	-	3,003.12
	12/22/2016	3,065.28	-	62.36	-	3,002.92
	02/28/2017	3,065.28	-	62.37	-	3,002.91
	06/29/2017	3,065.28	-	62.50	-	3,002.78
	09/25/2017	3,065.28	-	62.35	-	3,002.93
	11/16/2017	3,065.28	-	62.36	-	3,002.92
MW-3	02/05/2016	3,065.43	-	62.46	-	3,002.97
	05/06/2016	3,065.43	-	62.39	-	3,003.04
	08/03/2016	3,065.43	-	62.43	-	3,003.00
	12/22/2016	3,065.43	-	63.02	-	3,002.41
	02/28/2017	3,065.43	-	62.97	-	3,002.46
	06/29/2017	3,065.43	-	63.20	-	3,002.23
	09/25/2017	3,065.43	-	63.05	-	3,002.38
	11/16/2017	3,065.43	-	63.05	-	3,002.38
MW-4	02/05/2016	3,065.15	-	62.23	-	3,002.92
	05/06/2016	3,065.15	-	62.40	-	3,002.75
	08/03/2016	3,065.15	-	62.40	-	3,002.75
	12/22/2016	3,065.15	-	62.47	-	3,002.68
	02/28/2017	3,065.15	-	62.56	-	3,002.59
	06/29/2017	3,065.15	-	62.80	-	3,002.35
	09/25/2017	3,065.15	-	62.64	-	3,002.51
	11/16/2017	3,065.15	-	62.60	-	3,002.55
MW-5	02/05/2016	3,065.95	-	63.04	-	3,002.91
	05/06/2016	3,065.95	-	63.10	-	3,002.85
	08/03/2016	3,065.95	-	63.08	-	3,002.87
	12/22/2016	3,065.95	-	63.33	-	3,002.62
	02/28/2017	3,065.95	-	63.33	-	3,002.62
	06/29/2017	3,065.95	-	63.47	-	3,002.48
	09/25/2017	3,065.95	-	63.35	-	3,002.60
	11/16/2017	3,065.95	-	63.32	-	3,002.63
MW-6	02/05/2016	3,065.35	-	62.79	-	3,002.56
	05/06/2016	3,065.35	-	62.90	-	3,002.45
	08/03/2016	3,065.35	-	63.03	-	3,002.32
	12/22/2016	3,065.35	-	63.05	-	3,002.30
	02/28/2017	3,065.35	-	63.09	-	3,002.26
	06/29/2017	3,065.35	-	63.33	-	3,002.02
	09/25/2017	3,065.35	-	63.19	-	3,002.16
	11/16/2017	3,065.35	-	63.22	-	3,002.13
MW-7	02/05/2016	3,065.38	-	62.74	-	3,002.64
	05/06/2016	3,065.38	-	62.88	-	3,002.50
	08/03/2016	3,065.38	-	62.85	-	3,002.53
	12/22/2016	3,065.38	-	62.98	-	3,002.40
	02/28/2017	3,065.38	-	63.10	-	3,002.28
	06/29/2017	3,065.38	-	63.31	-	3,002.07
	09/25/2017	3,065.38	-	63.17	-	3,002.21
	11/16/2017	3,065.38	-	63.20	-	3,002.18
MW-8	02/05/2016	3,065.10	-	62.46	-	3,002.64
	05/06/2016	3,065.10	-	62.41	-	3,002.69
	08/03/2016	3,065.10	-	62.40	-	3,002.70
	12/22/2016	3,065.10	-	62.85	-	3,002.25
	02/28/2017	3,065.10	-	62.78	-	3,002.32
	06/29/2017	3,065.10	-	63.03	-	3,002.07
	09/25/2017	3,065.10	-	62.91	-	3,002.19
	11/16/2017	3,065.10	-	62.91	-	3,002.19
MW-9	02/05/2016	3,065.42	-	62.88	-	3,002.54
	05/06/2016	3,065.42	-	63.05	-	3,002.37
	08/03/2016	3,065.42	-	63.11	-	3,002.31
	12/22/2016	3,065.42	-	63.14	-	3,002.28
	02/28/2017	3,065.42	-	63.23	-	3,002.19
	06/29/2017	3,065.42	-	63.44	-	3,001.98
	09/25/2017	3,065.42	-	63.38	-	3,002.04
	11/16/2017	3,065.42	-	63.40	-	3,002.02

Elevations based on the North American Vertical Datum of 1988

- = Not applicable

TABLE 2

GROUNDWATER ANALYTICAL SUMMARY - BTEX & CHLORIDE
14-INCH VAC TO JAL LEGACY
LEA COUNTY, NEW MEXICO
PLAINS SRS #: 2009-092
NMOCD REFERENCE #: 1RP-2162
TERRACON PROJECT #: AR187005

SAMPLE LOCATION	SAMPLE DATE	METHODS: EPA SW 846-8021B, 5030							CHLORIDE (mg/L)
		BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL-BENZENE (mg/L)	M,P-XYLENES (mg/L)	O-XYLENES (mg/L)	TOTAL XYLENES (mg/L)	TOTAL BTEX (mg/L)	
MW-2	02/05/2016	**0.0205**	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0205	**9,570**
	05/06/2016	**0.0279**	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0279	-
	09/27/2016	**0.0570**	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.0570	**10,200**
	12/29/2016	**0.0199**	<0.00100	<0.00100	<0.00200	<0.00100	<0.00200	0.0199	**10,600**
	02/28/2017	**0.0418**	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.0418	**10,400**
	06/29/2017	**0.0800**	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.0800	**9,100**
	09/25/2017	**0.0430**	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.0430	**9,560**
	11/16/2017	**0.0632**	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.0430	**10,400**
MW-3	02/05/2016	**2.59**	<0.0200	<0.0100	<0.0200	<0.0100	<0.0200	2.59	-
	05/06/2016	**2.68**	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2.68	-
	09/27/2016	**2.70**	0.00260	<0.00200	0.0254	0.00937	0.0348	2.74	-
	12/29/2016	**3.57**	<0.0200	<0.0200	<0.0400	<0.0200	<0.0400	3.57	-
	02/28/2017	**6.65**	<0.0020	<0.0020	0.255	<0.0020	0.255	6.91	-
	06/29/2017	**1.80**	<0.0020	<0.0020	0.0292	<0.0020	0.0292	1.83	-
	09/25/2017	**0.50**	<0.0020	<0.0020	0.004	<0.0020	0.004	0.506	-
	11/16/2017	**0.815**	<0.0020	<0.0020	<0.200	<0.0020	<0.200	0.815	-
MW-4	02/05/2016	0.0021	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0021	-
	05/06/2016	**0.0101**	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0101	-
	09/27/2016	0.00660	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.00660	-
	12/29/2016	0.00110	<0.00100	<0.00100	<0.00200	<0.00100	<0.00200	0.00110	-
	02/28/2017	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
	06/29/2017	0.00138	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.00138	-
	09/25/2017	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
	11/16/2017	0.00280	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.00280	-
MW-5	02/05/2016	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-
	05/06/2016	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	-
	09/27/2016	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
	12/29/2016	<0.00100	<0.00100	<0.00100	<0.00200	<0.00100	<0.00200	<0.00200	-
	02/28/2017	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
	06/29/2017	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
	09/25/2017	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
	11/16/2017	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
MW-6	02/05/2016	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-
	05/06/2016	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	-
	09/27/2016	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
	12/29/2016	<0.00100	<0.00100	<0.00100	<0.00200	<0.00100	<0.00200	<0.00200	-
	02/28/2017	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
	06/29/2017	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
	09/25/2017	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
	11/16/2017	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
MW-7	02/05/2016	0.0061	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0061	-
	05/06/2016	**0.0211**	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0211	-
	09/27/2016	<0.00200	0.00309	<0.00200	<0.00200	<0.00200	<0.00200	0.00309	-
	12/29/2016	<0.00100	<0.00100	<0.00100	<0.00200	<0.00100	<0.00200	<0.00200	-
	02/28/2017	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
	06/29/2017	0.00117	<0.00200	0.00307	<0.00200	<0.00200	<0.00200	0.00424	-
	09/25/2017	0.00140	<0.00200	0.01560	<0.00200	<0.00200	<0.00200	0.01700	-
	11/16/2017	<0.00200	<0.00200	0.01560	<0.00200	<0.00200	<0.00200	<0.00200	-
MW-8	02/05/2016	**0.262**	<0.0020	<0.0010	0.0033	<0.0010	0.0033	0.265	-
	05/06/2016	**0.52**	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.52	-
	09/27/2016	**0.967**	0.00246	<0.00200	0.0177	0.00244	0.0201	0.990	-
	12/29/2016	**0.417**	<0.00500	<0.00500	<0.0100	<0.00500	<0.00500	0.417	-
	02/28/2017	**0.0417**	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.0417	-
	06/29/2017	**0.420**	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.420	-
	09/25/2017	**0.368**	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.368	-
	11/16/2017	**0.080**	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.080	-
MW-9	02/05/2016	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-
	05/06/2016	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	-
	09/27/2016	<0.00200	<0.00200	<0.00200	0.00241	<0.00200	0.00241	0.00241	-
	12/29/2016	<0.00100	<0.00100	<0.00100	<0.00200	<0.00100	<0.00200	<0.00200	-
	02/28/2017	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
	06/29/2017	0.00233	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.00233	-
	09/25/2017	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
	11/16/2017	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
NMOCD CRITERIA		**0.01**	**0.75**	**0.75**	**TOTAL XYLENES 0.62**				**250**

Note: MW-1 no longer sampled due to the presence of PSH.

- = Not analyzed.

Bold denotes concentrations above applicable NMOCD criteria.

APPENDIX C

Laboratory Data Sheets

Certificate of Analysis Summary 547574

Terracon Lubbock, Lubbock, TX

Project Name: 14" Vac to Jal Legacy (SRS# 2009-092)

Project Id: AR167323
Contact: Joel Lowry
Project Location:

Date Received in Lab: Wed Mar-01-17 09:15 am
Report Date: 08-MAR-17
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	547574-001		547574-002		547574-003		547574-004		547574-005		547574-006	
	Field Id:	MW-2		MW-3		MW-4		MW-5		MW-6		MW-7	
	Depth:												
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	Sampled:	Feb-28-17 09:56		Feb-28-17 13:05		Feb-28-17 11:59		Feb-28-17 11:05		Feb-28-17 16:02		Feb-28-17 16:59	
BTEX by EPA 8021B	***Extracted:***	Mar-04-17 08:00		Mar-05-17 07:40		Mar-05-17 07:40		Mar-04-17 08:00		Mar-04-17 08:00		Mar-04-17 08:00	
	Analyzed:	Mar-04-17 23:35		Mar-05-17 21:32		Mar-05-17 21:00		Mar-05-17 00:23		Mar-05-17 00:38		Mar-05-17 00:54	
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
Benzene		0.0418	0.00200	6.65	0.200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200
Toluene		<0.00200	0.00200	<0.200	0.200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200
Ethylbenzene		<0.00200	0.00200	<0.200	0.200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200
m_p-Xylenes		<0.00200	0.00200	0.255	0.200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200
o-Xylene		<0.00200	0.00200	<0.200	0.200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200
Total Xylenes		<0.00200	0.00200	0.255	0.200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200
Total BTEX		0.0418	0.00200	6.91	0.200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200
Chloride by EPA 300	***Extracted:***	Mar-01-17 13:30											
	Analyzed:	Mar-01-17 17:36											
	Units/RL:	mg/L	RL										
Chloride		10400	50.0										

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 547574

Terracon Lubbock, Lubbock, TX

Project Name: 14" Vac to Jal Legacy (SRS# 2009-092)

Project Id: AR167323
Contact: Joel Lowry
Project Location:

Date Received in Lab: Wed Mar-01-17 09:15 am
Report Date: 08-MAR-17
Project Manager: Kelsey Brooks

Analysis Requested									
	Lab Id:	547574-007		547574-008					
	Field Id:	MW-8		MW-9					
	Depth:								
	Matrix:	WATER		WATER					
	Sampled:	Feb-28-17 14:05		Feb-28-17 14:57					
BTEX by EPA 8021B	***Extracted:***	Mar-04-17 08:00		Mar-06-17 15:30					
	Analyzed:	Mar-05-17 01:43		Mar-06-17 19:31					
	Units/RL:	mg/L	RL	mg/L	RL				
Benzene		0.0417	0.00200	<0.00200	0.00200				
Toluene		<0.00200	0.00200	<0.00200	0.00200				
Ethylbenzene		<0.00200	0.00200	<0.00200	0.00200				
m_p-Xylenes		<0.00200	0.00200	<0.00200	0.00200				
o-Xylene		<0.00200	0.00200	<0.00200	0.00200				
Total Xylenes		<0.00200	0.00200	<0.00200	0.00200				
Total BTEX		0.0417	0.00200	<0.00200	0.00200				

Kelsey Brooks
Project Manager

Analytical Report 547574

for

Terracon Lubbock

Project Manager: Joel Lowry

14" Vac to Jal Legacy (SRS# 2009-092)

AR167323

08-MAR-17

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)
Xenco-San Antonio: Texas (T104704534)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

08-MAR-17

Project Manager: **Joel Lowry**
Terracon Lubbock
5827 50th st, Suite 1
Lubbock, TX 79424

Reference: XENCO Report No(s): **547574**
14" Vac to Jal Legacy (SRS# 2009-092)
Project Address:

Joel Lowry:

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) 547574. 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. 547574 will be filed for 60 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

Sample Cross Reference 547574

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy (SRS# 2009-092)

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-2	W	02-28-17 09:56		547574-001
MW-3	W	02-28-17 13:05		547574-002
MW-4	W	02-28-17 11:59		547574-003
MW-5	W	02-28-17 11:05		547574-004
MW-6	W	02-28-17 16:02		547574-005
MW-7	W	02-28-17 16:59		547574-006
MW-8	W	02-28-17 14:05		547574-007
MW-9	W	02-28-17 14:57		547574-008

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results 547574

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy (SRS# 2009-092)

Sample Id: **MW-2** Matrix: Water Date Received:03.01.17 09.15

Lab Sample Id: 547574-001 Date Collected: 02.28.17 09.56

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: MGO % Moisture:

Analyst: MGO Date Prep: 03.01.17 13.30

Seq Number: 3011496

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**10400**	50.0	mg/L	03.01.17 17.36		100

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: ALJ % Moisture:

Analyst: ALJ Date Prep: 03.04.17 08.00

Seq Number: 3011642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.0418**	0.00200	mg/L	03.04.17 23.35		1
Toluene	108-88-3	<0.00200	0.00200	mg/L	03.04.17 23.35	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	03.04.17 23.35	U	1
m_p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	03.04.17 23.35	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	03.04.17 23.35	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	03.04.17 23.35	U	1
Total BTEX		**0.0418**	0.00200	mg/L	03.04.17 23.35		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	108	%	80-120	03.04.17 23.35	
4-Bromofluorobenzene	460-00-4	107	%	80-120	03.04.17 23.35	

Certificate of Analytical Results 547574

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy (SRS# 2009-092)

Sample Id:	**MW-3**	Matrix:	Water	Date Received:	03.01.17 09.15
Lab Sample Id:	547574-002	Date Collected:	02.28.17 13.05		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.05.17 07.40		
Seq Number:	3011677				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**6.65**	0.200	mg/L	03.05.17 21.32		100
Toluene	108-88-3	<0.200	0.200	mg/L	03.05.17 21.32	U	100
Ethylbenzene	100-41-4	<0.200	0.200	mg/L	03.05.17 21.32	U	100
m_p-Xylenes	179601-23-1	**0.255**	0.200	mg/L	03.05.17 21.32		100
o-Xylene	95-47-6	<0.200	0.200	mg/L	03.05.17 21.32	U	100
Total Xylenes	1330-20-7	**0.255**	0.200	mg/L	03.05.17 21.32		100
Total BTEX		**6.91**	0.200	mg/L	03.05.17 21.32		100

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	112	%	80-120	03.05.17 21.32	
4-Bromofluorobenzene	460-00-4	92	%	80-120	03.05.17 21.32	

Certificate of Analytical Results 547574

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy (SRS# 2009-092)

Sample Id: **MW-4** Matrix: Water Date Received:03.01.17 09.15

Lab Sample Id: 547574-003 Date Collected: 02.28.17 11.59

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: ALJ % Moisture:

Analyst: ALJ Date Prep: 03.05.17 07.40

Seq Number: 3011677

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	03.05.17 21.00	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	03.05.17 21.00	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	03.05.17 21.00	U	1
m_p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	03.05.17 21.00	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	03.05.17 21.00	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	03.05.17 21.00	U	1
Total BTEX		<0.00200	0.00200	mg/L	03.05.17 21.00	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	102	%	80-120	03.05.17 21.00	
4-Bromofluorobenzene	460-00-4	100	%	80-120	03.05.17 21.00	

Certificate of Analytical Results 547574

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy (SRS# 2009-092)

Sample Id: **MW-5** Matrix: Water Date Received:03.01.17 09.15

Lab Sample Id: 547574-004 Date Collected: 02.28.17 11.05

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: ALJ % Moisture:

Analyst: ALJ Date Prep: 03.04.17 08.00

Seq Number: 3011642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	03.05.17 00.23	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	03.05.17 00.23	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	03.05.17 00.23	U	1
m_p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	03.05.17 00.23	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	03.05.17 00.23	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	03.05.17 00.23	U	1
Total BTEX		<0.00200	0.00200	mg/L	03.05.17 00.23	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	107	%	80-120	03.05.17 00.23	
4-Bromofluorobenzene	460-00-4	99	%	80-120	03.05.17 00.23	

Certificate of Analytical Results 547574

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy (SRS# 2009-092)

Sample Id: **MW-6**
Matrix: Water
Date Received:03.01.17 09.15
Lab Sample Id: 547574-005
Date Collected: 02.28.17 16.02

Analytical Method: BTEX by EPA 8021B
Prep Method: SW5030B
Tech: ALJ
% Moisture:
Analyst: ALJ
Date Prep: 03.04.17 08.00
Seq Number: 3011642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	03.05.17 00.38	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	03.05.17 00.38	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	03.05.17 00.38	U	1
m_p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	03.05.17 00.38	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	03.05.17 00.38	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	03.05.17 00.38	U	1
Total BTEX		<0.00200	0.00200	mg/L	03.05.17 00.38	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	114	%	80-120	03.05.17 00.38	
4-Bromofluorobenzene	460-00-4	97	%	80-120	03.05.17 00.38	

Certificate of Analytical Results 547574

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy (SRS# 2009-092)

Sample Id: **MW-7** Matrix: Water Date Received:03.01.17 09.15

Lab Sample Id: 547574-006 Date Collected: 02.28.17 16.59

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: ALJ % Moisture:

Analyst: ALJ Date Prep: 03.04.17 08.00

Seq Number: 3011642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	03.05.17 00.54	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	03.05.17 00.54	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	03.05.17 00.54	U	1
m_p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	03.05.17 00.54	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	03.05.17 00.54	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	03.05.17 00.54	U	1
Total BTEX		<0.00200	0.00200	mg/L	03.05.17 00.54	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	117	%	80-120	03.05.17 00.54	
4-Bromofluorobenzene	460-00-4	96	%	80-120	03.05.17 00.54	

Certificate of Analytical Results 547574

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy (SRS# 2009-092)

Sample Id: **MW-8** Matrix: Water Date Received:03.01.17 09.15

Lab Sample Id: 547574-007 Date Collected: 02.28.17 14.05

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: ALJ % Moisture:

Analyst: ALJ Date Prep: 03.04.17 08.00

Seq Number: 3011642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.0417**	0.00200	mg/L	03.05.17 01.43		1
Toluene	108-88-3	<0.00200	0.00200	mg/L	03.05.17 01.43	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	03.05.17 01.43	U	1
m_p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	03.05.17 01.43	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	03.05.17 01.43	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	03.05.17 01.43	U	1
Total BTEX		**0.0417**	0.00200	mg/L	03.05.17 01.43		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	116	%	80-120	03.05.17 01.43	
4-Bromofluorobenzene	460-00-4	97	%	80-120	03.05.17 01.43	

Certificate of Analytical Results 547574

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy (SRS# 2009-092)

Sample Id: **MW-9** Matrix: Water Date Received:03.01.17 09.15

Lab Sample Id: 547574-008 Date Collected: 02.28.17 14.57

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: ALJ % Moisture:

Analyst: ALJ Date Prep: 03.06.17 15.30

Seq Number: 3011717

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	03.06.17 19.31	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	03.06.17 19.31	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	03.06.17 19.31	U	1
m_p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	03.06.17 19.31	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	03.06.17 19.31	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	03.06.17 19.31	U	1
Total BTEX		<0.00200	0.00200	mg/L	03.06.17 19.31	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	107	%	80-120	03.06.17 19.31	
4-Bromofluorobenzene	460-00-4	95	%	80-120	03.06.17 19.31	

Flagging Criteria

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

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

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

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

F RPD exceeded lab control limits.

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

U Analyte was not detected.

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

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

K Sample analyzed outside of recommended hold time.

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

	Phone	Fax
4147 Greenbriar Dr, Stafford, TX 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

QC Summary 547574

Terracon Lubbock

14" Vac to Jal Legacy (SRS# 2009-092)

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3011496 Matrix: Water Date Prep: 03.01.17
MB Sample Id: 720853-1-BLK LCS Sample Id: 720853-1-BKS LCSD Sample Id: 720853-1-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	25.0	100	24.9	100	90-110	0	20	mg/L	03.01.17 16:45	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3011496 Matrix: Ground Water Date Prep: 03.01.17
Parent Sample Id: 547550-008 MS Sample Id: 547550-008 S MSD Sample Id: 547550-008 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	190	250	208	7	205	6	90-110	1	20	mg/L	03.01.17 18:50	X

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3011496 Matrix: Drinking Water Date Prep: 03.01.17
Parent Sample Id: 547571-001 MS Sample Id: 547571-001 S MSD Sample Id: 547571-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	3.20	25.0	29.5	105	29.4	105	90-110	0	20	mg/L	03.01.17 17:07	

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3011642 Matrix: Water Date Prep: 03.04.17
MB Sample Id: 721037-1-BLK LCS Sample Id: 721037-1-BKS LCSD Sample Id: 721037-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0877	88	0.0976	98	70-125	11	25	mg/L	03.04.17 20:53	
Toluene	<0.00200	0.100	0.0950	95	0.104	104	70-125	9	25	mg/L	03.04.17 20:53	
Ethylbenzene	<0.00200	0.100	0.0955	96	0.105	105	71-129	9	25	mg/L	03.04.17 20:53	
m_p-Xylenes	<0.00200	0.200	0.187	94	0.206	103	70-131	10	25	mg/L	03.04.17 20:53	
o-Xylene	<0.00200	0.100	0.100	100	0.108	108	71-133	8	25	mg/L	03.04.17 20:53	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	117		110		101		80-120	%	03.04.17 20:53
4-Bromofluorobenzene	107		114		98		80-120	%	03.04.17 20:53

QC Summary 547574

Terracon Lubbock

14" Vac to Jal Legacy (SRS# 2009-092)

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3011677 Matrix: Water Date Prep: 03.05.17
MB Sample Id: 721048-1-BLK LCS Sample Id: 721048-1-BKS LCSD Sample Id: 721048-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0798	80	0.0772	77	70-125	3	25	mg/L	03.05.17 15:55	
Toluene	<0.00200	0.100	0.0875	88	0.0837	84	70-125	4	25	mg/L	03.05.17 15:55	
Ethylbenzene	<0.00200	0.100	0.0878	88	0.0858	86	71-129	2	25	mg/L	03.05.17 15:55	
m_p-Xylenes	<0.00200	0.200	0.171	86	0.168	84	70-131	2	25	mg/L	03.05.17 15:55	
o-Xylene	<0.00200	0.100	0.0906	91	0.0890	89	71-133	2	25	mg/L	03.05.17 15:55	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	106		112		107		80-120	%	03.05.17 15:55
4-Bromofluorobenzene	92		102		108		80-120	%	03.05.17 15:55

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3011717 Matrix: Water Date Prep: 03.06.17
MB Sample Id: 721089-1-BLK LCS Sample Id: 721089-1-BKS LCSD Sample Id: 721089-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0874	87	0.0974	97	70-125	11	25	mg/L	03.06.17 17:04	
Toluene	<0.00200	0.100	0.0972	97	0.106	106	70-125	9	25	mg/L	03.06.17 17:04	
Ethylbenzene	<0.00200	0.100	0.0997	100	0.109	109	71-129	9	25	mg/L	03.06.17 17:04	
m_p-Xylenes	<0.00200	0.200	0.195	98	0.213	107	70-131	9	25	mg/L	03.06.17 17:04	
o-Xylene	<0.00200	0.100	0.104	104	0.114	114	71-133	9	25	mg/L	03.06.17 17:04	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	99		114		104		80-120	%	03.06.17 17:04
4-Bromofluorobenzene	95		111		112		80-120	%	03.06.17 17:04

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3011642 Matrix: Water Date Prep: 03.04.17
Parent Sample Id: 547558-001 MS Sample Id: 547558-001 S MSD Sample Id: 547558-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.101	101	0.103	103	70-125	2	25	mg/L	03.04.17 21:25	
Toluene	<0.00200	0.100	0.111	111	0.112	112	70-125	1	25	mg/L	03.04.17 21:25	
Ethylbenzene	<0.00200	0.100	0.110	110	0.112	112	71-129	2	25	mg/L	03.04.17 21:25	
m_p-Xylenes	<0.00200	0.200	0.212	106	0.217	109	70-131	2	25	mg/L	03.04.17 21:25	
o-Xylene	<0.00200	0.100	0.114	114	0.114	114	71-133	0	25	mg/L	03.04.17 21:25	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	107		117		80-120	%	03.04.17 21:25
4-Bromofluorobenzene	117		100		80-120	%	03.04.17 21:25

QC Summary 547574

Terracon Lubbock

14" Vac to Jal Legacy (SRS# 2009-092)

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B

Seq Number: 3011677 Matrix: Ground Water Date Prep: 03.05.17

Parent Sample Id: 547702-005 MS Sample Id: 547702-005 S MSD Sample Id: 547702-005 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0918	92	0.0924	92	70-125	1	25	mg/L	03.05.17 16:27	
Toluene	<0.00200	0.100	0.0982	98	0.101	101	70-125	3	25	mg/L	03.05.17 16:27	
Ethylbenzene	<0.00200	0.100	0.0980	98	0.101	101	71-129	3	25	mg/L	03.05.17 16:27	
m_p-Xylenes	<0.00200	0.200	0.191	96	0.196	98	70-131	3	25	mg/L	03.05.17 16:27	
o-Xylene	<0.00200	0.100	0.101	101	0.105	105	71-133	4	25	mg/L	03.05.17 16:27	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	105		107		80-120	%	03.05.17 16:27
4-Bromofluorobenzene	97		113		80-120	%	03.05.17 16:27

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B

Seq Number: 3011717 Matrix: Ground Water Date Prep: 03.06.17

Parent Sample Id: 547696-002 MS Sample Id: 547696-002 S MSD Sample Id: 547696-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	0.00402	0.100	0.0918	88	0.0884	84	70-125	4	25	mg/L	03.06.17 17:37	
Toluene	<0.00200	0.100	0.0986	99	0.0942	94	70-125	5	25	mg/L	03.06.17 17:37	
Ethylbenzene	<0.00200	0.100	0.101	101	0.0922	92	71-129	9	25	mg/L	03.06.17 17:37	
m_p-Xylenes	0.00257	0.200	0.196	97	0.180	89	70-131	9	25	mg/L	03.06.17 17:37	
o-Xylene	<0.00200	0.100	0.102	102	0.0951	95	71-133	7	25	mg/L	03.06.17 17:37	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	103		115		80-120	%	03.06.17 17:37
4-Bromofluorobenzene	99		93		80-120	%	03.06.17 17:37

CHAIN OF CUSTODY RECORD

Terracon

Office Location: Lubbock

Project Manager: Joel Lowry

Sampler's Name: Kimble Thrash

Sampler's Signature

Laboratory: Xenco Laboratories
Address: 1211 West Florida Ave. Midland, TX 79701
Phone: (432) 563-1800
Contact: Julian Martinez
PO/SO #:

Project Number: AR167323

Project Name: 14" Vac to Jal Legacy (SRS # 2009-092)

ANALYSIS REQUESTED

LAB USE ONLY
DUE DATE:
Temp: 0.8 IR ID: R-8
CF: + 0.1
Corrected Temp: 0.9

Page 1 of 1

547574

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	No. Type of Containers: 40 ml VOA	250 ml Poly			BTEX (EPA Method 8021B)	Chloride (Total) (EPA 300)						Lab Sample ID
GW	02/28/17	0956		X	MW-2			X	X			3	1						
GW	02/28/17	1305		X	MW-3			X				3							
GW	02/28/17	1159		X	MW-4			X				3							
GW	02/28/17	1105		X	MW-5			X				3							
GW	02/28/17	1602		X	MW-6			X				3							
GW	02/28/17	1659		X	MW-7			X				3							
GW	02/28/17	1405		X	MW-8			X				3							
GW	02/28/17	1457		X	MW-9			X				3							
					**********END OF COC**********														

TURNAROUND TIME: ☒ Normal ☐ 48-Hour Rush ☐ 24-Hour Rush

TRRP Laboratory Review Checklist ☐ Yes ☐ No

Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
	3/1/17	054	Amy Weatherford	3/1/17	0800
Amy Weatherford	3/1/17	0853	Julian Martinez	3/1/17	8:53
Julian Martinez	3/1/17	9:15	[illegible] AMER	3/1/17	915

NOTES:

E-MAIL RESULTS TO:
CJBRYANT@PAALP.COM
&
JOEL.LOWRY@TERRACON.COM
&
KATHRASH@TERRACON.COM

Matrix: WW-Wastewater; W - Water; S - Soil; L - Liquid; A - Air Bag; C - Charcoal tube; SL - Sludge
Container: VOA - 40 ml vial; A/G - Amber Glass 1L; 250 ml = Glass wide mouth; P/O - Plastic or other _____

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: Terracon Lubbock

Date/ Time Received: 03/01/2017 09:15:00 AM

Work Order #: 547574

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)?	.9
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seal present on shipping container/ cooler?	**N/A**
#5 *Custody Seals intact on shipping container/ cooler?	**N/A**
#6 Custody Seals intact on sample bottles?	**N/A**
#7 *Custody Seals Signed and dated?	**N/A**
#8 *Chain of Custody present?	**Yes**
#9 Sample instructions complete on Chain of Custody?	**Yes**
#10 Any missing/extra samples?	**No**
#11 Chain of Custody signed when relinquished/ received?	**Yes**
#12 Chain of Custody agrees with sample label(s)?	**Yes**
#13 Container label(s) legible and intact?	**Yes**
#14 Sample matrix/ properties agree with Chain of Custody?	**Yes**
#15 Samples in proper container/ bottle?	**Yes**
#16 Samples properly preserved?	**Yes**
#17 Sample container(s) intact?	**Yes**
#18 Sufficient sample amount for indicated test(s)?	**Yes**
#19 All samples received within hold time?	**Yes**
#20 Subcontract of sample(s)?	**N/A**
#21 VOC samples have zero headspace?	**N/A**
#22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts.	**N/A**
#23 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**N/A**

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

Analyst: JKR

PH Device/Lot#: 213315

Checklist completed by: Jessica Kramer
Jessica Kramer
Date: 03/01/2017

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks
Date: 03/01/2017

Certificate of Analysis Summary 556671

Terracon Lubbock, Lubbock, TX

Project Name: 14'' Vac to Jal Legacy

Project Id: AR167323
Contact: Joel Lowry
Project Location:

Date Received in Lab: Thu Jun-29-17 04:30 pm
Report Date: 06-JUL-17
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	556671-001		556671-002		556671-003		556671-004		556671-005		556671-006	
	Field Id:	MW-2		MW-3		MW-4		MW-5		MW-6		MW-7	
	Depth:												
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	Sampled:	Jun-29-17 12:16		Jun-29-17 11:37		Jun-29-17 11:52		Jun-29-17 12:05		Jun-29-17 10:43		Jun-29-17 10:13	
BTEX by EPA 8021B	***Extracted:***	Jul-01-17 13:00		Jul-03-17 14:00		Jul-03-17 14:00		Jul-03-17 14:00		Jul-01-17 13:00		Jul-01-17 13:00	
	Analyzed:	Jul-02-17 08:39		Jul-03-17 23:17		Jul-03-17 21:02		Jul-03-17 21:29		Jul-02-17 10:26		Jul-02-17 10:53	
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
Benzene		0.0800	0.00106	1.80	0.0101	0.00138	0.00106	<0.00106	0.00106	<0.00106	0.00106	0.00117	0.00106
Toluene		<0.00106	0.00106	<0.0101	0.0101	<0.00106	0.00106	<0.00106	0.00106	<0.00106	0.00106	<0.00106	0.00106
Ethylbenzene		<0.00106	0.00106	<0.0101	0.0101	<0.00106	0.00106	<0.00106	0.00106	<0.00106	0.00106	0.00307	0.00106
m,p-Xylenes		<0.00212	0.00212	0.0292	0.0201	<0.00212	0.00212	<0.00212	0.00212	<0.00212	0.00212	<0.00212	0.00212
o-Xylene		<0.00106	0.00106	<0.0101	0.0101	<0.00106	0.00106	<0.00106	0.00106	<0.00106	0.00106	<0.00106	0.00106
Total Xylenes		<0.00106	0.00106	0.0292	0.0101	<0.00106	0.00106	<0.00106	0.00106	<0.00106	0.00106	<0.00106	0.00106
Total BTEX		0.0800	0.00106	1.83	0.0101	0.00138	0.00106	<0.00106	0.00106	<0.00106	0.00106	0.00424	0.00106
Chloride by EPA 300	***Extracted:***	Jul-05-17 10:00											
	Analyzed:	Jul-05-17 14:00											
	Units/RL:	mg/L	RL										
Chloride		9100 D	1250										

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 556671

Terracon Lubbock, Lubbock, TX

Project Name: 14'' Vac to Jal Legacy

Project Id: AR167323
Contact: Joel Lowry
Project Location:

Date Received in Lab: Thu Jun-29-17 04:30 pm
Report Date: 06-JUL-17
Project Manager: Kelsey Brooks

Analysis Requested									
	Lab Id:	556671-007		556671-008					
	Field Id:	MW-8		MW-9					
	Depth:								
	Matrix:	WATER		WATER					
	Sampled:	Jun-29-17 11:22		Jun-29-17 10:30					
BTEX by EPA 8021B	***Extracted:***	Jul-03-17 14:00		Jul-01-17 13:00					
	Analyzed:	Jul-03-17 18:20		Jul-02-17 11:46					
	Units/RL:	mg/L	RL	mg/L	RL				
Benzene		0.420	0.00506	0.00233	0.00106				
Toluene		<0.00506	0.00506	<0.00106	0.00106				
Ethylbenzene		<0.00506	0.00506	<0.00106	0.00106				
m,p-Xylenes		<0.0101	0.0101	<0.00212	0.00212				
o-Xylene		<0.00506	0.00506	<0.00106	0.00106				
Total Xylenes		<0.00506	0.00506	<0.00106	0.00106				
Total BTEX		0.420	0.00506	0.00233	0.00106				

Kelsey Brooks
Project Manager

Analytical Report 556671

for

Terracon Lubbock

Project Manager: Joel Lowry

14'' Vac to Jal Legacy

AR167323

06-JUL-17

Collected By: Client

6701 Aberdeen, Suite 9 Lubbock, TX 79424

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)
Xenco-San Antonio: Texas (T104704534)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

06-JUL-17

Project Manager: **Joel Lowry**
Terracon Lubbock
5827 50th st, Suite 1
Lubbock, TX 79424

Reference: XENCO Report No(s): **556671**
14'' Vac to Jal Legacy
Project Address:

Joel Lowry:

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) 556671. 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. 556671 will be filed for 60 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

Sample Cross Reference 556671

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-2	W	06-29-17 12:16		556671-001
MW-3	W	06-29-17 11:37		556671-002
MW-4	W	06-29-17 11:52		556671-003
MW-5	W	06-29-17 12:05		556671-004
MW-6	W	06-29-17 10:43		556671-005
MW-7	W	06-29-17 10:13		556671-006
MW-8	W	06-29-17 11:22		556671-007
MW-9	W	06-29-17 10:30		556671-008

CASE NARRATIVE

Client Name: Terracon Lubbock

Project Name: 14'' Vac to Jal Legacy

Project ID: *AR167323*
Work Order Number(s): *556671*

Report Date: *06-JUL-17*
Date Received: *06/29/2017*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results 556671

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy

Sample Id:	**MW-2**	Matrix:	Water	Date Received:	06.29.17 16.30
Lab Sample Id:	556671-001	Date Collected:	06.29.17 12.16		

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	RNL			% Moisture:	
Analyst:	RNL	Date Prep:	07.05.17 10.00		
Seq Number:	3021586				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**9100**	1250	mg/L	07.05.17 14.13	D	500

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.01.17 13.00		
Seq Number:	3021365				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.0800**	0.00106	mg/L	07.02.17 08.39		1.06
Toluene	108-88-3	<0.00106	0.00106	mg/L	07.02.17 08.39	U	1.06
Ethylbenzene	100-41-4	<0.00106	0.00106	mg/L	07.02.17 08.39	U	1.06
m,p-Xylenes	179601-23-1	<0.00212	0.00212	mg/L	07.02.17 08.39	U	1.06
o-Xylene	95-47-6	<0.00106	0.00106	mg/L	07.02.17 08.39	U	1.06
Total Xylenes	1330-20-7	<0.00106	0.00106	mg/L	07.02.17 08.39	U	1.06
Total BTEX		**0.0800**	0.00106	mg/L	07.02.17 08.39		1.06

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
a,a,a-Trifluorotoluene	98-08-8	96	%	66-120	07.02.17 08.39	
4-Bromofluorobenzene	460-00-4	93	%	67-120	07.02.17 08.39	

Certificate of Analytical Results 556671

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy

Sample Id:	**MW-3**	Matrix:	Water	Date Received:	06.29.17 16.30
Lab Sample Id:	556671-002	Date Collected:	06.29.17 11.37		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.03.17 14.00		
Seq Number:	3021470				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**1.80**	0.0101	mg/L	07.03.17 23.17		10.06
Toluene	108-88-3	<0.0101	0.0101	mg/L	07.03.17 23.17	U	10.06
Ethylbenzene	100-41-4	<0.0101	0.0101	mg/L	07.03.17 23.17	U	10.06
m,p-Xylenes	179601-23-1	**0.0292**	0.0201	mg/L	07.03.17 23.17		10.06
o-Xylene	95-47-6	<0.0101	0.0101	mg/L	07.03.17 23.17	U	10.06
Total Xylenes	1330-20-7	**0.0292**	0.0101	mg/L	07.03.17 23.17		10.06
Total BTEX		**1.83**	0.0101	mg/L	07.03.17 23.17		10.06

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
a,a,a-Trifluorotoluene	98-08-8	90	%	66-120	07.03.17 23.17	
4-Bromofluorobenzene	460-00-4	92	%	67-120	07.03.17 23.17	

Certificate of Analytical Results 556671

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy

Sample Id:	**MW-4**	Matrix:	Water	Date Received:	06.29.17 16.30
Lab Sample Id:	556671-003	Date Collected:	06.29.17 11.52		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.03.17 14.00		
Seq Number:	3021470				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.00138**	0.00106	mg/L	07.03.17 21.02		1.06
Toluene	108-88-3	<0.00106	0.00106	mg/L	07.03.17 21.02	U	1.06
Ethylbenzene	100-41-4	<0.00106	0.00106	mg/L	07.03.17 21.02	U	1.06
m,p-Xylenes	179601-23-1	<0.00212	0.00212	mg/L	07.03.17 21.02	U	1.06
o-Xylene	95-47-6	<0.00106	0.00106	mg/L	07.03.17 21.02	U	1.06
Total Xylenes	1330-20-7	<0.00106	0.00106	mg/L	07.03.17 21.02	U	1.06
Total BTEX		**0.00138**	0.00106	mg/L	07.03.17 21.02		1.06

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
a,a,a-Trifluorotoluene	98-08-8	94	%	66-120	07.03.17 21.02	
4-Bromofluorobenzene	460-00-4	95	%	67-120	07.03.17 21.02	

Certificate of Analytical Results 556671

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy

Sample Id:	**MW-5**	Matrix:	Water	Date Received:	06.29.17 16.30
Lab Sample Id:	556671-004	Date Collected:	06.29.17 12.05		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.03.17 14.00		
Seq Number:	3021470				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00106	0.00106	mg/L	07.03.17 21.29	U	1.06
Toluene	108-88-3	<0.00106	0.00106	mg/L	07.03.17 21.29	U	1.06
Ethylbenzene	100-41-4	<0.00106	0.00106	mg/L	07.03.17 21.29	U	1.06
m,p-Xylenes	179601-23-1	<0.00212	0.00212	mg/L	07.03.17 21.29	U	1.06
o-Xylene	95-47-6	<0.00106	0.00106	mg/L	07.03.17 21.29	U	1.06
Total Xylenes	1330-20-7	<0.00106	0.00106	mg/L	07.03.17 21.29	U	1.06
Total BTEX		<0.00106	0.00106	mg/L	07.03.17 21.29	U	1.06

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
a,a,a-Trifluorotoluene	98-08-8	93	%	66-120	07.03.17 21.29	
4-Bromofluorobenzene	460-00-4	96	%	67-120	07.03.17 21.29	

Certificate of Analytical Results 556671

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy

Sample Id:	**MW-6**	Matrix:	Water	Date Received:	06.29.17 16.30
Lab Sample Id:	556671-005	Date Collected:	06.29.17 10.43		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.01.17 13.00		
Seq Number:	3021365				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00106	0.00106	mg/L	07.02.17 10.26	U	1.06
Toluene	108-88-3	<0.00106	0.00106	mg/L	07.02.17 10.26	U	1.06
Ethylbenzene	100-41-4	<0.00106	0.00106	mg/L	07.02.17 10.26	U	1.06
m,p-Xylenes	179601-23-1	<0.00212	0.00212	mg/L	07.02.17 10.26	U	1.06
o-Xylene	95-47-6	<0.00106	0.00106	mg/L	07.02.17 10.26	U	1.06
Total Xylenes	1330-20-7	<0.00106	0.00106	mg/L	07.02.17 10.26	U	1.06
Total BTEX		<0.00106	0.00106	mg/L	07.02.17 10.26	U	1.06

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
a,a,a-Trifluorotoluene	98-08-8	94	%	66-120	07.02.17 10.26	
4-Bromofluorobenzene	460-00-4	97	%	67-120	07.02.17 10.26	

Certificate of Analytical Results 556671

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy

Sample Id:	**MW-7**	Matrix:	Water	Date Received:	06.29.17 16.30
Lab Sample Id:	556671-006	Date Collected:	06.29.17 10.13		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.01.17 13.00		
Seq Number:	3021365				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.00117**	0.00106	mg/L	07.02.17 10.53		1.06
Toluene	108-88-3	<0.00106	0.00106	mg/L	07.02.17 10.53	U	1.06
Ethylbenzene	100-41-4	**0.00307**	0.00106	mg/L	07.02.17 10.53		1.06
m,p-Xylenes	179601-23-1	<0.00212	0.00212	mg/L	07.02.17 10.53	U	1.06
o-Xylene	95-47-6	<0.00106	0.00106	mg/L	07.02.17 10.53	U	1.06
Total Xylenes	1330-20-7	<0.00106	0.00106	mg/L	07.02.17 10.53	U	1.06
Total BTEX		**0.00424**	0.00106	mg/L	07.02.17 10.53		1.06

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
a,a,a-Trifluorotoluene	98-08-8	96	%	66-120	07.02.17 10.53	
4-Bromofluorobenzene	460-00-4	97	%	67-120	07.02.17 10.53	

Certificate of Analytical Results 556671

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy

Sample Id:	**MW-8**	Matrix:	Water	Date Received:	06.29.17 16.30
Lab Sample Id:	556671-007	Date Collected:	06.29.17 11.22		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.03.17 14.00		
Seq Number:	3021470				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.420**	0.00506	mg/L	07.03.17 18.20		5.06
Toluene	108-88-3	<0.00506	0.00506	mg/L	07.03.17 18.20	U	5.06
Ethylbenzene	100-41-4	<0.00506	0.00506	mg/L	07.03.17 18.20	U	5.06
m,p-Xylenes	179601-23-1	<0.0101	0.0101	mg/L	07.03.17 18.20	U	5.06
o-Xylene	95-47-6	<0.00506	0.00506	mg/L	07.03.17 18.20	U	5.06
Total Xylenes	1330-20-7	<0.00506	0.00506	mg/L	07.03.17 18.20	U	5.06
Total BTEX		**0.420**	0.00506	mg/L	07.03.17 18.20		5.06

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
a,a,a-Trifluorotoluene	98-08-8	96	%	66-120	07.03.17 18.20	
4-Bromofluorobenzene	460-00-4	98	%	67-120	07.03.17 18.20	

Certificate of Analytical Results 556671

Terracon Lubbock, Lubbock, TX

14" Vac to Jal Legacy

Sample Id:	**MW-9**	Matrix:	Water	Date Received:	06.29.17 16.30
Lab Sample Id:	556671-008	Date Collected:	06.29.17 10.30		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.01.17 13.00		
Seq Number:	3021365				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.00233**	0.00106	mg/L	07.02.17 11.46		1.06
Toluene	108-88-3	<0.00106	0.00106	mg/L	07.02.17 11.46	U	1.06
Ethylbenzene	100-41-4	<0.00106	0.00106	mg/L	07.02.17 11.46	U	1.06
m,p-Xylenes	179601-23-1	<0.00212	0.00212	mg/L	07.02.17 11.46	U	1.06
o-Xylene	95-47-6	<0.00106	0.00106	mg/L	07.02.17 11.46	U	1.06
Total Xylenes	1330-20-7	<0.00106	0.00106	mg/L	07.02.17 11.46	U	1.06
Total BTEX		**0.00233**	0.00106	mg/L	07.02.17 11.46		1.06

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
a,a,a-Trifluorotoluene	98-08-8	94	%	66-120	07.02.17 11.46	
4-Bromofluorobenzene	460-00-4	90	%	67-120	07.02.17 11.46	

Flagging Criteria

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

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

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

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

F RPD exceeded lab control limits.

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

U Analyte was not detected.

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

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

K Sample analyzed outside of recommended hold time.

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

	Phone	Fax
4147 Greenbriar Dr, Stafford, TX 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

QC Summary 556671

Terracon Lubbock

14" Vac to Jal Legacy

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3021586 Matrix: Water Date Prep: 07.05.17
MB Sample Id: 727233-1-BLK LCS Sample Id: 727233-1-BKS LCSD Sample Id: 727233-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<2.50	25.0	25.5	102	24.1	96	90-110	6	20	mg/L	07.05.17 11:31	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3021586 Matrix: Water Date Prep: 07.05.17
Parent Sample Id: 556666-002 MS Sample Id: 556666-002 S MSD Sample Id: 556666-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	1990	2500	4990	120	4950	118	80-120	1	20	mg/L	07.05.17 12:33	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3021586 Matrix: Water Date Prep: 07.05.17
Parent Sample Id: 556739-003 MS Sample Id: 556739-003 S MSD Sample Id: 556739-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	14.7	125	142	102	139	99	80-120	2	20	mg/L	07.05.17 15:27	

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3021365 Matrix: Water Date Prep: 07.01.17
MB Sample Id: 727101-1-BLK LCS Sample Id: 727101-1-BKS LCSD Sample Id: 727101-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00106	0.106	0.105	99	0.103	97	74-120	2	20	mg/L	07.01.17 23:13	
Toluene	<0.00106	0.106	0.106	100	0.106	100	74-120	0	20	mg/L	07.01.17 23:13	
Ethylbenzene	<0.00106	0.106	0.100	94	0.103	97	74-120	3	20	mg/L	07.01.17 23:13	
m,p-Xylenes	<0.00212	0.212	0.202	95	0.209	99	73-120	3	25	mg/L	07.01.17 23:13	
o-Xylene	<0.00106	0.106	0.101	95	0.105	99	73-120	4	25	mg/L	07.01.17 23:13	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
a,a,a-Trifluorotoluene	99		102		101		66-120	%	07.01.17 23:13
4-Bromofluorobenzene	103		97		98		67-120	%	07.01.17 23:13

QC Summary 556671

Terracon Lubbock

14" Vac to Jal Legacy

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3021470 Matrix: Water Date Prep: 07.03.17
MB Sample Id: 727143-1-BLK LCS Sample Id: 727143-1-BKS LCSD Sample Id: 727143-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00106	0.106	0.0993	94	0.102	96	74-120	3	20	mg/L	07.03.17 16:31	
Toluene	<0.00106	0.106	0.102	96	0.105	99	74-120	3	20	mg/L	07.03.17 16:31	
Ethylbenzene	<0.00106	0.106	0.0984	93	0.103	97	74-120	5	20	mg/L	07.03.17 16:31	
m,p-Xylenes	<0.00212	0.212	0.199	94	0.208	98	73-120	4	25	mg/L	07.03.17 16:31	
o-Xylene	<0.00106	0.106	0.0997	94	0.104	98	73-120	4	25	mg/L	07.03.17 16:31	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
a,a,a-Trifluorotoluene	95		96		98		66-120	%	07.03.17 16:31
4-Bromofluorobenzene	94		96		97		67-120	%	07.03.17 16:31

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3021365 Matrix: Water Date Prep: 07.01.17
Parent Sample Id: 556741-004 MS Sample Id: 556741-004 S MSD Sample Id: 556741-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00106	0.106	0.107	101	0.110	104	15-147	3	25	mg/L	07.02.17 01:27	
Toluene	<0.00106	0.106	0.109	103	0.112	106	11-147	3	25	mg/L	07.02.17 01:27	
Ethylbenzene	<0.00106	0.106	0.106	100	0.109	103	10-149	3	25	mg/L	07.02.17 01:27	
m,p-Xylenes	<0.00212	0.212	0.214	101	0.221	104	62-124	3	25	mg/L	07.02.17 01:27	
o-Xylene	<0.00106	0.106	0.107	101	0.112	106	62-124	5	25	mg/L	07.02.17 01:27	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
a,a,a-Trifluorotoluene	97		99		66-120	%	07.02.17 01:27
4-Bromofluorobenzene	100		101		67-120	%	07.02.17 01:27

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3021470 Matrix: Water Date Prep: 07.03.17
Parent Sample Id: 556671-007 MS Sample Id: 556671-007 S MSD Sample Id: 556671-007 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	0.420	0.506	0.936	102	0.912	97	15-147	3	25	mg/L	07.03.17 18:48	
Toluene	<0.00506	0.506	0.502	99	0.493	97	11-147	2	25	mg/L	07.03.17 18:48	
Ethylbenzene	<0.00506	0.506	0.490	97	0.480	95	10-149	2	25	mg/L	07.03.17 18:48	
m,p-Xylenes	<0.0101	1.01	0.946	94	0.933	92	62-124	1	25	mg/L	07.03.17 18:48	
o-Xylene	<0.00506	0.506	0.491	97	0.484	96	62-124	1	25	mg/L	07.03.17 18:48	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
a,a,a-Trifluorotoluene	96		96		66-120	%	07.03.17 18:48
4-Bromofluorobenzene	98		96		67-120	%	07.03.17 18:48

556671

Terracon

CHAIN OF CUSTODY RECORD

Office Location: Lubbock

Project Manager: Joel Lowry

Sampler's Name: Joel Lowry

Laboratory: Xenco Laboratories
Address: 1211 W. Florida Ave.
Midland, TX 79701
432-563-1800
Phone:
Contact: Joel Lowry
PO/SO #: SRS 2009-092
Sampler's Signature

LAB USE ONLY
DUE DATE:
TEMP OF COOLER WHEN RECEIVED (°C): 1R3 3.4 3.3

Project Number: AR167323
Project Name: 14" Vac to Jal Legacy

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	No. Type of Containers: 40 ml VOA	250 ml Poly			ANALYSIS REQUESTED: BTEX (EPA Method 8021B)	Chloride (EPA Method 300)						Lab Sample ID
GW	6/29/2017	12:16			MW-2			3	1			x	x						001
GW	6/29/2017	11:37			MW-3			3				x							002
GW	6/29/2017	11:52			MW-4			3				x							003
GW	6/29/2017	12:05			MW-5			3				x							004
GW	6/29/2017	10:43			MW-6			3				x							005
GW	6/29/2017	10:13			MW-7			3				x							006
GW	6/29/2017	11:22			MW-8			3				x							007
GW	6/29/2017	10:30			MW-9			3				x							008

TURNAROUND TIME ☐ Normal ☐ 48-Hour Rush ☐ 24-Hour Rush

TRRP Laboratory Review Checklist ☐ Yes ☐ No

Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:
Joel Lowry	6/29/17	16:30			
Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:
				6/29/17	16:30

NOTES:

Please Email Results to
erin.loyd@terracon.com
joel.lowry@terracon.com
cjbryant@paapl.com

Matrix: WW-Wastewater; W - Water; S - Soil; L - Liquid; A - Air Bag; C - Charcoal tube; SL - Sludge
Container: VOA - 40 ml vial; A/G - Amber Glass 1L; 250 ml = Glass wide mouth; P/O - Plastic or other _____

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: Terracon Lubbock

Date/ Time Received: 06/29/2017 04:30:00 PM

Work Order #: 556671

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

Temperature Measuring device used : IR-3

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	3.3
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seal present on shipping container/ cooler?	**N/A**
#5 *Custody Seals intact on shipping container/ cooler?	**N/A**
#6 Custody Seals intact on sample bottles?	**N/A**
#7 *Custody Seals Signed and dated?	**N/A**
#8 *Chain of Custody present?	**Yes**
#9 Sample instructions complete on Chain of Custody?	**Yes**
#10 Any missing/extra samples?	**No**
#11 Chain of Custody signed when relinquished/ received?	**Yes**
#12 Chain of Custody agrees with sample label(s)?	**Yes**
#13 Container label(s) legible and intact?	**Yes**
#14 Sample matrix/ properties agree with Chain of Custody?	**Yes**
#15 Samples in proper container/ bottle?	**Yes**
#16 Samples properly preserved?	**Yes**
#17 Sample container(s) intact?	**Yes**
#18 Sufficient sample amount for indicated test(s)?	**Yes**
#19 All samples received within hold time?	**Yes**
#20 Subcontract of sample(s)?	**No**
#21 VOC samples have zero headspace?	**Yes**

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

Analyst: ASD

PH Device/Lot#: 208515

Checklist completed by: Brenda Ward
Brenda Ward

Date: 06/30/2017

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks

Date: 06/30/2017

Analytical Report 563933

for

Terracon Lubbock

Project Manager: Kris Williams

14-inch Vac to Jal Legacy

AR167323

06-OCT-17

Collected By: Client

6701 Aberdeen, Suite 9 Lubbock, TX 79424

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)
Xenco-San Antonio: Texas (T104704534)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Table of Contents

06-OCT-17

Project Manager: **Kris Williams**
Terracon Lubbock
5827 50th st, Suite 1
Lubbock, TX 79424

Reference: XENCO Report No(s): **563933**
14-inch Vac to Jal Legacy
Project Address: 14-inch Vac to Jal Legacy

Kris Williams:

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) 563933. 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. 563933 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

Sample Cross Reference 563933

Terracon Lubbock, Lubbock, TX

14-inch Vac to Jal Legacy

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-2	W	09-25-17 16:35		563933-001
MW-3	W	09-25-17 15:50		563933-002
MW-4	W	09-25-17 11:26		563933-003
MW-5	W	09-25-17 12:15		563933-004
MW-6	W	09-25-17 13:25		563933-005
MW-7	W	09-25-17 12:55		563933-006
MW-8	W	09-25-17 15:20		563933-007
MW-9	W	09-25-17 13:35		563933-008

This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory.

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results
563933
Terracon Lubbock, Lubbock, TX
14-inch Vac to Jal Legacy

Sample Id: **MW-2** Matrix: Ground Water Sample Depth:

Lab Sample Id: 563933-001 Date Collected: 09.25.17 16.35 Date Received: 09.27.17 08.46

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

Analyst: RNL % Moist: Tech: RNL

Seq Number: 3029671 Date Prep: 10.03.17 09.30

Prep seq: 7632115

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**9560**	1250	173	mg/L	10.03.17 13:24	D	500

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: MIT % Moist: Tech: MIT

Seq Number: 3028867 Date Prep: 09.27.17 11.30

Prep seq: 731628

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**0.0430**	0.00100	0.000480	mg/L	09.27.17 11:56		1
Toluene	108-88-3	<0.000512	0.00100	0.000512	mg/L	09.27.17 11:56	U	1
Ethylbenzene	100-41-4	<0.000616	0.00100	0.000616	mg/L	09.27.17 11:56	U	1
m,p-Xylenes	179601-23-1	<0.000454	0.00200	0.000454	mg/L	09.27.17 11:56	U	1
o-Xylene	95-47-6	<0.000270	0.00100	0.000270	mg/L	09.27.17 11:56	U	1
Total Xylenes	1330-20-7	<0.000270		0.000270	mg/L	09.27.17 11:56	U	
Total BTEX		**0.0430**		0.000270	mg/L	09.27.17 11:56		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
a,a,a-Trifluorotoluene	72	66 - 120	%		
4-Bromofluorobenzene	79	67 - 120	%		

Certificate of Analytical Results
563933
Terracon Lubbock, Lubbock, TX
14-inch Vac to Jal Legacy

Sample Id: **MW-3** Matrix: Ground Water Sample Depth:

Lab Sample Id: 563933-002 Date Collected: 09.25.17 15.50 Date Received: 09.27.17 08.46

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: MIT % Moist: Tech: MIT

Seq Number: 3029152 Date Prep: 09.29.17 10.20

Prep seq: 731791

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**0.502**	0.00500	0.00240	mg/L	09.29.17 18:26		5
Toluene	108-88-3	<0.00256	0.00500	0.00256	mg/L	09.29.17 18:26	U	5
Ethylbenzene	100-41-4	<0.00308	0.00500	0.00308	mg/L	09.29.17 18:26	U	5
m,p-Xylenes	179601-23-1	**0.00400**	0.0100	0.00227	mg/L	09.29.17 18:26	J	5
o-Xylene	95-47-6	<0.00135	0.00500	0.00135	mg/L	09.29.17 18:26	U	5
Total Xylenes	1330-20-7	**0.00400**		0.00135	mg/L	09.29.17 18:26	J	
Total BTEX		**0.506**		0.00135	mg/L	09.29.17 18:26		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
a,a,a-Trifluorotoluene	91	66 - 120	%		
4-Bromofluorobenzene	88	67 - 120	%		

Sample Id: **MW-4** Matrix: Ground Water Sample Depth:

Lab Sample Id: 563933-003 Date Collected: 09.25.17 11.26 Date Received: 09.27.17 08.46

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: MIT % Moist: Tech: MIT

Seq Number: 3029152 Date Prep: 09.29.17 10.20

Prep seq: 731791

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000480	0.00100	0.000480	mg/L	09.29.17 20:16	U	1
Toluene	108-88-3	<0.000512	0.00100	0.000512	mg/L	09.29.17 20:16	U	1
Ethylbenzene	100-41-4	<0.000616	0.00100	0.000616	mg/L	09.29.17 20:16	U	1
m,p-Xylenes	179601-23-1	<0.000454	0.00200	0.000454	mg/L	09.29.17 20:16	U	1
o-Xylene	95-47-6	<0.000270	0.00100	0.000270	mg/L	09.29.17 20:16	U	1
Total Xylenes	1330-20-7	<0.000270		0.000270	mg/L	09.29.17 20:16	U	
Total BTEX		<0.000270		0.000270	mg/L	09.29.17 20:16	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
a,a,a-Trifluorotoluene	90	66 - 120	%		
4-Bromofluorobenzene	91	67 - 120	%		

Certificate of Analytical Results
563933
Terracon Lubbock, Lubbock, TX
14-inch Vac to Jal Legacy

Sample Id: **MW-5** Matrix: Ground Water Sample Depth:

Lab Sample Id: 563933-004 Date Collected: 09.25.17 12.15 Date Received: 09.27.17 08.46

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: MIT % Moist: Tech: MIT

Seq Number: 3028867 Date Prep: 09.27.17 11.30

Prep seq: 731628

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000480	0.00100	0.000480	mg/L	09.27.17 14:38	U	1
Toluene	108-88-3	<0.000512	0.00100	0.000512	mg/L	09.27.17 14:38	U	1
Ethylbenzene	100-41-4	<0.000616	0.00100	0.000616	mg/L	09.27.17 14:38	U	1
m,p-Xylenes	179601-23-1	<0.000454	0.00200	0.000454	mg/L	09.27.17 14:38	U	1
o-Xylene	95-47-6	<0.000270	0.00100	0.000270	mg/L	09.27.17 14:38	U	1
Total Xylenes	1330-20-7	<0.000270		0.000270	mg/L	09.27.17 14:38	U	
Total BTEX		<0.000270		0.000270	mg/L	09.27.17 14:38	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
a,a,a-Trifluorotoluene	94	66 - 120	%		
4-Bromofluorobenzene	101	67 - 120	%		

Sample Id: **MW-6** Matrix: Ground Water Sample Depth:

Lab Sample Id: 563933-005 Date Collected: 09.25.17 13.25 Date Received: 09.27.17 08.46

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: MIT % Moist: Tech: MIT

Seq Number: 3028867 Date Prep: 09.27.17 11.30

Prep seq: 731628

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000480	0.00100	0.000480	mg/L	09.27.17 15:05	U	1
Toluene	108-88-3	<0.000512	0.00100	0.000512	mg/L	09.27.17 15:05	U	1
Ethylbenzene	100-41-4	<0.000616	0.00100	0.000616	mg/L	09.27.17 15:05	U	1
m,p-Xylenes	179601-23-1	<0.000454	0.00200	0.000454	mg/L	09.27.17 15:05	U	1
o-Xylene	95-47-6	<0.000270	0.00100	0.000270	mg/L	09.27.17 15:05	U	1
Total Xylenes	1330-20-7	<0.000270		0.000270	mg/L	09.27.17 15:05	U	
Total BTEX		<0.000270		0.000270	mg/L	09.27.17 15:05	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
a,a,a-Trifluorotoluene	95	66 - 120	%		
4-Bromofluorobenzene	101	67 - 120	%		

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Terracon Lubbock, Lubbock, TX
14-inch Vac to Jal Legacy

Sample Id: **MW-7** Matrix: Ground Water Sample Depth:

Lab Sample Id: 563933-006 Date Collected: 09.25.17 12.55 Date Received: 09.27.17 08.46

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: MIT % Moist: Tech: MIT

Seq Number: 3028867 Date Prep: 09.27.17 11.30

Prep seq: 731628

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**0.00140**	0.00100	0.000480	mg/L	09.27.17 15:32		1
Toluene	108-88-3	<0.000512	0.00100	0.000512	mg/L	09.27.17 15:32	U	1
Ethylbenzene	100-41-4	**0.0156**	0.00100	0.000616	mg/L	09.27.17 15:32		1
m,p-Xylenes	179601-23-1	<0.000454	0.00200	0.000454	mg/L	09.27.17 15:32	U	1
o-Xylene	95-47-6	<0.000270	0.00100	0.000270	mg/L	09.27.17 15:32	U	1
Total Xylenes	1330-20-7	<0.000270		0.000270	mg/L	09.27.17 15:32	U	
Total BTEX		**0.0170**		0.000270	mg/L	09.27.17 15:32		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
a,a,a-Trifluorotoluene	95	66 - 120	%		
4-Bromofluorobenzene	102	67 - 120	%		

Sample Id: **MW-8** Matrix: Ground Water Sample Depth:

Lab Sample Id: 563933-007 Date Collected: 09.25.17 15.20 Date Received: 09.27.17 08.46

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: MIT % Moist: Tech: MIT

Seq Number: 3029152 Date Prep: 09.29.17 10.20

Prep seq: 731791

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**0.368**	0.00500	0.00240	mg/L	09.29.17 20:42		5
Toluene	108-88-3	<0.00256	0.00500	0.00256	mg/L	09.29.17 20:42	U	5
Ethylbenzene	100-41-4	<0.00308	0.00500	0.00308	mg/L	09.29.17 20:42	U	5
m,p-Xylenes	179601-23-1	<0.00227	0.0100	0.00227	mg/L	09.29.17 20:42	U	5
o-Xylene	95-47-6	<0.00135	0.00500	0.00135	mg/L	09.29.17 20:42	U	5
Total Xylenes	1330-20-7	<0.00135		0.00135	mg/L	09.29.17 20:42	U	
Total BTEX		**0.368**		0.00135	mg/L	09.29.17 20:42		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
a,a,a-Trifluorotoluene	90	66 - 120	%		
4-Bromofluorobenzene	84	67 - 120	%		

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14-inch Vac to Jal Legacy

Sample Id: **MW-9** Matrix: Ground Water Sample Depth:

Lab Sample Id: 563933-008 Date Collected: 09.25.17 13.35 Date Received: 09.27.17 08.46

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: MIT % Moist: Tech: MIT

Seq Number: 3028867 Date Prep: 09.27.17 11.30

Prep seq: 731628

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000480	0.00100	0.000480	mg/L	09.27.17 16:26	U	1
Toluene	108-88-3	<0.000512	0.00100	0.000512	mg/L	09.27.17 16:26	U	1
Ethylbenzene	100-41-4	<0.000616	0.00100	0.000616	mg/L	09.27.17 16:26	U	1
m,p-Xylenes	179601-23-1	<0.000454	0.00200	0.000454	mg/L	09.27.17 16:26	U	1
o-Xylene	95-47-6	<0.000270	0.00100	0.000270	mg/L	09.27.17 16:26	U	1
Total Xylenes	1330-20-7	<0.000270		0.000270	mg/L	09.27.17 16:26	U	
Total BTEX		<0.000270		0.000270	mg/L	09.27.17 16:26	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
a,a,a-Trifluorotoluene	95	66 - 120	%		
4-Bromofluorobenzene	103	67 - 120	%		

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Terracon Lubbock, Lubbock, TX
14-inch Vac to Jal Legacy

Sample Id: **731628-1-BLK** Matrix: Water Sample Depth:

Lab Sample Id: 731628-1-BLK Date Collected: Date Received:

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: MIT % Moist: Tech: MIT

Seq Number: 3028867 Date Prep: 09.27.17 11.30

Prep seq: 731628

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000480	0.00100	0.000480	mg/L	09.27.17 10:31	U	1
Toluene	108-88-3	<0.000512	0.00100	0.000512	mg/L	09.27.17 10:31	U	1
Ethylbenzene	100-41-4	<0.000616	0.00100	0.000616	mg/L	09.27.17 10:31	U	1
m,p-Xylenes	179601-23-1	<0.000454	0.00200	0.000454	mg/L	09.27.17 10:31	U	1
o-Xylene	95-47-6	<0.000270	0.00100	0.000270	mg/L	09.27.17 10:31	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
a,a,a-Trifluorotoluene	99	66 - 120	%		
4-Bromofluorobenzene	105	67 - 120	%		

Sample Id: **731791-1-BLK** Matrix: Water Sample Depth:

Lab Sample Id: 731791-1-BLK Date Collected: Date Received:

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: MIT % Moist: Tech: MIT

Seq Number: 3029152 Date Prep: 09.29.17 10.20

Prep seq: 731791

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000480	0.00100	0.000480	mg/L	09.29.17 17:59	U	1
Toluene	108-88-3	<0.000512	0.00100	0.000512	mg/L	09.29.17 17:59	U	1
Ethylbenzene	100-41-4	<0.000616	0.00100	0.000616	mg/L	09.29.17 17:59	U	1
m,p-Xylenes	179601-23-1	<0.000454	0.00200	0.000454	mg/L	09.29.17 17:59	U	1
o-Xylene	95-47-6	<0.000270	0.00100	0.000270	mg/L	09.29.17 17:59	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
a,a,a-Trifluorotoluene	91	66 - 120	%		
4-Bromofluorobenzene	93	67 - 120	%		

Certificate of Analytical Results
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Terracon Lubbock, Lubbock, TX
14-inch Vac to Jal Legacy

Sample Id: **7632115-1-BLK** Matrix: Water Sample Depth:

Lab Sample Id: 7632115-1-BLK Date Collected: Date Received:

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

Analyst: RNL % Moist: Tech: RNL

Seq Number: 3029671 Date Prep: 10.03.17 09.30

Prep seq: 7632115

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	<0.347	2.50	0.347	mg/L	10.03.17 10:05	U	1

Flagging Criteria

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

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

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

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

F RPD exceeded lab control limits.

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

U Analyte was not detected.

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

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

K Sample analyzed outside of recommended hold time.

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

	Phone	Fax
4147 Greenbriar Dr, Stafford, TX 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

Form 2 - Surrogate Recoveries

Project Name: 14-inch Vac to Jal Legacy

Work Orders : 563933,

Project ID: AR167323

Lab Batch #: 3028867 **Sample:** 731628-1-BKS / BKS **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 09/27/17 08:45

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0976	0.100	98	66-120	
4-Bromofluorobenzene	0.101	0.100	101	67-120	

Lab Batch #: 3028867 **Sample:** 731628-1-BSD / BSD **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 09/27/17 09:11

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0961	0.100	96	66-120	
4-Bromofluorobenzene	0.102	0.100	102	67-120	

Lab Batch #: 3028867 **Sample:** 731628-1-BLK / BLK **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 09/27/17 10:31

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0993	0.100	99	66-120	
4-Bromofluorobenzene	0.105	0.100	105	67-120	

Lab Batch #: 3028867 **Sample:** 563933-001 S / MS **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 09/27/17 12:23

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0746	0.100	75	66-120	
4-Bromofluorobenzene	0.0824	0.100	82	67-120	

Lab Batch #: 3028867 **Sample:** 563933-001 SD / MSD **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 09/27/17 12:50

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0880	0.100	88	66-120	
4-Bromofluorobenzene	0.0967	0.100	97	67-120	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Version: 1.%

Form 2 - Surrogate Recoveries

Project Name: 14-inch Vac to Jal Legacy

Work Orders : 563933,

Project ID: AR167323

Lab Batch #: 3029152 **Sample:** 731791-1-BKS / BKS **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 09/29/17 16:11

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0924	0.100	92	66-120	
4-Bromofluorobenzene	0.0904	0.100	90	67-120	

Lab Batch #: 3029152 **Sample:** 731791-1-BSD / BSD **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 09/29/17 16:38

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0922	0.100	92	66-120	
4-Bromofluorobenzene	0.0902	0.100	90	67-120	

Lab Batch #: 3029152 **Sample:** 731791-1-BLK / BLK **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 09/29/17 17:59

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0912	0.100	91	66-120	
4-Bromofluorobenzene	0.0930	0.100	93	67-120	

Lab Batch #: 3029152 **Sample:** 563933-002 S / MS **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 09/29/17 18:53

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.458	0.500	92	66-120	
4-Bromofluorobenzene	0.0870	0.100	87	67-120	

Lab Batch #: 3029152 **Sample:** 563933-002 SD / MSD **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 09/29/17 19:21

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.450	0.500	90	66-120	
4-Bromofluorobenzene	0.0838	0.100	84	67-120	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Version: 1.%

BS / BSD Recoveries

Project Name: 14-inch Vac to Jal Legacy

Work Order #: 563933 **Project ID:** AR167323

Analyst: MIT **Date Prepared:** 09/27/2017 **Date Analyzed:** 09/27/2017

Lab Batch ID: 3028867 **Sample:** 731628-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	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
Benzene	<0.000480	0.100	0.104	104	0.100	0.104	104	0	74-120	20	
Toluene	<0.000512	0.100	0.103	103	0.100	0.103	103	0	74-120	20	
Ethylbenzene	<0.000616	0.100	0.108	108	0.100	0.108	108	0	74-120	20	
m,p-Xylenes	<0.000454	0.200	0.219	110	0.200	0.218	109	0	73-120	25	
o-Xylene	<0.000270	0.100	0.106	106	0.100	0.107	107	1	73-120	25	

Analyst: MIT **Date Prepared:** 09/29/2017 **Date Analyzed:** 09/29/2017

Lab Batch ID: 3029152 **Sample:** 731791-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	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
Benzene	<0.000480	0.100	0.0953	95	0.100	0.0938	94	2	74-120	20	
Toluene	<0.000512	0.100	0.0951	95	0.100	0.0940	94	1	74-120	20	
Ethylbenzene	<0.000616	0.100	0.0938	94	0.100	0.0939	94	0	74-120	20	
m,p-Xylenes	<0.000454	0.200	0.188	94	0.200	0.188	94	0	73-120	25	
o-Xylene	<0.000270	0.100	0.0941	94	0.100	0.0938	94	0	73-120	25	

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

Version: 1.%

BS / BSD Recoveries

Project Name: 14-inch Vac to Jal Legacy

Work Order #: 563933 **Project ID:** AR167323

Analyst: RNL **Date Prepared:** 10/03/2017 **Date Analyzed:** 10/03/2017

Lab Batch ID: 3029671 **Sample:** 7632115-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	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
Chloride	<0.347	25.0	25.9	104	25.0	25.5	102	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

Version: 1.%

Form 3 - MS / MSD Recoveries

Project Name: 14-inch Vac to Jal Legacy

Work Order # : 563933 **Project ID:** AR167323

Lab Batch ID: 3028867 **QC- Sample ID:** 563933-001 S **Batch #:** 1 **Matrix:** Ground Water

Date Analyzed: 09/27/2017 **Date Prepared:** 09/27/2017 **Analyst:** MIT

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B 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
Benzene	0.0430	0.100	0.130	87	0.100	0.146	103	12	15-147	25	
Toluene	<0.000512	0.100	0.0858	86	0.100	0.0984	98	14	11-147	25	
Ethylbenzene	<0.000616	0.100	0.0874	87	0.100	0.102	102	15	10-149	25	
m,p-Xylenes	<0.000454	0.200	0.176	88	0.200	0.207	104	16	62-124	25	
o-Xylene	<0.000270	0.100	0.0872	87	0.100	0.100	100	14	62-124	25	

Lab Batch ID: 3029152 **QC- Sample ID:** 563933-002 S **Batch #:** 1 **Matrix:** Ground Water

Date Analyzed: 09/29/2017 **Date Prepared:** 09/29/2017 **Analyst:** MIT

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B 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
Benzene	0.502	0.500	0.953	90	0.500	0.957	91	0	15-147	25	
Toluene	<0.00256	0.500	0.453	91	0.500	0.456	91	1	11-147	25	
Ethylbenzene	<0.00308	0.500	0.454	91	0.500	0.452	90	0	10-149	25	
m,p-Xylenes	0.00400	1.00	0.914	91	1.00	0.909	91	1	62-124	25	
o-Xylene	<0.00135	0.500	0.453	91	0.500	0.450	90	1	62-124	25	

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: 14-inch Vac to Jal Legacy

Work Order # : 563933 **Project ID:** AR167323

Lab Batch ID: 3029671 **QC- Sample ID:** 563871-001 S **Batch #:** 1 **Matrix:** Water

Date Analyzed: 10/03/2017 **Date Prepared:** 10/03/2017 **Analyst:** RNL

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300 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	122	250	400	111	250	389	107	3	80-120	20	

Lab Batch ID: 3029671 **QC- Sample ID:** 563933-001 S **Batch #:** 1 **Matrix:** Ground Water

Date Analyzed: 10/03/2017 **Date Prepared:** 10/03/2017 **Analyst:** RNL

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300 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	7600	12500	21900	114	12500	21600	112	1	80-120	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.

563933

Terracon

CHAIN OF CUSTODY RECORD

Laboratory: ESC
Address: 12065 Lebanon Rd
Mt. Juliet, TN 37122

Phone: (800) 767-5859
Contact:
PO/SO #:

Office Location: Lubbock
Project Manager: Kris Williams
Sampler's Name: Kris Williams
Sampler's Signature:

Project Number: AR167323
Project Name: 14-Inch Vac to Jal Legacy (SRS# 2009-092)

ANALYSIS REQUESTED

LAB USE ONLY
DUE DATE:

TEMP OF COOLER WHEN RECEIVED (°C)

Page 1 of 1

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	No. Type of Containers: 40 ml VOA	125 ml HDPE		BTEX (EPA Method 8021B)	Chloride (EPA Method 300)	Lab Sample ID
GW	9/27/2017	16:35		X	MW-2			3	1		X	X	
GW	9/27/2017	15:50		X	MW-3			3			X		
GW	9/27/2017	11:26		X	MW-4			3			X		
GW	9/27/2017	12:15		X	MW-5			3			X		
GW	9/27/2017	13:25		X	MW-6			3			X		
GW	9/27/2017	12:55		X	MW-7			3			X		
GW	9/27/2017	15:20		X	MW-8			3			X		
GW	9/27/2017	13:35		X	MW-9			3			X		

TURNAROUND TIME ☒ Normal ☐ 48-Hour Rush ☐ 24-Hour Rush

TRRP Laboratory Review Checklist ☐ Yes ☐ No

	Date	Time		Date	Time
Relinquished by (Signature)	9/26/17	17:50	Received by (Signature)		
Relinquished by (Signature)			Received by (Signature)		
Relinquished by (Signature)			Received by (Signature)		
Relinquished by (Signature)			Received by (Signature) Brenda Word	9/26/17	4:50 pm

NOTES: Direct bill Plains

e-mail results to:
erin.loyd@terracon.com
kcwilliams@terracon.com
zach.conder@terracon.com

6.0/5.9 IR 3 -0.1

Matrix: WW-Wastewater; W - Water; S - Soil; L - Liquid; SL - Sludge
Container: VOA - 40 ml vial; A/G - Amber Glass 1L; 250 ml = Glass wide mouth; A - Air Bag; C - Charcoal tube; P/O - Plastic or other _____

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Terracon Lubbock

Date/ Time Received: 09/27/2017 08:46:21 AM

Work Order #: 563933

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

Temperature Measuring device used : IR-3

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	5.9
#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?	**Yes**

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

Analyst: BRW

PH Device/Lot#: 208515

Checklist completed by: Brenda Ward Date: 09/27/2017

Brenda Ward

Checklist reviewed by: Kelsey Brooks Date: 09/27/2017

Kelsey Brooks

Analytical Report 568797

for

Terracon Lubbock

Project Manager: Kris Williams

14-Inch Vac to Jal Legacy

AR167323

29-NOV-17

Collected By: Client

6701 Aberdeen, Suite 9 Lubbock, TX 79424

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)

29-NOV-17

Project Manager: **Kris Williams**
Terracon Lubbock
5827 50th st, Suite 1
Lubbock, TX 79424

Reference: XENCO Report No(s): **568797**
14-Inch Vac to Jal Legacy
Project Address: 14-Inch Vac to Jal Leases

Kris Williams:

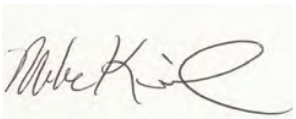
We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 568797. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory 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. 568797 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,



Mike Kimmel
Client Services Manager

Sample Cross Reference 568797

Terracon Lubbock, Lubbock, TX

14-Inch Vac to Jal Legacy

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-2	W	11-16-17 12:00		568797-001
MW-3	W	11-16-17 12:45		568797-002
MW-4	W	11-16-17 14:00		568797-003
MW-5	W	11-16-17 16:10		568797-004
MW-6	W	11-16-17 15:35		568797-005
MW-7	W	11-16-17 14:30		568797-006
MW-8	W	11-16-17 13:30		568797-007
MW-9	W	11-16-17 15:00		568797-008

Client Name: Terracon Lubbock

Project Name: 14-Inch Vac to Jal Legacy

Project ID: *AR167323*
Work Order Number(s): *568797*

Report Date: *29-NOV-17*
Date Received: *11/17/2017*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3034436 Inorganic Anions by EPA 300

Lab Sample ID 568797-001 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: 568797-001.

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

Certificate of Analysis Summary 568797

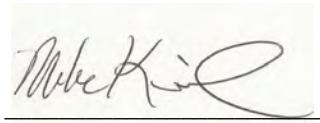
Terracon Lubbock, Lubbock, TX

Project Name: 14-Inch Vac to Jal Legacy

Project Id: AR167323
Contact: Kris Williams
Project Location: 14-Inch Vac to Jal Leases

Date Received in Lab: Fri Nov-17-17 10:12 am
Report Date: 29-NOV-17
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	568797-001		568797-002		568797-003		568797-004		568797-005		568797-006	
	Field Id:	MW-2		MW-3		MW-4		MW-5		MW-6		MW-7	
	Depth:												
	Matrix:	GROUND WATER		GROUND WATER		GROUND WATER		GROUND WATER		GROUND WATER		GROUND WATER	
	Sampled:	Nov-16-17 12:00		Nov-16-17 12:45		Nov-16-17 14:00		Nov-16-17 16:10		Nov-16-17 15:35		Nov-16-17 14:30	
BTEX by EPA 8021B	***Extracted:***	Nov-17-17 15:00		Nov-18-17 12:30		Nov-18-17 12:30		Nov-17-17 15:00		Nov-17-17 15:00		Nov-17-17 15:00	
	Analyzed:	Nov-17-17 18:41		Nov-18-17 20:08		Nov-18-17 21:57		Nov-17-17 20:02		Nov-17-17 20:29		Nov-17-17 21:51	
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
Benzene		0.0632	0.00100	0.815	0.00500	0.00280	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100
Toluene		<0.00100	0.00100	<0.00500	0.00500	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100
Ethylbenzene		<0.00100	0.00100	<0.00500	0.00500	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100
m,p-Xylenes		<0.00200	0.00200	<0.0100	0.0100	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200
o-Xylene		<0.00100	0.00100	<0.00500	0.00500	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100
Total Xylenes		<0.00100	0.00100	<0.00500	0.00500	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100
Total BTEX		0.0632	0.00100	0.815	0.00500	0.00280	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100
Inorganic Anions by EPA 300	***Extracted:***	Nov-29-17 10:00											
	Analyzed:	Nov-29-17 13:04											
	Units/RL:	mg/L	RL										
Chloride		10400 D	1250										



Mike Kimmel
Client Services Manager

Certificate of Analysis Summary 568797

Terracon Lubbock, Lubbock, TX

Project Name: 14-Inch Vac to Jal Legacy

Project Id: AR167323
Contact: Kris Williams
Project Location: 14-Inch Vac to Jal Leases

Date Received in Lab: Fri Nov-17-17 10:12 am
Report Date: 29-NOV-17
Project Manager: Kelsey Brooks

Analysis Requested									
	Lab Id:	568797-007		568797-008					
	Field Id:	MW-8		MW-9					
	Depth:								
	Matrix:	GROUND WATER		GROUND WATER					
	Sampled:	Nov-16-17 13:30		Nov-16-17 15:00					
BTEX by EPA 8021B	***Extracted:***	Nov-17-17 15:00		Nov-17-17 15:00					
	Analyzed:	Nov-17-17 22:18		Nov-17-17 22:45					
	Units/RL:	mg/L	RL	mg/L	RL				
Benzene		0.0800	0.00100	<0.00100	0.00100				
Toluene		<0.00100	0.00100	<0.00100	0.00100				
Ethylbenzene		<0.00100	0.00100	<0.00100	0.00100				
m,p-Xylenes		<0.00200	0.00200	<0.00200	0.00200				
o-Xylene		<0.00100	0.00100	<0.00100	0.00100				
Total Xylenes		<0.00100	0.00100	<0.00100	0.00100				
Total BTEX		0.0800	0.00100	<0.00100	0.00100				

Mike Kimmel
Client Services Manager

Flagging Criteria

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

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

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

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

F RPD exceeded lab control limits.

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

U Analyte was not detected.

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

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

K Sample analyzed outside of recommended hold time.

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal Legacy

Work Orders : 568797,

Project ID: AR167323

Lab Batch #: 3033698 **Sample:** 568797-001 / SMP **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 11/17/17 18:41

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0967	0.100	97	66-120	
4-Bromofluorobenzene	0.0965	0.100	97	67-120	

Lab Batch #: 3033698 **Sample:** 568797-004 / SMP **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 11/17/17 20:02

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0973	0.100	97	66-120	
4-Bromofluorobenzene	0.0964	0.100	96	67-120	

Lab Batch #: 3033698 **Sample:** 568797-005 / SMP **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 11/17/17 20:29

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0993	0.100	99	66-120	
4-Bromofluorobenzene	0.0973	0.100	97	67-120	

Lab Batch #: 3033698 **Sample:** 568797-006 / SMP **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 11/17/17 21:51

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.102	0.100	102	66-120	
4-Bromofluorobenzene	0.104	0.100	104	67-120	

Lab Batch #: 3033698 **Sample:** 568797-007 / SMP **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 11/17/17 22:18

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.103	0.100	103	66-120	
4-Bromofluorobenzene	0.101	0.100	101	67-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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

Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal Legacy

Work Orders : 568797,

Project ID: AR167323

Lab Batch #: 3033698 **Sample:** 568797-008 / SMP **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 11/17/17 22:45

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.102	0.100	102	66-120	
4-Bromofluorobenzene	0.0984	0.100	98	67-120	

Lab Batch #: 3033733 **Sample:** 568797-002 / SMP **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 11/18/17 20:08

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.500	0.500	100	66-120	
4-Bromofluorobenzene	0.106	0.100	106	67-120	

Lab Batch #: 3033733 **Sample:** 568797-003 / SMP **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 11/18/17 21:57

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.104	0.100	104	66-120	
4-Bromofluorobenzene	0.104	0.100	104	67-120	

Lab Batch #: 3033698 **Sample:** 7634610-1-BLK / BLK **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/17/17 11:53

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0958	0.100	96	66-120	
4-Bromofluorobenzene	0.0962	0.100	96	67-120	

Lab Batch #: 3033733 **Sample:** 7634635-1-BLK / BLK **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/18/17 19:41

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.104	0.100	104	66-120	
4-Bromofluorobenzene	0.103	0.100	103	67-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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

Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal Legacy

Work Orders : 568797,

Project ID: AR167323

Lab Batch #: 3033698 **Sample:** 7634610-1-BKS / BKS **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/17/17 10:32

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0978	0.100	98	66-120	
4-Bromofluorobenzene	0.0983	0.100	98	67-120	

Lab Batch #: 3033733 **Sample:** 7634635-1-BKS / BKS **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/18/17 18:21

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.102	0.100	102	66-120	
4-Bromofluorobenzene	0.103	0.100	103	67-120	

Lab Batch #: 3033698 **Sample:** 7634610-1-BSD / BSD **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/17/17 10:59

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0934	0.100	93	66-120	
4-Bromofluorobenzene	0.0958	0.100	96	67-120	

Lab Batch #: 3033733 **Sample:** 7634635-1-BSD / BSD **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/18/17 18:48

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.104	0.100	104	66-120	
4-Bromofluorobenzene	0.103	0.100	103	67-120	

Lab Batch #: 3033698 **Sample:** 568793-001 S / MS **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 11/17/17 13:51

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0942	0.100	94	66-120	
4-Bromofluorobenzene	0.0957	0.100	96	67-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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

Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal Legacy

Work Orders : 568797,

Project ID: AR167323

Lab Batch #: 3033733 **Sample:** 568797-002 S / MS **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 11/18/17 20:35

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.530	0.500	106	66-120	
4-Bromofluorobenzene	0.106	0.100	106	67-120	

Lab Batch #: 3033698 **Sample:** 568793-001 SD / MSD **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 11/17/17 14:18

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.0981	0.100	98	66-120	
4-Bromofluorobenzene	0.0991	0.100	99	67-120	

Lab Batch #: 3033733 **Sample:** 568797-002 SD / MSD **Batch:** 1 **Matrix:** Ground Water

Units: mg/L **Date Analyzed:** 11/18/17 21:02

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
a,a,a-Trifluorotoluene	0.529	0.500	106	66-120	
4-Bromofluorobenzene	0.104	0.100	104	67-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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

BS / BSD Recoveries

Project Name: 14-Inch Vac to Jal Legacy

Work Order #: 568797 **Project ID:** AR167323

Analyst: MIT **Date Prepared:** 11/17/2017 **Date Analyzed:** 11/17/2017

Lab Batch ID: 3033698 **Sample:** 7634610-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	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
Benzene	<0.00100	0.100	0.103	103	0.100	0.0992	99	4	74-120	20	
Toluene	<0.00100	0.100	0.102	102	0.100	0.0964	96	6	74-120	20	
Ethylbenzene	<0.00100	0.100	0.106	106	0.100	0.100	100	6	74-120	20	
m,p-Xylenes	<0.00200	0.200	0.212	106	0.200	0.201	101	5	73-120	25	
o-Xylene	<0.00100	0.100	0.105	105	0.100	0.101	101	4	73-120	25	

Analyst: MIT **Date Prepared:** 11/18/2017 **Date Analyzed:** 11/18/2017

Lab Batch ID: 3033733 **Sample:** 7634635-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	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
Benzene	<0.00100	0.100	0.110	110	0.100	0.110	110	0	74-120	20	
Toluene	<0.00100	0.100	0.106	106	0.100	0.108	108	2	74-120	20	
Ethylbenzene	<0.00100	0.100	0.109	109	0.100	0.110	110	1	74-120	20	
m,p-Xylenes	<0.00200	0.200	0.219	110	0.200	0.221	111	1	73-120	25	
o-Xylene	<0.00100	0.100	0.109	109	0.100	0.110	110	1	73-120	25	

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

BS / BSD Recoveries

Project Name: 14-Inch Vac to Jal Legacy

Work Order #: 568797 **Project ID:** AR167323

Analyst: RNL **Date Prepared:** 11/29/2017 **Date Analyzed:** 11/29/2017

Lab Batch ID: 3034436 **Sample:** 7635114-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	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
Chloride	<2.50	25.0	25.1	100	25.0	24.6	98	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: 14-Inch Vac to Jal Legacy

Work Order # : 568797 **Project ID:** AR167323

Lab Batch ID: 3033698 **QC- Sample ID:** 568793-001 S **Batch #:** 1 **Matrix:** Ground Water

Date Analyzed: 11/17/2017 **Date Prepared:** 11/17/2017 **Analyst:** MIT

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B 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
Benzene	<0.00100	0.100	0.0998	100	0.100	0.105	105	5	15-147	25	
Toluene	<0.00100	0.100	0.0955	96	0.100	0.102	102	7	11-147	25	
Ethylbenzene	<0.00100	0.100	0.0996	100	0.100	0.106	106	6	10-149	25	
m,p-Xylenes	<0.00200	0.200	0.200	100	0.200	0.212	106	6	62-124	25	
o-Xylene	<0.00100	0.100	0.101	101	0.100	0.106	106	5	62-124	25	

Lab Batch ID: 3033733 **QC- Sample ID:** 568797-002 S **Batch #:** 1 **Matrix:** Ground Water

Date Analyzed: 11/18/2017 **Date Prepared:** 11/18/2017 **Analyst:** MIT

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B 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
Benzene	0.815	0.500	1.42	121	0.500	1.35	107	5	15-147	25	
Toluene	<0.00500	0.500	0.546	109	0.500	0.526	105	4	11-147	25	
Ethylbenzene	<0.00500	0.500	0.553	111	0.500	0.533	107	4	10-149	25	
m,p-Xylenes	<0.0100	1.00	1.11	111	1.00	1.07	107	4	62-124	25	
o-Xylene	<0.00500	0.500	0.550	110	0.500	0.531	106	4	62-124	25	

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: 14-Inch Vac to Jal Legacy

Work Order # : 568797 **Project ID:** AR167323

Lab Batch ID: 3034436 **QC- Sample ID:** 568797-001 S **Batch #:** 1 **Matrix:** Ground Water

Date Analyzed: 11/29/2017 **Date Prepared:** 11/29/2017 **Analyst:** RNL

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300 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	8260	12500	23900	125	12500	23600	123	1	80-120	20	X

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

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

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

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.

568797

Terracon

CHAIN OF CUSTODY RECORD 568797

Office Location: Lubbock

Project Manager: Kris Williams

Sampler's Name: Zach Conder

Laboratory: Xenco
Address: 6701 Aberdeen
Lubbock, Texas 79424

Phone:
Contact:
PO/SO #: SRS # 2009-092
Sampler's Signature

Project Number: AR17323

Project Name: 14-Inch Vac to Jal Lesees

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	No. Type of Containers: 4oz Glass	40ml Vial	125/250 mL Jar	TPH (TCEQ Method TX1005)	BTEX (EPA Method 8021B)	Cl - EPA 300	Lab Sample ID
GW	11-16-17	12:00		1	MW-2				3	1		✓	✓	
GW	11-16-17	12:45		1	mw-3				3			✓		
GW	11-16-17	14:00		1	mw-4				3			✓		
GW	11-16-17	16:10		1	mw-5				3			✓		
GW	11-16-17	15:35		1	mw-6				3			✓		
GW	11-16-17	14:30		1	mw-7				3			✓		
GW	11-16-17	13:30		1	mw-8				3			✓		
GW	11-16-17	15:00		1	mw-9				3			✓		
									3			✓		

ANALYSIS REQUESTED

LAB USE ONLY
DUE DATE:

TEMP OF COOLER WHEN RECEIVED (°C): IR3 3.2 / 3.1 / 6.1

Page 1 of 1

TURNAROUND TIME: ☒ Normal ☐ 48-Hour Rush ☐ 24-Hour Rush

TRRP Laboratory Review Checklist ☐ Yes ☐ No

	Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
1		11/17/17	10:12		11/17/17	10:12
2						
3						
4						

NOTES:

e-mail results to:
~~erin.lloyd@terracon.com~~
kcwilliams@terracon.com
zach.conder@terracon.com

Matrix: WW-Wastewater; W - Water; S - Soil; L - Liquid; A - Air Bag; C - Charcoal tube; SL - Sludge
Container: VOA - 40 ml vial; A/G - Amber Glass 1L; 250 ml = Glass wide mouth; P/O - Plastic or other _____

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Terracon Lubbock

Date/ Time Received: 11/17/2017 10:12:00 AM

Work Order #: 568797

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

Temperature Measuring device used : IR-3

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	3.1
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**No**
#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?	**Yes**

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

Analyst: ASD

PH Device/Lot#: 208515

Checklist completed by: Brenda Ward Date: 11/17/2017

Brenda Ward

Checklist reviewed by: Mike Kimmel Date: 11/26/2017

Mike Kimmel

APPENDIX D

Talon LPE Mobile Dual Phase Extraction Reports

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TALON LPE

MOBILE DUAL PHASE EXTRACTION REPORT
VACUUM TO JAL 14 INCH MAINLINE 5 PIPELINE RELEASE
LEA COUNTY, NEW MEXICO
SRS # 2009-092
Q2 2017
EVENT #1

PREPARED FOR:
PLAINS PIPELINE, L.P.
333 CLAY STREET
SUITE 1600
HOUSTON, TEXAS 77002

PREPARED BY:

TALON.LPE
921 N. BIVINS
AMARILLO, TEXAS 79107

DISTRIBUTION:
COPY 1 - PLAINS MARKETING, L.P. – DENVER CITY
COPY 2 - PLAINS MARKETING, L.P. – HOUSTON
COPY 3 – TERRACON

July 25, 2017

TABLE OF CONTENTS

Section Page

Attachments:

I. MDPE SUMMARY REPORT AND WASTE DISPOSITION

A. MDPE Results

The following report summarizes data collected during the 12-hour High Vacuum Multi-Phase Extraction (MDPE) event conducted from May 04, 2017 at the Vacuum to Jal 14 Inch Mainline 5 Pipeline release site, located in Lea County, New Mexico. The objective of the MDPE treatment was to remove both vapor and liquid phase separated hydrocarbons (PSH) from onsite groundwater wells. Talon/LPE utilized an MDPE unit which consisted of an SVE extraction pump capable of generating vacuum up to 25" hg. Off gas vapors extracted from the extraction wells were destroyed using a propane-fired 1000-SCFM thermal oxidizer capable of processing 172.96 lbs/hr of gasoline.

A total of 12 hours (0.5 days) of PSH recovery was performed on MW-1.

Prior to and immediately following the event, the groundwater wells were gauged for groundwater elevation and PSH. Depth to groundwater ranges were measured in feet below the top of casing. Refer to Attachment 1 for a summary of data collected during the MDPE event.

The volume of PSH removed during the MDPE event is shown to reflect the portions of PSH in the liquid phase and as off-gas vapor. Air removal rates were calculated from velocity measurements recorded at the influent manifold prior to entry into the MDPE unit. PSH recovery and air flow data has been detailed and is contained in Table 1. Two (2) influent air samples were collected over the course of the event. These samples were submitted for laboratory testing in order to compare the predicted vapor concentrations (based on field-screening or calculated based on fuel consumption) to the actual vapor concentrations. Both influent samples were tested for Total-Gas Analysis (Hydrocarbon Composition) by GPA 2261-C6+. Laboratory analytical results can be found in Attachment 2.

Based on a combination of field vapor screening and collected laboratory samples, a combined estimated total of **9.08 equivalent gallons of PSH (Total)** were removed during the event. The combined volume of PSH was comprised of approximately **3.00 gallons of PSH (liquid phase)** and approximately **6.08 gallons as off-gas vapor**. The calculations used to estimate the off-gas vapor mass recovered reflect the mass of total hydrocarbons recovered and does not necessarily equate to an equal mass of the product released. The mass recovery calculations may be affected by variations in the specific gravity of hydrocarbon released, age of release, activity of aerobic and/or anaerobic processes, and site specific geochemical factors.

The cumulative air flow measurements for the MDPE event were calculated using a combination of field data measurements and Preso® B+ manufacturer provided formulas. **Air flow rates extracted from the recovery wells averaged 65.25**

SCFM during the event.

B. Air Quality

Two (2) influent air samples were collected during the event. These samples were submitted for laboratory testing in order to compare the predicted vapor concentrations (based on field-screening or calculated based on fuel consumption) to the actual vapor concentrations. The maximum influent concentration was recorded as 13,470 ppmv for Hydrocarbon Composition. Laboratory analytical results can be found in Attachment 2.

C. Waste Management and Disposition

A cumulative total of 868 gallons of fluid were generated during this event. The fluids were temporarily transferred to an on-site storage tank prior to being transferred to an authorized disposal facility.

II. SYSTEM OPERATION DATA AND MASS RECOVERY CALCULATIONS

Formulae:

$$\text{Concentration (C\_mg/l)} = \frac{\text{C ppmv x Mol. wt. in mg(estimated) x 1000 x 0.000001}}{\text{0.0821 x Temp (K)}}$$

$$\text{Recovery Rate (lbs/hr)} = \frac{\text{(C mg/l) x 2.2 x (Flowrate) x 60 x 28.32}}{\text{1,000,000}}$$

Recovery (lbs) = (lbs/hr) x (hrs)

$$\text{Correction Factor (CF)} = \frac{\text{FID Reading(ppmv)}}{\text{FID Reading at Time of Laboratory Analysis}}$$

$$\frac{\text{8.34 lbs}}{\text{gallon water}} \times \text{0.82 average specific gravity of light crude (estimated)} = \frac{\text{6.84 lbs light crude}}{\text{gallon}}$$

Table 1
System Operation Data and Mass Recovery Calculations

Time	Period (hours)	Influent Temp. (°f)	Vacuum (In. hg)	Vacuum (In. h20)	Differential pressure (In. h20)	Flow (SCFM)	fID Readings (ppm)	Lab Result (ppmv)	Assigned Lab Result (ppmv)	Correction Factor (CF)	Adjusted Lab Result (ppmv)	Adjusted Lab Result (mg/L)	Recovery (lbs/hr)	Recovery in Period (lbs)	Total Recovery (lbs)
18:00	1	90	21	285.79	11.7	64.18	12661	13470.00	13470.00	1.00	13470	16.03	3.85	3.85	3.85
19:00	1	84	21	285.79	12	65.36	9743	-	13470.00	0.77	10366	12.47	3.05	3.05	6.89
20:00	1	80	21	285.79	11.4	63.94	10102	-	13470.00	0.80	10747	13.03	3.11	3.11	10.01
21:00	1	76	21	285.79	11.7	65.02	12503	-	13470.00	0.99	13302	16.25	3.95	3.95	13.96
22:00	1	70	21	285.79	11.9	65.94	14384	-	13470.00	1.14	15303	18.90	4.66	4.66	18.62
23:00	1	70	21	285.79	11.8	65.66	10742	-	13470.00	0.85	11428	14.12	3.47	3.47	22.08
0:00	1	70	21	285.79	12	66.22	8759	-	13420.00	0.69	9284	11.46	2.84	2.84	24.92
1:00	1	70	21	285.79	11.7	65.38	10107	-	13420.00	0.80	10713	13.22	3.23	3.23	28.15
2:00	1	70	21	285.79	11.9	65.94	9184	-	13420.00	0.73	9735	12.02	2.96	2.96	31.11
3:00	1	68	21	285.79	11.5	64.94	10175	-	13420.00	0.80	10785	13.36	3.24	3.24	34.36
4:00	1	64	21	285.79	11.7	65.76	11627	13420.00	13420.00	0.92	12324	15.39	3.78	3.78	38.14
5:00	1	64	21	285.79	11.3	64.62	10864		13420.00	0.86	11515	14.38	3.47	3.47	41.62
Averages:		73.00	21.00	285.79	11.72	65.25	10904.25						Total	41.62	

PSH Mass Recovered in Vapor Phase = 6.08 gallons

FID maximum Concentration = 50,000 PPM

Ex: Conversion from ppmv to mg/L (influent 1)

Measured Conc.	Molecular Wt.	Pressure	Gas Constant	Temp.	Temp.	Conc.
(ppmv)	(Grams)	(atm)	(atm.liter/K.mole)	(F)	(K)	(C_mg/l)
13470	29.8286	1	0.0821	90	305.222222	16.0339934

Inputs are the green values.
Calculated values are yellow.
Constants are purple values.
Outpus are the blue values.

Liquid-phase Hydrocarbon Recovery

∏ * r2 * h = volume

Gallons removed determined at time of pick up

PSH Volume in Gallons=	3
PSH Mass in Pounds=	20.52

Total Hydrocarbon Recovery

PSH Mass Recovered in Vapor Phase =	41.62	lbs
	6.08	gallons
PSH Mass Recovered in Liquid Phase =	20.52	lbs
	3.00	gallons
TOTAL =	**62.14**	**lbs**
	9.08	**gallons**

% Vol. Hydrocarbon to ppmv - Influent 1

Compound	Molecular Weight (g/mol)	% Vol	=	ppmv
Methane (CH4)	16.04	0		0.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0		0.00
Iso-Butane (C4H10)	58.12	0		0.00
N-Butane (C4H10)	58.12	0		0.00
Iso-Pentane (C4H12)	72.15	0		0.00
N-Pentane (C5H12)	72.15	0		0.00
Hexane+ (C6H14)	97.40	1.347		13470.00
			Total	**13470.00**

*Hexane+ is treated as 60% hexanes, 30 % heptanes, and 10 % octanes, as such its (0.6*93.1887)+(0.3*100.2019)+(0.1*114.2285) = 97.3966

Molecular Weight Calculations

component	Molecular Weight (g/mol)	mol%
Nitrogen (N2)	28.016	90.1060
Methane (CH4)	16.0425	0.0000
Carbon Dioxide (CO2)	44.011	9.4630
Ethane (C2H6)	30.069	0.0000
Propane (C3H8)	44.0956	0.0000
Iso-Butane (C4H10)	58.1222	0.0000
N-Butane (C4H10)	58.1222	0.0000
Iso-Pentane (C4H12)	72.1488	0.0000
N-Pentane (C5H12)	72.1488	0.0000
Hexane+	97.3966	0.4310
	Total	100
	Calculated MW	**29.8286**

% Vol. Hydrocarbon to ppmv - Influent 2

Compound	Molecular Weight (g/mol)	% Vol	=	ppmv
Methane (CH4)	16.04	0		0.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0		0.00
Iso-Butane (C4H10)	58.12	0		0.00
N-Butane (C4H10)	58.12	0		0.00
Iso-Pentane (C4H12)	72.15	0		0.00
N-Pentane (C5H12)	72.15	0		0.00
Hexane+ (C6H14)	97.40	1.342		13420.00
			Total	**13420.00**

*Hexane+ is treated as 60% hexanes, 30 % heptanes, and 10 % octanes, as such its (0.6*93.1887)+(0.3*100.2019)+(0.1*114.2285) = 97.3966

Molecular Weight Calculations

component	Molecular Weight (g/mol)	mol%
Nitrogen (N2)	28.016	90.2310
Methane (CH4)	16.0425	0.0000
Carbon Dioxide (CO2)	44.011	9.3400
Ethane (C2H6)	30.069	0.0000
Propane (C3H8)	44.0956	0.0000
Iso-Butane (C4H10)	58.1222	0.0000
N-Butane (C4H10)	58.1222	0.0000
Iso-Pentane (C4H12)	72.1488	0.0000
N-Pentane (C5H12)	72.1488	0.0000
Hexane+	97.3966	0.4290
	Total	100
	Calculated MW	**29.8076**

Calculated MW= $\frac{\text{sum (individual component MW x their reported mol\%)}}{100}$

ppmv= **% Vol x 10,000**

ATTACHMENT 1

MDPE Field Logs

MDPE FIELD NOTES						
Site Name:	Vac to Jal 14" Legacy				Event #:	
Location:	Jal, NM				Arrive at site:	
Date:	6/1/2017					
Job#:	700376.271.01		SRS:	2009-092	Start Vac:	17:00
Phase:			Unit:	2097	Stop Vac:	5:00
Onsite Personnel:	L. Bridges / B. Huntington				Leave Site:	7:00

GAUGING DATA							
WELL#	BEFORE			AFTER			COMMENTS
	PSH	GW	PSH-T	PSH	GW	PSH-T	
MW-1	62.96	63.56			63.30		
WASTE:	H2O:	865		PSH:	3		TOTAL (GAL): 868

Sample Name		Analysis	Date:	Time:	Comments:	
INFLUENT	1	C6+	1-Jun-17	18:00	FID=	12661
INFLUENT	2	C6+	2-Jun-17	4:00	FID=	11627
Notes:						
Tank #1 : T 33 3/4 , 868 PSH 33 5/8 , 865						

Start Date: 6/1/2017 7(		MDPE FIELD DATA										
		Well Flow						Well Data				
TIME	SAMPLE TAKEN	Inflent temp. (°f)	Diff. Pressure (INH20) 2" Preso	Vac (In.Hg)	FID Composite (PPM)	Propane (%-size) 500 Gal.	EXHAUST TEMP F	COMMENTS:				
								MW-1				
17:00								VAC (INH2O)	VAC (INH2O)	VAC (INH2O)	VAC (INH2O)	VAC (INH2O)
18:00	1	90	11.7	21	12661		1411	29.9				
19:00		84	12	21	9743		1412	28.5				
20:00		80	11.4	21	10102		1414	28.3				
21:00		76	11.7	21	12503		1413	28.6				
22:00		70	11.9	21	14384		1409	28.7				
23:00		70	11.8	21	10942		1411	28.5				
0:00		70	12	21	8759		1415	29.1				
1:00		70	11.7	21	10107		1412	28.6				
2:00		70	11.9	21	9184		1411	29.3				
3:00		68	11.5	21	10175		1410	28.2				
4:00	2	64	11.7	21	11627		1414	28.5				
5:00		64	11.3	21	10864		1411	27.9				

ATTACHMENT 2

Laboratory Analytical Results

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-17060229-001A

June 07, 2017

Jason Shubert
Talon/LPE
921 N. Bivins St
Amarillo, TX 79107

Station Name: Influent # 1
Station Number: 700376.271.01
Station Location: Vac To Jal Legacy
Station Number: 700376.271.01
Analyzed: 06/07/2017 03:04:42 by JD

Sampled By: BH
Sample Of: Gas Spot
Sample Date: 06/01/2017 18:00
Sample Conditions:
Method: GPA-2261M

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.65 psia		
Nitrogen	90.106	84.682		GPM TOTAL C2+	0.187
Carbon Dioxide	9.463	13.971		GPM TOTAL C3+	0.187
Methane	NIL	NIL		GPM TOTAL iC5+	0.187
Ethane	NIL	NIL	NIL		
Propane	NIL	NIL	NIL		
Iso-butane	NIL	NIL	NIL		
n-Butane	NIL	NIL	NIL		
Iso-pentane	NIL	NIL	NIL		
n-Pentane	NIL	NIL	NIL		
Hexanes Plus	0.431	1.347	0.187		
	100.000	100.000	0.187		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	1.0294	3.2176
Calculated Molecular Weight	29.81	93.19
Compressibility Factor	0.9994	
GPA 2172-09 Calculation:		
Calculated Gross BTU per ft³ @ 14.65 psia & 60°F		
Real Gas Dry BTU	22	5113
Water Sat. Gas Base BTU	22	5024

Comments: H2O Mol% : 1.750 ; Wt% : 1.065

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-17060229-002A

June 07, 2017

Jason Shubert
Talon/LPE
921 N. Bivins St
Amarillo, TX 79107

Station Name:	Influent # 2	Sampled By:	BH
Station Number:	700376.271.01	Sample Of:	Gas Spot
Station Location:	Vac To Jal Legacy	Sample Date:	06/02/2017 04:00
Station Number:	700376.271.01	Sample Conditions:	
Analyzed:	06/07/2017 03:20:12 by JD	Method:	GPA-2261M

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.65 psia		
Nitrogen	90.231	84.858		GPM TOTAL C2+	0.186
Carbon Dioxide	9.340	13.800		GPM TOTAL C3+	0.186
Methane	NIL	NIL		GPM TOTAL iC5+	0.186
Ethane	NIL	NIL	NIL		
Propane	NIL	NIL	NIL		
Iso-butane	NIL	NIL	NIL		
n-Butane	NIL	NIL	NIL		
Iso-pentane	NIL	NIL	NIL		
n-Pentane	NIL	NIL	NIL		
Hexanes Plus	0.429	1.342	0.186		
	100.000	100.000	0.186		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	1.0286	3.2176
Calculated Molecular Weight	29.79	93.19
Compressibility Factor	0.9994	
GPA 2172-09 Calculation:		
Calculated Gross BTU per ft³ @ 14.65 psia & 60°F		
Real Gas Dry BTU	22	5113
Water Sat. Gas Base BTU	22	5024

Comments: H2O Mol% : 1.750 ; Wt% : 1.066

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

SPL, Inc.

Analysis Request Chain of Custody Record

SPL

SPL Work Order No.:	SPL Work Order No.:	Acct. Mate Code: / Dept. Code
SPL	Page 1 of 1	

Report To: (Company Name):	Talon LPE
Address	921 N. Bivins
City/State/Zip	Amarillo, Texas 79107
Contact:	Jason Shubert
Phone:	806-467-0607 Fax: 806-467-0622
Invoice To: (Company Name):	Talon LPE
Address	921 N Bivins
City/State/Zip	Amarillo, Texas 79107
Contact:	Jason Shubert
Phone:	806-467-0607 Fax: 806-467-0622
PO / Ref. No.:	
Contract/Proposal #:	

Project/Station Name: Vacto Jal Legacy

Project/Station Number: 708376.271.01

Project/Station Location: Jal NM

Special Instructions:

Requested TAT: 24hr * / 48hr * / 72hr * / Standard / Other Indicate Below

* Surcharges May Apply

Indicate Billing Type: Net 30 day Acct. / Check # / Cash Recv'd $ / Credit Card — Contact SPL, Inc for CC payment arrangements.

* Terms: Cylinders will be rented for $10/cyl. All cylinders checked out are to be returned within 21 days, whether they contain sample or not. Cylinders not returned after 30 days will be considered lost and will be billed at current replacement cost.

Requested Analysis

Sample ID & Point	Sample Date	Sample Time	Sample Type (Gas/Liq. Solid)	Duplicate	Composite	Spot	Cylinder #	Date Out	Date In	C6+	Comments
Influent 1	6-1	1700	Gas							X	
Influent 2	6-2	0400	Gas							X	

Sampled By-Print Name: B Hurtig

Signature: [signature]

Company Name:

Relinquished By-Print Name	Date	Time	Received By-Print Name	Date	Time
B Hurtig / Signature: [signature]	6/5		Signature:		
Signature:			Signature: [signature]	6/6	
Signature:			Signature: [signature]	6/6	1:17

8820 Interchange Dr. Houston, TX 77054 (713) 660-0901

500 Ambassador Caffery Pkwy Scott, LA 70583 (337) 237-4775

9221 Highway 23 Belle Chasse, LA 70037 (504) 391-1337

1595 US 79 South Carthage, TX 75633 (903) 693-6242

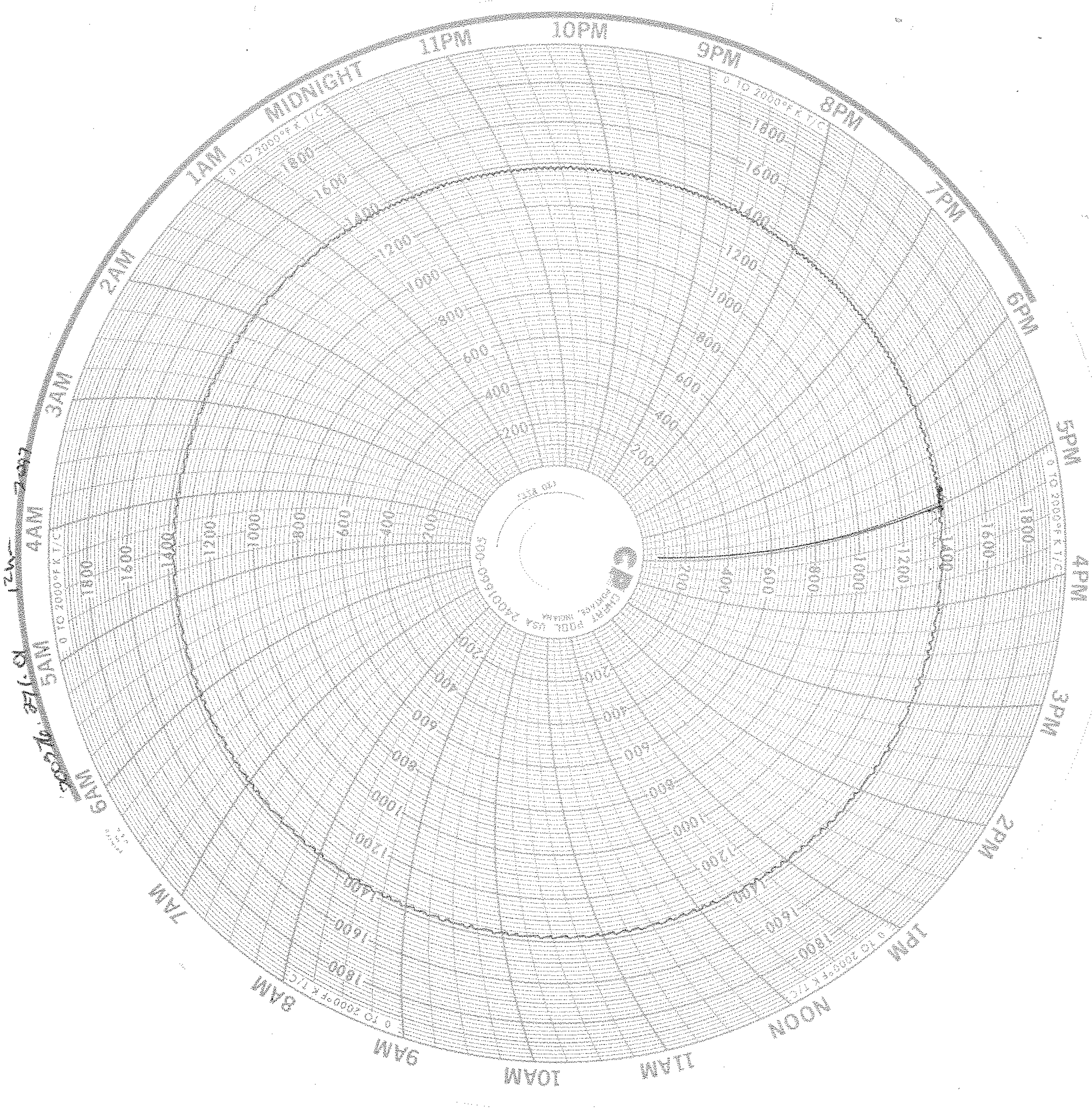
P.O. Box 3079 Laurel, MS 39442 (601) 428-0842

459 Hughes Dr. Traverse City, MI 49686 (616) 947-5777

Note: As a convenience to our clients, this form is available in an electronic format. Please contact one of our offices above for the form to be e-mailed to you.

ATTACHMENT 3

Oxidizer Charts


MIDNIGHT
11PM
10PM
9PM
8PM
7PM
6PM
5PM
4PM
3PM
2PM
1PM
NOON
11AM
10AM
9AM
8AM
7AM
6AM
5AM
4AM
3AM
2AM
1AM
0 TO 2000°F K T/C

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TALON LPE

MOBILE DUAL PHASE EXTRACTION REPORT
VACUUM TO JAL 14 INCH LEGACY PIPELINE RELEASE
LEA COUNTY, NEW MEXICO
SRS # 2009-092
Q3 2017
EVENT #1

PREPARED FOR:
PLAINS PIPELINE, L.P.
333 CLAY STREET
SUITE 1600
HOUSTON, TEXAS 77002

PREPARED BY:
TALON/LPE
921 N. BIVINS
AMARILLO, TEXAS 79107

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February 4, 2018

TABLE OF CONTENTS

Section Page

Attachments:

I. MDPE SUMMARY REPORT AND WASTE DISPOSITION

A. MDPE Results

The following report summarizes data collected during the 12-hour High Vacuum Multi-Phase Extraction (MDPE) event conducted on September 21, 2017 at the Vacuum to Jal 14 Inch Legacy Pipeline release site, located in Lea County, New Mexico. The objective of the MDPE treatment was to remove both vapor and liquid phase separated hydrocarbons (PSH) from onsite groundwater wells. Talon/LPE utilized an MDPE unit which consisted of an SVE extraction pump capable of generating vacuum up to 25" hg. Off gas vapors extracted from the extraction wells were destroyed using a propane-fired 1000-SCFM thermal oxidizer capable of processing 172.96 lbs/hr of gasoline.

A total of 12 hours (0.5 days) of PSH recovery was performed on MW-1.

Prior to and immediately following the event, the groundwater wells were gauged for groundwater elevation and PSH. Depth to groundwater ranges were measured in feet below the top of casing. Refer to Attachment 1 for a summary of data collected during the MDPE event.

The volume of PSH removed during the MDPE event is shown to reflect the portions of PSH in the liquid phase and as off-gas vapor. Air removal rates were calculated from velocity measurements recorded at the influent manifold prior to entry into the MDPE unit. PSH recovery and air flow data has been detailed and is contained in Table 1. Two (2) influent air samples were collected over the course of the event. These samples were submitted for laboratory testing in order to compare the predicted vapor concentrations (based on field-screening or calculated based on fuel consumption) to the actual vapor concentrations. Both influent samples were tested for Total-Gas Analysis (Hydrocarbon Composition) by GPA 2261-C6+. Laboratory analytical results can be found in Attachment 2.

Based on a combination of field vapor screening and collected laboratory samples, a combined estimated total of **20.38 equivalent gallons of PSH (Total)** were removed during the event. The combined volume of PSH was comprised of approximately **9 gallons of PSH (liquid phase)** and approximately **11.38 gallons as off-gas vapor**. The calculations used to estimate the off-gas vapor mass recovered reflect the mass of total hydrocarbons recovered and does not necessarily equate to an equal mass of the product released. The mass recovery calculations may be affected by variations in the specific gravity of hydrocarbon released, age of release, activity of aerobic and/or anaerobic processes, and site specific geochemical factors.

The cumulative air flow measurements for the MDPE event were calculated using a combination of field data measurements and Preso® B+ manufacturer provided

formulas. **Air flow rates extracted from the recovery wells averaged 130.38 SCFM** during the event.

B. Air Quality

Two (2) influent air samples were collected during the event. These samples were submitted for laboratory testing in order to compare the predicted vapor concentrations (based on field-screening or calculated based on fuel consumption) to the actual vapor concentrations. The maximum influent concentration was recorded as 11,050 ppmv for Hydrocarbon Composition. Laboratory analytical results can be found in Attachment 2.

C. Waste Management and Disposition

A cumulative total of 537 gallons of fluid were generated during this event. The fluids were temporarily transferred to an on-site storage tank prior to being transferred to an authorized disposal facility.

II. SYSTEM OPERATION DATA AND MASS RECOVERY CALCULATIONS

Formulae:

$$\text{Concentration (C\_mg/l)} = \frac{\text{C\_ppmv} \times \text{Mol. wt. in mg(estimated)} \times 1000 \times 0.000001}{0.0821 \times \text{Temp (K)}}$$

$$\text{Recovery Rate (lbs/hr)} = \frac{\text{(C\_mg/l)} \times 2.2 \times \text{(Flowrate)} \times 60 \times 28.32}{1{,}000{,}000}$$

Recovery (lbs) = (lbs/hr) x (hrs)

$$\text{Correction Factor (CF)} = \frac{\text{FID Reading(ppmv)}}{\text{FID Reading at Time of Laboratory Analysis}}$$

$$\frac{8.34 \text{ lbs}}{\text{gallon water}} \times 0.82 \text{ average specific gravity of light crude (estimated)} = \frac{6.84 \text{ lbs light crude}}{\text{gallon}}$$

Table 1
System Operation Data and Mass Recovery Calculations

Time	Period (hours)	Influent Temp. (°f)	Vacuum (In. hg)	Vacuum (In. h20)	Differential pressure (In. h20)	Flow (SCFM)	fID Readings (ppm)	Lab Result (ppmv)	Assigned Lab Result (ppmv)	Correction Factor (CF)	Adjusted Lab Result (ppmv)	Adjusted Lab Result (mg/L)	Recovery (lbs/hr)	Recovery in Period (lbs)	Total Recovery (lbs)
22:00	1	82	7.5	102.07	18.5	128.72	26754	10740.00	10740.00	1.00	10740	13.03	6.27	6.27	6.27
23:00	1	82	7.5	102.07	18	126.97	26412	-	10740.00	0.99	10603	12.86	6.10	6.10	12.37
0:00	1	82	7.6	103.43	19	130.16	25983	-	10740.00	0.97	10430	12.65	6.16	6.16	18.53
1:00	1	80	7.3	99.35	19	131.27	25764	-	10740.00	0.96	10343	12.59	6.18	6.18	24.71
2:00	1	80	7.4	100.71	19	130.98	25871	-	10740.00	0.97	10386	12.65	6.19	6.19	30.90
3:00	1	78	7.7	104.79	19	130.35	25901	-	10740.00	0.97	10398	12.71	6.19	6.19	37.09
4:00	1	78	7.5	102.07	19.1	131.28	25207	-	11050.00	1.06	11748	14.31	7.02	7.02	44.12
5:00	1	78	7.3	99.35	19	131.51	24899	-	11050.00	1.05	11604	14.14	6.95	6.95	51.07
6:00	1	76	7.4	100.71	19	131.47	24743	-	11050.00	1.04	11531	14.10	6.93	6.93	58.00
7:00	1	76	7.6	103.43	19	130.88	24555	-	11050.00	1.04	11444	13.99	6.85	6.85	64.85
8:00	1	72	7.9	107.51	19	130.49	23710	11050.00	11050.00	1.00	11050	13.61	6.64	6.64	71.49
9:00	1	74	7.8	106.15	19	130.54	22811		11050.00	0.96	10631	13.05	6.37	6.37	77.85
Averages:		78.17	7.54	102.63	18.88	130.38	25217.50						Total	77.85	

PSH Mass Recovered in Vapor Phase = 11.38 gallons

FID maximum Concentration = 50,000 PPM

Ex: Conversion from ppmv to mg/L (influent 1)

Measured Conc.	Molecular Wt.	Pressure	Gas Constant	Temp.	Temp.	Conc.
(ppmv)	(Grams)	(atm)	(atm.liter/K.mole)	(F)	(K)	(C_mg/l)
10740	29.9561	1	0.0821	82	300.777778	13.0286919

Inputs are the green values.
Calculated values are yellow.
Constants are purple values.
Outpus are the blue values.

Liquid-phase Hydrocarbon Recovery

∏ * r2 * h = volume

Total Hydrocarbon Recovery

PSH Mass Recovered in Vapor Phase =	77.85	lbs
	11.38	gallons
PSH Mass Recovered in Liquid Phase =	61.56	lbs
	9.00	gallons
TOTAL =	**139.41**	**lbs**
	20.38	**gallons**

Gallons removed determined at time of pick up

PSH Volume in Gallons=	9
PSH Mass in Pounds=	61.56

% Vol. Hydrocarbon to ppmv - Influent 1

Compound	Molecular Weight (g/mol)	% Vol	=	ppmv
Methane (CH4)	16.04	0		0.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0		0.00
Iso-Butane (C4H10)	58.12	0		0.00
N-Butane (C4H10)	58.12	0		0.00
Iso-Pentane (C4H12)	72.15	0		0.00
N-Pentane (C5H12)	72.15	0		0.00
Hexane+ (C6H14)	97.40	1.074		10740.00
			Total	**10740.00**

*Hexane+ is treated as 60% hexanes, 30 % heptanes, and 10 % octanes, as such its (0.6*93.1887)+(0.3*100.2019)+(0.1*114.2285) = 97.3966

Molecular Weight Calculations

component	Molecular Weight (g/mol)	mol%
Nitrogen (N2)	28.016	89.0220
Methane (CH4)	16.0425	0.0000
Carbon Dioxide (CO2)	44.011	10.6330
Ethane (C2H6)	30.069	0.0000
Propane (C3H8)	44.0956	0.0000
Iso-Butane (C4H10)	58.1222	0.0000
N-Butane (C4H10)	58.1222	0.0000
Iso-Pentane (C4H12)	72.1488	0.0000
N-Pentane (C5H12)	72.1488	0.0000
Hexane+	97.3966	0.3450
	Total	100
	Calculated MW	**29.9561**

% Vol. Hydrocarbon to ppmv - Influent 2

Compound	Molecular Weight (g/mol)	% Vol	=	ppmv
Methane (CH4)	16.04	0		0.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0		0.00
Iso-Butane (C4H10)	58.12	0		0.00
N-Butane (C4H10)	58.12	0		0.00
Iso-Pentane (C4H12)	72.15	0		0.00
N-Pentane (C5H12)	72.15	0		0.00
Hexane+ (C6H14)	97.40	1.105		11050.00
			Total	**11050.00**

*Hexane+ is treated as 60% hexanes, 30 % heptanes, and 10 % octanes, as such its (0.6*93.1887)+(0.3*100.2019)+(0.1*114.2285) = 97.3966

Molecular Weight Calculations

component	Molecular Weight (g/mol)	mol%
Nitrogen (N2)	28.016	89.6320
Methane (CH4)	16.0425	0.0000
Carbon Dioxide (CO2)	44.011	10.0140
Ethane (C2H6)	30.069	0.0000
Propane (C3H8)	44.0956	0.0000
Iso-Butane (C4H10)	58.1222	0.0000
N-Butane (C4H10)	58.1222	0.0000
Iso-Pentane (C4H12)	72.1488	0.0000
N-Pentane (C5H12)	72.1488	0.0000
Hexane+	97.3966	0.3540
	Total	100
	Calculated MW	**29.8633**

Calculated MW= $\frac{\text{sum (individual component MW x their reported mol\%)}}{100}$

ppmv= **% Vol x 10,000**

ATTACHMENT 1

MDPE Field Logs

MDPE FIELD NOTES						
Site Name:	Vac to Jal 14" Legacy				Event #:	2
Location:	Jal, NM				Arrive at site:	20:30
Date:	9/21/2017					
Job#:	700376.271.02		SRS:	2009-092	Start Vac:	21:00
Phase:			Unit:	1107	Stop Vac:	9:00
Onsite Personnel:	L. Bridges / B. Huntington				Leave Site:	9:30

GAUGING DATA							
WELL#	BEFORE			AFTER			COMMENTS
	PSH	GW	PSH-T	PSH	GW	PSH-T	
MW-1	62.95	63.63	0.68		63.20		
WASTE:	H2O:	528		PSH:	9		TOTAL (GAL): 537

Sample Name		Analysis	Date:	Time:	Comments:	
INFLUENT	1	C6+	21-Sep-17	22:00	FID=	26254
INFLUENT	2	C6+	22-Sep-17	8:00	FID=	23710
Notes:						

Start Date: 9/21/2017		MDPE FIELD DATA										
		Well Flow						Well Data				
TIME	SAMPLE TAKEN	Inflent temp. (°f)	Diff. Pressure (INH20) 2" Preso	Vac (In.Hg)	FID Composite (PPM)	Propane (%-size) 500 Gal.	EXHAUST TEMP F	COMMENTS:				
								MW-1				
21:00								VAC (INH2O)	VAC (INH2O)	VAC (INH2O)	VAC (INH2O)	VAC (INH2O)
22:00	1	82	7.5	18.5	26754		1420	27.6				
23:00		82	7.3	19	26412		1413	27.7				
0:00		82	7.6	19	25983		1411	27.5				
1:00		80	7.3	19	25764		1420	27.6				
2:00		80	7.4	19	25871		1421	27.4				
3:00		78	7.7	19	25901		1419	27.8				
4:00		78	7.5	19	25207		1420	26.1				
5:00		78	7.3	19	24899		1423	24.5				
6:00		76	7.4	19	24743		1421	23.2				
7:00		76	7.6	19	24555		1417	27.5				
8:00	2	72	7.9	19	23710		1426	27.7				
9:00		74	7.8	19	22811		1420	27.6				

ATTACHMENT 2

Laboratory Analytical Results

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-17090939-001A

Sep. 28, 2017

Jason Shubert
Talon/LPE
921 N Bivins
Amarillo, TX 79107

Station Name: Influent # 1
Station Number: 700376.271.02
Station Location: Vac To Jal Legacy
Station Number:
Analyzed: 09/28/2017 04:29:52 by JD

Sampled By:
Sample Of: Gas Spot
Sample Date: 09/21/2017 22:00
Sample Conditions:
Method: GPA-2261M

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.65 psia		
Nitrogen	89.022	83.296		GPM TOTAL C2+	0.150
Carbon Dioxide	10.633	15.630		GPM TOTAL C3+	0.150
Methane	NIL	NIL		GPM TOTAL iC5+	0.150
Ethane	NIL	NIL	NIL		
Propane	NIL	NIL	NIL		
Iso-butane	NIL	NIL	NIL		
n-Butane	NIL	NIL	NIL		
Iso-pentane	NIL	NIL	NIL		
n-Pentane	NIL	NIL	NIL		
Hexanes Plus	0.345	1.074	0.150		
	100.000	100.000	0.150		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	1.0339	3.2176
Calculated Molecular Weight	29.94	93.19
Compressibility Factor	0.9994	
GPA 2172-09 Calculation:		
Calculated Gross BTU per ft³ @ 14.65 psia & 60°F		
Real Gas Dry BTU	18	5113
Water Sat. Gas Base BTU	17	5024

Comments: H2O Mol% : 1.750 ; Wt% : 1.060

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-17090939-002A

Sep. 28, 2017

Jason Shubert
Talon/LPE
921 N Bivins
Amarillo, TX 79107

Station Name: Influent # 2
Station Number: 700376.271.02
Station Location: Vac To Jal Legacy
Station Number:
Analyzed: 09/28/2017 04:45:25 by JD

Sampled By:
Sample Of: Gas Spot
Sample Date: 09/22/2017 08:00
Sample Conditions:
Method: GPA-2261M

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.65 psia		
Nitrogen	89.632	84.129		GPM TOTAL C2+	0.154
Carbon Dioxide	10.014	14.766		GPM TOTAL C3+	0.154
Methane	NIL	NIL		GPM TOTAL iC5+	0.154
Ethane	NIL	NIL	NIL		
Propane	NIL	NIL	NIL		
Iso-butane	NIL	NIL	NIL		
n-Butane	NIL	NIL	NIL		
Iso-pentane	NIL	NIL	NIL		
n-Pentane	NIL	NIL	NIL		
Hexanes Plus	0.354	1.105	0.154		
	100.000	100.000	0.154		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	1.0307	3.2176
Calculated Molecular Weight	29.85	93.19
Compressibility Factor	0.9994	
GPA 2172-09 Calculation:		
Calculated Gross BTU per ft³ @ 14.65 psia & 60°F		
Real Gas Dry BTU	18	5113
Water Sat. Gas Base BTU	18	5024

Comments: H2O Mol% : 1.750 ; Wt% : 1.064

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

SPL, Inc.

Analysis Request Chain of Custody Record

SPL	SPL Work Order No.:	SPL Work Order No.:	Acct. Mate Code:	Dept. Code	SPL	
					Page 1 of 1	

Report To: (Company Name):	Talon LPE	Project/Station Name:	Project/Station Number:	Project/Station Location:	Requested TAT
Address	921 N. Bivins	Kite to Jal Legacy	700376271.02	Jal, NM	☐ 24hr *
City/State/Zip	Amarillo, Texas 79107	Special Instructions:			☐ 48hr *
Contact:	Jason Shubert				☐ 72hr *
Phone:	806-467-0607 Fax: 806-467-0622				

Invoice To: (Company Name):	Talon LPE	Indicate Billing Type.	Net 30 day Acct. ☐	Check #	Cash Recv'd	$	☐ Standard
Address	921 N Bivins		Credit Card ☐	Contact SPL. Inc for CC payment arrangements.			☐ Other Indicate Below
City/State/Zip	Amarillo, Texas 79107						
Contact:	Jason Shubert						
Phone:	806-467-0607 Fax: 806-467-0622						
PO / Ref. No.:							
Contract/Proposal #:							

* Terms: Cylinders will be rented for $10/cyl. All cylinders checked out are to be returned within 21 days, whether they contain sample or not. Cylinders not returned after 30 days will be considered lost and will be billed at current replacement cost.

Requested Analysis

* Surcharges May Apply

Sample ID & Point	Sample Date	Sample Time	Sample Type (Gas/Liq. Solid)	Duplicate	Composite	Spot	Cylinder Tracking Info * Cylinder #	Date Out	Date In	C6+	Comments
Inlet 1	9-21	1200	Gas							X	
Inlet 2	9-22	0800	1							X	

Sampled By-Print Name: L Barnes			Company Name:				
Signature:							
Relinquished By-Print Name:	Date:	Time:	Received By-Print Name:			Date:	Time:
Signature:			Signature:				
Relinquished By-Print Name:	Date:	Time:	Received By-Print Name:			Date:	Time:
Signature:			Signature:				
Relinquished By-Print Name:	Date:	Time:	Received By-Print Name:			Date:	Time:
Signature:			Signature:			9/26	15:30

☐ 8820 Interchange Dr. Houston,TX 77054 (713) 660-0901

☐ 5221Highway 23 Belle Chasse, LA 70037 (504) 391-1337

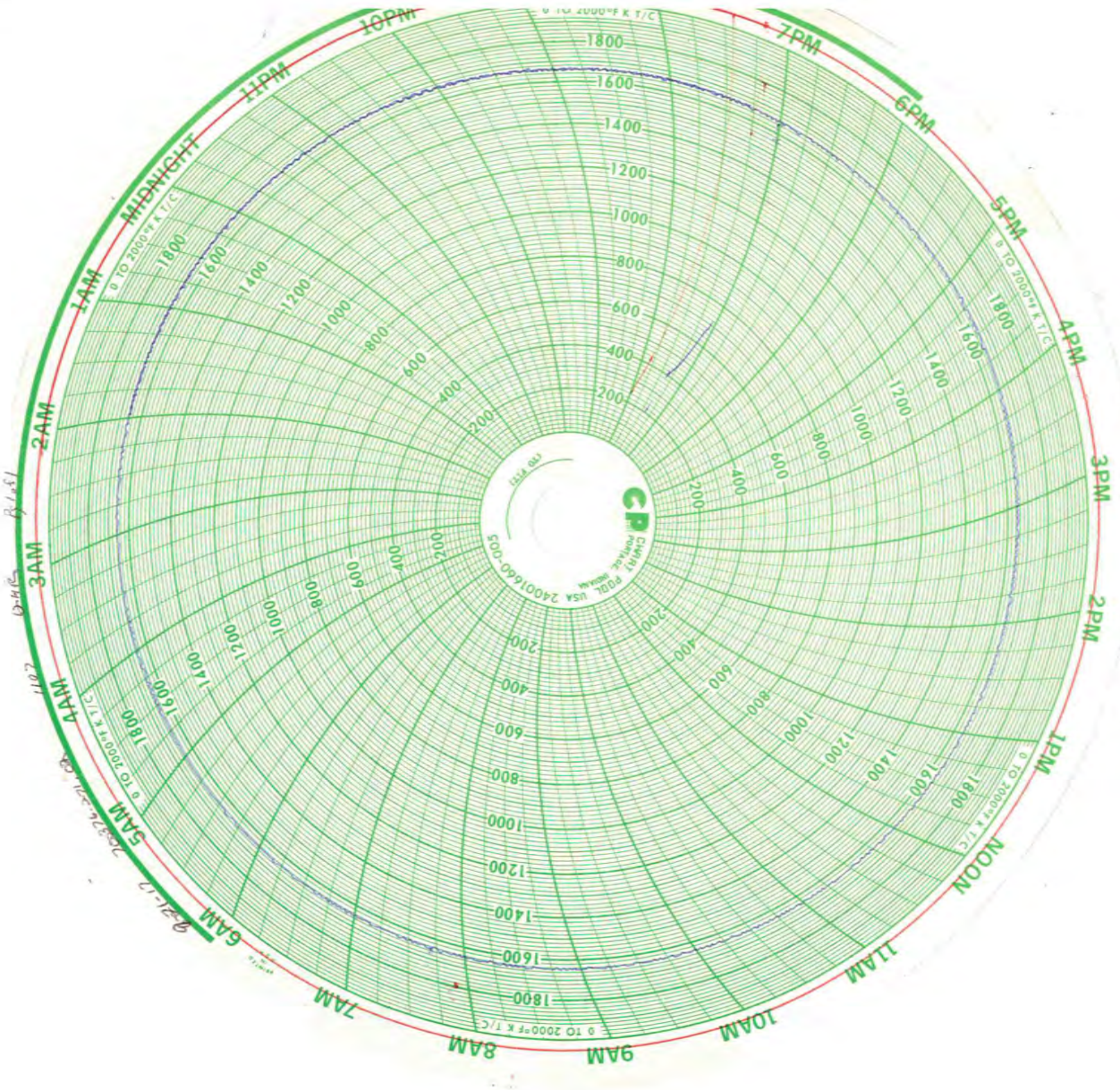
☐ P.O. Box 3079 Laurel, MS 39442 (601) 428-0642

☐ 500 Ambassador Caffery Pkwy Scott, LA 70583 (337) 237-4775

☐ 1595 US 79 South Carthage, TX 75633 (903) 693-6242

☐ 459 Hughes Dr. Traverse City, MI 49686 (616) 947-5777

Note: As a convenience to our clients, this form is available in electronic format. Please contact one of our offices above for the form to be e-mailed to you.


MIDNIGHT
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11PM
0 TO 2000°F K T/C
200
400
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800
1000
1200
1400
1600
1800

APPENDIX E

Historical Data Tables

TABLE 3
2017 ANNUAL REPORT

HISTORIC QUARTERLY GROUNDWATER ELEVATION AND PSH THICKNESS DATA
14-INCH VAC TO JAL LEGACY
LEA COUNTY, NEW MEXICO
PLAINS SRS #: 2009-092
NMOCD REFERENCE #: 1RP-2162
TERRACON PROJECT #: AR187005

WELL NUMBER	DATE MEASURED	CASING WELL ELEVATION	DEPTH TO PRODUCT	DEPTH TO WATER	PSH THICKNESS	CORRECTED GROUNDWATER ELEVATION
MW-1	6/7/2013	3,065.33	62.50	65.13	2.63	3,002.44
	8/29/2013	3,065.33	62.56	65.19	2.63	3,002.38
	11/7/2013	3,065.33	62.57	65.21	2.64	3,002.36
	02/12/2014	3,065.33	62.56	65.19	2.63	3,002.38
	05/12/2014	3,065.33	62.57	65.21	2.64	3,002.36
	08/04/2014	3,065.33	63.05	63.98	0.93	3,002.14
	11/12/2014	3,065.33	62.81	63.52	0.71	3,002.41
	02/25/2015	3,065.33	62.35	63.28	0.93	3,002.84
	05/08/2015	3,065.33	62.36	63.10	0.74	3,002.86
	08/10/2015	3,065.33	62.49	63.89	1.40	3,002.63
	12/08/2015	3,065.33	62.12	63.43	1.31	3,003.01
	02/02/2016	3,065.33	62.40	63.12	0.72	3,002.82
	05/06/2016	3,065.33	62.50	63.71	1.21	3,002.65
	08/03/2016	3,065.33	62.48	63.70	1.22	3,002.67
	12/22/2016	3,065.33	62.74	63.85	1.11	3,065.16
MW-2	6/7/2013	3,065.28	-	62.23	-	3,003.05
	8/29/2013	3,065.28	-	62.30	-	3,002.98
	11/7/2013	3,065.28	-	62.36	-	3,002.92
	02/12/2014	3,065.28	-	62.28	-	3,003.00
	05/12/2014	3,065.28	-	62.21	-	3,003.07
	08/04/2014	3,065.28	-	62.48	-	3,002.80
	11/12/2014	3,065.28	-	62.31	-	3,002.97
	02/25/2015	3,065.28	-	62.18	-	3,003.10
	05/08/2015	3,065.28	-	62.13	-	3,003.15
	08/10/2015	3,065.28	-	62.52	-	3,002.76
	12/08/2015	3,065.28	-	61.91	-	3,003.37
	02/05/2016	3,065.28	-	62.70	-	3,002.58
	05/06/2016	3,065.28	-	62.20	-	3,003.08
	08/03/2016	3,065.28	-	62.16	-	3,003.12
	12/22/2016	3,065.28	-	62.36	-	3,002.92
MW-3	6/7/2013	3,065.43	-	63.02	-	3,002.41
	8/29/2013	3,065.43	-	63.12	-	3,002.31
	11/7/2013	3,065.43	-	63.21	-	3,002.22
	02/12/2014	3,065.43	-	63.19	-	3,002.24
	05/12/2014	3,065.43	-	63.40	-	3,002.03
	08/04/2014	3,065.43	-	63.26	-	3,002.17
	11/12/2014	3,065.43	-	63.03	-	3,002.40
	02/25/2015	3,065.43	-	62.62	-	3,002.81
	05/08/2015	3,065.43	-	62.53	-	3,002.90
	08/10/2015	3,065.43	-	63.10	-	3,002.33
	12/08/2015	3,065.43		62.95		3,002.48
	02/05/2016	3,065.43	-	62.46	-	3,002.97
	05/06/2016	3,065.43	-	62.39	-	3,003.04
	08/03/2016	3,065.43	-	62.43	-	3,003.00
	12/22/2016	3,065.43	-	63.02	-	3,002.41

TABLE 3
2017 ANNUAL REPORT

HISTORIC QUARTERLY GROUNDWATER ELEVATION AND PSH THICKNESS DATA
14-INCH VAC TO JAL LEGACY
LEA COUNTY, NEW MEXICO
PLAINS SRS #: 2009-092
NMOCD REFERENCE #: 1RP-2162
TERRACON PROJECT #: AR187005

WELL NUMBER	DATE MEASURED	CASING WELL ELEVATION	DEPTH TO PRODUCT	DEPTH TO WATER	PSH THICKNESS	CORRECTED GROUNDWATER ELEVATION
MW-4	6/7/2013	3,065.15	-	62.57	-	3,002.58
	8/29/2013	3,065.15	-	62.76	-	3,002.39
	11/7/2013	3,065.15	-	62.79	-	3,002.36
	02/12/2014	3,065.15	-	62.76	-	3,002.39
	05/12/2014	3,065.15	-	62.91	-	3,002.24
	08/04/2014	3,065.15	-	62.82	-	3,002.33
	11/12/2014	3,065.15	-	62.49	-	3,002.66
	02/25/2015	3,065.15	-	62.30	-	3,002.85
	05/08/2015	3,065.15	-	62.27	-	3,002.88
	08/10/2015	3,065.15	-	62.50	-	3,002.65
	12/08/2015	3,065.15	-	61.91	-	3,003.24
	02/05/2016	3,065.15	-	62.23	-	3,002.92
	05/06/2016	3,065.15	-	62.40	-	3,002.75
	08/03/2016	3,065.15	-	62.40	-	3,002.75
	12/22/2016	3,065.15	-	62.47	-	3,002.68
MW-5	6/7/2013	3,065.95	-	63.16	-	3,002.79
	8/29/2013	3,065.95	-	63.22	-	3,002.73
	11/7/2013	3,065.95	-	63.26	-	3,002.69
	02/12/2014	3,065.95	-	63.28	-	3,002.67
	05/12/2014	3,065.95	-	63.49	-	3,002.46
	08/04/2014	3,065.95	-	63.40	-	3,002.55
	11/12/2014	3,065.95	-	63.23	-	3,002.72
	02/25/2015	3,065.95	-	63.15	-	3,002.80
	05/08/2015	3,065.95	-	63.10	-	3,002.85
	08/10/2015	3,065.95	-	62.93	-	3,003.02
	12/07/2015	3,065.95	-	62.84	-	3,003.11
	02/05/2016	3,065.95	-	63.04	-	3,002.91
	05/06/2016	3,065.95	-	63.10	-	3,002.85
	08/03/2016	3,065.95	-	63.08	-	3,002.87
	12/22/2016	3,065.95	-	63.33	-	3,002.62
MW-6	6/7/2013	3,065.35	-	63.12	-	3,002.23
	8/29/2013	3,065.35	-	63.16	-	3,002.19
	11/7/2013	3,065.35	-	63.21	-	3,002.14
	02/12/2014	3,065.35	-	63.23	-	3,002.12
	05/12/2014	3,065.35	-	63.44	-	3,001.91
	08/04/2014	3,065.35	-	63.36	-	3,001.99
	11/12/2014	3,065.35	-	63.10	-	3,002.25
	02/25/2015	3,065.35	-	62.66	-	3,002.69
	05/11/2015	3,065.35	-	62.67	-	3,002.68
	08/10/2015	3,065.35	-	62.65	-	3,002.70
	12/07/2015	3,065.35	-	62.60	-	3,002.75
	02/05/2016	3,065.35	-	62.79	-	3,002.56
	05/06/2016	3,065.35	-	62.90	-	3,002.45
	08/03/2016	3,065.35	-	63.03	-	3,002.32
	12/22/2016	3,065.35	-	63.05	-	3,002.30
MW-7	07/02/2014	3,065.38	-	77.52	-	2,987.86
	08/04/2014	3,065.38	-	63.32	-	3,002.06
	11/12/2014	3,065.38	-	63.07	-	3,002.31
	02/25/2015	3,065.38	-	62.70	-	3,002.68
	05/11/2015	3,065.38	-	62.68	-	3,002.70
	08/10/2015	3,065.38	-	62.68	-	3,002.70
	12/07/2015	3,065.38	-	62.55	-	3,002.83
	02/05/2016	3,065.38	-	62.74	-	3,002.64
	05/06/2016	3,065.38	-	62.88	-	3,002.50
	08/03/2016	3,065.38	-	62.85	-	3,002.53
	12/22/2016	3,065.38	-	62.98	-	3,002.40

TABLE 3
2017 ANNUAL REPORT

HISTORIC QUARTERLY GROUNDWATER ELEVATION AND PSH THICKNESS DATA
14-INCH VAC TO JAL LEGACY
LEA COUNTY, NEW MEXICO
PLAINS SRS #: 2009-092
NMOCD REFERENCE #: 1RP-2162
TERRACON PROJECT #: AR187005

WELL NUMBER	DATE MEASURED	CASING WELL ELEVATION	DEPTH TO PRODUCT	DEPTH TO WATER	PSH THICKNESS	CORRECTED GROUNDWATER ELEVATION
MW-8	07/02/2014	3,065.10	-	77.26	-	2,987.84
	08/04/2014	3,065.10	-	63.11	-	3,001.99
	11/12/2014	3,065.10	-	62.81	-	3,002.29
	02/25/2015	3,065.10	-	62.34	-	3,002.76
	05/11/2015	3,065.10	-	62.36	-	3,002.74
	08/10/2015	3,065.10	-	62.44	-	3,002.66
	12/07/2015	3,065.10	-	62.30	-	3,002.80
	02/05/2016	3,065.10	-	62.46	-	3,002.64
	05/06/2016	3,065.10	-	62.41	-	3,002.69
	08/03/2016	3,065.10	-	62.40	-	3,002.70
	12/22/2016	3,065.10	-	62.85	-	3,002.25
MW-9	07/02/2014	3,065.42	-	77.65	-	2,987.77
	08/04/2014	3,065.42	-	63.48	-	3,001.94
	11/12/2014	3,065.42	-	63.20	-	3,002.22
	02/25/2015	3,065.42	-	62.74	-	3,002.68
	05/11/2015	3,065.42	-	62.56	-	3,002.86
	08/10/2015	3,065.42	-	62.78	-	3,002.64
	12/07/2015	3,065.42	-	62.78	-	3,002.64
	02/05/2016	3,065.42	-	62.88	-	3,002.54
	05/06/2016	3,065.42	-	63.05	-	3,002.37
	08/03/2016	3,065.42	-	63.11	-	3,002.31
	12/22/2016	3,065.42	-	63.14	-	3,002.28

- = Not applicable

TABLE 4
2017 ANNUAL REPORT

HISTORIC GROUNDWATER ANALYTICAL SUMMARY - BTEX, CHLORIDE & TDS
14-INCH VAC TO JAL LEGACY
LEA COUNTY, NEW MEXICO
PLAINS SRS #: 2009-092
NMOCD REFERENCE #: 1RP-2162
TERRACON PROJECT #: AR187005

SAMPLE LOCATION	SAMPLE DATE	METHODS: EPA SW 846-8021B, 5030							CHLORIDE (mg/L)	TDS (mg/L)
		BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL-BENZENE (mg/L)	M,P-XYLENES (mg/L)	O-XYLENES (mg/L)	TOTAL XYLENES (mg/L)	TOTAL BTEX (mg/L)		
MW-1	7/6/2009	<0.001	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	**5,300**	**14,300**
	10/21/2009	**0.0125**	0.0049	<0.0010	<0.0020	<0.0010	<0.0020	0.017	-	-
	3/11/2010	**0.072**	0.0243	0.002	<0.0020	0.0017	0.002	0.102	-	-
	6/4/2010	**0.1407**	0.0637	0.0047	0.0041	0.0026	0.007	0.223	-	-
	9/23/2010	**0.0514**	0.0278	0.0022	0.0028	0.0019	0.005	0.091	-	-
	11/5/2010	**0.2795**	0.1807	0.0126	0.0114	0.0049	0.016	0.505	-	-
	2/28/2011	**0.162**	0.0925	0.0034	0.006	0.0035	0.009	0.277	-	-
	9/7/2011	**0.305**	0.18	0.0152	0.0202	0.0093	0.030	0.559	**9,590**	**17,300**
	11/2/2011	**0.0662**	0.069	0.0087	0.0105	0.0050	0.016	0.175	**7,880**	**15,500**
	4/12/2012	**0.362**	0.357	0.0589	0.0712	0.0309	0.102	0.982	**6,200**	**14,500**
MW-2	6/7/2013	<0.005	<0.005	<0.005	<0.010	<0.005	<0.010	<0.010	**8,740**	-
	8/29/2013	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	**9,620**	**19,600**
	11/7/2013	0.0052	<0.0200	<0.0100	0.0260	<0.0010	0.026	2.13	**9,040**	**17,700**
	2/12/2014	0.0086	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0086	**9,550**	**10,800**
	5/12/2014	0.0084	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0084	-	-
	8/4/2014	**0.0101**	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0101	-	-
	11/12/2014	0.0085	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0085	**10,500**	-
	2/25/2015	0.0095	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0095	**9,120***	-
	5/8/2015	**0.0113**	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0113	**9,860**	-
	8/10/2015	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	**11,500***	-
	12/8/2015	**0.0232**	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0232	**8,640**	-
	2/5/2016	**0.0205**	<0.00200	<0.00100	<0.00200	<0.00100	<0.00200	0.0205	**9,770**	-
	5/6/2016	**0.0279**	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.0279	-	-
	9/27/2016	**0.0570**	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.0570	**10,200**	-
	12/29/2016	**0.0199**	<0.00100	<0.00100	<0.00200	<0.00100	<0.00200	0.0199	**10,600**	-
MW-3	6/7/2013	<0.005	<0.005	<0.005	<0.010	<0.005	<0.010	<0.010	**6,120**	-
	8/29/2013	**0.110**	<0.0010	<0.0010	<0.0020	<0.0010	<0.0020	0.110	**6,250**	**13,600**
	11/7/2013	**2.10**	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	**6,100**	**15,500**
	2/12/2014	**0.4920**	<0.0020	<0.0010	0.0146	0.0058	0.0204	0.5120	**6,840**	**13,600**
	5/12/2014	**0.1970**	<0.0020	<0.0010	0.0034	<0.0010	0.0034	0.2000	-	-
	8/4/2014	**0.3870**	<0.0020	<0.0010	0.0038	<0.0010	0.0038	0.3910	-	-
	11/12/2014	**0.0345**	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0345	-	-
	2/25/2015	**0.1590**	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.1590	-	-
	5/8/2015	**2.96**	<0.0400	<0.0200	<0.0400	<0.0200	<0.0400	2.96	-	-
	8/10/2015	**3.19**	<0.200	<0.100	<0.200	<0.100	<0.200	3.19	-	-
	12/8/2015	0.0021	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0021	-	-
	2/5/2016	**2.59**	<0.0200	<0.0100	<0.0200	<0.0100	<0.0200	2.59	-	-
	5/6/2016	**2.68**	<0.002000	<0.002000	<0.00200	<0.00200	<0.0200	2.68	-	-
	9/27/2016	**2.70**	0.00260	<0.00200	0.0254	0.00937	0.0348	2.74	-	-
	12/29/2016	**3.57**	<0.0200	<0.0200	<0.0400	<0.0200	<0.0400	3.57	-	-

TABLE 4
2017 ANNUAL REPORT

HISTORIC GROUNDWATER ANALYTICAL SUMMARY - BTEX, CHLORIDE & TDS
14-INCH VAC TO JAL LEGACY
LEA COUNTY, NEW MEXICO
PLAINS SRS #: 2009-092
NMOCD REFERENCE #: 1RP-2162
TERRACON PROJECT #: AR187005

SAMPLE LOCATION	SAMPLE DATE	METHODS: EPA SW 846-8021B, 5030							CHLORIDE (mg/L)	TDS (mg/L)
		BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL-BENZENE (mg/L)	M,P-XYLENES (mg/L)	O-XYLENES (mg/L)	TOTAL XYLENES (mg/L)	TOTAL BTEX (mg/L)		
MW-4	6/7/2013	**0.293**	<0.005	<0.005	<0.010	<0.005	<0.010	<0.010	**7,290**	-
	8/29/2013	**0.692**	0.0027	<0.0010	0.0090	<0.0010	0.0090	0.704	**4,690**	**8,610**
	11/7/2013	**0.0289**	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0289	**8,860**	**21,400**
	2/12/2014	**0.0176**	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0176	**7,700**	**15,200**
	5/12/2014	**0.0856**	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0856	-	-
	8/4/2014	**0.0583**	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0583	-	-
	11/12/2014	**0.1050**	<0.0020	<0.0010	0.0024	<0.0010	0.0024	0.1070	-	-
	2/25/2015	**0.0610**	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0610	-	-
	5/8/2015	**0.0259**	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0259	-	-
	8/10/2015	**0.1810**	<0.0020	<0.0010	0.0070	<0.0010	0.0070	0.1880	-	-
	12/8/2015	**0.0240**	<0.0020	<0.0010	0.0107	<0.0010	0.0107	0.2510	-	-
	2/5/2016	0.00210	<0.00200	<0.00100	<0.00200	<0.00100	<0.00200	0.00210	-	-
	5/6/2016	**0.0101**	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0101	-	-
	9/27/2016	0.00660	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.00660	-	-
	12/29/2016	0.00110	<0.00100	<0.00100	<0.00200	<0.00100	<0.00200	0.00110	-	-
MW-5	6/7/2013	<0.005	<0.005	<0.005	<0.010	<0.005	<0.010	<0.010	**4,710**	-
	8/29/2013	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	**4,950**	**9,730**
	11/7/2013	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	**5,080**	**10,700**
	2/25/2015	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-	-
	5/8/2015	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-	-
	8/10/2015	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-	-
	12/7/2015	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-	-
	2/5/2016	<0.00100	<0.00200	<0.00100	<0.00200	<0.00100	<0.00200	<0.00200	-	-
	5/6/2016	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	-	-
	9/27/2016	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-	-
	12/29/2016	<0.00100	<0.00100	<0.00100	<0.00200	<0.00100	<0.00200	<0.00200	-	-
MW-6	6/7/2013	<0.005	<0.005	<0.005	<0.010	<0.005	<0.010	<0.010	**5,570**	-
	8/29/2013	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	**5,120**	**10,700**
	11/7/2013	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	**5,350**	**10,200**
	2/12/2014	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	**5,260**	9,920
	5/12/2014	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-	-
	8/4/2014	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-	-
	11/12/2014	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-	-
	2/25/2015	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-	-
	5/11/2015	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-	-
	8/17/2015	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-	-
	12/7/2015	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-	-
	2/5/2016	<0.00100	<0.00200	<0.00100	<0.00200	<0.00100	<0.00200	<0.00200	-	-
	5/6/2016	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	-	-
	9/27/2016	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-	-
	12/29/2016	<0.00100	<0.00100	<0.00100	<0.00200	<0.00100	<0.00200	<0.00200	-	-

TABLE 4
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HISTORIC GROUNDWATER ANALYTICAL SUMMARY - BTEX, CHLORIDE & TDS
14-INCH VAC TO JAL LEGACY
LEA COUNTY, NEW MEXICO
PLAINS SRS #: 2009-092
NMOCD REFERENCE #: 1RP-2162
TERRACON PROJECT #: AR187005

SAMPLE LOCATION	SAMPLE DATE	METHODS: EPA SW 846-8021B, 5030							CHLORIDE (mg/L)	TDS (mg/L)
		BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL-BENZENE (mg/L)	M,P-XYLENES (mg/L)	O-XYLENES (mg/L)	TOTAL XYLENES (mg/L)	TOTAL BTEX (mg/L)		
MW-7	7/2/2014	<0.0050	<0.0050	<0.0050	<0.0100	<0.0050	<0.0100	<0.0100	**4,850**	**13,700**
	8/4/2014	**0.3880**	<0.0020	<0.0010	0.0060	<0.0010	0.0060	0.3940	-	-
	11/12/2014	**0.3970**	<0.0020	<0.0010	0.0076	0.0011	0.0087	0.4060	-	-
	2/25/2015	**1.71**	<0.0020	<0.0010	0.0354	<0.0010	0.0354	1.75	-	-
	5/11/2015	**0.6070**	<0.0100	<0.0050	0.0180	<0.0050	0.0180	0.6250	-	-
	8/17/2015	**0.0420**	<0.0020	<0.0010	0.0024	0.0015	0.0039	0.0459	-	-
	12/7/2015	0.0047	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0047	-	-
	2/5/2016	0.00612	<0.00200	<0.00100	<0.00200	<0.00100	<0.00200	0.00612	-	-
	5/6/2016	**0.0211**	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0211	-	-
	9/27/2016	<0.00200	0.00309	<0.00200	<0.00200	<0.00200	<0.00200	0.00309	-	-
	12/29/2016	<0.00100	<0.00100	<0.00100	<0.00200	<0.00100	<0.00200	<0.00200	-	-
MW-8	7/2/2014	<0.0050	<0.0050	<0.0050	<0.0100	<0.0050	<0.0100	<0.0100	**7,540**	**18,100**
	8/4/2014	**0.2330**	<0.0020	<0.0010	0.0029	<0.0010	0.0029	0.2360	-	-
	11/12/2014	**0.7030**	<0.0100	<0.0050	0.0150	<0.0050	0.0150	0.7180	-	-
	2/25/2015	**1.61**	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	1.61	-	-
	5/11/2015	**2.38**	<0.0400	<0.0200	<0.0400	<0.0200	<0.0400	2.38	-	-
	8/10/2015	**0.8760**	<0.0500	<0.100	<0.0500	<0.100	<0.0500	0.8760	-	-
	12/7/2015	**0.0262**	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	0.0262	-	-
	2/5/2016	**0.262**	<0.00200	<0.00100	0.00329	<0.00100	0.00329	0.265	-	-
	5/6/2016	**0.520**	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.520	-	-
	9/27/2016	**0.967**	0.00246	<0.00200	0.0177	0.00244	0.0201	0.990	-	-
	12/29/2016	**0.417**	<0.00500	<0.00500	<0.0100	<0.00500	<0.00500	0.417	-	-
MW-9	7/2/2014	<0.0050	<0.0050	<0.0050	<0.0100	<0.0050	<0.0100	<0.0100	**3,340**	9,680
	8/4/2014	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-	-
	11/12/2014	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-	-
	2/25/2015	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-	-
	5/11/2015	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0020	-	-
	8/17/2015	<0.0010	<0.0020	<0.0010	0.0023	<0.0010	0.0023	0.0023	-	-
	12/7/2015	<0.0010	<0.0020	<0.0010	0.0051	<0.0010	0.0051	0.0051	-	-
	2/5/2016	<0.00100	<0.00200	<0.00100	<0.00200	<0.00100	<0.00200	<0.00200	-	-
	5/6/2016	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-	-
	9/27/2016	<0.00200	<0.00200	<0.00200	0.00241	<0.00200	0.00241	0.00241	-	-
	12/29/2016	<0.00100	<0.00100	<0.00100	<0.00200	<0.00100	<0.00200	<0.00200	-	-
NMOCD CRITERIA		**0.01**	**0.75**	**0.75**	**TOTAL XYLENES 0.62**				**250**	**10,000**

Note: MW-1 no longer sampled due to the presence of PSH.

- = Not analyzed.

TABLE 5
2017 ANNUAL REPORT

HISTORIC CONCENTRATIONS OF POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs)[1] IN GROUNDWATER
DCP PLANT TO LEA STATION 6-INCH SEC 31
PLAINS SRS #: 2009-084
LEA COUNTY, NEW MEXICO
NMOCD REFERENCE NUMBER 1RP-2166
TERRACON PROJECT #: AR187005

All water concentrations are reported in mg/L

SAMPLE LOCATION	SAMPLE DATE	EPA SW846-8270C, 3510																	
		Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[g,h,i]perylene	Benzo[k]fluoranthene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
MW-2	6/7/2013	<0.005	<0.005	<0.00017	<0.005	<0.00021	<0.00039	<0.005	<0.00053	<0.005	<0.005	<0.00026	<0.00032	<0.005	<0.005			<0.00029	<0.00029
MW-2	5/12/2014	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.00053			<0.000053	<0.000053
MW-3	6/7/2013	<0.005	<0.005	<0.00017	<0.005	<0.00021	<0.00039	<0.005	<0.00054	<0.005	<0.005	<0.00026	<0.00032	<0.005	<0.005			<0.00029	<0.00029
MW-3	5/12/2014	<0.000051	<0.000051	<0.000051	<0.000051	<0.000051	<0.000051	<0.000051	<0.000051	<0.000051	<0.000051	<0.000051	<0.000051	<0.000051	<0.00051			<0.000051	<0.000051
MW-4	5/12/2014	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	<0.00053			<0.000053	<0.000053
MW-4	6/7/2013	<0.005	<0.005	<0.00017	<0.005	<0.00021	<0.00040	<0.005	<0.00054	<0.005	<0.005	<0.00027	<0.00032	<0.005	<0.005			<0.00029	<0.00030
MW-5	6/7/2013	<0.005	<0.005	<0.00017	<0.005	<0.00021	<0.00039	<0.005	<0.00054	<0.005	<0.005	<0.00026	<0.00032	<0.005	<0.005			<0.00029	<0.00029
MW-5	5/12/2014	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.00052			<0.000052	<0.000052
MW-6	6/7/2013	<0.005	<0.005	<0.00017	<0.005	<0.00021	<0.00040	<0.005	<0.00055	<0.005	<0.005	<0.00027	<0.00033	<0.005	<0.005			<0.00030	<0.00030
MW-6	5/12/2014	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.000052	<0.00052			<0.000052	<0.000052
MW-7	7/2/2014	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.00050			<0.000050	<0.000050
MW-8	7/2/2014	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.00050			<0.000050	<0.000050
MW-9	7/2/2014	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.00050			<0.000050	<0.000050
Maximum Contaminant Levels for NM WQCC Drinking Water Standards Sections 1-101.UU and 3-103A.		**NA**	**NA**	**0.001**	**0.0001**	**0.0007**	**0.001**	**NA**	**0.001**	**0.0002**	**0.0003**	**0.001**	**0.001**	**0.0004**	**0.03**			**0.001**	**0.001**

PAH[1]=Polynuclear aromatic hydrocarbon concentrations analyzed in accordance with EPA SW846-8270C and 3510

APPENDIX F

CD of the 2017 Annual Groundwater Monitoring Report