

2017 Annual Groundwater Monitoring Report

Livingston Line – Bob McCasland Site
Plains SRS Number: 2001-11226
Lea County, New Mexico

March 19, 2018
Terracon Project No. AR187006
NMOCD File No. 1R-0395



Prepared for:
Plains Pipeline, LP
Seminole, Texas

Prepared by:
Terracon Consultants, Inc.
Lubbock, Texas

terracon.com

Terracon

Environmental ■ Facilities ■ Geotechnical ■ Materials



March 19, 2018

Plains Pipeline, LP
577 US Hwy 385 North
Seminole, TX 79360
Attn: Mrs. Camille Bryant

Telephone: (432) 758-8138
Fax: (432) 758-8150

Re: 2017 Annual Groundwater Monitoring Report
Livingston Line – Bob McCasland Site
NE ¼ of the SW ¼, Section 3, T21S, R37E
Lea County, New Mexico
NMOCD File Number 1R – 0395
Plains Pipeline, L.P. SRS Number 2001-11226
Terracon Project Number AR187006

Dear Mrs. Bryant:

Terracon is pleased to submit four copies of the 2017 Annual Groundwater Monitoring Report for the above-referenced site.

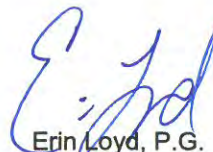
We appreciate the opportunity to perform these services for Plains Pipeline, LP (Plains). Please contact either of the undersigned at (806) 300-0140 if you have questions regarding the information provided in the report.

Sincerely,
Terracon

Prepared by:


For: Kristina Kohl
Staff Scientist
Lubbock

Reviewed by:


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

Terracon Consultants, Inc. 5827 50th, Suite 1 Lubbock, TX 79424
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Environmental



Facilities



Geotechnical



Materials

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2017 ANNUAL GROUNDWATER MONITORING REPORT

Livingston Line – Bob McCasland Site
NW ¼ of SE ¼, Section 3, T213, R37E
Lea County, New Mexico
Plains SRS Number 2001-11226
Terracon Project Number AR187006
NMOCD File Number 1R – 0395

1.0 INTRODUCTION

1.1 Site Description

Site Name	Livingston Line – Bob McCasland Site
Site Location	West of Loop 207 approximately 5 miles north-northeast of Eunice, Lea County, New Mexico.
General Site Description	Pipeline right-of-way surrounded by native pasture land, in close proximity of the former Carbon Black Plant.

Figure 1 presents the general boundaries and topography of the site on portions of the USGS topographic quadrangle map of Hobbs Southwest, New Mexico (Appendix A). Figure 2 is a site plan that indicates the approximate locations of the monitor wells in relation to the pertinent features, structures and general site boundaries (Appendix A).

1.2 Release Assessment Chronology

Below is a chronology of assessment and remedial activities to date as a result of the reported June 2001 crude oil release at the site.

- On July 13, 2001, an estimated release of 4 barrels (bbls) of crude oil was reported to the New Mexico Oil Conservation District (NMOCD). The release covered an area of approximately 1,600 square feet (sq. ft.) along a pipeline right-of-way and an adjacent caliche road. Initial excavation activities were reportedly conducted by Environmental Plus, Inc. (EPI) in an effort to stockpile saturated soils and expose the leak origin to facilitate repair of the pipeline. The pipeline excavation activities continued into December 2001. A total of approximately 11,445 cubic yards (cy) of hydrocarbon impacted soil were excavated and stockpiled at the site. Earthen berms were constructed around the stockpiles to prevent constituent runoff. Analytical results for soil samples collected from the excavation indicated benzene, toluene, ethylbenzene, and total xylenes (BTEX) concentrations above New Mexico Oil Conservation Division (NMOCD) remedial threshold limits. A Soil Characterization Report and Remediation Plan Report, dated June 2006, by Environmental Plus, Inc. (EPI) was submitted to the NMOCD. This report detailed remediation activities conducted at the site, in-place soil concentrations, and

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Livingston Line – Bob McCasland Site ■ Lea County, New Mexico
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- recommendations for in-situ hydrocarbon-impacted soil closure;
- Investigation activities were conducted from August 16 through 22, 2001, which included the advancement of 17 exploratory soil borings. It was determined during this time that groundwater, approximately 30 feet below ground surface (bgs), had been impacted. Based on these field observations, three groundwater monitor wells (MW-1, MW-2 and MW-3) were installed proximate to the release area to evaluate the extent and magnitude of the release. Groundwater samples collected from the groundwater monitor wells exhibited concentrations of BTEX above applicable New Mexico Water Quality Control Commission (NMWQCC) Groundwater Standards. Subsequently, three additional groundwater monitor wells (MW-4, MW-5 and MW-6) were installed at the site. A measureable thickness of phase separated hydrocarbons (PSH) was detected in groundwater monitor well MW-4 following installation;
- To delineate the lateral extent of groundwater impact at the site, three additional groundwater monitor wells (MW-7, MW-8 and MW-9) were installed in June of 2004. Two additional monitor wells (MW-10 and MW-11) were installed in November of 2004. During installation of these five groundwater monitor wells, soil samples were collected and submitted to AnalySys, Inc., Austin, Texas, for analysis of total petroleum hydrocarbons (TPH) (gasoline and diesel range organics) and BTEX constituents. BTEX constituents for all soil samples from the monitor wells were below NMOCD remedial threshold limits. TPH concentrations from soil samples collected from groundwater monitor wells MW-7, MW-10 and MW-11 were at, or below, laboratory analytical method detection limits (MDLs);
- On February 1, 2007, Terracon assumed consulting duties in association with the release. Available files for this site were given to Terracon at this time; and
- Terracon has continued to provide quarterly gauging and groundwater monitoring activities at the site through the present.

1.3 Scope of Work

Terracon's scope of work included assuming oversight of remedial activities on February 1, 2007. Oversight activities included the preparation of the 2006 through 2016 Annual Groundwater Monitoring Reports for submittal to the NMOCD on the behalf of Plains. In accordance with the approved scope of work, Terracon conducted quarterly groundwater monitoring and sampling events on February 7 and 8, April 27, July 16, and November 10, 2017. The events were performed at the Livingston Line – Bob McCasland site located in Lea County, New Mexico.

The objective of the quarterly sampling events was to gauge and collect groundwater samples from the on-site groundwater monitor wells MW-1 through MW-11 for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) on a quarterly basis.

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Livingston Line – Bob McCasland Site ■ Lea County, New Mexico
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1.4 Standard of Care

Activities conducted prior to Terracon management of the project (beginning on February 1, 2007) 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 Pipeline, 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 Pipeline, 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 Monitor Well Gauging

Monitoring wells were gauged to determine the depth to groundwater and to evaluate the presence of PSH. Based on the gauging data, no measurable thicknesses of PSH were present

in the on-site monitor wells during 2017.

Groundwater elevation gauging data collected during the respective quarterly sampling events were used to construct groundwater gradient maps that are included as Figures 3 through 6 (Appendix A). Groundwater flow direction was relatively consistent during 2017 in the southeasterly direction. Water level measurement data is summarized in Table 1 in Appendix B.

Groundwater elevations in 2017 decreased an average of approximately 0.99 feet in the on-site monitor wells. Monitor well MW-1 has remained dry (containing no fluids) since November 2007.

2.2 Groundwater Sampling

Quarterly monitoring and sampling events were performed on February 7 and 8, April 27, July 16, and November 10, 2017, by Terracon.

Groundwater samples were collected and analyzed from each of the groundwater monitor wells with the exception of monitoring wells exhibiting PSH or were dry in accordance with the NMOCD-approved groundwater sampling plan. Prior to sample collection, each of these monitor wells were micro-purged until consistent values (i.e., less than 10% variance between consecutive readings) were obtained for pH, temperature and conductivity. Following purging, a groundwater sample was collected directly from dedicated polyethylene tubing attached to the downhole pump.

Groundwater samples were 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 Company in Odessa, Texas for analysis on a standard turnaround. The groundwater samples collected from the on-site monitor wells were analyzed for BTEX using EPA SW-846 Method 8021B in each of the four quarters of 2017.

Groundwater generated onsite during the sampling events was collected in the on-site recovery tank. Purged fluids from the sampling events and the five AFR events were transported and disposed of at an NMOCD-permitted facility by Globe Trucking of Eunice, NM.

3.0 LABORATORY ANALYTICAL METHODS

The groundwater samples collected from the site monitor wells were analyzed for BTEX using EPA SW-846 Method 8021B. Laboratory results from the analysis of groundwater samples collected from the monitor wells are summarized in Table 2 in Appendix B and presented as Figures 7 through 10 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

Terracon compared the reported groundwater concentrations to the New Mexico Water Quality Control Commission (NMWQCC) Groundwater Standards. Based on historical data, PAH sampling was not required for any of the onsite monitoring wells.

1st Quarter 2017

The 1st Quarter 2017 Groundwater Sampling Event was conducted on February 7 and 8, 2017. The first quarter analytical results are summarized below:

- Groundwater was not collected from monitor well MW-1, as the well was dry; and
- BTEX constituents were not detected at concentrations above applicable NMWQCC groundwater standards in the groundwater samples collected from any of the remaining onsite groundwater monitoring wells during the 1st Quarter 2017 Groundwater Sampling Event.

2nd Quarter 2017

The 2nd Quarter 2017 Groundwater Sampling Event was conducted on April 27, 2017. The second quarter results are summarized below:

- Groundwater was not collected from monitor well MW-1, as the well was dry; and
- BTEX constituents were not detected at concentrations above applicable NMWQCC groundwater standards in the groundwater samples collected from any of the remaining onsite groundwater monitoring wells during the 2nd Quarter 2017 Groundwater Sampling Event.

3rd Quarter 2017

The 3rd Quarter 2017 Groundwater Sampling Event was conducted on July 16, 2017. The third quarter results are summarized below:

- Groundwater was not collected from monitor well MW-1, as the well was dry; and
- BTEX constituents were not detected at concentrations above applicable NMWQCC groundwater standards in the groundwater samples collected from any of the remaining onsite groundwater monitoring wells during the 3rd Quarter 2017 Groundwater Sampling Event.

4th Quarter 2017

The 4th Quarter 2017 Groundwater Sampling Event was conducted on November 10, 2017. The fourth quarter results are summarized below:

- Groundwater was not collected from monitor well MW-1, as the well was dry; and
- BTEX constituents were not detected at concentrations above applicable NMWQCC groundwater standards in the groundwater samples collected from any of the remaining onsite groundwater monitoring wells during the 4th Quarter 2017 Groundwater Sampling Event.

4.2 Historical Data Comparisons

With a few exceptions, measurable PSH has not been present in the groundwater monitor wells MW-1, MW-2, MW-3, and MW-5 through MW-11 since the monitor wells were installed at the site. Monitor well MW-4 has historically exhibited measurable thicknesses of PSH ranging up to 3.48 ft. observed in 2004.

With a few exceptions, benzene has historically not been present in groundwater samples collected from monitor wells MW-3, MW-7 and MW-11. Benzene has been present in the groundwater samples collected from monitor wells MW-2, MW-4, MW-5, MW-8, and MW-9 at concentrations exceeding the applicable NMWQCC groundwater standard of 0.01 mg/L.

Toluene, ethylbenzene and total xylenes were not detected in the groundwater at concentrations exceeding their respective NMWQCC groundwater standards in any of the groundwater samples in 2017.

As of 2015, all on-site monitor wells, for two consecutive years, did not exceed PAH constituents above the NMWQCC standards where established.

The historic groundwater impacts observed across the site have decreased in frequency and magnitude.

5.0 SUMMARY

The findings of the 2017 Quarterly Groundwater Monitoring activities are as follows:

- Groundwater was not collected from monitor well MW-1 in 2017, as the well was dry;
- Measurable thicknesses of PSH were not observed in any of the monitoring wells; and
- There were no detected BTEX concentrations exceeding their respective NMWQCC Groundwater standards in 2017.

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Livingston Line – Bob McCasland Site ■ Lea County, New Mexico
March 19, 2018 ■ Terracon Project Number AR187006



6.0 ANTICIPATED ACTIONS

Based upon the results of this report and approval from the NMOCD, Terracon recommends the following:

- Continue to observe monitor well MW-5 for the presence of benzene;
- Continue current quarterly groundwater sampling program for the presence of BTEX through 2018. If all monitor wells continue to remain below the NMWQCC Groundwater Standards, Plains and Terracon will evaluate possible closure; and
- Submit an annual report to the NMOCD detailing the 2018 site activities.

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Livingston Line – Bob McCasland Site ■ Lea County, New Mexico
March 19, 2018 ■ Terracon Project Number AR187006



7.0 DISTRIBUTION

Copy 1: Dr. Tomas Oberding, Hydrologist
New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Copy 2: Ms. Oliva Yu
New Mexico Oil Conservation Division
District 1
1625 N. French Drive
Hobbs, New Mexico 88240

Copy 3: Ms. Camille Bryant
Plains Marketing, LP
577 US Hwy 385 North
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333 Clay Street, Suite 1600
Houston, Texas 77002
jpdann@paalp.com

Copy 5: Mr. Kris Williams
Terracon Consultants, Inc.
5827 50th Street, Suite 1
Lubbock, Texas 79242
kris.williams@terracon.com

APPENDIX A

Figure 1– Topographic Map

Figure 2 – Site Map

Figure 3a – Groundwater Gradient Map (1Q2017)

Figure 3b – Groundwater Gradient Map (2Q2017)

Figure 3c – Groundwater Gradient Map (3Q2017)

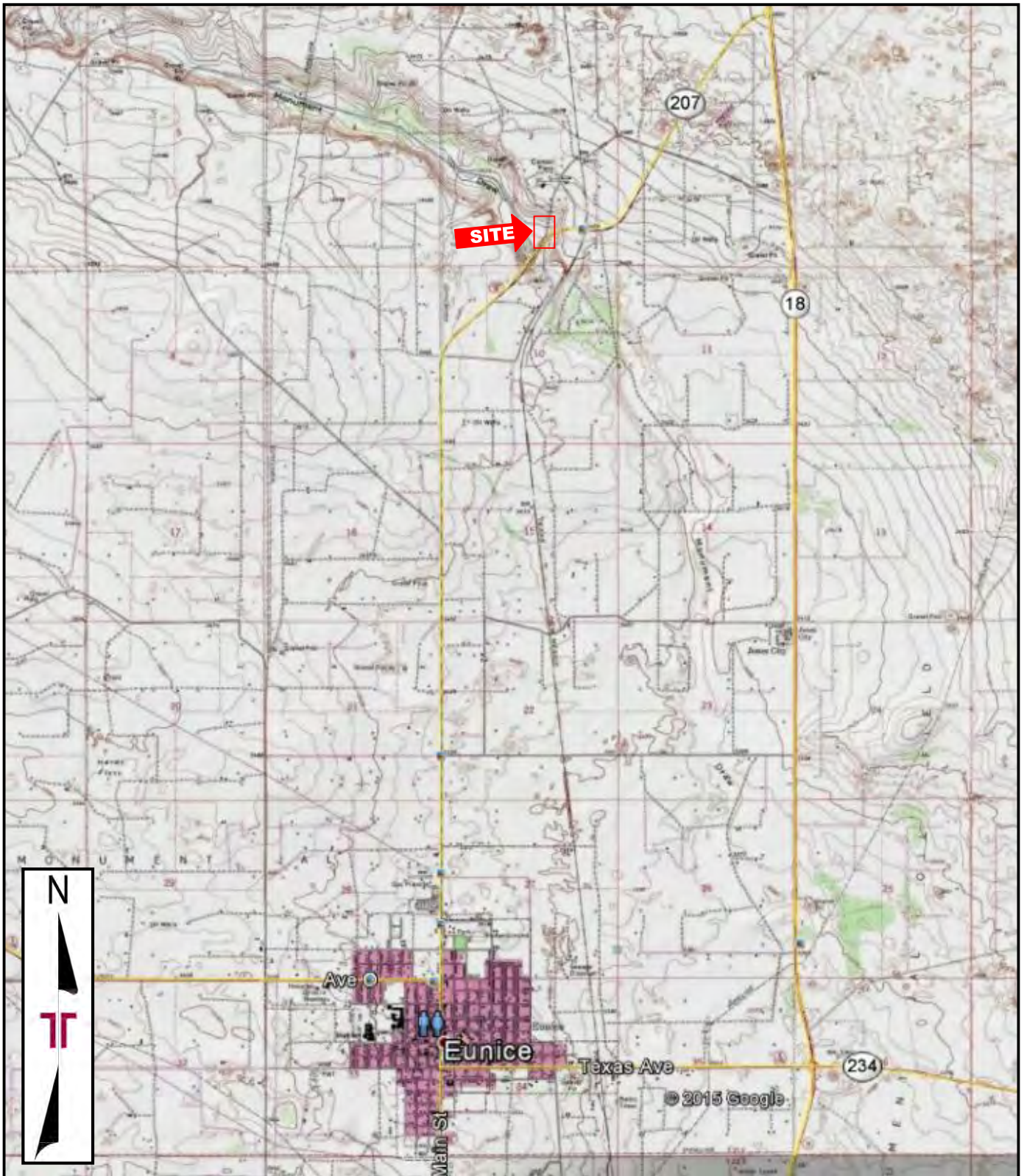
Figure 3d – Groundwater Gradient Map (4Q2017)

Figure 4a – Groundwater Contaminant Concentration Map (1Q2017)

Figure 4b – Groundwater Contaminant Concentration Map (2Q2017)

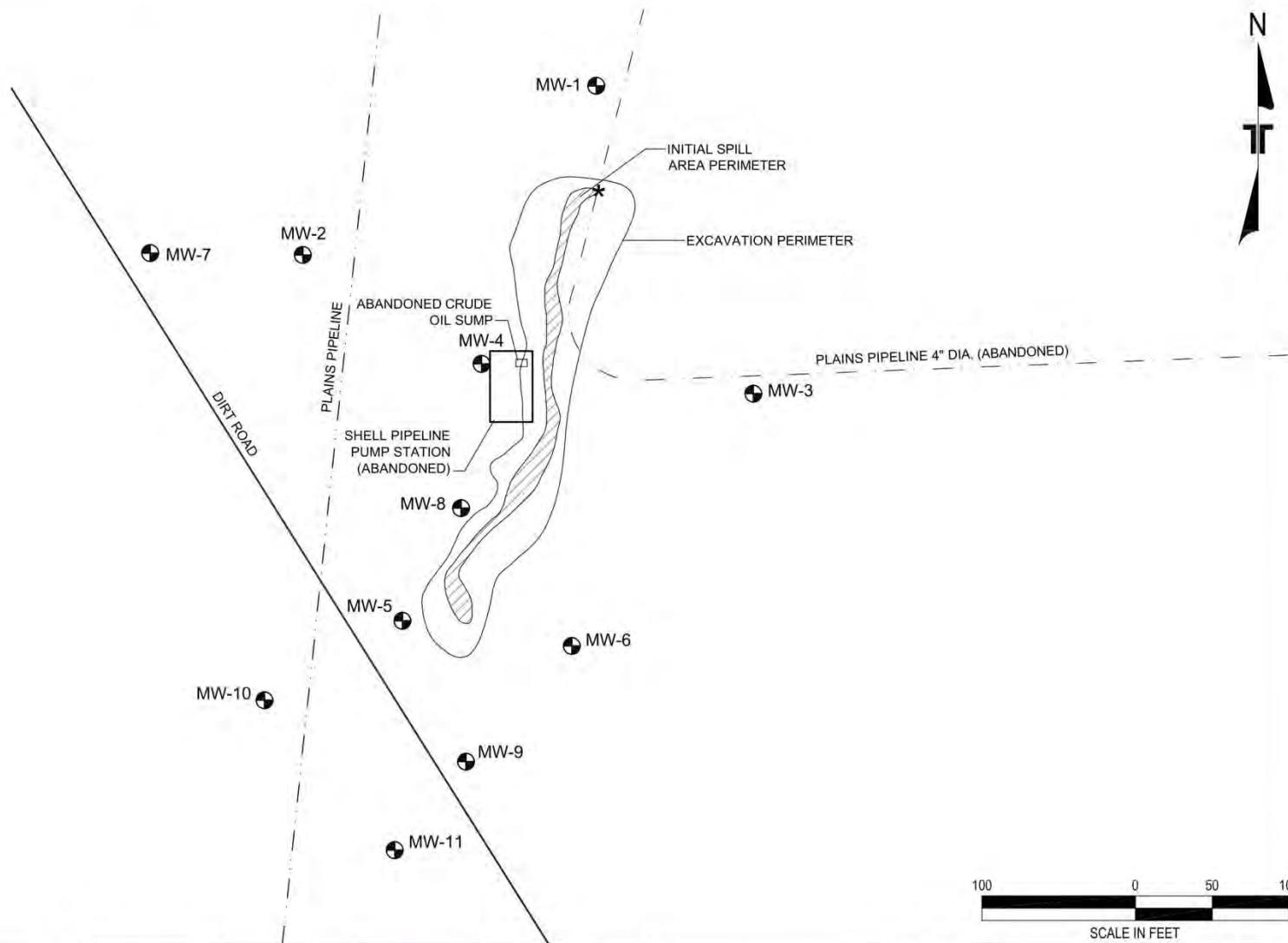
Figure 4c – Groundwater Contaminant Concentration Map (3Q2017)

Figure 4d – Groundwater Contaminant Concentration Map (4Q2017)



USGS 7.5 MINUTE SERIES TOPOGRAPHIC MAP
STATE OF TX QUADRANGLES

Project No. AR187006 Scale 1" ~ 5,280' Date 2015 Quad Hobbs SW, NM	 Consulting Engineers & Scientists 5827 50th St, Suite 1 Lubbock, TX, 79242 PH. (806) 300-0140 FAX. (806) 797-0947	Topographic Map Livingston Line – Bob McCasland NE ¼ of SW ¼, Sec. 3, T21S, R37E Eunice, Lea County, New Mexico	FIGURE 1
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LEGEND



MONITORING WELL
LOCATIONS

DIAGRAM IS FOR GENERAL LOCATION ONLY,
AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Mng: KW

Drawn By: ACS

Checked By: DH

Approved By: EL

Project No. AR187006

Scale: 1"=100'

File Name: Basemap

Date: 03/21/2016

Terracon

Consulting Engineers & Scientists

5827 50th Street, Suite 1

Lubbock, TX 79242

PH (806) 300-0140

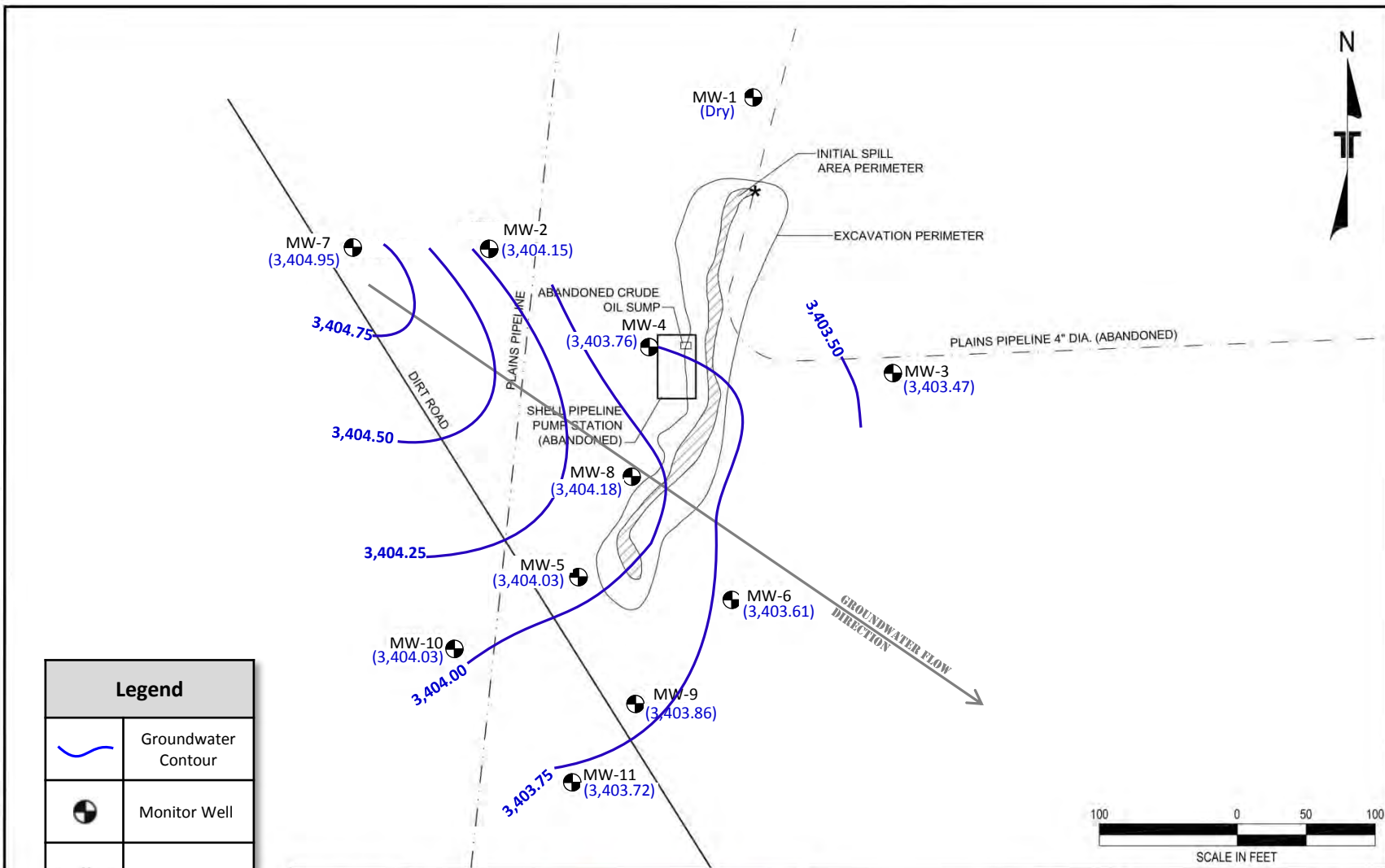
FAX: 797-0947

SITE PLAN

Plains Pipeline, LP
Livingston Line – Bob McCasland
Lea County, New Mexico
SRS#2001-11226

Figure

2



Legend	
	Groundwater Contour
	Monitor Well
	Fence
	Pipeline

DIAGRAM IS FOR GENERAL LOCATION ONLY,
AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Mng: KW	Project No. AR187006
Drawn By: ACS	Scale: 1"=100'
Checked By: KA	File Name: 1Q GWGM
Approved By: EL	Date: 03/29/2017

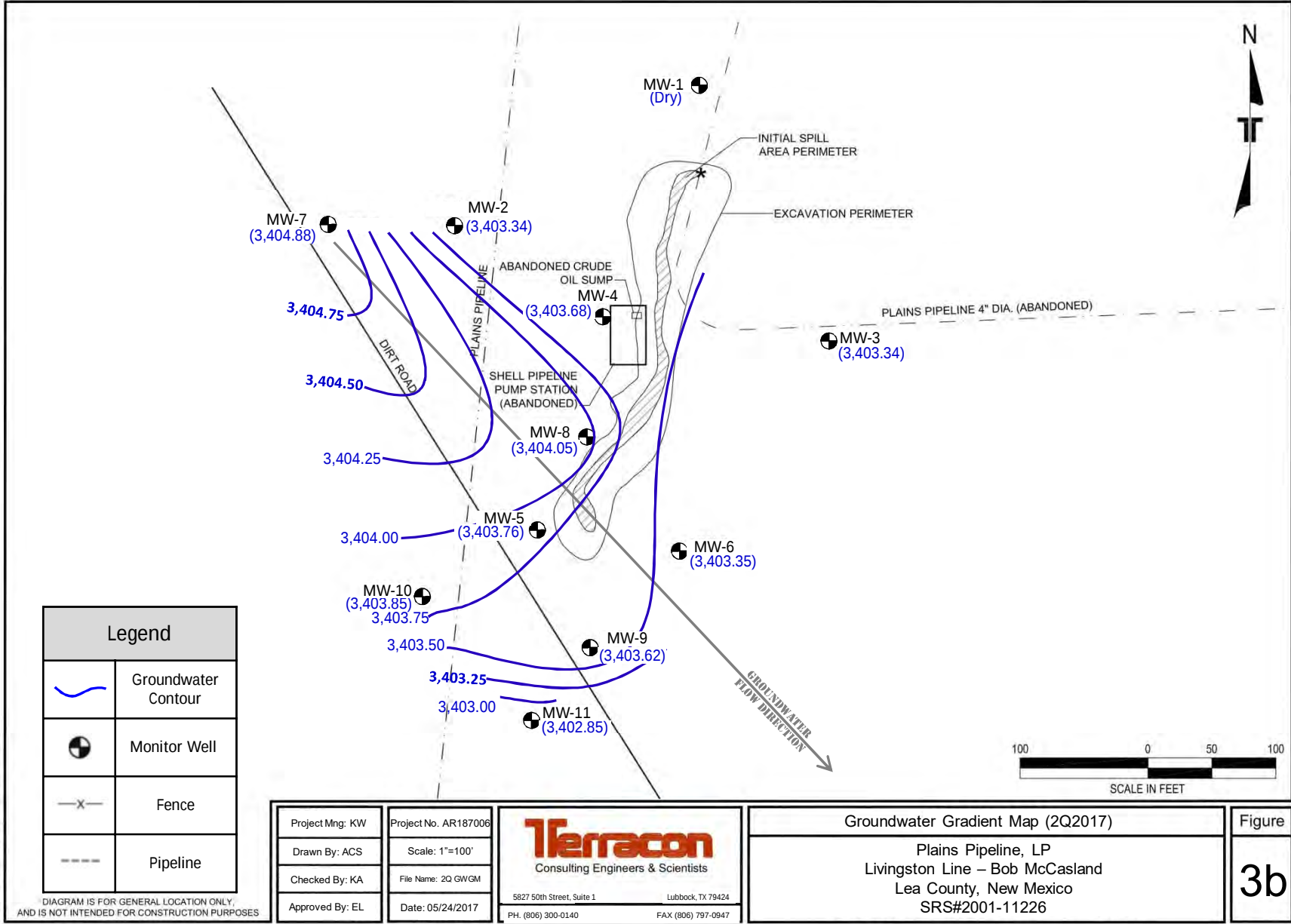
Terracon
Consulting Engineers & Scientists

5827 50th Street, Suite 1 Lubbock, TX 79242
PH. (806) 300-0140 FAX (806) 797-0947

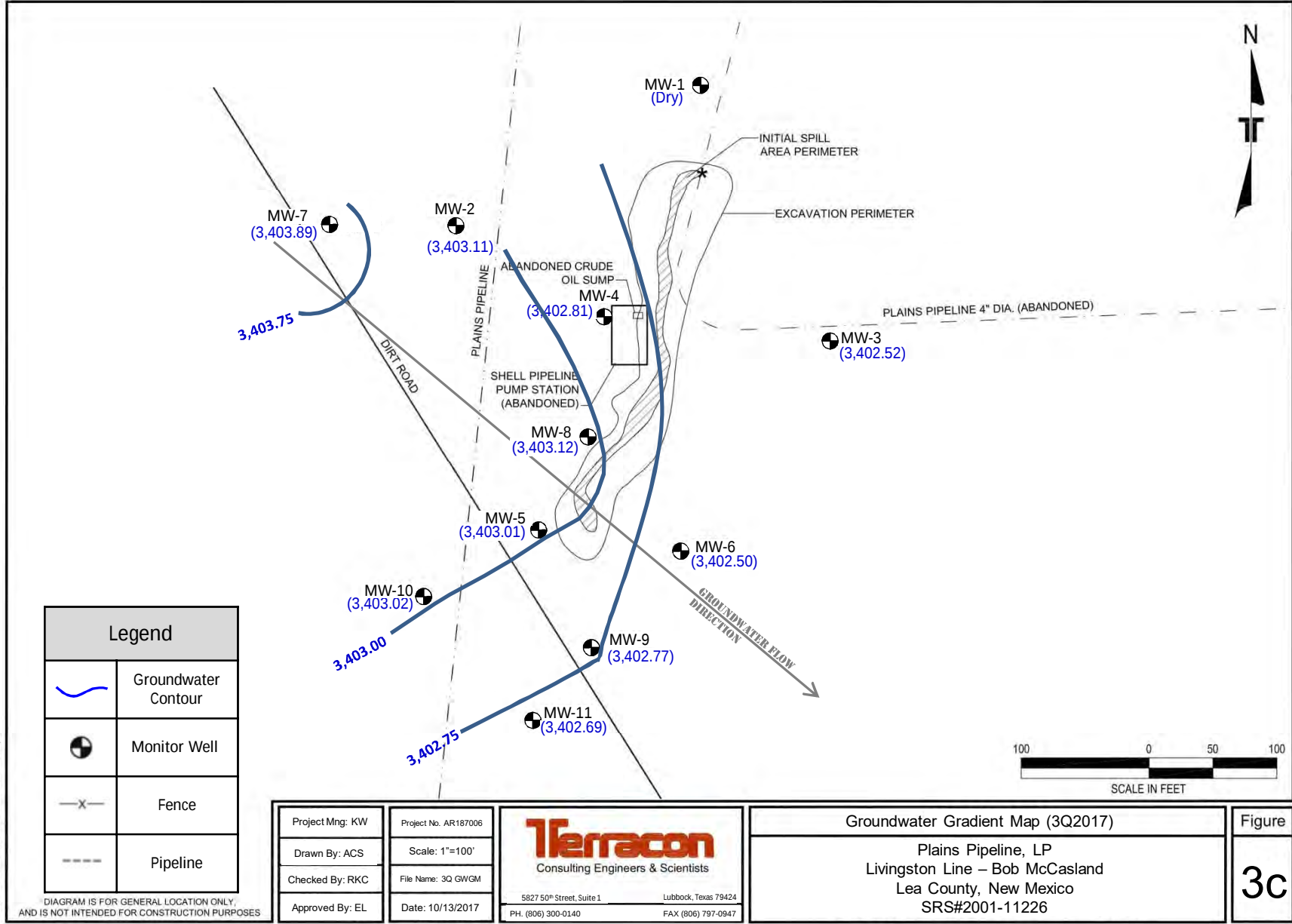
Groundwater Gradient Map (1Q2017)
Plains Pipeline, LP Livingston Line – Bob McCasland Lea County, New Mexico SRS#2001-11226

Figure
3a

DWG. No. A4137007 base map



DWG. No. A4137007 base map



DWG. No. A4137007 base map

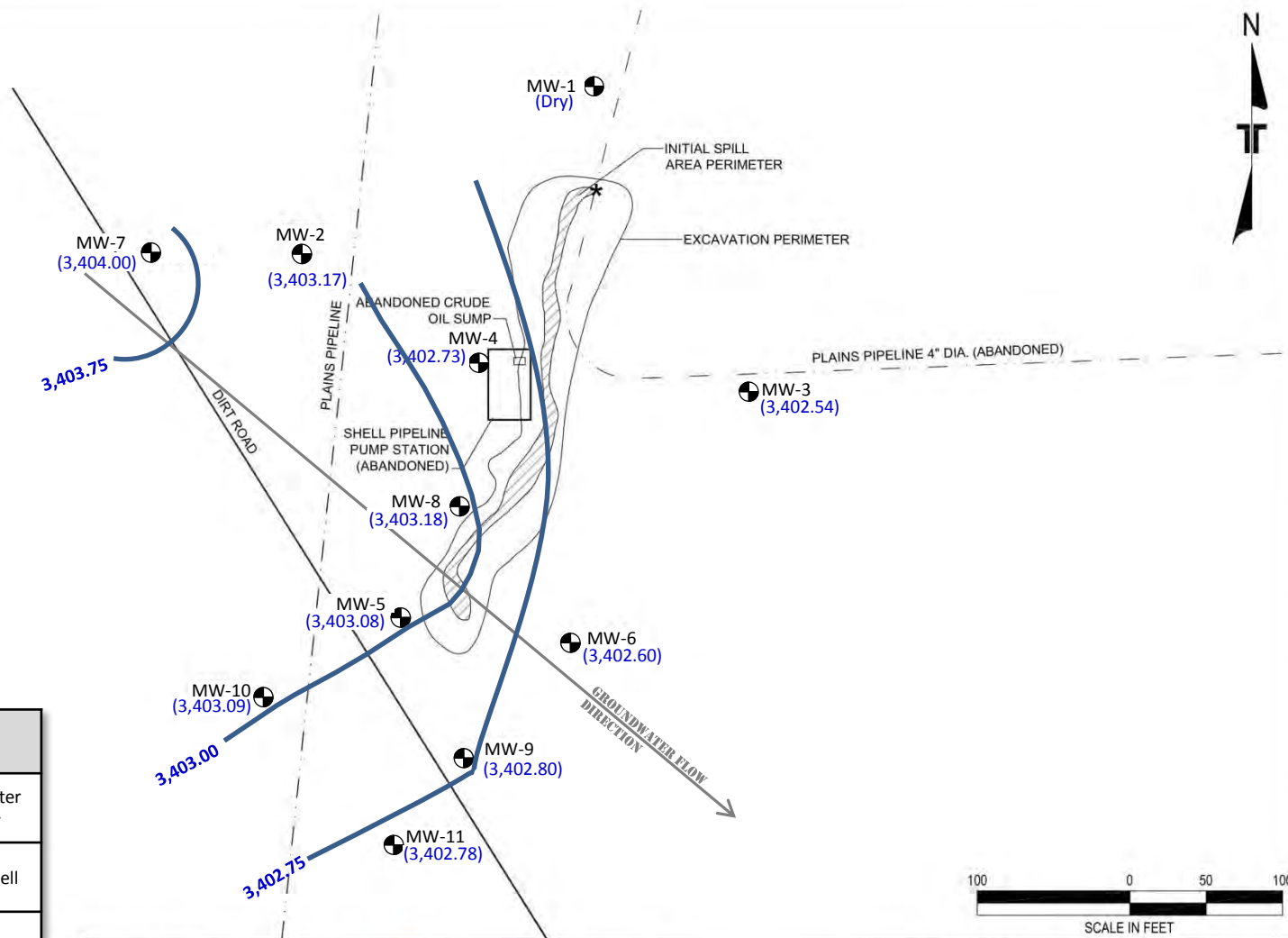


DIAGRAM IS FOR GENERAL LOCATION ONLY,
AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Mng: KW	Project No. AR187006
Drawn By: ACS	Scale: 1"=100'
Checked By: RKC	File Name: 3Q GWGM
Approved By: EL	Date: 03/05/2018

Terracon
Consulting Engineers & Scientists

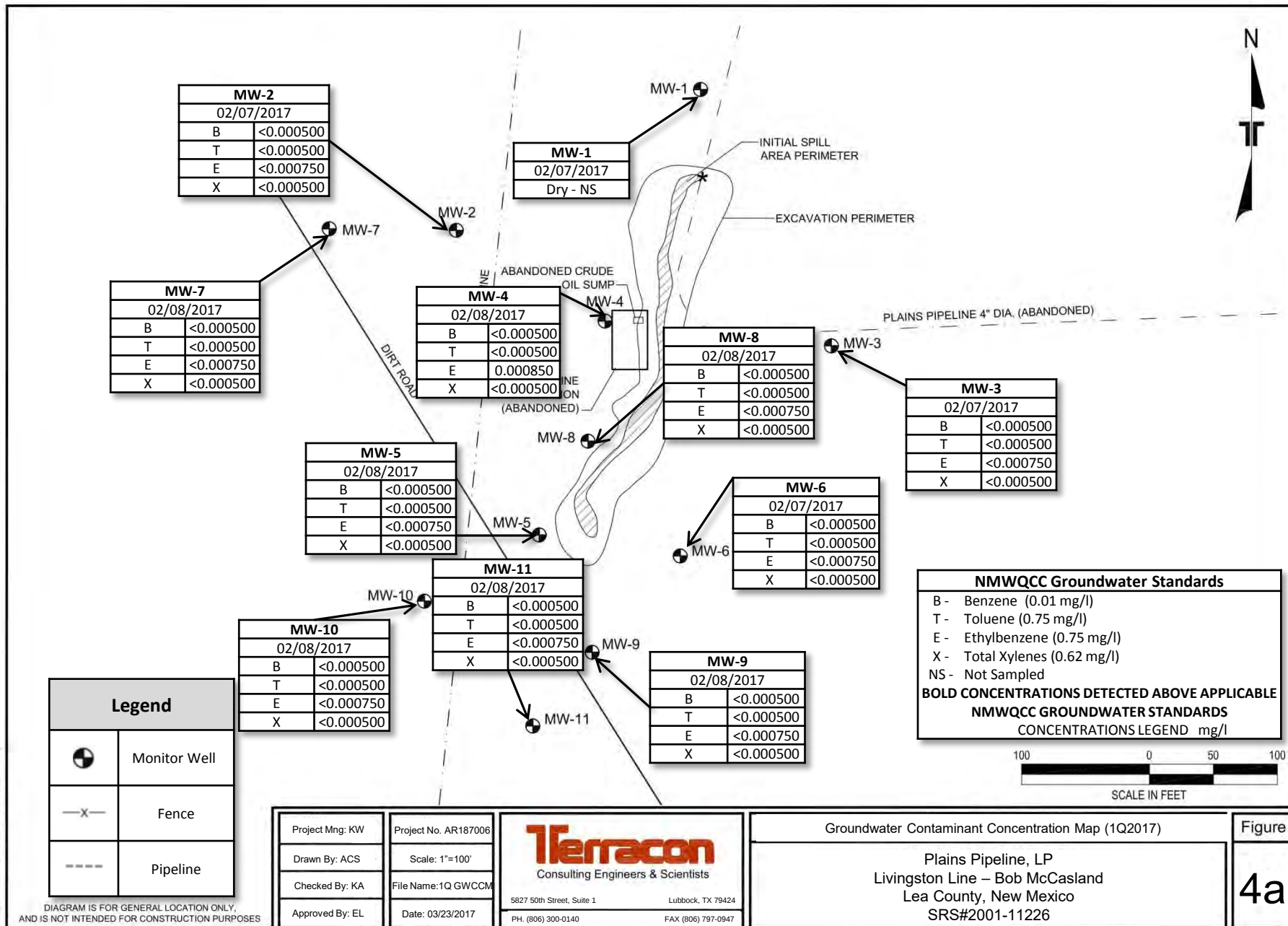
5827 50th Street, Suite 1 Lubbock, Texas 79424
PH. (806) 300-0140 FAX (806) 797-0947

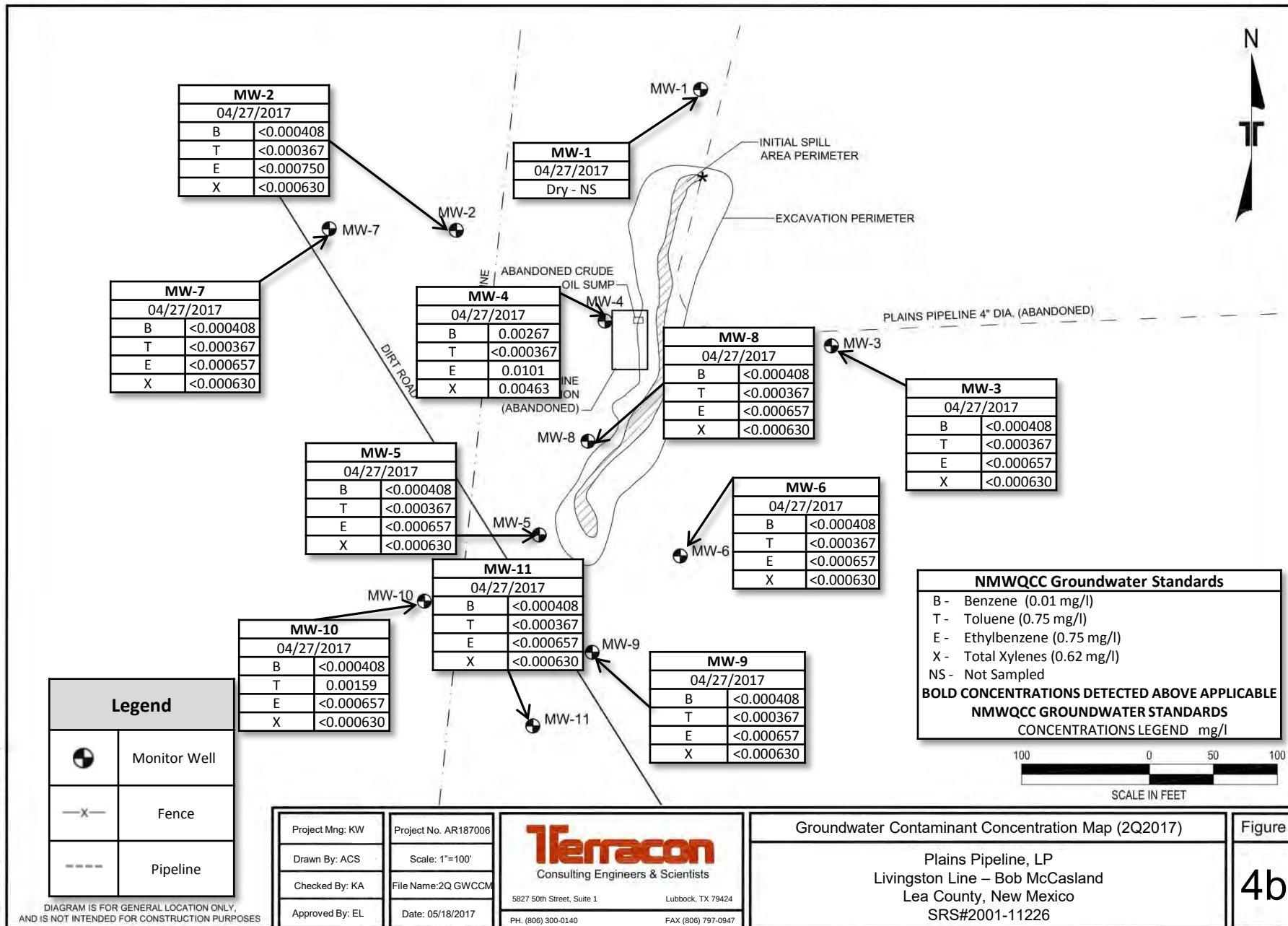
Groundwater Gradient Map (4Q2017)

Plains Pipeline, LP
Livingston Line – Bob McCasland
Lea County, New Mexico
SRS#2001-11226

Figure

3d





MW-2	
04/27/2017	
B	<0.000408
T	<0.000367
E	<0.000750
X	<0.000630

MW-1	
04/27/2017	
Dry - NS	

MW-7	
04/27/2017	
B	<0.000408
T	<0.000367
E	<0.000657
X	<0.000630

MW-4	
04/27/2017	
B	0.00267
T	<0.000367
E	0.0101
X	0.00463

MW-8	
04/27/2017	
B	<0.000408
T	<0.000367
E	<0.000657
X	<0.000630

MW-3	
04/27/2017	
B	<0.000408
T	<0.000367
E	<0.000657
X	<0.000630

MW-5	
04/27/2017	
B	<0.000408
T	<0.000367
E	<0.000657
X	<0.000630

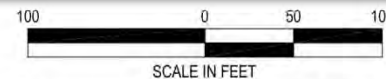
MW-6	
04/27/2017	
B	<0.000408
T	<0.000367
E	<0.000657
X	<0.000630

MW-11	
04/27/2017	
B	<0.000408
T	<0.000367
E	<0.000657
X	<0.000630

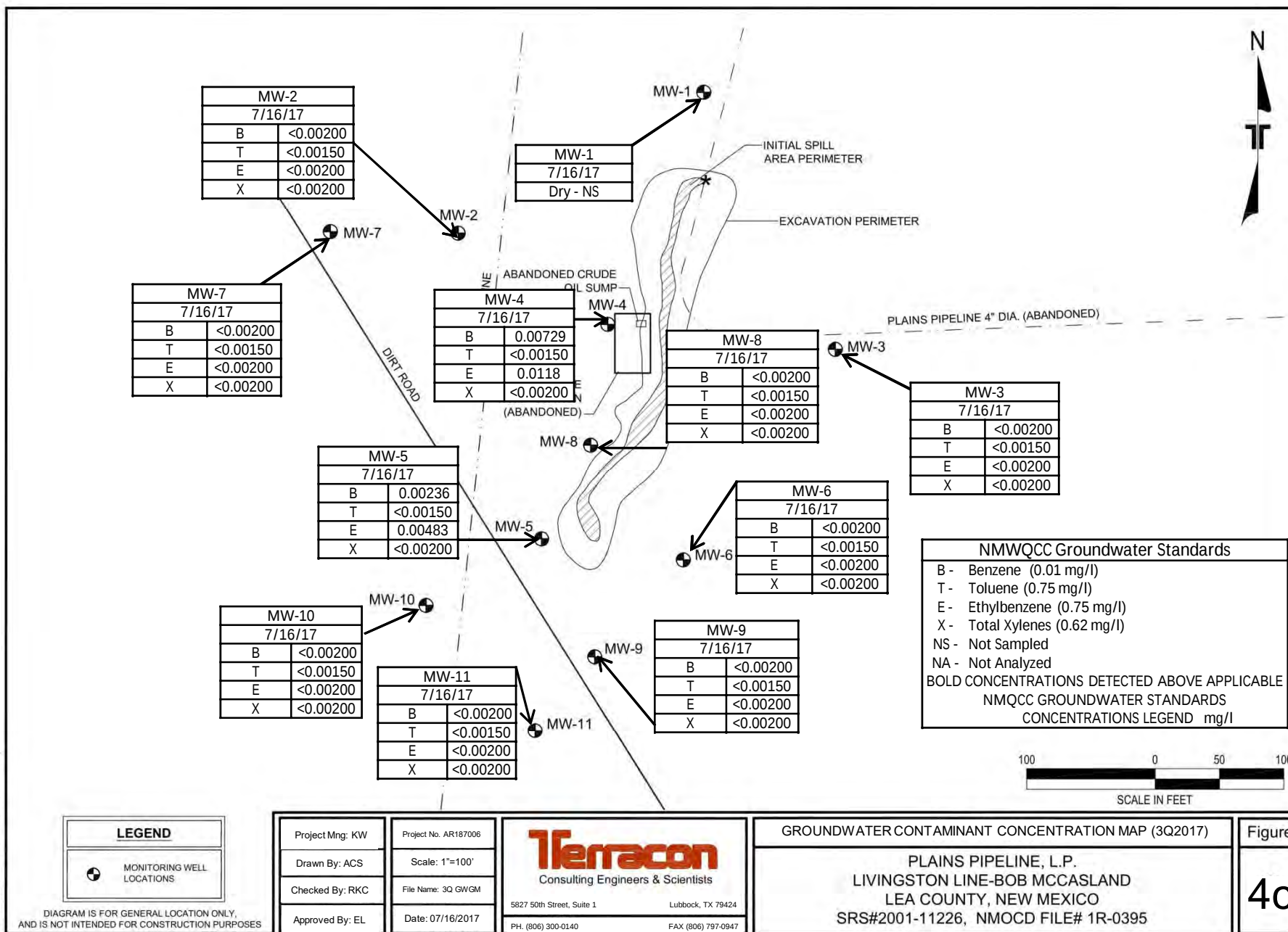
MW-9	
04/27/2017	
B	<0.000408
T	<0.000367
E	<0.000657
X	<0.000630

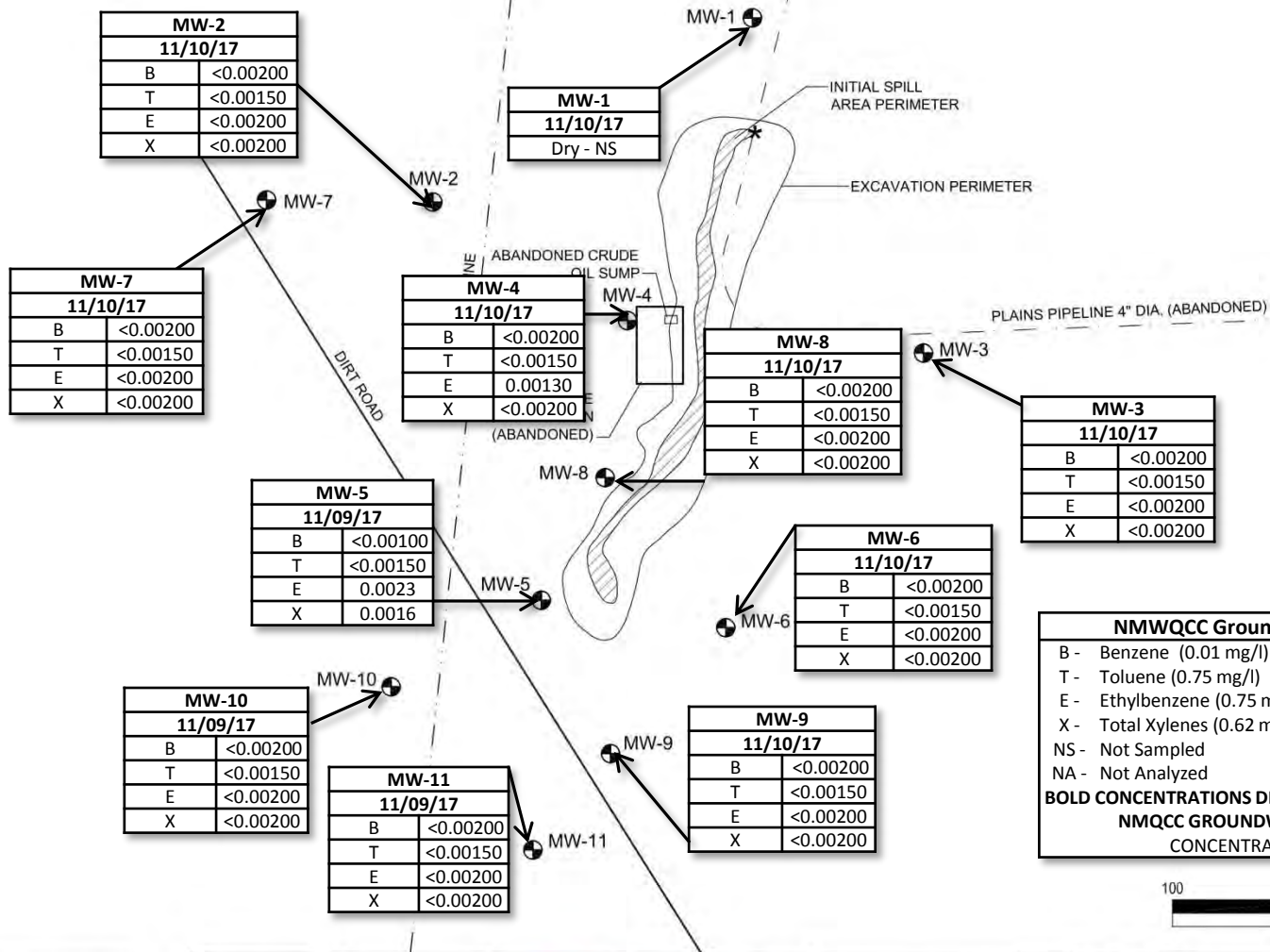
MW-10	
04/27/2017	
B	<0.000408
T	0.00159
E	<0.000657
X	<0.000630

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)
NS - Not Sampled	
BOLD CONCENTRATIONS DETECTED ABOVE APPLICABLE NMWQCC GROUNDWATER STANDARDS	
CONCENTRATIONS LEGEND mg/l	



DWG. No. A4137007 base map





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)
NS - Not Sampled	
NA - Not Analyzed	
BOLD CONCENTRATIONS DETECTED ABOVE APPLICABLE NMWQCC GROUNDWATER STANDARDS	
CONCENTRATIONS LEGEND mg/l	



LEGEND
MONITORING WELL LOCATIONS

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Mng: KW	Project No. AR187006
Drawn By: ACS	Scale: 1"=100'
Checked By: RKC	File Name: 3Q GWGM
Approved By: EL	Date: 11/10/2017

Consulting Engineers & Scientists

5827 50th Street, Suite 1 Lubbock, TX 79424
 PH: (806) 300-0140 FAX: (806) 797-0947

GROUNDWATER CONTAMINANT CONCENTRATION MAP (4Q2017)
PLAINS PIPELINE, L.P. LIVINGSTON LINE-BOB MCCASLAND LEA COUNTY, NEW MEXICO SRS#2001-11226, NMOCD FILE# 1R-0395

Figure
4d

APPENDIX B

Tables

TABLE 1

GROUNDWATER ELEVATION AND PSH DATA
 PLAINS ALL AMERICAN PIPELINE, LP
 LIVINGSTON LINE - BOB MCCASLAND PIPELINE LEAK
 LEA COUNTY, NEW MEXICO
 PLAINS SRS #: 2001-11226
 NMOCD REFERENCE #: 1R-0395
 TERRACON PROJECT #: AR187006

WELL NUMBER	DATE MEASURED	CASING WELL ELEVATION	DEPTH TO PRODUCT	DEPTH TO WATER	PSH THICKNESS	CORRECTED GROUNDWATER ELEVATION
MW-1	01/22/2016	3,439.09	DRY			
	04/27/2016	3,439.09				
	07/14/2016	3,439.09				
	10/05/2016	3,439.09				
	02/07/2017	3,439.09				
	04/27/2017	3,439.09				
	07/16/2017	3,439.09				
	11/10/2017	3,439.09				
MW-2	01/22/2016	3,432.62	-	30.07	-	3,402.55
	04/27/2016	3,432.62	-	30.00	-	3,402.62
	07/14/2016	3,432.62	-	30.85	-	3,401.77
	10/05/2016	3,432.62	28.72	28.73	0.01	3,403.89
	02/07/2017	3,432.62	-	28.27	-	3,404.35
	04/27/2017	3,432.62	-	28.75	-	3,403.87
	07/16/2017	3,432.62	-	29.51	-	3,403.11
	11/10/2017	3,432.62	-	29.45	-	3,403.17
MW-3	01/22/2016	3,433.61	-	31.72	-	3,401.89
	04/27/2016	3,433.61	-	31.64	-	3,401.97
	07/14/2016	3,433.61	-	32.35	-	3,401.26
	10/05/2016	3,433.61	-	30.28	-	3,403.33
	02/07/2017	3,433.61	-	30.14	-	3,403.47
	04/27/2017	3,433.61	-	30.27	-	3,403.34
	07/16/2017	3,433.61	-	31.09	-	3,402.52
	11/10/2017	3,433.61	-	31.07	-	3,402.54
MW-4	01/22/2016	3,432.25	30.07	30.08	0.01	3,402.17
	04/27/2016	3,432.25	29.98	29.99	0.01	3,402.26
	07/14/2016	3,432.25	30.79	30.80	0.01	3,401.45
	10/05/2016	3,432.25	28.54	28.55	0.01	3,403.70
	02/08/2017	3,432.25	-	28.55	-	3,403.70
	04/27/2017	3,432.25	-	28.64	-	3,403.61
	07/16/2017	3,432.25	-	29.44	-	3,402.81
	11/10/2017	3,432.25	-	29.52	-	3,402.73
MW-5	01/22/2016	3,429.63	-	27.20	-	3,402.43
	04/27/2016	3,429.63	-	27.09	-	3,402.54
	07/14/2016	3,429.63	-	27.92	-	3,401.71
	10/06/2016	3,429.63	25.08	25.20	0.12	3,404.43
	02/08/2017	3,429.63	-	25.60	-	3,404.03
	04/27/2017	3,429.63	-	25.76	-	3,403.87
	07/16/2017	3,429.63	-	26.62	-	3,403.01
	11/09/2017	3,429.63	-	26.55	-	3,403.08

TABLE 1

**GROUNDWATER ELEVATION AND PSH DATA
PLAINS ALL AMERICAN PIPELINE, LP
LIVINGSTON LINE - BOB MCCASLAND PIPELINE LEAK
LEA COUNTY, NEW MEXICO
PLAINS SRS #: 2001-11226
NMOCD REFERENCE #: 1R-0395
TERRACON PROJECT #: AR187006**

WELL NUMBER	DATE MEASURED	CASING WELL ELEVATION	DEPTH TO PRODUCT	DEPTH TO WATER	PSH THICKNESS	CORRECTED GROUNDWATER ELEVATION
MW-6	01/22/2016	3,429.30	-	27.40	-	3,401.90
	04/27/2016	3,429.30	-	27.29	-	3,402.01
	07/14/2016	3,429.30	-	28.10	-	3,401.20
	10/05/2016	3,429.30	-	25.28	-	3,404.02
	02/07/2017	3,429.30	-	25.69	-	3,403.61
	04/27/2017	3,429.30	-	25.95	-	3,403.35
	07/16/2017	3,429.30	-	26.80	-	3,402.50
	11/10/2017	3,429.30	-	26.70	-	3,402.60
MW-7	01/22/2016	3,431.37	-	28.03	-	3,403.34
	04/27/2016	3,431.37	-	27.91	-	3,403.46
	07/14/2016	3,431.37	-	28.88	-	3,402.49
	10/05/2016	3,431.37	-	26.65	-	3,404.72
	02/08/2017	3,431.37	-	26.42	-	3,404.95
	04/27/2017	3,431.37	-	26.49	-	3,404.88
	07/16/2017	3,431.37	-	27.48	-	3,403.89
	11/10/2017	3,431.37	-	27.37	-	3,404.00
MW-8	01/22/2016	3,431.07	-	28.52	-	3,402.55
	04/27/2016	3,431.07	-	28.41	-	3,402.66
	07/14/2016	3,431.07	-	29.24	-	3,401.83
	10/05/2016	3,431.07	-	26.71	-	3,404.36
	02/08/2017	3,431.07	-	26.89	-	3,404.18
	04/26/2017	3,431.07	-	27.02	-	3,404.05
	07/16/2017	3,431.07	-	27.95	-	3,403.12
	07/16/2017	3,431.07	-	27.89	-	3,403.18
MW-9	01/22/2016	3,429.79	-	27.62	-	3,402.17
	04/27/2016	3,429.79	-	27.51	-	3,402.28
	07/14/2016	3,429.79	-	28.34	-	3,401.45
	10/05/2016	3,429.79	-	25.29	-	3,404.50
	02/08/2017	3,429.79	-	25.93	-	3,403.86
	04/27/2017	3,429.79	-	26.12	-	3,403.67
	07/16/2017	3,429.79	-	27.02	-	3,402.77
	11/10/2017	3,429.79	-	26.99	-	3,402.80
MW-10	01/21/2016	3,429.49	-	27.06	-	3,402.43
	04/27/2016	3,429.49	-	26.99	-	3,402.50
	07/14/2016	3,429.49	-	27.81	-	3,401.68
	10/05/2016	3,429.49	-	24.92	-	3,404.57
	02/08/2017	3,429.49	-	25.46	-	3,404.03
	04/27/2017	3,429.49	-	25.64	-	3,403.85
	07/16/2017	3,429.49	-	26.47	-	3,403.02
	11/09/2017	3,429.49	-	26.40	-	3,403.09
MW-11	01/21/2016	3,428.32	-	26.18	-	3,402.14
	04/27/2016	3,428.32	-	26.10	-	3,402.22
	07/14/2016	3,428.32	-	26.93	-	3,401.39
	10/05/2016	3,428.32	-	23.80	-	3,404.52
	02/08/2017	3,428.32	-	24.60	-	3,403.72
	04/27/2017	3,428.32	-	25.47	-	3,402.85
	07/16/2017	3,428.32	-	25.63	-	3,402.69
	11/09/2017	3,428.32	-	25.54	-	3,402.78

Elevations based on the North American Vertical Datum of 1988

-- = Not applicable

TABLE 2

GROUNDWATER ANALYTICAL SUMMARY - BTEX
 PLAINS ALL AMERICAN PIPELINE, LP
 LIVINGSTON LINE- BOB MCCASLAND PIPELINE LEAK
 LEA COUNTY, NEW MEXICO
 PLAINS SRS #: 2001-11226
 NMOCD REFERENCE #: 1R-0395
 TERRACON PROJECT #: AR187006

SAMPLE LOCATION	SAMPLE DATE	METHODS: EPA SW 846-8021b			
		BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL-BENZENE (mg/L)	TOTAL XYLENES (mg/L)
MW-1	02/07/2017	Dry - Not Sampled			
	04/27/2017				
	07/16/2017				
	11/09/2017				
MW-2	02/07/2017	<0.00200	<0.00150	<0.00200	<0.00200
	04/27/2017	<0.00200	<0.00150	<0.00200	<0.00200
	07/16/2017	<0.00200	<0.00150	<0.00200	<0.00200
	11/10/2017	<0.00200	<0.00150	<0.00200	<0.00200
MW-3	02/07/2017	<0.00200	<0.00150	<0.00200	<0.00200
	04/27/2017	<0.00200	<0.00150	<0.00200	<0.00200
	07/16/2017	<0.00200	<0.00150	<0.00200	<0.00200
	11/10/2017	<0.00200	<0.00150	<0.00200	<0.00200
MW-4	02/08/2017	<0.00200	<0.00150	0.0008	<0.00200
	04/27/2017	0.00267	<0.00150	0.0101	0.00463
	07/16/2017	0.00729	<0.0020	0.0118	<0.00200
	11/10/2017	<0.00200	<0.00150	0.0013	<0.00200
MW-5	02/08/2017	<0.00200	<0.00200	<0.00200	<0.00200
	04/27/2017	<0.00200	<0.00150	<0.00200	<0.00200
	07/16/2017	0.00236	<0.00150	0.00483	<0.00200
	11/09/2017	<0.00200	<0.00150	0.0023	0.0016
MW-6	02/08/2017	<0.00200	<0.00200	<0.00200	<0.00200
	04/27/2017	<0.00200	<0.00150	<0.00200	<0.00200
	07/16/2017	<0.00200	<0.00150	<0.00200	<0.00200
	11/10/2017	<0.00200	<0.00150	<0.00200	<0.00200
MW-7	02/08/2017	<0.00200	<0.00200	<0.00200	<0.00200
	04/27/2017	<0.00200	<0.00150	<0.00200	<0.00200
	07/16/2017	<0.00200	<0.00150	<0.00200	<0.00200
	11/10/2017	<0.00200	<0.00150	<0.00200	<0.00200
MW-8	02/08/2017	<0.00200	<0.00200	<0.00200	<0.00200
	04/27/2017	<0.00200	<0.00150	<0.00200	<0.00200
	07/16/2017	<0.00200	<0.00150	<0.00200	<0.00200
	11/10/2017	<0.00200	<0.00150	<0.00200	<0.00200
MW-9	02/08/2017	<0.00200	<0.00200	<0.00200	<0.00200
	04/27/2017	<0.00200	<0.00150	<0.00200	<0.00200
	07/16/2017	<0.00200	<0.00150	0.00325	<0.00200
	11/10/2017	<0.00200	<0.00150	<0.00200	<0.00200
MW-10	02/08/2017	<0.00200	<0.00200	<0.00200	<0.00200
	04/27/2017	<0.00200	0.00159	<0.00200	<0.00200
	07/16/2017	<0.00200	<0.00150	<0.00200	<0.00200
	11/09/2017	<0.00200	<0.00150	<0.00200	<0.00200
MW-11	02/08/2017	<0.00200	<0.00200	<0.00200	<0.00200
	04/27/2017	<0.00200	<0.00150	<0.00200	<0.00200
	07/16/2017	<0.00200	<0.00150	<0.00200	<0.00200
	11/09/2017	<0.00200	<0.00150	<0.00200	<0.00200
NMWQCC CRITERIA		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NMWQCC = New Mexico Water Quality Control Commission

Bold denotes concentrations above applicable NMOCD criteria.

APPENDIX C

Laboratory Data Sheets

Analytical Report 545980

**for
Terracon Midland**

Project Manager: Dale Moxley

Plains Pipeline Livingston Line

A4177007

15-FEB-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)

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15-FEB-17

Project Manager: **Dale Moxley**

Terracon Midland

10400 State Hwy 191

Midland, TX 79707

Reference: XENCO Report No(s): **545980**

Plains Pipeline Livingston Line

Project Address:

Dale Moxley:

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) 545980. 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. 545980 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

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

Certified and approved by numerous States and Agencies.

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

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



Sample Cross Reference 545980



Terracon Midland, Midland, TX

Plains Pipeline Livingston Line

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-2	W	02-07-17 14:09		545980-001
MW-3	W	02-07-17 16:20		545980-002
MW-4	W	02-08-17 14:25		545980-003
MW-5	W	02-08-17 13:24		545980-004
MW-6	W	02-07-17 17:04		545980-005
MW-7	W	02-08-17 14:55		545980-006
MW-8	W	02-08-17 13:56		545980-007
MW-9	W	02-08-17 14:25		545980-008
MW-10	W	02-08-17 12:42		545980-009
MW-11	W	02-08-17 11:54		545980-010



CASE NARRATIVE

Client Name: Terracon Midland

Project Name: Plains Pipeline Livingston Line

Project ID: A4177007
Work Order Number(s): 545980

Report Date: 15-FEB-17
Date Received: 02/08/2017

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

545980



Terracon Midland, Midland, TX

Plains Pipeline Livingston Line

Sample Id: **MW-2** Matrix: Water Sample Depth:
Lab Sample Id: 545980-001 Date Collected: 02.07.17 14.09 Date Received: 02.08.17 16.51
Analytical Method: BTEX by SW 8260B Prep Method: 5030B
Analyst: JTR % Moist: Tech: JTR
Seq Number: 3010195 Date Prep: 02.15.17 12.00
Subcontractor: SUB: TX104704215 Prep seq: 720124

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000500	0.00100	0.000500	mg/L	02.15.17 14:32	U	1
Toluene	108-88-3	<0.000500	0.00100	0.000500	mg/L	02.15.17 14:32	U	1
Ethylbenzene	100-41-4	<0.000750	0.00100	0.000750	mg/L	02.15.17 14:32	U	1
m,p-Xylenes	179601-23-1	<0.00100	0.00200	0.00100	mg/L	02.15.17 14:32	U	1
o-Xylene	95-47-6	<0.000500	0.00100	0.000500	mg/L	02.15.17 14:32	U	1
Total Xylenes	1330-20-7	<0.000500		0.000500		02.15.17 14:32	U	
Total BTEX		<0.000500		0.000500		02.15.17 14:32	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	115	75 - 131	%		
1,2-Dichloroethane-D4	132	63 - 144	%		
Toluene-D8	99	80 - 117	%		

Sample Id: **MW-3** Matrix: Water Sample Depth:
Lab Sample Id: 545980-002 Date Collected: 02.07.17 16.20 Date Received: 02.08.17 16.51
Analytical Method: BTEX by SW 8260B Prep Method: 5030B
Analyst: JTR % Moist: Tech: JTR
Seq Number: 3010195 Date Prep: 02.15.17 12.00
Subcontractor: SUB: TX104704215 Prep seq: 720124

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000500	0.00100	0.000500	mg/L	02.15.17 14:52	U	1
Toluene	108-88-3	<0.000500	0.00100	0.000500	mg/L	02.15.17 14:52	U	1
Ethylbenzene	100-41-4	<0.000750	0.00100	0.000750	mg/L	02.15.17 14:52	U	1
m,p-Xylenes	179601-23-1	<0.00100	0.00200	0.00100	mg/L	02.15.17 14:52	U	1
o-Xylene	95-47-6	<0.000500	0.00100	0.000500	mg/L	02.15.17 14:52	U	1
Total Xylenes	1330-20-7	<0.000500		0.000500		02.15.17 14:52	U	
Total BTEX		<0.000500		0.000500		02.15.17 14:52	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	114	75 - 131	%		
1,2-Dichloroethane-D4	136	63 - 144	%		
Toluene-D8	96	80 - 117	%		



Certificate of Analytical Results

545980



Terracon Midland, Midland, TX

Plains Pipeline Livingston Line

Sample Id: **MW-4**

Matrix: Water

Sample Depth:

Lab Sample Id: 545980-003

Date Collected: 02.08.17 14.25

Date Received: 02.08.17 16.51

Analytical Method: BTEX by SW 8260B

Prep Method: 5030B

Analyst: JTR

% Moist:

Tech: JTR

Seq Number: 3010195

Date Prep: 02.15.17 12.00

Subcontractor: SUB: TX104704215

Prep seq: 720124

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000500	0.00100	0.000500	mg/L	02.15.17 12:18	U	1
Toluene	108-88-3	<0.000500	0.00100	0.000500	mg/L	02.15.17 12:18	U	1
Ethylbenzene	100-41-4	0.000850	0.00100	0.000750	mg/L	02.15.17 12:18	J	1
m,p-Xylenes	179601-23-1	<0.00100	0.00200	0.00100	mg/L	02.15.17 12:18	U	1
o-Xylene	95-47-6	<0.000500	0.00100	0.000500	mg/L	02.15.17 12:18	U	1
Total Xylenes	1330-20-7	<0.000500		0.000500		02.15.17 12:18	U	
Total BTEX		0.000850		0.000500		02.15.17 12:18	J	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	105	75 - 131	%		
1,2-Dichloroethane-D4	116	63 - 144	%		
Toluene-D8	97	80 - 117	%		

Sample Id: **MW-5**

Matrix: Water

Sample Depth:

Lab Sample Id: 545980-004

Date Collected: 02.08.17 13.24

Date Received: 02.08.17 16.51

Analytical Method: BTEX by SW 8260B

Prep Method: 5030B

Analyst: JTR

% Moist:

Tech: JTR

Seq Number: 3010195

Date Prep: 02.15.17 12.00

Subcontractor: SUB: TX104704215

Prep seq: 720124

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000500	0.00100	0.000500	mg/L	02.15.17 13:54	U	1
Toluene	108-88-3	<0.000500	0.00100	0.000500	mg/L	02.15.17 13:54	U	1
Ethylbenzene	100-41-4	<0.000750	0.00100	0.000750	mg/L	02.15.17 13:54	U	1
m,p-Xylenes	179601-23-1	<0.00100	0.00200	0.00100	mg/L	02.15.17 13:54	U	1
o-Xylene	95-47-6	<0.000500	0.00100	0.000500	mg/L	02.15.17 13:54	U	1
Total Xylenes	1330-20-7	<0.000500		0.000500		02.15.17 13:54	U	
Total BTEX		<0.000500		0.000500		02.15.17 13:54	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	112	75 - 131	%		
1,2-Dichloroethane-D4	131	63 - 144	%		
Toluene-D8	98	80 - 117	%		



Certificate of Analytical Results

545980



Terracon Midland, Midland, TX

Plains Pipeline Livingston Line

Sample Id: **MW-6** Matrix: Water Sample Depth:
Lab Sample Id: 545980-005 Date Collected: 02.07.17 17.04 Date Received: 02.08.17 16.51
Analytical Method: BTEX by SW 8260B Prep Method: 5030B
Analyst: JTR % Moist: Tech: JTR
Seq Number: 3009999 Date Prep: 02.13.17 14.20
Subcontractor: SUB: TX104704215 Prep seq: 719997

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000500	0.00100	0.000500	mg/L	02.13.17 15:16	U	1
Toluene	108-88-3	<0.000500	0.00100	0.000500	mg/L	02.13.17 15:16	U	1
Ethylbenzene	100-41-4	<0.000750	0.00100	0.000750	mg/L	02.13.17 15:16	U	1
m,p-Xylenes	179601-23-1	<0.00100	0.00200	0.00100	mg/L	02.13.17 15:16	U	1
o-Xylene	95-47-6	<0.000500	0.00100	0.000500	mg/L	02.13.17 15:16	U	1
Total Xylenes	1330-20-7	<0.000500		0.000500	mg/L	02.13.17 15:16	U	
Total BTEX		<0.000500		0.000500	mg/L	02.13.17 15:16	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	101	75 - 131	%		
1,2-Dichloroethane-D4	104	63 - 144	%		
Toluene-D8	96	80 - 117	%		

Sample Id: **MW-7** Matrix: Water Sample Depth:
Lab Sample Id: 545980-006 Date Collected: 02.08.17 14.55 Date Received: 02.08.17 16.51
Analytical Method: BTEX by SW 8260B Prep Method: 5030B
Analyst: JTR % Moist: Tech: JTR
Seq Number: 3009999 Date Prep: 02.13.17 17.00
Subcontractor: SUB: TX104704215 Prep seq: 719997

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000500	0.00100	0.000500	mg/L	02.13.17 20:14	U	1
Toluene	108-88-3	<0.000500	0.00100	0.000500	mg/L	02.13.17 20:14	U	1
Ethylbenzene	100-41-4	<0.000750	0.00100	0.000750	mg/L	02.13.17 20:14	U	1
m,p-Xylenes	179601-23-1	<0.00100	0.00200	0.00100	mg/L	02.13.17 20:14	U	1
o-Xylene	95-47-6	<0.000500	0.00100	0.000500	mg/L	02.13.17 20:14	U	1
Total Xylenes	1330-20-7	<0.000500		0.000500	mg/L	02.13.17 20:14	U	
Total BTEX		<0.000500		0.000500	mg/L	02.13.17 20:14	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	103	75 - 131	%		
1,2-Dichloroethane-D4	100	63 - 144	%		
Toluene-D8	98	80 - 117	%		



Certificate of Analytical Results

545980



Terracon Midland, Midland, TX

Plains Pipeline Livingston Line

Sample Id: **MW-8** Matrix: Water Sample Depth:
Lab Sample Id: 545980-007 Date Collected: 02.08.17 13.56 Date Received: 02.08.17 16.51
Analytical Method: BTEX by SW 8260B Prep Method: 5030B
Analyst: JTR % Moist: Tech: JTR
Seq Number: 3010195 Date Prep: 02.15.17 12.00
Subcontractor: SUB: TX104704215 Prep seq: 720124

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000500	0.00100	0.000500	mg/L	02.15.17 14:13	U	1
Toluene	108-88-3	<0.000500	0.00100	0.000500	mg/L	02.15.17 14:13	U	1
Ethylbenzene	100-41-4	<0.000750	0.00100	0.000750	mg/L	02.15.17 14:13	U	1
m,p-Xylenes	179601-23-1	<0.00100	0.00200	0.00100	mg/L	02.15.17 14:13	U	1
o-Xylene	95-47-6	<0.000500	0.00100	0.000500	mg/L	02.15.17 14:13	U	1
Total Xylenes	1330-20-7	<0.000500		0.000500		02.15.17 14:13	U	
Total BTEX		<0.000500		0.000500		02.15.17 14:13	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	111	75 - 131	%		
1,2-Dichloroethane-D4	132	63 - 144	%		
Toluene-D8	99	80 - 117	%		

Sample Id: **MW-9** Matrix: Water Sample Depth:
Lab Sample Id: 545980-008 Date Collected: 02.08.17 14.25 Date Received: 02.08.17 16.51
Analytical Method: BTEX by SW 8260B Prep Method: 5030B
Analyst: JTR % Moist: Tech: JTR
Seq Number: 3010143 Date Prep: 02.14.17 13.50
Subcontractor: SUB: TX104704215 Prep seq: 720097

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000500	0.00100	0.000500	mg/L	02.14.17 15:42	U	1
Toluene	108-88-3	<0.000500	0.00100	0.000500	mg/L	02.14.17 15:42	U	1
Ethylbenzene	100-41-4	<0.000750	0.00100	0.000750	mg/L	02.14.17 15:42	U	1
m,p-Xylenes	179601-23-1	<0.00100	0.00200	0.00100	mg/L	02.14.17 15:42	U	1
o-Xylene	95-47-6	<0.000500	0.00100	0.000500	mg/L	02.14.17 15:42	U	1
Total Xylenes	1330-20-7	<0.000500		0.000500	mg/L	02.14.17 15:42	U	
Total BTEX		<0.000500		0.000500	mg/L	02.14.17 15:42	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	92	75 - 131	%		
1,2-Dichloroethane-D4	101	63 - 144	%		
Toluene-D8	94	80 - 117	%		



Certificate of Analytical Results

545980



Terracon Midland, Midland, TX

Plains Pipeline Livingston Line

Sample Id: **MW-10** Matrix: Water Sample Depth:
Lab Sample Id: 545980-009 Date Collected: 02.08.17 12.42 Date Received: 02.08.17 16.51
Analytical Method: BTEX by SW 8260B Prep Method: 5030B
Analyst: JTR % Moist: Tech: JTR
Seq Number: 3009999 Date Prep: 02.13.17 17.00
Subcontractor: SUB: TX104704215 Prep seq: 719997

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000500	0.00100	0.000500	mg/L	02.13.17 19:55	U	1
Toluene	108-88-3	<0.000500	0.00100	0.000500	mg/L	02.13.17 19:55	U	1
Ethylbenzene	100-41-4	<0.000750	0.00100	0.000750	mg/L	02.13.17 19:55	U	1
m,p-Xylenes	179601-23-1	<0.00100	0.00200	0.00100	mg/L	02.13.17 19:55	U	1
o-Xylene	95-47-6	<0.000500	0.00100	0.000500	mg/L	02.13.17 19:55	U	1
Total Xylenes	1330-20-7	<0.000500		0.000500	mg/L	02.13.17 19:55	U	
Total BTEX		<0.000500		0.000500	mg/L	02.13.17 19:55	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	101	75 - 131	%		
1,2-Dichloroethane-D4	96	63 - 144	%		
Toluene-D8	98	80 - 117	%		

Sample Id: **MW-11** Matrix: Water Sample Depth:
Lab Sample Id: 545980-010 Date Collected: 02.08.17 11.54 Date Received: 02.08.17 16.51
Analytical Method: BTEX by SW 8260B Prep Method: 5030B
Analyst: JTR % Moist: Tech: JTR
Seq Number: 3009999 Date Prep: 02.13.17 17.00
Subcontractor: SUB: TX104704215 Prep seq: 719997

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000500	0.00100	0.000500	mg/L	02.13.17 19:36	U	1
Toluene	108-88-3	<0.000500	0.00100	0.000500	mg/L	02.13.17 19:36	U	1
Ethylbenzene	100-41-4	<0.000750	0.00100	0.000750	mg/L	02.13.17 19:36	U	1
m,p-Xylenes	179601-23-1	<0.00100	0.00200	0.00100	mg/L	02.13.17 19:36	U	1
o-Xylene	95-47-6	<0.000500	0.00100	0.000500	mg/L	02.13.17 19:36	U	1
Total Xylenes	1330-20-7	<0.000500		0.000500	mg/L	02.13.17 19:36	U	
Total BTEX		<0.000500		0.000500	mg/L	02.13.17 19:36	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	95	75 - 131	%		
1,2-Dichloroethane-D4	90	63 - 144	%		
Toluene-D8	95	80 - 117	%		



Certificate of Analytical Results

545980



Terracon Midland, Midland, TX

Plains Pipeline Livingston Line

Sample Id: 719997-1-BLK Matrix: Water Sample Depth:
Lab Sample Id: 719997-1-BLK Date Collected: Date Received:
Analytical Method: BTEX by SW 8260B Prep Method: 5030B
Analyst: JTR % Moist: Tech: JTR
Seq Number: 3009999 Date Prep: 02.13.17 13.51
Subcontractor: SUB: TX104704215 Prep seq: 719997

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000500	0.00100	0.000500	mg/L	02.13.17 14:57	U	1
Toluene	108-88-3	<0.000500	0.00100	0.000500	mg/L	02.13.17 14:57	U	1
Ethylbenzene	100-41-4	<0.000750	0.00100	0.000750	mg/L	02.13.17 14:57	U	1
m,p-Xylenes	179601-23-1	<0.00100	0.00200	0.00100	mg/L	02.13.17 14:57	U	1
o-Xylene	95-47-6	<0.000500	0.00100	0.000500	mg/L	02.13.17 14:57	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	97	75 - 131	%		
1,2-Dichloroethane-D4	97	63 - 144	%		
Toluene-D8	94	80 - 117	%		

Sample Id: 720097-1-BLK Matrix: Water Sample Depth:
Lab Sample Id: 720097-1-BLK Date Collected: Date Received:
Analytical Method: BTEX by SW 8260B Prep Method: 5030B
Analyst: JTR % Moist: Tech: JTR
Seq Number: 3010143 Date Prep: 02.14.17 13.50
Subcontractor: SUB: TX104704215 Prep seq: 720097

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000500	0.00100	0.000500	mg/L	02.14.17 15:18	U	1
Toluene	108-88-3	<0.000500	0.00100	0.000500	mg/L	02.14.17 15:18	U	1
Ethylbenzene	100-41-4	<0.000750	0.00100	0.000750	mg/L	02.14.17 15:18	U	1
m,p-Xylenes	179601-23-1	<0.00100	0.00200	0.00100	mg/L	02.14.17 15:18	U	1
o-Xylene	95-47-6	<0.000500	0.00100	0.000500	mg/L	02.14.17 15:18	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	89	75 - 131	%		
1,2-Dichloroethane-D4	92	63 - 144	%		
Toluene-D8	94	80 - 117	%		



Certificate of Analytical Results

545980



Terracon Midland, Midland, TX

Plains Pipeline Livingston Line

Sample Id: 720124-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 720124-1-BLK

Date Collected:

Date Received:

Analytical Method: BTEX by SW 8260B

Prep Method: 5030B

Analyst: JTR

% Moist:

Tech: JTR

Seq Number: 3010195

Date Prep: 02.15.17 10.30

Subcontractor: SUB: TX104704215

Prep seq: 720124

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000500	0.00100	0.000500	mg/L	02.15.17 11:39	U	1
Toluene	108-88-3	<0.000500	0.00100	0.000500	mg/L	02.15.17 11:39	U	1
Ethylbenzene	100-41-4	<0.000750	0.00100	0.000750	mg/L	02.15.17 11:39	U	1
m,p-Xylenes	179601-23-1	<0.00100	0.00200	0.00100	mg/L	02.15.17 11:39	U	1
o-Xylene	95-47-6	<0.000500	0.00100	0.000500	mg/L	02.15.17 11:39	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	94	75 - 131	%		
1,2-Dichloroethane-D4	104	63 - 144	%		
Toluene-D8	96	80 - 117	%		

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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(602) 437-0330	

Form 2 - Surrogate Recoveries

Project Name: Plains Pipeline Livingston Line

Work Orders : 545980,

Project ID: A4177007

Lab Batch #: 3009999

Sample: 719997-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/13/17 13:10

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0521	0.0500	104	75-131	
1,2-Dichloroethane-D4	0.0578	0.0500	116	63-144	
Toluene-D8	0.0495	0.0500	99	80-117	

Lab Batch #: 3009999

Sample: 719997-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/13/17 13:40

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0502	0.0500	100	75-131	
1,2-Dichloroethane-D4	0.0550	0.0500	110	63-144	
Toluene-D8	0.0503	0.0500	101	80-117	

Lab Batch #: 3009999

Sample: 545980-005 S / MS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/13/17 13:59

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0489	0.0500	98	75-131	
1,2-Dichloroethane-D4	0.0536	0.0500	107	63-144	
Toluene-D8	0.0513	0.0500	103	80-117	

Lab Batch #: 3009999

Sample: 545980-005 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/13/17 14:18

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0478	0.0500	96	75-131	
1,2-Dichloroethane-D4	0.0511	0.0500	102	63-144	
Toluene-D8	0.0500	0.0500	100	80-117	

* 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: Plains Pipeline Livingston Line

Work Orders : 545980,

Project ID: A4177007

Lab Batch #: 3009999

Sample: 719997-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/13/17 14:57

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0484	0.0500	97	75-131	
1,2-Dichloroethane-D4	0.0486	0.0500	97	63-144	
Toluene-D8	0.0471	0.0500	94	80-117	

Lab Batch #: 3010143

Sample: 720097-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/14/17 13:23

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0440	0.0500	88	75-131	
1,2-Dichloroethane-D4	0.0458	0.0500	92	63-144	
Toluene-D8	0.0498	0.0500	100	80-117	

Lab Batch #: 3010143

Sample: 720097-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/14/17 13:42

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0437	0.0500	87	75-131	
1,2-Dichloroethane-D4	0.0466	0.0500	93	63-144	
Toluene-D8	0.0494	0.0500	99	80-117	

Lab Batch #: 3010143

Sample: 545980-008 S / MS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/14/17 14:02

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0427	0.0500	85	75-131	
1,2-Dichloroethane-D4	0.0454	0.0500	91	63-144	
Toluene-D8	0.0494	0.0500	99	80-117	

* 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: Plains Pipeline Livingston Line

Work Orders : 545980,

Project ID: A4177007

Lab Batch #: 3010143

Sample: 545980-008 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/14/17 14:21

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0432	0.0500	86	75-131	
1,2-Dichloroethane-D4	0.0438	0.0500	88	63-144	
Toluene-D8	0.0494	0.0500	99	80-117	

Lab Batch #: 3010143

Sample: 720097-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/14/17 15:18

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0447	0.0500	89	75-131	
1,2-Dichloroethane-D4	0.0461	0.0500	92	63-144	
Toluene-D8	0.0471	0.0500	94	80-117	

Lab Batch #: 3010195

Sample: 720124-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/15/17 09:43

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0467	0.0500	93	75-131	
1,2-Dichloroethane-D4	0.0530	0.0500	106	63-144	
Toluene-D8	0.0490	0.0500	98	80-117	

Lab Batch #: 3010195

Sample: 720124-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/15/17 10:03

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0465	0.0500	93	75-131	
1,2-Dichloroethane-D4	0.0512	0.0500	102	63-144	
Toluene-D8	0.0490	0.0500	98	80-117	

* 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: Plains Pipeline Livingston Line

Work Orders : 545980,

Project ID: A4177007

Lab Batch #: 3010195

Sample: 545980-003 S / MS

Batch: 1 **Matrix:** Water

Units: mg/L

Date Analyzed: 02/15/17 10:22

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0453	0.0500	91	75-131	
1,2-Dichloroethane-D4	0.0504	0.0500	101	63-144	
Toluene-D8	0.0481	0.0500	96	80-117	

Lab Batch #: 3010195

Sample: 545980-003 SD / MSD

Batch: 1 **Matrix:** Water

Units: mg/L

Date Analyzed: 02/15/17 10:41

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0454	0.0500	91	75-131	
1,2-Dichloroethane-D4	0.0470	0.0500	94	63-144	
Toluene-D8	0.0489	0.0500	98	80-117	

Lab Batch #: 3010195

Sample: 720124-1-BLK / BLK

Batch: 1 **Matrix:** Water

Units: mg/L

Date Analyzed: 02/15/17 11:39

SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0471	0.0500	94	75-131	
1,2-Dichloroethane-D4	0.0520	0.0500	104	63-144	
Toluene-D8	0.0481	0.0500	96	80-117	

* 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: Plains Pipeline Livingston Line

Work Order #: 545980

Project ID: A4177007

Analyst: JTR

Date Prepared: 02/13/2017

Date Analyzed: 02/13/2017

Lab Batch ID: 3009999

Sample: 719997-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260B	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Benzene	<0.000500	0.100	0.105	105	0.100	0.102	102	3	66-142	20	
Toluene	<0.000500	0.100	0.100	100	0.100	0.0988	99	1	59-139	20	
Ethylbenzene	<0.000750	0.100	0.101	101	0.100	0.0981	98	3	75-125	20	
m,p-Xylenes	<0.00100	0.200	0.204	102	0.200	0.199	100	2	75-125	20	
o-Xylene	<0.000500	0.100	0.104	104	0.100	0.100	100	4	75-125	20	

Analyst: JTR

Date Prepared: 02/14/2017

Date Analyzed: 02/14/2017

Lab Batch ID: 3010143

Sample: 720097-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260B	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Benzene	<0.000500	0.100	0.0922	92	0.100	0.0923	92	0	66-142	20	
Toluene	<0.000500	0.100	0.0948	95	0.100	0.0951	95	0	59-139	20	
Ethylbenzene	<0.000750	0.100	0.102	102	0.100	0.101	101	1	75-125	20	
m,p-Xylenes	<0.00100	0.200	0.203	102	0.200	0.202	101	0	75-125	20	
o-Xylene	<0.000500	0.100	0.102	102	0.100	0.101	101	1	75-125	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



BS / BSD Recoveries



Project Name: Plains Pipeline Livingston Line

Work Order #: 545980

Project ID: A4177007

Analyst: JTR

Date Prepared: 02/15/2017

Date Analyzed: 02/15/2017

Lab Batch ID: 3010195

Sample: 720124-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260B	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Benzene	<0.000500	0.100	0.0954	95	0.100	0.0930	93	3	66-142	20	
Toluene	<0.000500	0.100	0.0969	97	0.100	0.0949	95	2	59-139	20	
Ethylbenzene	<0.000750	0.100	0.0997	100	0.100	0.101	101	1	75-125	20	
m,p-Xylenes	<0.00100	0.200	0.200	100	0.200	0.208	104	4	75-125	20	
o-Xylene	<0.000500	0.100	0.0991	99	0.100	0.104	104	5	75-125	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: Plains Pipeline Livingston Line

Work Order # : 545980

Project ID: A4177007

Lab Batch ID: 3009999

QC- Sample ID: 545980-005 S

Batch #: 1 Matrix: Water

Date Analyzed: 02/13/2017

Date Prepared: 02/13/2017

Analyst: JTR

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260B 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	<0.000500	0.100	0.103	103	0.100	0.0969	97	6	66-142	20	
Toluene	<0.000500	0.100	0.101	101	0.100	0.0962	96	5	59-139	20	
Ethylbenzene	<0.000750	0.100	0.0995	100	0.100	0.0969	97	3	75-125	20	
m,p-Xylenes	<0.00100	0.200	0.204	102	0.200	0.200	100	2	75-125	20	
o-Xylene	<0.000500	0.100	0.103	103	0.100	0.0964	96	7	75-125	20	

Lab Batch ID: 3010143

QC- Sample ID: 545980-008 S

Batch #: 1 Matrix: Water

Date Analyzed: 02/14/2017

Date Prepared: 02/14/2017

Analyst: JTR

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260B 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	<0.000500	0.100	0.0920	92	0.100	0.0841	84	9	66-142	20	
Toluene	<0.000500	0.100	0.0961	96	0.100	0.0871	87	10	59-139	20	
Ethylbenzene	<0.000750	0.100	0.104	104	0.100	0.0925	93	12	75-125	20	
m,p-Xylenes	<0.00100	0.200	0.204	102	0.200	0.183	92	11	75-125	20	
o-Xylene	<0.000500	0.100	0.103	103	0.100	0.0945	95	9	75-125	20	

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

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

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

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



Form 3 - MS / MSD Recoveries



Project Name: Plains Pipeline Livingston Line

Work Order # : 545980

Project ID: A4177007

Lab Batch ID: 3010195

QC- Sample ID: 545980-003 S

Batch #: 1 Matrix: Water

Date Analyzed: 02/15/2017

Date Prepared: 02/15/2017

Analyst: JTR

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260B 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	<0.000500	0.100	0.0881	88	0.100	0.0865	87	2	66-142	20	
Toluene	<0.000500	0.100	0.0915	92	0.100	0.0891	89	3	59-139	20	
Ethylbenzene	0.000850	0.100	0.0970	96	0.100	0.0942	93	3	75-125	20	
m,p-Xylenes	<0.00100	0.200	0.196	98	0.200	0.190	95	3	75-125	20	
o-Xylene	<0.000500	0.100	0.0984	98	0.100	0.0938	94	5	75-125	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.

Terracon

Consulting Engineers & Scientists

Office Location MidlandProject Manager DALE MOXLEYSampler's Name DALE MOXLEYSampler's Signature DALE MOXLEYLaboratory: XEROX

Address: _____

Contact: _____

Phone: _____

PO/ISO #: _____

ANALYSIS
REQUESTEDLab use only
Due Date: _____

Temp: IR ID: R-8

CF: + 0.1 5.4

Corrected Temp: 5.5

Page 1 of _____Proj. No. 4177007Project Name PLAINS PIPELINE

No/Type of Containers

Matrix Livingston Line

Identifying Marks of Sample(s)

Start Depth

End Depth

VOA

A/G

250

P/O

Lab Sample ID (Lab Use Only)

5459850

Date

Time

C

G

F

a

b

Identifying Marks of Sample(s)

Start Depth

End Depth

VOA

A/G

250

P/O

W 2-7

14:09

X

MW-2

MW-3

MW-4

MW-5

MW-6

MW-7

MW-8

MW-9

MW-10

MW-11

MW-12

MW-13

MW-14

MW-15

MW-16

MW-17

MW-18

MW-19

MW-20

W 2-7

16:20

X

MW-3

MW-4

MW-5

MW-6

MW-7

MW-8

MW-9

MW-10

MW-11

MW-12

MW-13

MW-14

MW-15

MW-16

MW-17

MW-18

MW-19

MW-20

W 2-8

14:25

X

MW-4

MW-5

MW-6

MW-7

MW-8

MW-9

MW-10

MW-11

MW-12

MW-13

MW-14

MW-15

MW-16

MW-17

MW-18

MW-19

MW-20

W 2-8

13:24

X

MW-5

MW-6

MW-7

MW-8

MW-9

MW-10

MW-11

MW-12

MW-13

MW-14

MW-15

MW-16

MW-17

MW-18

MW-19

MW-20

W 2-8

14:55

X

MW-7

MW-8

MW-9

MW-10

MW-11

MW-12

MW-13

MW-14

MW-15

MW-16

MW-17

MW-18

MW-19

MW-20

W 2-8

13:56

X

MW-8

MW-9

MW-10

MW-11

MW-12

MW-13

MW-14

MW-15

MW-16

MW-17

MW-18

MW-19

MW-20

W 2-7

17:04

X

MW-6

MW-7

MW-8

MW-9

MW-10

MW-11

MW-12

MW-13

MW-14

MW-15

MW-16

MW-17

MW-18

MW-19

MW-20

W 2-8

12:42

X

MW-10

MW-11

MW-12

MW-13

MW-14

MW-15

MW-16

MW-17

MW-18

MW-19

MW-20

W 2-8

11:54

X

MW-11

MW-12

MW-13

MW-14

MW-15

MW-16

MW-17

MW-18

MW-19

MW-20

W 2-8

11:54

X

MW-11

MW-12

MW-13

MW-14

MW-15

MW-16

MW-17

MW-18

MW-19

MW-20

W 2-8

11:54

X

MW-11

MW-12

MW-13

MW-14

MW-15

MW-16

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MW-19

MW-20

W 2-8

11:54

X

MW-11

MW-12

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MW-14

MW-15

MW-16

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MW-19

MW-20

W 2-8

11:54

X

MW-11

MW-12

MW-13

MW-14

MW-15

MW-16

MW-17

MW-18

MW-19

MW-20

W 2-8

11:54

X

MW-11

MW-12

MW-13

MW-14

MW-15

MW-16

MW-17

MW-18

MW-19

MW-20

NOTES:

Plains Pipeline SPS# 2001-11226

Email Results To: GSBRYANT@TERRACON.COM

DALE MOXLEY AT TERRACON.COM

Matrix	W - Wastewater	S - Soil	SD - Solid	L - Liquid	A - Air Bag	C - Charcoal tube	SL - Sludge	O - Oil
Container	VOA - 40 ml vial	AG - Amber / Or Glass 1 Liter	250 ml - Glass wide mouth	P/O - Plastic or other				
Houston Office 11555 Clay Road, Suite 100 Houston, Texas 77043 (713) 690-8989 Fax (713) 690-8787	Dallas Office 8901 Carpenter Freeway, Suite 100 Dallas, Texas 75247 (214) 630-1010 Fax (214) 630-7070	Fort Worth Office 2601 Gravel Drive Fort Worth, Texas 76118 (817) 268-8600 Fax (817) 268-8602	Austin Office 5307 Industrial Oaks Blvd. # 160 Austin, Texas 78735 (512) 442-1122 Fax (512) 442-1181	Midland Office 1211 W. Florida Ave. Midland, Texas 79701 (432) 684-9600 Fax (432) 684-9608	Lubbock Office 5827 50th Street, Suite 1 Lubbock, Texas 79424 (806) 300-0140			



XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In



Client: Terracon Midland

Date/ Time Received: 02/08/2017 04:51:00 PM

Work Order #: 545980

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	5.5
#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 MW3 Sample 002, 1 VOA broke
#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)?	Yes Houston
#21 VOC samples have zero headspace?	Yes
#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.	Yes
#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:

PH Device/Lot#:

Checklist completed by:

Jessica Kramer

Jessica Kramer

Date: 02/09/2017

Checklist reviewed by:

Kelsey Brooks

Kelsey Brooks

Date: 02/09/2017

Analytical Report 552027

**for
Terracon Midland**

**Project Manager: Dale Moxley
Livingston Line- Bob McCasland**

A4177007

03-MAY-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)

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03-MAY-17

Project Manager: **Dale Moxley**

Terracon Midland

10400 State Hwy 191

Midland, TX 79707

Reference: XENCO Report No(s): **552027**

Livingston Line- Bob McCasland

Project Address:

Dale Moxley:

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) 552027. 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. 552027 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

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

Certified and approved by numerous States and Agencies.

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

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



Sample Cross Reference 552027



Terracon Midland, Midland, TX

Livingston Line- Bob McCasland

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-2	W	04-27-17 08:25		552027-001
MW-3	W	04-27-17 09:10		552027-002
MW-4	W	04-27-17 15:15		552027-003
MW-5	W	04-27-17 12:30		552027-004
MW-6	W	04-27-17 09:50		552027-005
MW-7	W	04-27-17 14:20		552027-006
MW-8	W	04-27-17 13:30		552027-007
MW-9	W	04-27-17 10:24		552027-008
MW-10	W	04-27-17 11:46		552027-009
MW-11	W	04-27-17 10:58		552027-010



CASE NARRATIVE

Client Name: Terracon Midland

Project Name: Livingston Line- Bob McCasland

Project ID: A4177007
Work Order Number(s): 552027

Report Date: 03-MAY-17
Date Received: 04/28/2017

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

552027



Terracon Midland, Midland, TX

Livingston Line- Bob McCasland

Sample Id: **MW-2** Matrix: Water Sample Depth:
Lab Sample Id: 552027-001 Date Collected: 04.27.17 08.25 Date Received: 04.28.17 12.05
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3016143 Date Prep: 04.28.17 13.00
Prep seq: 723833

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	04.28.17 15:23	U	1
Toluene	108-88-3	<0.000367	0.00150	0.000367	mg/L	04.28.17 15:23	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	04.28.17 15:23	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00200	0.000630	mg/L	04.28.17 15:23	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	04.28.17 15:23	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	04.28.17 15:23	U	
Total BTEX		<0.000367		0.000367	mg/L	04.28.17 15:23	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	98	80 - 120	%		
4-Bromofluorobenzene	84	80 - 120	%		

Sample Id: **MW-3** Matrix: Water Sample Depth:
Lab Sample Id: 552027-002 Date Collected: 04.27.17 09.10 Date Received: 04.28.17 12.05
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3016143 Date Prep: 04.28.17 13.00
Prep seq: 723833

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	04.28.17 15:40	U	1
Toluene	108-88-3	<0.000367	0.00150	0.000367	mg/L	04.28.17 15:40	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	04.28.17 15:40	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00200	0.000630	mg/L	04.28.17 15:40	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	04.28.17 15:40	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	04.28.17 15:40	U	
Total BTEX		<0.000367		0.000367	mg/L	04.28.17 15:40	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	112	80 - 120	%		
4-Bromofluorobenzene	106	80 - 120	%		



Certificate of Analytical Results

552027



Terracon Midland, Midland, TX

Livingston Line- Bob McCasland

Sample Id: **MW-4** Matrix: Water Sample Depth:
Lab Sample Id: 552027-003 Date Collected: 04.27.17 15.15 Date Received: 04.28.17 12.05
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3016143 Date Prep: 04.28.17 13.00
Prep seq: 723833

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	0.00267	0.00200	0.000408	mg/L	04.28.17 17:45		1
Toluene	108-88-3	<0.000367	0.00150	0.000367	mg/L	04.28.17 17:45	U	1
Ethylbenzene	100-41-4	0.0101	0.00200	0.000657	mg/L	04.28.17 17:45		1
m,p-Xylenes	179601-23-1	0.00463	0.00200	0.000630	mg/L	04.28.17 17:45		1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	04.28.17 17:45	U	1
Total Xylenes	1330-20-7	0.00463		0.000630	mg/L	04.28.17 17:45		
Total BTEX		0.0174		0.000367	mg/L	04.28.17 17:45		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	115	80 - 120	%		
4-Bromofluorobenzene	80	80 - 120	%		

Sample Id: **MW-5** Matrix: Water Sample Depth:
Lab Sample Id: 552027-004 Date Collected: 04.27.17 12.30 Date Received: 04.28.17 12.05
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3016143 Date Prep: 04.28.17 13.00
Prep seq: 723833

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	04.28.17 17:29	U	1
Toluene	108-88-3	<0.000367	0.00150	0.000367	mg/L	04.28.17 17:29	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	04.28.17 17:29	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00200	0.000630	mg/L	04.28.17 17:29	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	04.28.17 17:29	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	04.28.17 17:29	U	
Total BTEX		<0.000367		0.000367	mg/L	04.28.17 17:29	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	116	80 - 120	%		
4-Bromofluorobenzene	87	80 - 120	%		



Certificate of Analytical Results

552027



Terracon Midland, Midland, TX

Livingston Line- Bob McCasland

Sample Id: **MW-6** Matrix: Water Sample Depth:
Lab Sample Id: 552027-005 Date Collected: 04.27.17 09.50 Date Received: 04.28.17 12.05
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3016143 Date Prep: 04.28.17 13.00
Prep seq: 723833

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	04.28.17 15:56	U	1
Toluene	108-88-3	<0.000367	0.00150	0.000367	mg/L	04.28.17 15:56	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	04.28.17 15:56	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00200	0.000630	mg/L	04.28.17 15:56	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	04.28.17 15:56	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	04.28.17 15:56	U	
Total BTEX		<0.000367		0.000367	mg/L	04.28.17 15:56	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	100	80 - 120	%		
4-Bromofluorobenzene	84	80 - 120	%		

Sample Id: **MW-7** Matrix: Water Sample Depth:
Lab Sample Id: 552027-006 Date Collected: 04.27.17 14.20 Date Received: 04.28.17 12.05
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3016215 Date Prep: 05.01.17 09.00
Prep seq: 723904

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	05.01.17 15:19	U	1
Toluene	108-88-3	<0.000367	0.00150	0.000367	mg/L	05.01.17 15:19	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	05.01.17 15:19	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00200	0.000630	mg/L	05.01.17 15:19	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	05.01.17 15:19	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	05.01.17 15:19	U	
Total BTEX		<0.000367		0.000367	mg/L	05.01.17 15:19	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	98	80 - 120	%		
4-Bromofluorobenzene	89	80 - 120	%		



Certificate of Analytical Results

552027



Terracon Midland, Midland, TX

Livingston Line- Bob McCasland

Sample Id: **MW-8**

Matrix: Water

Sample Depth:

Lab Sample Id: 552027-007

Date Collected: 04.27.17 13.30

Date Received: 04.28.17 12.05

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3016143

Date Prep: 04.28.17 13.00

Prep seq: 723833

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	04.28.17 16:40	U	1
Toluene	108-88-3	<0.000367	0.00150	0.000367	mg/L	04.28.17 16:40	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	04.28.17 16:40	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00200	0.000630	mg/L	04.28.17 16:40	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	04.28.17 16:40	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	04.28.17 16:40	U	
Total BTEX		<0.000367		0.000367	mg/L	04.28.17 16:40	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	117	80 - 120	%		
4-Bromofluorobenzene	107	80 - 120	%		

Sample Id: **MW-9**

Matrix: Water

Sample Depth:

Lab Sample Id: 552027-008

Date Collected: 04.27.17 10.24

Date Received: 04.28.17 12.05

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3016143

Date Prep: 04.28.17 13.00

Prep seq: 723833

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	04.28.17 18:02	U	1
Toluene	108-88-3	<0.000367	0.00150	0.000367	mg/L	04.28.17 18:02	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	04.28.17 18:02	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00200	0.000630	mg/L	04.28.17 18:02	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	04.28.17 18:02	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	04.28.17 18:02	U	
Total BTEX		<0.000367		0.000367	mg/L	04.28.17 18:02	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	116	80 - 120	%		
4-Bromofluorobenzene	108	80 - 120	%		



Certificate of Analytical Results

552027



Terracon Midland, Midland, TX

Livingston Line- Bob McCasland

Sample Id: **MW-10**

Matrix: Water

Sample Depth:

Lab Sample Id: 552027-009

Date Collected: 04.27.17 11.46

Date Received: 04.28.17 12.05

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3016143

Date Prep: 04.28.17 13.00

Prep seq: 723833

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	04.28.17 16:56	U	1
Toluene	108-88-3	0.00159	0.00150	0.000367	mg/L	04.28.17 16:56		1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	04.28.17 16:56	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00200	0.000630	mg/L	04.28.17 16:56	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	04.28.17 16:56	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	04.28.17 16:56	U	
Total BTEX		0.00159		0.000367	mg/L	04.28.17 16:56		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	120	80 - 120	%		
4-Bromofluorobenzene	113	80 - 120	%		

Sample Id: **MW-11**

Matrix: Water

Sample Depth:

Lab Sample Id: 552027-010

Date Collected: 04.27.17 10.58

Date Received: 04.28.17 12.05

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3016143

Date Prep: 04.28.17 13.00

Prep seq: 723833

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	04.28.17 17:13	U	1
Toluene	108-88-3	<0.000367	0.00150	0.000367	mg/L	04.28.17 17:13	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	04.28.17 17:13	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00200	0.000630	mg/L	04.28.17 17:13	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	04.28.17 17:13	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	04.28.17 17:13	U	
Total BTEX		<0.000367		0.000367	mg/L	04.28.17 17:13	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	100	80 - 120	%		
4-Bromofluorobenzene	95	80 - 120	%		



Certificate of Analytical Results

552027



Terracon Midland, Midland, TX

Livingston Line- Bob McCasland

Sample Id: 723833-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 723833-1-BLK

Date Collected:

Date Received:

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3016143

Date Prep: 04.27.17 15.00

Prep seq: 723833

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	04.27.17 19:22	U	1
Toluene	108-88-3	<0.000367	0.00150	0.000367	mg/L	04.27.17 19:22	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	04.27.17 19:22	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00200	0.000630	mg/L	04.27.17 19:22	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	04.27.17 19:22	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	104	80 - 120	%		
4-Bromofluorobenzene	89	80 - 120	%		

Sample Id: 723904-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 723904-1-BLK

Date Collected:

Date Received:

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3016215

Date Prep: 05.01.17 09.00

Prep seq: 723904

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	05.01.17 12:52	U	1
Toluene	108-88-3	<0.000367	0.00150	0.000367	mg/L	05.01.17 12:52	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	05.01.17 12:52	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00200	0.000630	mg/L	05.01.17 12:52	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	05.01.17 12:52	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	118	80 - 120	%		
4-Bromofluorobenzene	119	80 - 120	%		

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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(432) 563-1800	(432) 563-1713
(602) 437-0330	

Form 2 - Surrogate Recoveries

Project Name: Livingston Line- Bob McCasland

Work Orders : 552027,

Project ID: A4177007

Lab Batch #: 3016143

Sample: 723833-1-BKS / BKS

Batch: 1 **Matrix:** Water

Units: mg/L Date Analyzed: 04/27/17 16:56		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
1,4-Difluorobenzene		0.0308	0.0300	103	80-120
4-Bromofluorobenzene		0.0290	0.0300	97	80-120

Lab Batch #: 3016143

Sample: 723833-1-BSD / BSD

Batch: 1 **Matrix:** Water

Units: mg/L Date Analyzed: 04/27/17 17:12		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
1,4-Difluorobenzene		0.0298	0.0300	99	80-120
4-Bromofluorobenzene		0.0285	0.0300	95	80-120

Lab Batch #: 3016143

Sample: 551826-008 S / MS

Batch: 1 **Matrix:** Ground Water

Units: mg/L Date Analyzed: 04/27/17 18:00		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
1,4-Difluorobenzene		0.0318	0.0300	106	80-120
4-Bromofluorobenzene		0.0282	0.0300	94	80-120

Lab Batch #: 3016143

Sample: 551826-008 SD / MSD

Batch: 1 **Matrix:** Ground Water

Units: mg/L Date Analyzed: 04/27/17 18:17		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
1,4-Difluorobenzene		0.0313	0.0300	104	80-120
4-Bromofluorobenzene		0.0307	0.0300	102	80-120

Lab Batch #: 3016143

Sample: 723833-1-BLK / BLK

Batch: 1 **Matrix:** Water

Units: mg/L Date Analyzed: 04/27/17 19:22		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
1,4-Difluorobenzene		0.0311	0.0300	104	80-120
4-Bromofluorobenzene		0.0268	0.0300	89	80-120

* 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: Livingston Line- Bob McCasland

Work Orders : 552027,

Project ID: A4177007

Lab Batch #: 3016215

Sample: 723904-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 05/01/17 10:26	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0308	0.0300	103	80-120
4-Bromofluorobenzene		0.0260	0.0300	87	80-120

Lab Batch #: 3016215

Sample: 723904-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 05/01/17 10:42	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0329	0.0300	110	80-120
4-Bromofluorobenzene		0.0328	0.0300	109	80-120

Lab Batch #: 3016215

Sample: 552069-001 S / MS

Batch: 1 Matrix: Ground Water

Units: mg/L	Date Analyzed: 05/01/17 11:31	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0276	0.0300	92	80-120
4-Bromofluorobenzene		0.0287	0.0300	96	80-120

Lab Batch #: 3016215

Sample: 552069-001 SD / MSD

Batch: 1 Matrix: Ground Water

Units: mg/L	Date Analyzed: 05/01/17 11:48	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0275	0.0300	92	80-120
4-Bromofluorobenzene		0.0294	0.0300	98	80-120

Lab Batch #: 3016215

Sample: 723904-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 05/01/17 12:52	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0353	0.0300	118	80-120
4-Bromofluorobenzene		0.0357	0.0300	119	80-120

* 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: Livingston Line- Bob McCasland

Work Order #: 552027

Project ID: A4177007

Analyst: ALJ

Date Prepared: 04/27/2017

Date Analyzed: 04/27/2017

Lab Batch ID: 3016143

Sample: 723833-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Benzene	<0.000408	0.100	0.116	116	0.100	0.109	109	6	70-125	25	
Toluene	<0.000367	0.100	0.106	106	0.100	0.100	100	6	70-125	25	
Ethylbenzene	<0.000657	0.100	0.121	121	0.100	0.113	113	7	71-129	25	
m,p-Xylenes	<0.000630	0.200	0.232	116	0.200	0.220	110	5	70-131	25	
o-Xylene	<0.000642	0.100	0.112	112	0.100	0.103	103	8	71-133	25	

Analyst: ALJ

Date Prepared: 05/01/2017

Date Analyzed: 05/01/2017

Lab Batch ID: 3016215

Sample: 723904-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Benzene	<0.000408	0.100	0.104	104	0.100	0.113	113	8	70-125	25	
Toluene	<0.000367	0.100	0.108	108	0.100	0.115	115	6	70-125	25	
Ethylbenzene	<0.000657	0.100	0.121	121	0.100	0.123	123	2	71-129	25	
m,p-Xylenes	<0.000630	0.200	0.228	114	0.200	0.240	120	5	70-131	25	
o-Xylene	<0.000642	0.100	0.0949	95	0.100	0.109	109	14	71-133	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



Form 3 - MS / MSD Recoveries



Project Name: Livingston Line- Bob McCasland

Work Order # : 552027

Project ID: A4177007

Lab Batch ID: 3016143

QC- Sample ID: 551826-008 S

Batch #: 1 Matrix: Ground Water

Date Analyzed: 04/27/2017

Date Prepared: 04/27/2017

Analyst: ALJ

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	<0.000408	0.100	0.106	106	0.100	0.120	120	12	70-125	25	
Toluene	<0.000367	0.100	0.0979	98	0.100	0.110	110	12	70-125	25	
Ethylbenzene	<0.000657	0.100	0.108	108	0.100	0.124	124	14	71-129	25	
m,p-Xylenes	<0.000630	0.200	0.211	106	0.200	0.242	121	14	70-131	25	
o-Xylene	<0.000642	0.100	0.103	103	0.100	0.121	121	16	71-133	25	

Lab Batch ID: 3016215

QC- Sample ID: 552069-001 S

Batch #: 1 Matrix: Ground Water

Date Analyzed: 05/01/2017

Date Prepared: 05/01/2017

Analyst: ALJ

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	<0.000408	0.100	0.0870	87	0.100	0.0834	83	4	70-125	25	
Toluene	<0.000367	0.100	0.0867	87	0.100	0.0816	82	6	70-125	25	
Ethylbenzene	<0.000657	0.100	0.0967	97	0.100	0.0915	92	6	71-129	25	
m,p-Xylenes	<0.000630	0.200	0.188	94	0.200	0.178	89	5	70-131	25	
o-Xylene	<0.000642	0.100	0.0916	92	0.100	0.0883	88	4	71-133	25	

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

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

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

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



CHAIN OF CUSTODY RECORD

Laboratory: Xenco Laboratories
Address: 1211 West Florida Ave.
Midland, TX 79701

Office Location Midland

Project Manager: J. Dale Moxley

Sampler's Name: Joey Pinson

Phone: (432) 563-1800
Contact: Julian Martinez
PO/SO #:

Project Number A4177007

Project Name Livingston Line - Bob McCasland (SRS # 2001-11226)

Identifying Marks of Sample(s)

Start Depth End Depth

No. Type of Containers 40 ml VOA

BTEX (EPA Method 8021B)

LAB USE ONLY
DUE DATE:

TEMP OF COOLER
WHEN RECEIVED (°C)

Page 1 of 1

552027

Lab Sample ID

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	No. Type of Containers	BTEX (EPA Method 8021B)
GW	04/27/17	0825		X	MMW-2			X	3
GW	04/27/17	0910		X	MMW-3			X	3
GW	04/27/17	1515		X	MMW-4			X	3
GW	04/27/17	1230		X	MMW-5			X	3
GW	04/27/17	0950		X	MMW-6			X	3
GW	04/27/17	1420		X	MMW-7			X	3
GW	04/27/17	1330		X	MMW-8			X	3
GW	04/27/17	1024		X	MMW-9			X	3
GW	04/27/17	1146		X	MMW-10			X	3
GW	04/27/17	1058		X	MMW-11			X	3

TURNAROUND TIME

Relinquished by (Signature)

Date: 4/25/17

Time: 1205

Received by (Signature)

Date: 4/28

Time: 1205

NOTES:

E-MAIL RESULTS TO:
CIBRYANT@PAALP.COM
&
JDMOXLEY@TERRACON.COM
&
KATHRASH@TERRACON.COM

Relinquished by (Signature)

Date:

Time:

Received by (Signature)

Date:

Time:

Relinquished by (Signature)

Date:

Time:

Received by (Signature)

Date:

Time:

Matrix WW-Wastewater W-Water S-Soil L-Liquid A-Air Bag C-Charcoal Ruble St-Sludge
Container VOA - 40 ml Vial AG - Amber Glass 1L 250 ml - Glass wide mouth P/O - Plastic or other

Temp: 0.6 IR ID: R-9
CF: (0.6; 0.0°C) (6.23; +0.1°C)
Corrected Temp: 0.6

Midland Office ■ 10400 State Highway 191 ■ Midland, Texas 79701-1701 ■ 505.552.9600

Responsive ■ Resourceful ■ Reliable

Analytical Report 557698

**for
Terracon Midland**

Project Manager: Kevin Axe

Livingston Line-Bob McCasland (SRS #2001-11226)

A4177007

24-JUL-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)



XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In



Client: Terracon Midland

Date/ Time Received: 04/28/2017 12:05:00 PM

Work Order #: 552027

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R9

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	.6
#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?	Yes
#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.	Yes
#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:

PH Device/Lot#:

Checklist completed by:

Jessica Kramer

Jessica Kramer

Date: 04/28/2017

Checklist reviewed by:

Kelsey Brooks

Kelsey Brooks

Date: 04/28/2017

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24-JUL-17

Project Manager: **Kevin Axe**

Terracon Midland

10400 State Hwy 191

Midland, TX 79707

Reference: XENCO Report No(s): **557698**

Livingston Line-Bob McCasland (SRS #2001-11226)

Project Address:

Kevin Axe:

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) 557698. 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. 557698 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

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

Certified and approved by numerous States and Agencies.

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

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



Sample Cross Reference 557698



Terracon Midland, Midland, TX

Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-11	W	07-16-17 14:11		557698-001
MW-10	W	07-16-17 15:00		557698-002
MW-7	W	07-16-17 15:40		557698-003
MW-2	W	07-16-17 16:15		557698-004
MW-3	W	07-16-17 16:55		557698-005
MW-6	W	07-16-17 17:33		557698-006
MW-9	W	07-16-17 18:08		557698-007
MW-5	W	07-16-17 18:50		557698-008
MW-8	W	07-16-17 19:25		557698-009
MW-4	W	07-16-17 20:01		557698-010



CASE NARRATIVE

Client Name: Terracon Midland

Project Name: Livingston Line-Bob McCasland (SRS #2001-11226)

Project ID: A4177007
Work Order Number(s): 557698

Report Date: 24-JUL-17
Date Received: 07/17/2017

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

557698



Terracon Midland, Midland, TX
Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: **MW-11** Matrix: Ground Water Sample Depth:
Lab Sample Id: 557698-001 Date Collected: 07.16.17 14.11 Date Received: 07.17.17 11.37
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3022970 Date Prep: 07.20.17 15.30
Prep seq: 728011

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	07.20.17 21:32	U	1
Toluene	108-88-3	<0.000367	0.00200	0.000367	mg/L	07.20.17 21:32	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	07.20.17 21:32	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00400	0.000630	mg/L	07.20.17 21:32	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	07.20.17 21:32	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	07.20.17 21:32	U	
Total BTEX		<0.000367		0.000367	mg/L	07.20.17 21:32	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	99	80 - 120	%		
4-Bromofluorobenzene	99	80 - 120	%		

Sample Id: **MW-10** Matrix: Ground Water Sample Depth:
Lab Sample Id: 557698-002 Date Collected: 07.16.17 15.00 Date Received: 07.17.17 11.37
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3022970 Date Prep: 07.20.17 15.30
Prep seq: 728011

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	07.20.17 21:50	U	1
Toluene	108-88-3	<0.000367	0.00200	0.000367	mg/L	07.20.17 21:50	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	07.20.17 21:50	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00400	0.000630	mg/L	07.20.17 21:50	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	07.20.17 21:50	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	07.20.17 21:50	U	
Total BTEX		<0.000367		0.000367	mg/L	07.20.17 21:50	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	94	80 - 120	%		
4-Bromofluorobenzene	104	80 - 120	%		



Certificate of Analytical Results

557698



Terracon Midland, Midland, TX
Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: **MW-7** Matrix: Ground Water Sample Depth:
Lab Sample Id: 557698-003 Date Collected: 07.16.17 15.40 Date Received: 07.17.17 11.37
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3022970 Date Prep: 07.20.17 15.30
Prep seq: 728011

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	07.20.17 22:09	U	1
Toluene	108-88-3	<0.000367	0.00200	0.000367	mg/L	07.20.17 22:09	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	07.20.17 22:09	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00400	0.000630	mg/L	07.20.17 22:09	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	07.20.17 22:09	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	07.20.17 22:09	U	
Total BTEX		<0.000367		0.000367	mg/L	07.20.17 22:09	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	91	80 - 120	%		
4-Bromofluorobenzene	103	80 - 120	%		

Sample Id: **MW-2** Matrix: Ground Water Sample Depth:
Lab Sample Id: 557698-004 Date Collected: 07.16.17 16.15 Date Received: 07.17.17 11.37
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3022970 Date Prep: 07.20.17 15.30
Prep seq: 728011

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	07.20.17 22:27	U	1
Toluene	108-88-3	<0.000367	0.00200	0.000367	mg/L	07.20.17 22:27	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	07.20.17 22:27	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00400	0.000630	mg/L	07.20.17 22:27	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	07.20.17 22:27	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	07.20.17 22:27	U	
Total BTEX		<0.000367		0.000367	mg/L	07.20.17 22:27	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	92	80 - 120	%		
4-Bromofluorobenzene	103	80 - 120	%		



Certificate of Analytical Results

557698



Terracon Midland, Midland, TX
Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: **MW-3** Matrix: Ground Water Sample Depth:
Lab Sample Id: 557698-005 Date Collected: 07.16.17 16.55 Date Received: 07.17.17 11.37
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3022970 Date Prep: 07.20.17 15.30
Prep seq: 728011

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	07.20.17 22:46	U	1
Toluene	108-88-3	<0.000367	0.00200	0.000367	mg/L	07.20.17 22:46	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	07.20.17 22:46	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00400	0.000630	mg/L	07.20.17 22:46	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	07.20.17 22:46	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	07.20.17 22:46	U	
Total BTEX		<0.000367		0.000367	mg/L	07.20.17 22:46	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	93	80 - 120	%		
4-Bromofluorobenzene	100	80 - 120	%		

Sample Id: **MW-6** Matrix: Ground Water Sample Depth:
Lab Sample Id: 557698-006 Date Collected: 07.16.17 17.33 Date Received: 07.17.17 11.37
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3022970 Date Prep: 07.20.17 15.30
Prep seq: 728011

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	07.21.17 01:14	U	1
Toluene	108-88-3	<0.000367	0.00200	0.000367	mg/L	07.21.17 01:14	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	07.21.17 01:14	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00400	0.000630	mg/L	07.21.17 01:14	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	07.21.17 01:14	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	07.21.17 01:14	U	
Total BTEX		<0.000367		0.000367	mg/L	07.21.17 01:14	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	89	80 - 120	%		
4-Bromofluorobenzene	96	80 - 120	%		



Certificate of Analytical Results

557698



Terracon Midland, Midland, TX
Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: **MW-9** Matrix: Ground Water Sample Depth:
Lab Sample Id: 557698-007 Date Collected: 07.16.17 18.08 Date Received: 07.17.17 11.37
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3022970 Date Prep: 07.20.17 15.30
Prep seq: 728011

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	07.21.17 00:00	U	1
Toluene	108-88-3	<0.000367	0.00200	0.000367	mg/L	07.21.17 00:00	U	1
Ethylbenzene	100-41-4	0.00325	0.00200	0.000657	mg/L	07.21.17 00:00		1
m,p-Xylenes	179601-23-1	<0.000630	0.00400	0.000630	mg/L	07.21.17 00:00	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	07.21.17 00:00	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	07.21.17 00:00	U	
Total BTEX		0.00325		0.000367	mg/L	07.21.17 00:00		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	94	80 - 120	%		
4-Bromofluorobenzene	98	80 - 120	%		

Sample Id: **MW-5** Matrix: Ground Water Sample Depth:
Lab Sample Id: 557698-008 Date Collected: 07.16.17 18.50 Date Received: 07.17.17 11.37
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3022970 Date Prep: 07.20.17 15.30
Prep seq: 728011

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	0.00236	0.00200	0.000408	mg/L	07.21.17 04:00		1
Toluene	108-88-3	<0.000367	0.00200	0.000367	mg/L	07.21.17 04:00	U	1
Ethylbenzene	100-41-4	0.00483	0.00200	0.000657	mg/L	07.21.17 04:00		1
m,p-Xylenes	179601-23-1	<0.000630	0.00400	0.000630	mg/L	07.21.17 04:00	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	07.21.17 04:00	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	07.21.17 04:00	U	
Total BTEX		0.00719		0.000367	mg/L	07.21.17 04:00		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	89	80 - 120	%		
4-Bromofluorobenzene	93	80 - 120	%		



Certificate of Analytical Results

557698



Terracon Midland, Midland, TX
Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: **MW-8** Matrix: Ground Water Sample Depth:
Lab Sample Id: 557698-009 Date Collected: 07.16.17 19.25 Date Received: 07.17.17 11.37
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3022970 Date Prep: 07.20.17 15.30
Prep seq: 728011

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	07.21.17 01:32	U	1
Toluene	108-88-3	<0.000367	0.00200	0.000367	mg/L	07.21.17 01:32	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	07.21.17 01:32	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00400	0.000630	mg/L	07.21.17 01:32	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	07.21.17 01:32	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	07.21.17 01:32	U	
Total BTEX		<0.000367		0.000367	mg/L	07.21.17 01:32	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	88	80 - 120	%		
4-Bromofluorobenzene	97	80 - 120	%		

Sample Id: **MW-4** Matrix: Ground Water Sample Depth:
Lab Sample Id: 557698-010 Date Collected: 07.16.17 20.01 Date Received: 07.17.17 11.37
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: ALJ % Moist: Tech: ALJ
Seq Number: 3022970 Date Prep: 07.20.17 15.30
Prep seq: 728011

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	0.00729	0.00200	0.000408	mg/L	07.21.17 03:41		1
Toluene	108-88-3	<0.000367	0.00200	0.000367	mg/L	07.21.17 03:41	U	1
Ethylbenzene	100-41-4	0.0118	0.00200	0.000657	mg/L	07.21.17 03:41		1
m,p-Xylenes	179601-23-1	<0.000630	0.00400	0.000630	mg/L	07.21.17 03:41	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	07.21.17 03:41	U	1
Total Xylenes	1330-20-7	<0.000630		0.000630	mg/L	07.21.17 03:41	U	
Total BTEX		0.0191		0.000367	mg/L	07.21.17 03:41		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	100	80 - 120	%		
4-Bromofluorobenzene	90	80 - 120	%		



Certificate of Analytical Results

557698



Terracon Midland, Midland, TX
Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: 728011-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 728011-1-BLK

Date Collected:

Date Received:

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3022970

Date Prep: 07.20.17 15.30

Prep seq: 728011

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000408	0.00200	0.000408	mg/L	07.20.17 21:13	U	1
Toluene	108-88-3	<0.000367	0.00200	0.000367	mg/L	07.20.17 21:13	U	1
Ethylbenzene	100-41-4	<0.000657	0.00200	0.000657	mg/L	07.20.17 21:13	U	1
m,p-Xylenes	179601-23-1	<0.000630	0.00400	0.000630	mg/L	07.20.17 21:13	U	1
o-Xylene	95-47-6	<0.000642	0.00200	0.000642	mg/L	07.20.17 21:13	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	91	80 - 120	%		
4-Bromofluorobenzene	100	80 - 120	%		

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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

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

Form 2 - Surrogate Recoveries

Project Name: Livingston Line-Bob McCasland (SRS #2001-11226)

Work Orders : 557698,

Project ID: A4177007

Lab Batch #: 3022970

Sample: 728011-1-BKS / BKS

Batch: 1 **Matrix:** Water

Units: mg/L Date Analyzed: 07/20/17 19:37		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0315	0.0300	105	80-120
4-Bromofluorobenzene		0.0281	0.0300	94	80-120

Lab Batch #: 3022970

Sample: 728011-1-BSD / BSD

Batch: 1 **Matrix:** Water

Units: mg/L Date Analyzed: 07/20/17 19:59		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0314	0.0300	105	80-120
4-Bromofluorobenzene		0.0312	0.0300	104	80-120

Lab Batch #: 3022970

Sample: 557698-001 S / MS

Batch: 1 **Matrix:** Ground Water

Units: mg/L Date Analyzed: 07/20/17 20:18		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0345	0.0300	115	80-120
4-Bromofluorobenzene		0.0306	0.0300	102	80-120

Lab Batch #: 3022970

Sample: 557698-001 SD / MSD

Batch: 1 **Matrix:** Ground Water

Units: mg/L Date Analyzed: 07/20/17 20:37		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0339	0.0300	113	80-120
4-Bromofluorobenzene		0.0311	0.0300	104	80-120

Lab Batch #: 3022970

Sample: 728011-1-BLK / BLK

Batch: 1 **Matrix:** Water

Units: mg/L Date Analyzed: 07/20/17 21:13		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0272	0.0300	91	80-120
4-Bromofluorobenzene		0.0299	0.0300	100	80-120

* 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: Livingston Line-Bob McCasland (SRS #2001-11226)

Work Order #: 557698

Project ID: A4177007

Analyst: ALJ

Date Prepared: 07/20/2017

Date Analyzed: 07/20/2017

Lab Batch ID: 3022970

Sample: 728011-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Benzene	<0.000408	0.100	0.107	107	0.100	0.117	117	9	70-125	25	
Toluene	<0.000367	0.100	0.120	120	0.100	0.123	123	2	70-125	25	
Ethylbenzene	<0.000657	0.100	0.116	116	0.100	0.124	124	7	71-129	25	
m,p-Xylenes	<0.000630	0.200	0.225	113	0.200	0.240	120	6	70-131	25	
o-Xylene	<0.000642	0.100	0.112	112	0.100	0.122	122	9	71-133	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



Form 3 - MS / MSD Recoveries



Project Name: Livingston Line-Bob McCasland (SRS #2001-11226)

Work Order # : 557698

Project ID: A4177007

Lab Batch ID: 3022970

QC- Sample ID: 557698-001 S

Batch #: 1 Matrix: Ground Water

Date Analyzed: 07/20/2017

Date Prepared: 07/20/2017

Analyst: ALJ

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	<0.000408	0.100	0.122	122	0.100	0.113	113	8	70-125	25	
Toluene	<0.000367	0.100	0.125	125	0.100	0.121	121	3	70-125	25	
Ethylbenzene	<0.000657	0.100	0.124	124	0.100	0.119	119	4	71-129	25	
m,p-Xylenes	<0.000630	0.200	0.239	120	0.200	0.231	116	3	70-131	25	
o-Xylene	<0.000642	0.100	0.124	124	0.100	0.115	115	8	71-133	25	

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

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

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



XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In



Client: Terracon Midland

Date/ Time Received: 07/17/2017 11:37:00 AM

Work Order #: 557698

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	.1
#2 *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?	Yes

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

Analyst:

PH Device/Lot#:

Checklist completed by: Jessica Kramer
Jessica Kramer

Date: 07/17/2017

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks

Date: 07/17/2017



Certificate of Analysis Summary 568157

Terracon Lubbock, Lubbock, TX

Project Name: Livingston Line-Bob McCasland (SRS #2001-11226)

Project Id: AR177190
Contact: Kris Williams
Project Location:

Date Received in Lab: Fri Nov-10-17 04:40 pm
Report Date: 18-NOV-17
Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	568157-001	568157-002	568157-003	568157-004	568157-005	568157-006
	Field Id:	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
	Depth:						
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	Sampled:	Nov-10-17 12:00	Nov-10-17 12:40	Nov-10-17 11:00	Nov-09-17 14:30	Nov-09-17 13:12	Nov-10-17 11:25
BTEX by EPA 8021B	Extracted:	Nov-14-17 11:00	Nov-14-17 11:00	Nov-14-17 11:00	Nov-15-17 11:00	Nov-14-17 11:00	Nov-14-17 11:00
	Analyzed:	Nov-15-17 01:46	Nov-14-17 19:01	Nov-15-17 02:13	Nov-16-17 01:42	Nov-15-17 03:07	Nov-15-17 03:34
	Units/RL:	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Benzene		<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100
Toluene		<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100
Ethylbenzene		<0.00100 0.00100	<0.00100 0.00100	0.00130 0.00100	0.00230 0.00100	<0.00100 0.00100	<0.00100 0.00100
m,p-Xylenes		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200
o-Xylene		<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100	0.00160 0.00100	<0.00100 0.00100	<0.00100 0.00100
Total Xylenes		<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100	0.00160 0.00100	<0.00100 0.00100	<0.00100 0.00100
Total BTEX		<0.00100 0.00100	<0.00100 0.00100	0.00130 0.00100	0.00390 0.00100	<0.00100 0.00100	<0.00100 0.00100

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

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

Mike Kimmel
Client Services Manager



Certificate of Analysis Summary 568157

Terracon Lubbock, Lubbock, TX

Project Name: Livingston Line-Bob McCasland (SRS #2001-11226)

Project Id: AR177190
Contact: Kris Williams
Project Location:

Date Received in Lab: Fri Nov-10-17 04:40 pm
Report Date: 18-NOV-17
Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	568157-007	568157-008	568157-009	568157-010		
	Field Id:	MW-8	MW-9	MW-10	MW-11		
	Depth:						
	Matrix:	WATER	WATER	WATER	WATER		
	Sampled:	Nov-10-17 10:22	Nov-10-17 13:37	Nov-09-17 14:05	Nov-09-17 13:40		
BTEX by EPA 8021B	Extracted:	Nov-14-17 11:00	Nov-14-17 11:00	Nov-14-17 11:00	Nov-14-17 11:00		
	Analyzed:	Nov-15-17 04:01	Nov-15-17 04:28	Nov-15-17 04:55	Nov-15-17 05:22		
	Units/RL:	mg/L RL	mg/L RL	mg/L RL	mg/L RL		
Benzene		<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100		
Toluene		<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100		
Ethylbenzene		<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100		
m,p-Xylenes		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200		
o-Xylene		<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100		
Total Xylenes		<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100		
Total BTEX		<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100	<0.00100 0.00100		

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The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories.
XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented.
Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Mike Kimmel
Client Services Manager

Analytical Report 568157

for Terracon Lubbock

Project Manager: Kris Williams

Livingston Line-Bob McCasland (SRS #2001-11226)

AR177190

18-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)



18-NOV-17

Project Manager: **Kris Williams**

Terracon Lubbock

5827 50th st, Suite 1

Lubbock, TX 79424

Reference: XENCO Report No(s): **568157**

Livingston Line-Bob McCasland (SRS #2001-11226)

Project Address:

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) 568157. 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. 568157 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,

A handwritten signature in black ink, appearing to read 'Mike Kimmel', is positioned above a horizontal line.

Mike Kimmel

Client Services Manager

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Sample Cross Reference 568157

Terracon Lubbock, Lubbock, TX

Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-2	W	11-10-17 12:00		568157-001
MW-3	W	11-10-17 12:40		568157-002
MW-4	W	11-10-17 11:00		568157-003
MW-5	W	11-09-17 14:30		568157-004
MW-6	W	11-09-17 13:12		568157-005
MW-7	W	11-10-17 11:25		568157-006
MW-8	W	11-10-17 10:22		568157-007
MW-9	W	11-10-17 13:37		568157-008
MW-10	W	11-09-17 14:05		568157-009
MW-11	W	11-09-17 13:40		568157-010



CASE NARRATIVE

Client Name: Terracon Lubbock

Project Name: Livingston Line-Bob McCasland (SRS #2001-11226)

Project ID: AR177190
Work Order Number(s): 568157

Report Date: 18-NOV-17
Date Received: 11/10/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None



Certificate of Analytical Results 568157

Terracon Lubbock, Lubbock, TX
Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: **MW-2**
Lab Sample Id: 568157-001

Matrix: Water
Date Collected: 11.10.17 12.00

Date Received: 11.10.17 16.40

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MIT

% Moisture:

Analyst: MIT

Date Prep: 11.14.17 11.00

Seq Number: 3033288

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/L	11.15.17 01.46	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/L	11.15.17 01.46	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/L	11.15.17 01.46	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	11.15.17 01.46	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/L	11.15.17 01.46	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/L	11.15.17 01.46	U	1
Total BTEX		<0.00100	0.00100	mg/L	11.15.17 01.46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
a,a,a-Trifluorotoluene	98-08-8	98	%	66-120	11.15.17 01.46		
4-Bromofluorobenzene	460-00-4	102	%	67-120	11.15.17 01.46		



Certificate of Analytical Results 568157

Terracon Lubbock, Lubbock, TX
Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: **MW-3**
Lab Sample Id: 568157-002

Matrix: Water
Date Collected: 11.10.17 12.40

Date Received: 11.10.17 16.40

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MIT

% Moisture:

Analyst: MIT

Date Prep: 11.14.17 11.00

Seq Number: 3033288

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/L	11.14.17 19.01	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/L	11.14.17 19.01	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/L	11.14.17 19.01	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	11.14.17 19.01	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/L	11.14.17 19.01	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/L	11.14.17 19.01	U	1
Total BTEX		<0.00100	0.00100	mg/L	11.14.17 19.01	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
a,a,a-Trifluorotoluene	98-08-8	99	%	66-120	11.14.17 19.01		
4-Bromofluorobenzene	460-00-4	95	%	67-120	11.14.17 19.01		



Certificate of Analytical Results 568157

Terracon Lubbock, Lubbock, TX
Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: **MW-4**
Lab Sample Id: 568157-003

Matrix: Water
Date Collected: 11.10.17 11.00

Date Received: 11.10.17 16.40

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MIT

% Moisture:

Analyst: MIT

Date Prep: 11.14.17 11.00

Seq Number: 3033288

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/L	11.15.17 02.13	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/L	11.15.17 02.13	U	1
Ethylbenzene	100-41-4	0.00130	0.00100	mg/L	11.15.17 02.13		1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	11.15.17 02.13	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/L	11.15.17 02.13	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/L	11.15.17 02.13	U	1
Total BTEX		0.00130	0.00100	mg/L	11.15.17 02.13		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
a,a,a-Trifluorotoluene	98-08-8	102	%	66-120	11.15.17 02.13		
4-Bromofluorobenzene	460-00-4	106	%	67-120	11.15.17 02.13		



Certificate of Analytical Results 568157

Terracon Lubbock, Lubbock, TX
 Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: **MW-5** Matrix: Water Date Received: 11.10.17 16.40
 Lab Sample Id: 568157-004 Date Collected: 11.09.17 14.30
 Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B
 Tech: MIT % Moisture:
 Analyst: MIT Date Prep: 11.15.17 11.00
 Seq Number: 3033441

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/L	11.16.17 01.42	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/L	11.16.17 01.42	U	1
Ethylbenzene	100-41-4	0.00230	0.00100	mg/L	11.16.17 01.42		1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	11.16.17 01.42	U	1
o-Xylene	95-47-6	0.00160	0.00100	mg/L	11.16.17 01.42		1
Total Xylenes	1330-20-7	0.00160	0.00100	mg/L	11.16.17 01.42		1
Total BTEX		0.00390	0.00100	mg/L	11.16.17 01.42		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
a,a,a-Trifluorotoluene	98-08-8	98	%	66-120	11.16.17 01.42		
4-Bromofluorobenzene	460-00-4	100	%	67-120	11.16.17 01.42		



Certificate of Analytical Results 568157

Terracon Lubbock, Lubbock, TX
Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: **MW-6**
Lab Sample Id: 568157-005

Matrix: Water
Date Collected: 11.09.17 13.12

Date Received: 11.10.17 16.40

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MIT

% Moisture:

Analyst: MIT

Date Prep: 11.14.17 11.00

Seq Number: 3033288

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/L	11.15.17 03.07	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/L	11.15.17 03.07	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/L	11.15.17 03.07	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	11.15.17 03.07	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/L	11.15.17 03.07	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/L	11.15.17 03.07	U	1
Total BTEX		<0.00100	0.00100	mg/L	11.15.17 03.07	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
a,a,a-Trifluorotoluene	98-08-8	98	%	66-120	11.15.17 03.07		
4-Bromofluorobenzene	460-00-4	97	%	67-120	11.15.17 03.07		



Certificate of Analytical Results 568157

Terracon Lubbock, Lubbock, TX
Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: **MW-7**
Lab Sample Id: 568157-006

Matrix: Water
Date Collected: 11.10.17 11.25

Date Received: 11.10.17 16.40

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MIT

% Moisture:

Analyst: MIT

Date Prep: 11.14.17 11.00

Seq Number: 3033288

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/L	11.15.17 03.34	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/L	11.15.17 03.34	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/L	11.15.17 03.34	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	11.15.17 03.34	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/L	11.15.17 03.34	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/L	11.15.17 03.34	U	1
Total BTEX		<0.00100	0.00100	mg/L	11.15.17 03.34	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
a,a,a-Trifluorotoluene	98-08-8	98	%	66-120	11.15.17 03.34		
4-Bromofluorobenzene	460-00-4	99	%	67-120	11.15.17 03.34		



Certificate of Analytical Results 568157

Terracon Lubbock, Lubbock, TX
Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: **MW-8**
Lab Sample Id: 568157-007

Matrix: Water
Date Collected: 11.10.17 10.22

Date Received: 11.10.17 16.40

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MIT

% Moisture:

Analyst: MIT

Date Prep: 11.14.17 11.00

Seq Number: 3033288

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/L	11.15.17 04.01	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/L	11.15.17 04.01	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/L	11.15.17 04.01	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	11.15.17 04.01	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/L	11.15.17 04.01	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/L	11.15.17 04.01	U	1
Total BTEX		<0.00100	0.00100	mg/L	11.15.17 04.01	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
a,a,a-Trifluorotoluene	98-08-8	99	%	66-120	11.15.17 04.01		
4-Bromofluorobenzene	460-00-4	101	%	67-120	11.15.17 04.01		



Certificate of Analytical Results 568157

Terracon Lubbock, Lubbock, TX
Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: **MW-9**
Lab Sample Id: 568157-008

Matrix: Water
Date Collected: 11.10.17 13.37

Date Received: 11.10.17 16.40

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MIT

% Moisture:

Analyst: MIT

Date Prep: 11.14.17 11.00

Seq Number: 3033288

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/L	11.15.17 04.28	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/L	11.15.17 04.28	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/L	11.15.17 04.28	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	11.15.17 04.28	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/L	11.15.17 04.28	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/L	11.15.17 04.28	U	1
Total BTEX		<0.00100	0.00100	mg/L	11.15.17 04.28	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
a,a,a-Trifluorotoluene	98-08-8	101	%	66-120	11.15.17 04.28		
4-Bromofluorobenzene	460-00-4	101	%	67-120	11.15.17 04.28		



Certificate of Analytical Results 568157

Terracon Lubbock, Lubbock, TX
Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: **MW-10**
Lab Sample Id: 568157-009

Matrix: Water
Date Collected: 11.09.17 14.05

Date Received: 11.10.17 16.40

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MIT

% Moisture:

Analyst: MIT

Date Prep: 11.14.17 11.00

Seq Number: 3033288

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/L	11.15.17 04.55	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/L	11.15.17 04.55	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/L	11.15.17 04.55	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	11.15.17 04.55	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/L	11.15.17 04.55	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/L	11.15.17 04.55	U	1
Total BTEX		<0.00100	0.00100	mg/L	11.15.17 04.55	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
a,a,a-Trifluorotoluene	98-08-8	99	%	66-120	11.15.17 04.55		
4-Bromofluorobenzene	460-00-4	101	%	67-120	11.15.17 04.55		



Certificate of Analytical Results 568157

Terracon Lubbock, Lubbock, TX
Livingston Line-Bob McCasland (SRS #2001-11226)

Sample Id: **MW-11**
Lab Sample Id: 568157-010

Matrix: Water
Date Collected: 11.09.17 13.40

Date Received: 11.10.17 16.40

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MIT

% Moisture:

Analyst: MIT

Date Prep: 11.14.17 11.00

Seq Number: 3033288

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/L	11.15.17 05.22	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/L	11.15.17 05.22	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/L	11.15.17 05.22	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	11.15.17 05.22	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/L	11.15.17 05.22	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/L	11.15.17 05.22	U	1
Total BTEX		<0.00100	0.00100	mg/L	11.15.17 05.22	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
a,a,a-Trifluorotoluene	98-08-8	100	%	66-120	11.15.17 05.22		
4-Bromofluorobenzene	460-00-4	101	%	67-120	11.15.17 05.22		

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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(210) 509-3334	(210) 509-3335
(432) 563-1800	(432) 563-1713
(602) 437-0330	



Terracon Lubbock

Livingston Line-Bob McCasland (SRS #2001-11226)

Analytical Method: BTEX by EPA 8021B

Seq Number: 3033288

MB Sample Id: 7634343-1-BLK

Matrix: Water

LCS Sample Id: 7634343-1-BKS

Prep Method: SW5030B

Date Prep: 11.14.17

LCSD Sample Id: 7634343-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00100	0.100	0.103	103	0.105	105	74-120	2	20	mg/L	11.14.17 16:19	
Toluene	<0.00100	0.100	0.0992	99	0.102	102	74-120	3	20	mg/L	11.14.17 16:19	
Ethylbenzene	<0.00100	0.100	0.103	103	0.104	104	74-120	1	20	mg/L	11.14.17 16:19	
m,p-Xylenes	<0.00200	0.200	0.204	102	0.208	104	73-120	2	25	mg/L	11.14.17 16:19	
o-Xylene	<0.00100	0.100	0.103	103	0.105	105	73-120	2	25	mg/L	11.14.17 16:19	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
a,a,a-Trifluorotoluene	103		96		100		66-120	%	11.14.17 16:19
4-Bromofluorobenzene	99		96		98		67-120	%	11.14.17 16:19

Analytical Method: BTEX by EPA 8021B

Seq Number: 3033441

MB Sample Id: 7634421-1-BLK

Matrix: Water

LCS Sample Id: 7634421-1-BKS

Prep Method: SW5030B

Date Prep: 11.15.17

LCSD Sample Id: 7634421-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00100	0.100	0.110	110	0.108	108	74-120	2	20	mg/L	11.15.17 15:22	
Toluene	<0.00100	0.100	0.109	109	0.107	107	74-120	2	20	mg/L	11.15.17 15:22	
Ethylbenzene	<0.00100	0.100	0.111	111	0.109	109	74-120	2	20	mg/L	11.15.17 15:22	
m,p-Xylenes	<0.00200	0.200	0.222	111	0.217	109	73-120	2	25	mg/L	11.15.17 15:22	
o-Xylene	<0.00100	0.100	0.110	110	0.108	108	73-120	2	25	mg/L	11.15.17 15:22	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
a,a,a-Trifluorotoluene	103		107		105		66-120	%	11.15.17 15:22
4-Bromofluorobenzene	101		104		103		67-120	%	11.15.17 15:22

Analytical Method: BTEX by EPA 8021B

Seq Number: 3033288

Parent Sample Id: 568157-002

Matrix: Water

MS Sample Id: 568157-002 S

Prep Method: SW5030B

Date Prep: 11.14.17

MSD Sample Id: 568157-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00100	0.100	0.103	103	0.102	102	15-147	1	25	mg/L	11.14.17 19:28	
Toluene	<0.00100	0.100	0.100	100	0.101	101	11-147	1	25	mg/L	11.14.17 19:28	
Ethylbenzene	<0.00100	0.100	0.103	103	0.103	103	10-149	0	25	mg/L	11.14.17 19:28	
m,p-Xylenes	<0.00200	0.200	0.206	103	0.206	103	62-124	0	25	mg/L	11.14.17 19:28	
o-Xylene	<0.00100	0.100	0.103	103	0.102	102	62-124	1	25	mg/L	11.14.17 19:28	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
a,a,a-Trifluorotoluene	97		101		66-120	%	11.14.17 19:28
4-Bromofluorobenzene	95		98		67-120	%	11.14.17 19:28



Terracon Lubbock

Livingston Line-Bob McCasland (SRS #2001-11226)

Analytical Method: BTEX by EPA 8021B

Seq Number: 3033441

Parent Sample Id: 568100-016

Matrix: Ground Water

MS Sample Id: 568100-016 S

Prep Method: SW5030B

Date Prep: 11.15.17

MSD Sample Id: 568100-016 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	19.4	10.0	31.0	116	30.0	106	15-147	3	25	mg/L	11.15.17 17:36	
Toluene	0.770	10.0	11.3	105	10.8	100	11-147	5	25	mg/L	11.15.17 17:36	
Ethylbenzene	0.740	10.0	11.6	109	11.0	103	10-149	5	25	mg/L	11.15.17 17:36	
m,p-Xylenes	4.16	20.0	25.8	108	24.7	103	62-124	4	25	mg/L	11.15.17 17:36	
o-Xylene	1.32	10.0	12.1	108	11.6	103	62-124	4	25	mg/L	11.15.17 17:36	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
a,a,a-Trifluorotoluene	105		102		66-120	%	11.15.17 17:36
4-Bromofluorobenzene	106		100		67-120	%	11.15.17 17:36



CHAIN OF CUSTODY RECORD

Office Location: Lubbock

Laboratory: Xenco
Address: 6701 Aberdeen
Lubbock, Texas 79424

Project Manager: Kris Williams

PO/ISO #: SRS# 2001-11226

Sampler's Name: Zach Conder

Sampler's Signature: [Signature]

ANALYSIS REQUESTED: 508155

LAB USE ONLY DUE DATE: 11/13/17

TEMP OF COOLER WHEN RECEIVED (°C): 38/37

Page 1 of 1

Project Number			Project Name		No. Type of Containers			
AR177190			Livingston Line (SRS# 2001-11226)		40 ml VOA			
Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	
GW	11/10/2017	12:00		X	MW-2		3	
GW	11/10/2017	12:40		X	MW-3		3	
GW	11/10/2017	11:00		X	MW-4		3	
GW	11/9/2017	14:30		X	MW-5		3	
GW	11/10/2017	13:12		X	MW-6		3	
GW	11/10/2017	11:25		X	MW-7		3	
GW	11/10/2017	10:22		X	MW-8		3	
GW	11/10/2017	13:37		X	MW-9		3	
GW	11/9/2017	14:05		X	MW-10		3	
GW	11/9/2017	13:40		X	MW-11		3	

TURNAROUND TIME

Relinquished by (Signature): [Signature] Date: 11-10-17 Time: 4:12

Relinquished by (Signature): [Signature] Date: 11-10-17 Time: 4:12

Relinquished by (Signature): [Signature] Date: 11-10-17 Time: 4:40

Relinquished by (Signature): [Signature] Date: 11-10-17 Time: 4:40

TRRP Laboratory Review Checklist

Received by (Signature): [Signature] Date: 11-10-17 Time: 18:12

Received by (Signature): [Signature] Date: 11-10-17 Time: 18:12

Received by (Signature): [Signature] Date: 11-10-17 Time: 18:12

Received by (Signature): [Signature] Date: 11-10-17 Time: 18:12

Matrix Container: WW - Wastewater

VOA - 40 ml vial

W - Water

A/G - Amber Glass 1L

S - Soil

250 ml - Glass wide mouth

L - Liquid

A - Air Bag

C - Charcoal tube

SL - Sludge

Y/O - Plastic or other

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XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In



Client: Terracon Lubbock

Date/ Time Received: 11/10/2017 04:40:00 PM

Work Order #: 568157

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR3

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	3.7
#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:

PH Device/Lot#:

Checklist completed by:

Ashley Derstine

Date: 11/13/2017

Checklist reviewed by:

Mike Kimmel

Date: 11/14/2017

APPENDIX D

Historical Data Tables

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-1	07/10/02	3,439.09	-	38.10	-	3,400.99		
	04/15/03		-	37.31	-	3,401.78		
	07/14/03		-	38.13	-	3,400.96		
	04/20/04		-	35.62	-	3,403.47		
	05/07/04		-	35.55	-	3,403.54		
	05/25/04		-	35.62	-	3,403.47		
	06/10/04		-	35.77	-	3,403.32		
	07/14/04		-	34.90	-	3,404.19		
	07/21/04		-	34.69	-	3,404.40		
	08/02/04		-	34.73	-	3,404.36		
	09/10/04		-	34.24	-	3,404.85		
	09/14/04		-	34.26	-	3,404.83		
	10/05/04		-	32.64	-	3,406.45		
	10/19/04		-	30.92	-	3,408.17		
	11/02/04		-	31.01	-	3,408.08		
	11/15/04		-	30.41	-	3,408.68		
	12/06/04		-	30.30	-	3,408.79		
	12/21/04		-	30.29	-	3,408.80		
	01/03/05		-	30.45	-	3,408.64		
	01/18/05		-	30.57	-	3,408.52		
	02/01/05		-	30.65	-	3,408.44		
	03/21/05		-	30.81	-	3,408.28		
	04/21/05		-	31.03	-	3,408.06		
	05/05/05		-	31.04	-	3,408.05		
	05/17/05		-	31.11	-	3,407.98		
	08/15/05		-	31.50	-	3,407.59		
	10/05/05		-	31.24	-	3,407.85		
	11/18/05		-	31.44	-	3,407.65		
	01/12/06		-	31.56	-	3,407.53		
	02/16/06		-	31.68	-	3,407.41		
	03/16/06		-	31.88	-	3,407.21		
	04/10/06		-	31.83	-	3,407.26		
	05/22/06		-	31.97	-	3,407.12		
	07/20/06		-	32.44	-	3,406.65		
	08/07/06		-	32.55	-	3,406.54		
	09/11/06		-	31.87	-	3,407.22		
	10/17/06		-	31.81	-	3,407.28		
	11/21/06		-	31.91	-	3,407.18		
	12/13/06		-	31.93	-	3,407.16		
	01/09/07		-	32.07	-	3,407.02		
	02/14/07		-	31.99	-	3,407.10		
	02/22/07		-	32.01	-	3,407.08		
	03/01/07		-	31.99	-	3,407.10		
	03/13/07		-	32.03	-	3,407.06		
	05/10/07		-	31.71	-	3,407.38	0.1	6.00
	08/10/07		-	31.82	-	3,407.27		
	08/20/07		-	31.94	-	3,407.15		
	11/15/07		DRY					
	02/28/08		DRY					
	05/28/08		DRY					
	05/30/08		DRY					
	08/20/08		DRY					
	11/07/08		DRY					
	02/09/09		DRY					
	05/14/09		DRY					
	08/12/09		DRY					
	11/10/09		DRY					
	02/03/10		DRY					
	05/27/10		DRY					
	08/16/10		DRY					
	11/10/10		DRY					
	02/17/11		DRY					
	05/24/11		DRY					
	10/03/11		DRY					

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

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Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea lev-

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	el/ Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-1	11/10/11	3,439.09				DRY		
	12/09/11					DRY		
	02/24/12					DRY		
	02/28/12					DRY		
	03/27/12					DRY		
	04/12/12					DRY		
	05/05/12					DRY		
	05/17/12					DRY		
	06/21/12					DRY		
	07/09/12					DRY		
	08/02/12					DRY		
	08/16/12					DRY		
	08/28/12					DRY		
	09/12/12					DRY		
	09/26/12					DRY		
	10/10/12					DRY		
	10/26/12					DRY		
	11/07/12					DRY		
	11/20/12					DRY		
	12/06/12					DRY		
	12/18/12					DRY		
	01/03/13					DRY		
	01/11/13					DRY		
	01/25/13					DRY		
	02/07/13					DRY		
	02/28/13					DRY		
	03/08/13					DRY		
	03/21/13					DRY		
	04/04/13					DRY		
	04/17/13					DRY		
	05/01/13					DRY		
	05/23/13					DRY		
	06/14/13					DRY		
	06/28/13					DRY		
	07/10/13					DRY		
	07/24/13					DRY		
	08/09/13					DRY		
	08/21/13					DRY		
	09/05/13					DRY		
	09/19/13					DRY		
	10/07/13					DRY		
	10/17/13					DRY		
	10/31/13					DRY		
	11/14/13					DRY		
	11/27/13					DRY		
	12/11/13					DRY		
	12/22/13					DRY		
	01/09/14					DRY		
	01/23/14					DRY		
	02/05/14					DRY		
	02/19/14					DRY		
	03/05/14					DRY		
	03/19/14					DRY		
	04/02/14					DRY		
	04/15/14					DRY		
	05/01/14					DRY		
	05/13/14					DRY		
	05/28/14					DRY		
	06/10/14					DRY		
	06/24/14					DRY		
	07/10/14					DRY		
	07/23/14					DRY		
	08/05/14					DRY		

1. PSH = Phase Separated Hydrocarbons

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2017 Annual Groundwater Monitoring Report

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Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-1	08/12/14	3,439.09				DRY		
	09/03/14					DRY		
	09/16/14					DRY		
	10/05/14					DRY		
	10/21/14					DRY		
	10/28/14					DRY		
	11/13/14					DRY		
	11/25/14					DRY		
	12/10/14					DRY		
	12/21/14					DRY		
	01/14/15					DRY		
	01/21/15					DRY		
	02/17/15					DRY		
	03/04/15					DRY		
	03/20/15					DRY		
	04/01/15					DRY		
	04/15/15					DRY		
	04/28/15					DRY		
	05/12/15					DRY		
	05/27/15					DRY		
	06/09/15					DRY		
	06/23/15					DRY		
	07/14/15					DRY		
	08/05/15					DRY		
	08/18/15					DRY		
	09/12/15					DRY		
	10/01/15					DRY		
	10/14/15					DRY		
	10/27/15					DRY		
	11/12/15					DRY		
	11/24/15					DRY		
	12/09/15					DRY		
	12/22/15					DRY		
	01/06/16					DRY		
	01/21/16					DRY		
	03/01/16					DRY		
	03/15/16					DRY		
	03/30/16					DRY		
	04/27/16					DRY		
	05/17/16					DRY		
	06/01/16					DRY		
	06/14/16					DRY		
	06/28/16					DRY		
	07/14/16					DRY		
	08/11/16					DRY		
	08/23/16					DRY		
	09/06/16					DRY		
	09/20/16					DRY		
	10/05/16					DRY		
	10/17/16					DRY		
	10/31/16					DRY		
	11/17/16					DRY		
	12/01/16					DRY		
	12/21/16					DRY		

1. PSH = Phase Separated Hydrocarbons

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Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-2	07/10/02	3,432.62	-	31.31	-	3,401.31		
	04/15/03		-	30.68	-	3,401.94		
	07/14/03		-	31.70	-	3,400.92		
	04/20/04		-	28.20	-	3,404.42		
	05/07/04		-	28.44	-	3,404.18		
	05/25/04		-	28.72	-	3,403.90		
	06/10/04		-	29.14	-	3,403.48		
	07/14/04		-	27.73	-	3,404.89		
	07/21/04		-	27.71	-	3,404.91		
	08/02/04		-	27.96	-	3,404.66		
	09/10/04		-	27.52	-	3,405.10		
	09/14/04		-	27.51	-	3,405.11		
	10/05/04		-	24.25	-	3,408.37		
	10/19/04		-	23.12	-	3,409.50		
	11/02/04		-	23.22	-	3,409.40		
	11/15/04		-	23.50	-	3,409.12		
	12/06/04		-	23.63	-	3,408.99		
	12/21/04		-	23.63	-	3,408.99		
	01/03/05		-	23.91	-	3,408.71		
	01/18/05		-	24.05	-	3,408.57		
	02/01/05		-	24.17	-	3,408.45		
	03/21/05		-	24.44	-	3,408.18		
	04/21/05		-	24.67	-	3,407.95		
	05/05/05		-	24.63	-	3,407.99		
	05/17/05		-	24.78	-	3,407.84		
	08/15/05		-	25.18	-	3,407.44		
	10/05/05		-	24.93	-	3,407.69		
	11/18/05		-	25.07	-	3,407.55		
	01/12/06		-	25.18	-	3,407.44		
	02/16/06		-	25.36	-	3,407.26		
	03/16/06		-	25.57	-	3,407.05		
	04/10/06		-	25.48	-	3,407.14		
	05/22/06		-	25.63	-	3,406.99		
	07/20/06		-	26.15	-	3,406.47		
	08/07/06		-	26.28	-	3,406.34		
	09/11/06		-	25.30	-	3,407.32		
	10/17/06		-	25.39	-	3,407.23		
	11/21/06		-	25.46	-	3,407.16		
	12/13/06		-	25.48	-	3,407.14		
	01/09/07		-	25.61	-	3,407.01		
	02/14/07		-	25.52	-	3,407.10		
	02/22/07		-	25.54	-	3,407.08		
	03/01/07		-	25.47	-	3,407.15		
	03/13/07		-	25.53	-	3,407.09		
	05/10/07		-	25.12	-	3,407.50		
	08/10/07		-	25.41	-	3,407.21		
	08/20/07		-	25.57	-	3,407.05		
	11/15/07		-	25.73	-	3,406.89		
	02/28/08		-	25.69	-	3,406.93		
	04/30/08		-	25.73	-	3,406.89		
	05/28/08		-	26.04	-	3,406.58		
	05/30/08		-	25.73	-	3,406.89		
	07/07/08		-	26.45	-	3,406.17		
	07/14/08		-	26.45	-	3,406.17		
	07/22/08		-	26.54	-	3,406.08		
	07/30/08		-	26.60	-	3,406.02		
	08/05/08		-	26.62	-	3,406.00		
	08/14/08		-	26.70	-	3,405.92		
	08/20/08		-	26.70	-	3,405.92		
	09/20/08		-	26.30	-	3,406.32		
	09/29/08		-	26.26	-	3,406.36		
	11/07/08		-	26.19	-	3,406.43		
	11/15/08		-	26.32	-	3,406.30		
	11/24/08		-	26.19	-	3,406.43		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-2	11/26/08	3,432.62	-	26.21	-	3,406.41		
	12/20/08		-	26.23	-	3,406.39		
	01/16/09		-	26.25	-	3,406.37		
	02/09/09		-	26.30	-	3,406.32		
	04/08/09		-	26.35	-	3,406.27		
	04/16/09		-	26.35	-	3,406.27		
	04/23/09		-	26.41	-	3,406.21		
	04/29/08		-	26.43	-	3,406.19		
	05/06/09		-	26.45	-	3,406.17		
	05/14/09		-	26.51	-	3,406.11		
	07/08/09		-	26.93	-	3,405.69		
	07/24/09		-	26.99	-	3,405.63		
	08/04/09		-	26.93	-	3,405.69		
	08/12/09		-	27.05	-	3,405.57		
	08/19/09		-	27.18	-	3,405.44		
	09/01/09		-	27.21	-	3,405.41		
	09/22/09		-	27.30	-	3,405.32		
	10/12/09		-	27.27	-	3,405.35		
	10/30/09		-	27.32	-	3,405.30		
	11/10/09		-	27.27	-	3,405.35		
	01/08/10		-	27.15	-	3,405.47		
	01/22/10		-	27.01	-	3,405.61		
	01/26/10		-	27.17	-	3,405.45		
	02/03/10		-	27.07	-	3,405.55		
	02/10/10		-	27.11	-	3,405.51		
	02/22/10		-	27.06	-	3,405.56		
	03/09/10		-	27.02	-	3,405.60		
	03/24/10		-	27.03	-	3,405.59		
	04/12/10		-	27.02	-	3,405.60		
	04/27/10		-	27.05	-	3,405.57		
	05/27/10		-	27.27	-	3,405.35		
	06/21/10		-	27.53	-	3,405.09		
	07/07/10		-	27.47	-	3,405.15		
	07/20/10		-	27.31	-	3,405.31		
	08/03/10		-	27.48	-	3,405.14		
	08/16/10		-	27.65	-	3,404.97		
	09/02/10		-	27.62	-	3,405.00		
	09/17/10		-	27.72	-	3,404.90		
	11/10/10		-	27.63	-	3,404.99		
	02/17/11		-	27.57	-	3,405.05		
	05/24/11		-	28.00	-	3,404.62		
	08/19/11		-	29.00	-	3,403.62		
	10/03/11		-	28.17	-	3,404.45		
	11/10/11		-	28.14	-	3,404.48		
	12/09/11		-	29.09	-	3,403.53		
	02/28/12		-	28.90	-	3,403.72		
	03/27/12		-	29.05	-	3,403.57		
	04/12/12		-	29.13	-	3,403.49		
	05/05/12		-	29.41	-	3,403.21		
	05/17/12		-	29.42	-	3,403.20		
	06/21/12		-	29.71	-	3,402.91		
	07/09/12		-	29.97	-	3,402.65		
	08/02/12		-	29.90	-	3,402.72		
	08/16/12		-	30.05	-	3,402.57		
	08/28/12		-	30.13	-	3,402.49		
	09/12/12		-	30.24	-	3,402.38		
	09/26/12		-	30.61	-	3,402.01		
	10/10/12		-	30.25	-	3,402.37		
	10/26/12		-	30.30	-	3,402.32		
	11/07/12		-	30.23	-	3,402.39		
	11/20/13		-	30.18	-	3,402.44		
	12/06/12		-	30.10	-	3,402.52		
	12/18/12		-	30.11	-	3,402.51		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

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Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
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All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-2	01/03/13	3,432.62	-	30.15	-	3,402.47		
	01/11/13		-	30.06	-	3,402.56		
	01/25/13		-	30.09	-	3,402.53		
	02/07/13		-	30.14	-	3,402.48		
	02/28/13		-	30.44	-	3,402.18		
	03/08/13		-	30.15	-	3,402.47		
	03/21/13		-	30.29	-	3,402.33		
	04/04/13		-	30.25	-	3,402.37		
	04/17/13		-	30.10	-	3,402.52		
	05/01/13		-	30.28	-	3,402.34		
	05/23/13		-	30.20	-	3,402.42		
	06/14/13		-	30.42	-	3,402.20		
	06/28/13		-	30.57	-	3,402.05		
	07/10/13		30.68	30.70	0.02	3,401.92		
	07/24/13		-	30.78	-	3,401.84		
	08/09/13		-	30.94	-	3,401.68		
	08/22/13		-	31.70	-	3,400.92		
	09/05/13		-	31.19	-	3,401.43		
	09/19/13		-	31.27	-	3,401.35		
	10/07/13		-	31.32	-	3,401.30		
	10/17/13		-	31.21	-	3,401.41		
	10/31/13		-	30.99	-	3,401.63		
	11/14/13		-	30.89	-	3,401.73		
	11/27/13		-	30.88	-	3,401.74		
	12/11/13		-	30.87	-	3,401.75		
	12/22/13		-	30.80	-	3,401.82		
	01/09/14		-	30.80	-	3,401.82		
	01/23/14		-	30.84	-	3,401.78		
	02/05/14		-	30.83	-	3,401.79		
	02/19/14		-	30.72	-	3,401.90		
	03/05/14		-	30.76	-	3,401.86		
	03/19/14		-	30.78	-	3,401.84		
	04/02/14		-	30.72	-	3,401.90		
	04/15/14		-	30.72	-	3,401.90		
	05/01/14		-	30.73	-	3,401.89		
	05/13/14		-	30.78	-	3,401.84		
	05/28/14		-	30.92	-	3,401.70		
	06/10/14		-	31.25	-	3,401.37		
	06/24/14		-	31.40	-	3,401.22		
	07/10/14		-	31.53	-	3,401.09		
	07/23/14		-	31.69	-	3,400.93		
	08/05/14		-	31.82	-	3,400.80		
	08/12/14		-	31.87	-	3,400.75		
	09/03/14		-	32.04	-	3,400.58		
	09/16/14		-	31.31	-	3,401.31		
	10/05/14		-	28.39	-	3,404.23		
	10/21/14		-	28.28	-	3,404.34		
	10/28/14		28.32	28.35	0.03	3,404.27		
	11/13/14		-	28.35	-	3,404.27		
	11/25/14		-	28.40	-	3,404.22		
	12/10/14		-	28.36	-	3,404.26		
	12/21/14		-	28.40	-	3,404.22		
	01/14/15		-	28.54	-	3,404.08		
	01/21/15		-	28.63	-	3,403.99		
	02/17/15		-	28.78	-	3,403.84		
	03/04/15		-	28.88	-	3,403.74		
	03/20/15		-	28.89	-	3,403.73		
	04/01/15		-	28.86	-	3,403.76		
	04/15/15		-	28.85	-	3,403.77		
	04/28/15		-	28.99	-	3,403.63		
	05/12/15		-	29.05	-	3,403.57		
	05/27/15		-	29.13	-	3,403.49		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-2	06/09/15	3,432.62	-	29.26	-	3,403.36		
	06/23/15		-	29.41	-	3,403.21		
	07/14/15		-	29.64	-	3,402.98		
	08/05/15		-	29.93	-	3,402.69		
	08/18/15		-	30.03	-	3,402.59		
	09/12/15		-	30.24	-	3,402.38		
	10/01/15		-	31.31	-	3,401.31		
	10/14/15		-	30.24	-	3,402.38		
	10/27/15		-	30.21	-	3,402.41		
	11/12/15		-	30.17	-	3,402.45		
	11/24/15		-	30.09	-	3,402.53		
	12/09/15		-	30.03	-	3,402.59		
	12/22/15		-	30.03	-	3,402.59		
	01/06/16		-	30.05	-	3,402.57		
	01/21/16		-	30.07	-	3,402.55		
	03/01/16		-	30.11	-	3,402.51		
	03/15/16		-	30.07	-	3,402.55		
	03/30/16		-	30.02	-	3,402.60		
	04/27/16		-	30.00	-	3,402.62		
	06/01/16		-	30.35	-	3,402.27		
	06/14/16		-	30.46	-	3,402.16		
	06/28/16		-	30.65	-	3,401.97		
	07/14/16		-	30.85	-	3,401.77		
	08/11/16		-	31.22	-	3,401.40		
	08/23/16		-	31.27	-	3,401.35		
	09/06/16		-	30.98	-	3,401.64		
	09/20/16		-	29.45	-	3,403.17		
	10/17/16		-	28.65	-	3,403.97		
	10/31/16		-	28.70	-	3,403.92		
	10/31/16		-	28.70	-	3,403.92		
	11/17/16		-	28.64	-	3,403.98		
	12/01/16		-	28.66	-	3,403.96		
	12/21/16		-	28.58	-	3,404.04		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-3	07/10/02	3,433.61	-	34.48	-	3,399.13		
	04/15/03		-	32.14	-	3,401.47		
	07/14/03		-	32.95	-	3,400.66		
	04/20/04		-	29.17	-	3,404.44		
	05/07/04		-	29.55	-	3,404.06		
	05/25/04		-	29.80	-	3,403.81		
	06/10/04		-	30.12	-	3,403.49		
	07/14/04		-	28.33	-	3,405.28		
	07/21/04		-	28.59	-	3,405.02		
	08/02/04		-	28.85	-	3,404.76		
	09/10/04		-	28.35	-	3,405.26		
	09/14/04		-	28.45	-	3,405.16		
	10/05/04		-	25.00	-	3,408.61		
	10/19/04		-	23.24	-	3,410.37		
	11/02/04		-	23.29	-	3,410.32		
	11/15/04		-	24.10	-	3,409.51		
	12/06/04		-	24.33	-	3,409.28		
	12/21/04		-	24.39	-	3,409.22		
	01/03/05		-	24.73	-	3,408.88		
	01/18/05		-	24.94	-	3,408.67		
	02/01/05		-	25.08	-	3,408.53		
	03/21/05		-	25.40	-	3,408.21		
	04/21/05		-	25.66	-	3,407.95		
	05/05/05		-	25.63	-	3,407.98		
	05/17/05		-	25.82	-	3,407.79		
	08/15/05		-	26.06	-	3,407.55		
	10/05/05		-	25.98	-	3,407.63		
	11/18/05		-	26.26	-	3,407.35		
	01/12/06		-	26.37	-	3,407.24		
	02/16/06		-	26.52	-	3,407.09		
	03/16/06		-	26.71	-	3,406.90		
	04/10/06		-	26.69	-	3,406.92		
	05/22/06		-	26.84	-	3,406.77		
	07/20/06		-	28.27	-	3,405.34		
	08/07/06		-	27.39	-	3,406.22		
	09/11/06		-	26.52	-	3,407.09		
	10/17/06		-	22.62	-	3,410.99		
	11/21/06		-	26.77	-	3,406.84		
	12/13/06		-	26.80	-	3,406.81		
	01/09/07		-	26.92	-	3,406.69		
	02/14/07		-	26.84	-	3,406.77		
	02/22/07		-	26.87	-	3,406.74		
	03/01/07		-	26.84	-	3,406.77		
	03/13/07		-	26.89	-	3,406.72		
	05/10/07		-	26.48	-	3,407.13		
	08/10/07		-	26.61	-	3,407.00		
	08/20/07		-	26.70	-	3,406.91		
	11/15/07		-	27.07	-	3,406.54		
	02/28/08		-	26.99	-	3,406.62		
	05/28/08		-	27.76	-	3,405.85		
	08/20/08		-	27.85	-	3,405.76		
	11/07/08		-	27.47	-	3,406.14		
	02/09/09		-	27.58	-	3,406.03		
	05/14/09		-	27.44	-	3,406.17		
	08/12/09		-	28.18	-	3,405.43		
	11/10/09		-	28.48	-	3,405.13		
	02/03/10		-	28.64	-	3,404.97		
	05/27/10		-	28.49	-	3,405.12		
	08/16/10		-	28.78	-	3,404.83		
	11/10/10		-	28.86	-	3,404.75		
	02/17/11		-	28.84	-	3,404.77		
	05/24/11		-	29.18	-	3,404.43		
	08/19/11		-	30.19	-	3,403.42		
	10/03/11		-	30.30	-	3,403.31		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-3	11/10/11	3,433.61	-	30.34	-	3,403.27		
	12/09/11		-	30.36	-	3,403.25		
	02/24/12		-	30.32	-	3,403.29		
	02/28/12		-	30.37	-	3,403.24		
	03/27/12		-	30.43	-	3,403.18		
	04/12/12		-	30.53	-	3,403.08		
	04/12/12		-	30.53	-	3,403.08		
	05/05/12		-	30.70	-	3,402.91		
	06/21/12		-	30.70	-	3,402.91		
	07/09/12		-	31.22	-	3,402.39		
	08/02/12		-	31.13	-	3,402.48		
	08/16/12		-	31.27	-	3,402.34		
	08/28/12		-	31.37	-	3,402.24		
	09/12/12		-	31.48	-	3,402.13		
	09/26/12		-	31.85	-	3,401.76		
	10/10/12		-	31.56	-	3,402.05		
	10/26/12		-	31.58	-	3,402.03		
	11/07/12		-	31.59	-	3,402.02		
	11/20/12		-	31.58	-	3,402.03		
	12/06/12		-	31.52	-	3,402.09		
	12/18/12		-	31.54	-	3,402.07		
	01/03/13		-	31.57	-	3,402.04		
	01/11/13		-	31.51	-	3,402.10		
	01/25/13		-	31.57	-	3,402.04		
	02/07/13		-	31.59	-	3,402.02		
	02/28/13		-	31.90	-	3,401.71		
	03/08/13		-	31.59	-	3,402.02		
	03/21/13		-	31.57	-	3,402.04		
	04/04/13		-	31.71	-	3,401.90		
	04/17/13		-	31.62	-	3,401.99		
	05/01/13		-	31.73	-	3,401.88		
	05/23/13		-	31.68	-	3,401.93		
	06/14/13		-	31.83	-	3,401.78		
	06/28/13		-	31.95	-	3,401.66		
	07/10/13		-	32.07	-	3,401.54		
	07/24/13		-	32.15	-	3,401.46		
	08/09/13		-	32.29	-	3,401.32		
	08/22/13		-	32.43	-	3,401.18		
	09/05/13		-	32.53	-	3,401.08		
	09/19/13		-	32.63	-	3,400.98		
	10/07/13		-	32.70	-	3,400.91		
	10/17/13		-	32.69	-	3,400.92		
	10/31/13		-	32.52	-	3,401.09		
	11/14/13		-	32.45	-	3,401.16		
	11/27/13		-	32.45	-	3,401.16		
	12/11/13		-	32.43	-	3,401.18		
	12/22/13		-	32.43	-	3,401.18		
	01/09/14		-	32.40	-	3,401.21		
	01/23/14		-	32.41	-	3,401.20		
	02/05/14		-	32.41	-	3,401.20		
	02/19/14		-	32.37	-	3,401.24		
	03/05/14		-	32.37	-	3,401.24		
	03/19/14		-	32.39	-	3,401.22		
	04/02/14		-	32.35	-	3,401.26		
	04/15/14		-	32.36	-	3,401.25		
	05/01/14		-	32.37	-	3,401.24		
	05/13/14		-	32.39	-	3,401.22		
	05/28/14		-	32.53	-	3,401.08		
	06/10/14		-	32.75	-	3,400.86		
	06/24/14		-	32.86	-	3,400.75		
	07/10/14		-	32.99	-	3,400.62		
	07/23/14		-	33.10	-	3,400.51		
	08/05/14		-	33.23	-	3,400.38		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-3	08/12/14	3,433.61	-	33.30	-	3,400.31		
	09/03/14		-	33.43	-	3,400.18		
	09/16/14		-	33.30	-	3,400.31		
	10/05/14		-	30.12	-	3,403.49		
	10/21/14		-	29.91	-	3,403.70		
	10/28/14		-	29.93	-	3,403.68		
	11/13/14		-	29.92	-	3,403.69		
	11/25/14		-	29.94	-	3,403.67		
	12/10/14		-	29.92	-	3,403.69		
	12/21/14		-	29.97	-	3,403.64		
	01/14/15		-	30.12	-	3,403.49		
	01/21/15		-	30.16	-	3,403.45		
	02/17/15		-	30.31	-	3,403.30		
	03/04/15		-	30.45	-	3,403.16		
	03/20/15		-	30.44	-	3,403.17		
	04/01/15		-	30.41	-	3,403.20		
	04/15/15		-	30.45	-	3,403.16		
	04/28/15		-	30.55	-	3,403.06		
	05/12/15		-	30.61	-	3,403.00		
	05/27/15		-	30.67	-	3,402.94		
	06/09/15		-	30.79	-	3,402.82		
	06/23/15		-	30.94	-	3,402.67		
	07/14/15		-	31.16	-	3,402.45		
	08/05/15		-	31.43	-	3,402.18		
	08/18/15		-	31.55	-	3,402.06		
	09/12/15		-	31.74	-	3,401.87		
	10/01/15		-	31.81	-	3,401.80		
	10/14/15		-	31.82	-	3,401.79		
	10/27/15		-	31.76	-	3,401.85		
	11/12/15		-	37.74	-	3,395.87		
	11/24/15		-	31.69	-	3,401.92		
	12/09/15		-	31.66	-	3,401.95		
	12/22/15		-	31.66	-	3,401.95		
	01/06/16		-	31.68	-	3,401.93		
	01/21/16		-	31.72	-	3,401.89		
	03/01/16		-	31.72	-	3,401.89		
	03/15/16		-	31.70	-	3,401.91		
	03/30/16		-	31.66	-	3,401.95		
	04/27/16		-	31.64	-	3,401.97		
	05/17/16		-	31.78	-	3,401.83		
	06/01/16		-	31.89	-	3,401.72		
	06/14/16		-	31.99	-	3,401.62		
	06/28/16		-	32.15	-	3,401.46		
	07/14/16		-	32.35	-	3,401.26		
	08/11/16		-	32.66	-	3,400.95		
	08/23/16		-	32.73	-	3,400.88		
	09/06/16		-	32.57	-	3,401.04		
	09/20/16		-	31.19	-	3,402.42		
	10/05/16		-	30.28	-	3,403.33		
	10/17/16		-	30.26	-	3,403.35		
	10/31/16		-	30.34	-	3,403.27		
	11/17/16		-	30.26	-	3,403.35		
	12/01/16		-	30.28	-	3,403.33		
	12/21/16		-	30.27	-	3,403.34		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-4	07/10/02	3,432.35	30.70	30.95	0.25	3,401.63		
	11/18/02		29.28	29.95	0.67	3,403.00		
	12/13/02		29.75	30.99	1.24	3,402.48		
	03/24/03		30.56	31.03	0.47	3,401.74		
	04/15/03		30.55	31.05	0.50	3,401.75		
	05/02/03		30.71	30.94	0.23	3,401.62		
	06/16/03		31.09	31.18	0.09	3,401.25		
	07/14/03		31.50	31.81	0.31	3,400.82		
	07/31/03		31.49	31.80	0.31	3,400.83		
	09/22/03		32.05	32.07	0.02	3,400.30		
	10/23/03		32.03	33.07	1.04	3,400.22		
	11/05/03		32.10	34.65	2.55	3,400.00		
	01/02/04		31.82	35.30	3.48	3,400.18		
	01/30/04		32.20	34.20	2.00	3,399.95		
	03/03/04		32.19	34.21	2.02	3,399.96		
	03/15/04		32.15	33.87	1.72	3,400.03		
	03/25/04		32.14	33.87	1.73	3,400.04		
	04/20/04		27.20	27.86	0.66	3,405.08		
	05/07/04		27.89	28.63	0.74	3,404.39		
	05/25/04		28.55	28.78	0.23	3,403.78		
	06/10/04		28.80	28.84	0.04	3,403.55		
	07/14/04		-	26.88	-	3,405.47		
	07/21/04		-	27.67	-	3,404.68		
	08/02/04		-	27.28	-	3,405.07		
	09/10/04		-	27.25	-	3,405.10		
	09/14/04		-	27.15	-	3,405.20		
	10/05/04		-	23.20	-	3,409.15		
	10/19/04		-	22.00	-	3,410.35		
	11/02/04		-	22.29	-	3,410.06		
	11/15/04		-	22.95	-	3,409.40		
	12/06/04		-	23.19	-	3,409.16		
	12/21/04		-	23.21	-	3,409.14		
	01/03/05		-	23.56	-	3,408.79		
	01/18/05		-	23.75	-	3,408.60		
	02/01/05		-	23.83	-	3,408.52		
	03/21/05		-	24.11	-	3,408.24		
	04/21/05		-	24.56	-	3,407.79		
	05/05/05		-	24.54	-	3,407.81		
	05/17/05		-	24.68	-	3,407.67		
	08/15/05		-	24.98	-	3,407.37		
	10/05/05		-	24.85	-	3,407.50		
	11/18/05		-	25.04	-	3,407.31		
	01/12/06		-	25.13	-	3,407.22		
	02/16/06		-	25.31	-	3,407.04		
	03/16/06		-	25.42	-	3,406.93		
	04/10/06		-	25.42	-	3,406.93		
	05/22/06		-	25.29	-	3,407.06		
	07/20/06		-	26.02	-	3,406.33		
	08/07/06		-	26.33	-	3,406.02		
	09/11/06		-	25.02	-	3,407.33		
	10/17/06		-	25.34	-	3,407.01		
	11/21/06		-	25.37	-	3,406.98		
	12/13/06		-	24.71	-	3,407.64		
	01/09/07		-	25.81	-	3,406.54		
	02/14/07		-	25.51	-	3,406.84		
	02/22/07		-	25.47	-	3,406.88		
	03/01/07		-	25.43	-	3,406.92		
	03/13/07		-	25.46	-	3,406.89		
	04/09/07		-	25.39	-	3,406.96		
	05/10/07		-	25.05	-	3,407.30		
	05/16/07		-	24.83	-	3,407.52		
	05/29/07		-	24.71	-	3,407.64		
	06/06/07		-	22.12	-	3,410.23		
	06/21/07		-	24.94	-	3,407.41		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-4	07/12/07	3,432.35	-	25.10	-	3,407.25		
	07/25/07		-	25.26	-	3,407.09		
	08/08/07		-	25.38	-	3,406.97		
	08/20/07		-	25.49	-	3,406.86		
	09/07/07		-	26.66	-	3,405.69		
	09/19/07		-	25.64	-	3,406.71		
	10/01/07		-	24.03	-	3,408.32		
	10/15/07		-	25.69	-	3,406.66		
	11/02/07		-	25.71	-	3,406.64		
	11/15/07		-	25.73	-	3,406.62		
	11/29/07		-	25.75	-	3,406.60		
	12/27/07		-	25.65	-	3,406.70		
	01/18/08		-	25.66	-	3,406.69		
	02/20/08		-	25.17	-	3,407.18		
	02/28/08		-	25.65	-	3,406.70		6.25
	04/30/08		-	25.71	-	3,406.64		
	05/28/08		-	25.94	-	3,406.41		
	05/30/08		-	25.71	-	3,406.64		
	06/25/08		-	26.13	-	3,406.22		
	07/02/08		-	26.20	-	3,406.15		
	07/07/08		-	26.25	-	3,406.10		10.00
	07/14/08		-	26.30	-	3,406.05		25.00
	07/22/08		-	26.35	-	3,406.00		
	07/30/08		-	26.40	-	3,405.95		
	08/05/08		26.40	26.47	0.07	3,405.94		
	08/14/08		-	26.52	-	3,405.83		10.00
	08/20/08		-	26.49	-	3,405.86		
	09/20/08		-	26.17	-	3,406.18		15.00
	11/07/08		-	26.08	-	3,406.27		
	11/15/08		-	23.24	-	3,409.11		
	11/24/08		-	26.10	-	3,406.25		
	11/26/08		-	26.19	-	3,406.16		
	12/20/08		-	26.06	-	3,406.29		
	01/16/09		-	26.19	-	3,406.16		
	02/09/09		-	26.22	-	3,406.13		
	04/08/09		-	26.51	-	3,405.84		50.00
	04/16/09		-	26.40	-	3,405.95		52.00
	04/23/09		-	26.45	-	3,405.90		50.00
	05/06/09		-	26.59	-	3,405.76		40.00
	05/14/09		-	26.62	-	3,405.73		
	07/08/09		-	26.79	-	3,405.56		50.00
	07/24/09		-	26.82	-	3,405.53		
	08/04/09		-	26.84	-	3,405.51		55.00
	08/12/09		-	26.90	-	3,405.46		
	08/19/09		-	26.90	-	3,405.45		47.00
	09/01/09		27.02	27.08	0.06	3,405.32	3	43.00
	09/22/09		27.15	27.18	0.03	3,405.20	0.25	5.00
	10/12/09		-	27.16	-	3,405.20	0.5	12.00
	10/30/09		-	27.21	-	3,405.14		
	11/10/09		27.15	27.17	0.02	3,405.20	1	10.00
	01/08/10		-	27.06	-	3,405.29		10.00
	01/22/10		-	26.93	-	3,405.42		20.00
	01/26/10		-	27.08	-	3,405.27		
	01/08/10		-	27.06	-	3,405.29		
	01/22/10		-	26.93	-	3,405.42		30.00
	01/26/10		-	27.08	-	3,405.27		30.00
	02/03/10		-	26.98	-	3,405.37		50.00
	02/10/10		-	27.06	-	3,405.29		50.00
	02/22/10		-	26.98	-	3,405.37		50.00
	03/09/10		-	26.94	-	3,405.41		50.00
	03/24/10		-	26.96	-	3,405.39		
	04/12/10		-	26.95	-	3,405.40		
	04/27/10		-	26.97	-	3,405.38		50.00

1. PSH = Phase Separated Hydrocarbons

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2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-4	05/27/10	3,432.35	27.16	27.21	0.05	3,405.19		50.00
	06/21/10		27.39	27.45	0.06	3,404.95		50.00
	07/07/10		-	27.33	-	3,405.02		45.00
	07/20/10		-	27.17	-	3,405.18		50.00
	08/03/10		-	27.35	-	3,405.00		50.00
	08/16/10		27.5	27.53	0.03	3,404.85		50.00
	09/02/10		-	27.51	-	3,404.84		45.00
	09/17/10		-	27.60	-	3,404.76		50.00
	10/05/10		27.59	27.61	0.02	3,404.76		50.00
	11/10/10		27.51	27.57	0.06	3,404.83		50.00
	12/29/10		-	27.36	-	3,404.99		30.00
	02/17/11		27.46	27.58	0.12	3,404.88		
	03/02/11		-	25.99	-	3,406.36		30.00
	03/16/11		-	26.54	-	3,405.81		20.00
	03/29/11		-	27.46	-	3,404.89		25.00
	04/15/11		27.64	27.77	0.13	3,404.70		30.00
	04/18/11		-	27.42	-	3,404.93		20.00
	05/06/11		-	27.78	-	3,404.57		25.00
	05/20/11		-	27.93	-	3,404.42		25.00
	05/24/11		-	27.94	-	3,404.41		
	06/01/11		-	28.00	-	3,404.35		20.00
	06/14/11		-	28.11	-	3,404.24		25.00
	06/30/11		-	28.31	-	3,404.04		20.00
	07/30/11		-	28.64	-	3,403.71		25.00
	09/20/11		-	28.93	-	3,403.42		
	10/03/11		-	29.03	-	3,403.32		
	11/10/11		-	29.02	-	3,403.33		20.00
	12/09/11		-	29.00	-	3,403.35		20.00
	02/24/12		-	29.21	-	3,403.14		20.00
	02/28/12		-	29.30	-	3,403.05		
	03/27/12		-	29.36	-	3,402.99		20.00
	04/12/12		-	29.45	-	3,402.90		20.00
	05/05/12		-	29.61	-	3,402.74		20.00
	05/17/12		-	29.66	-	3,402.69		
	06/21/12		-	29.61	-	3,402.74		
	07/09/12		-	29.91	-	3,402.44		25.00
	08/02/12		-	29.77	-	3,402.58		25.00
	08/16/12		-	29.97	-	3,402.38		
	08/28/12		-	30.02	-	3,402.33		25.00
	09/12/12		-	30.12	-	3,402.23		28.00
	09/26/12		-	30.50	-	3,401.85		20.00
	10/10/12		-	30.18	-	3,402.17		20.00
	10/26/12		-	30.22	-	3,402.13		20.00
	11/07/12		-	30.18	-	3,402.17		5.00
	11/20/12		-	30.29	-	3,402.06		25.00
	12/06/12		-	30.31	-	3,402.04		25.00
	12/18/12		-	30.26	-	3,402.09		25.00
	01/03/13		-	30.30	-	3,402.05		25.00
	01/11/13		-	30.17	-	3,402.18		25.00
	01/25/13		-	30.24	-	3,402.11		25.00
	02/07/13		-	30.32	-	3,402.03		25.00
	02/28/13		-	30.26	-	3,402.09		25.00
	03/08/13		-	30.32	-	3,402.03		25.00
	03/21/13		-	30.24	-	3,402.11	1	25.00
	04/04/13		-	33.34	-	3,399.01	1	25.00
	04/17/13		-	30.90	-	3,401.45	0.5	5.00
	05/01/13		-	30.34	-	3,402.01	0.5	25.00
	05/23/13		-	30.32	-	3,402.03	0.7	5.00
	06/14/13		-	30.52	-	3,401.83	0.2	5.00
	06/28/13		-	30.64	-	3,401.72	0.5	5.00
	07/10/13		-	30.74	-	3,401.62		5.00
	07/24/13		-	31.00	-	3,401.35		
	08/09/13		-	30.84	-	3,401.51		
	08/22/13		-	30.98	-	3,401.37		25.00

1. PSH = Phase Separated Hydrocarbons

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Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-4	09/05/13	3,432.35	-	31.10	-	3,401.25		3.50
	09/19/13		-	31.19	-	3,401.16		
	10/07/13		-	31.24	-	3,401.11		1.00
	10/17/13		-	31.16	-	3,401.19		0.75
	10/31/13		-	30.97	-	3,401.39		4.00
	11/14/13		-	30.86	-	3,401.50		
	11/27/13		-	30.87	-	3,401.49		3.00
	12/11/13		-	30.86	-	3,401.49		3.00
	12/22/13		-	30.87	-	3,401.49		3.00
	01/09/14		-	30.82	-	3,401.54	0.10	3.00
	01/23/14		-	30.85	-	3,401.51	0.10	3.00
	02/05/14		-	30.84	-	3,401.52	0.15	3.00
	02/19/14		-	30.90	-	3,401.46	0.10	3.00
	03/05/14		-	30.77	-	3,401.59	0.15	3.00
	03/19/14		-	30.80	-	3,401.56	0.10	3.00
	04/02/14		-	30.74	-	3,401.62	0.10	3.00
	04/15/14		-	30.80	-	3,401.56		
	05/01/14		-	30.76	-	3,401.60	0.15	5.00
	05/13/14		-	30.80	-	3,401.56	0.15	4.00
	05/28/14		30.90	30.92	0.02	3,401.45	0.10	4.00
	06/10/14		-	31.21	-	3,401.15	0.20	3.50
	06/24/14		-	31.34	-	3,401.02	0.05	5.00
	07/10/14		-	31.65	-	3,400.71		
	07/23/14		-	31.61	-	3,400.75	0.05	30.00
	08/05/14		-	31.73	-	3,400.63	0.50	30.00
	08/12/14		-	31.80	-	3,400.56	0.35	30.00
	09/03/14		-	31.97	-	3,400.39	0.15	30.00
	09/16/14		-	31.41	-	3,400.95	0.55	30.00
	10/05/14		-	28.28	-	3,404.08		
	10/21/14		-	28.19	-	3,404.17	0.25	5.00
	10/28/14		-	28.27	-	3,404.09	0.20	5.00
	11/13/14		-	28.28	-	3,404.07	0.45	5.00
	11/25/14		-	28.34	-	3,404.01	0.50	5.00
	12/10/14		-	28.31	-	3,404.04		7.00
	12/21/14		-	28.36	-	3,403.99	0.20	7.00
	01/14/15		-	28.61	-	3,403.74		
	01/21/15		-	28.58	-	3,403.77		4.00
	02/17/15		-	28.77	-	3,403.58		
	03/04/15		-	28.83	-	3,403.52		
	03/20/15		-	28.88	-	3,403.47	0.04	4.00
	04/01/15		-	28.84	-	3,403.51		
	04/15/15		-	28.82	-	3,403.53		
	04/28/15		-	28.98	-	3,403.37		4.00
	05/12/15		-	29.03	-	3,403.32		4.00
	05/27/15		-	29.11	-	3,403.24		4.00
	06/09/15		-	29.22	-	3,403.13		4.50
	06/23/15		-	29.37	-	3,402.98		4.50
	07/14/15		-	29.59	-	3,402.77		4.50
	08/05/15		-	29.87	-	3,402.48		
	08/18/15		-	29.96	-	3,402.39		
	09/12/15		-	30.28	-	3,402.07		
	10/01/15		-	30.26	-	3,402.09		2.00
	10/14/15		-	30.21	-	3,402.14		
	10/27/15		-	30.17	-	3,402.18		4.50
	11/12/15		-	30.15	-	3,402.20		
	11/24/15		-	30.08	-	3,402.27		
	12/09/15		-	30.03	-	3,402.33		
	12/22/15		-	30.04	-	3,402.32		
	01/06/16		-	30.07	-	3,402.29		
	01/21/16		-	30.08	-	3,402.28		
	03/01/16		-	30.12	-	3,402.24		
	03/15/16		-	30.10	-	3,402.26		
	03/30/16		-	30.05	-	3,402.31		

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Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-4	04/27/16	3,432.35	-	29.99	-	3,402.37		
	06/01/16		-	30.33	-	3,402.03		
	06/14/16		-	30.43	-	3,401.93		
	06/28/16		-	30.60	-	3,401.76		
	07/14/16		-	30.80	-	3,401.56		
	08/11/16		-	31.17	-	3,401.19		
	08/23/16		-	31.20	-	3,401.15		
	09/06/16		-	30.95	-	3,401.15		
	09/20/16		-	29.16	-	3,401.40		
	10/05/16		-	28.55	-	3,403.19		
	10/17/16		-	28.56	-	3,403.81		
	10/31/16		-	27.48	-	3,403.19		
	11/17/16		-	28.63	-	3,403.81		
	12/01/16		-	28.74	-	3,403.80		
	12/21/16		-	28.66	-	3,403.62		

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Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-5	07/10/02	3,429.63	-	27.16	-	3,402.47		
	04/15/03		-	27.79	-	3,401.84		
	07/14/03		-	28.79	-	3,400.84		
	04/20/04		-	23.73	-	3,405.90		
	05/07/04		-	24.75	-	3,404.88		
	05/25/04		-	25.32	-	3,404.31		
	06/10/04		-	25.66	-	3,403.97		
	07/14/04		-	23.33	-	3,406.30		
	07/21/04		-	24.30	-	3,405.33		
	08/02/04		-	23.88	-	3,405.75		
	09/10/04		-	23.58	-	3,406.05		
	09/14/04		-	23.88	-	3,405.75		
	10/05/04		-	17.86	-	3,411.77		
	10/19/04		-	17.50	-	3,412.13		
	11/02/04		-	17.52	-	3,412.11		
	11/15/04		-	19.54	-	3,410.09		
	12/06/04		-	20.04	-	3,409.59		
	12/21/04		-	20.17	-	3,409.46		
	01/03/05		-	20.60	-	3,409.03		
	01/18/05		-	20.86	-	3,408.77		
	02/01/05		-	21.05	-	3,408.58		
	03/21/05		-	21.41	-	3,408.22		
	04/21/05		-	21.76	-	3,407.87		
	05/05/05		-	21.76	-	3,407.87		
	05/17/05		-	21.87	-	3,407.76		
	08/15/05		-	22.00	-	3,407.63		
	10/05/05		-	22.01	-	3,407.62		
	11/18/05		-	22.20	-	3,407.43		
	01/12/06		-	22.32	-	3,407.31		
	02/16/06		-	22.56	-	3,407.07		
	03/16/06		-	22.71	-	3,406.92		
	04/10/06		-	22.66	-	3,406.97		
	05/22/06		-	22.83	-	3,406.80		
	07/20/06		-	23.26	-	3,406.37		
	08/07/06		-	23.27	-	3,406.36		
	09/11/06		-	22.23	-	3,407.40		
	10/17/06		-	22.67	-	3,406.96		
	11/21/06		-	22.67	-	3,406.96		
	12/13/06		-	22.71	-	3,406.92		
	01/09/07		-	22.83	-	3,406.80		
	02/14/07		-	22.67	-	3,406.96		
	02/22/07		-	22.69	-	3,406.94		
	03/01/07		-	22.64	-	3,406.99		
	03/13/07		-	22.68	-	3,406.95		
	05/10/07		-	21.88	-	3,407.75		
	08/10/07		-	22.49	-	3,407.14		
	08/20/07		-	22.60	-	3,407.03		
	11/15/07		-	22.87	-	3,406.76		
	02/28/08		-	22.84	-	3,406.79		
	04/30/08		-	22.89	-	3,406.74		
	05/28/08		-	23.14	-	3,406.49		
	05/30/08		-	22.89	-	3,406.74		10.00
	07/07/08		-	26.47	-	3,403.16		10.00
	07/14/08		-	23.50	-	3,406.13		25.00
	07/22/08		-	23.50	-	3,406.13		10.00
	07/30/08		-	23.65	-	3,405.98		20.00
	08/05/08		-	23.70	-	3,405.93		20.00
	08/14/08		-	23.74	-	3,405.89		12.00
	08/20/08		-	23.75	-	3,405.88		
	09/20/08		-	23.33	-	3,406.30		35.00
	09/29/08		-	23.39	-	3,406.24		40.00
	11/07/08		-	24.59	-	3,405.04		
	11/15/08		-	23.45	-	3,406.18		50.00
	11/24/08		-	23.34	-	3,406.29		25.00

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-5	11/26/08	3,429.63	-	23.37	-	3,406.26		25.00
	12/20/08		-	23.39	-	3,406.24		50.00
	01/16/09		-	23.42	-	3,406.21		
	02/09/09		-	23.44	-	3,406.19		
	04/08/09		-	23.49	-	3,406.14		50.00
	04/16/09		-	23.50	-	3,406.13		50.00
	04/23/09		-	24.31	-	3,405.32		50.00
	04/29/08		-	23.51	-	3,406.12		50.00
	05/06/09		-	23.59	-	3,406.04		50.00
	05/14/09		-	23.66	-	3,405.97		
	07/08/09		-	24.01	-	3,405.62		35.00
	07/24/09		-	24.07	-	3,405.56		
	08/04/09		-	24.48	-	3,405.15		55.00
	08/12/09		-	24.12	-	3,405.51		
	08/19/09		-	24.16	-	3,405.47		2.00
	09/01/09		-	24.02	-	3,405.61		3.00
	09/22/09		-	24.38	-	3,405.25		5.00
	10/12/09		-	24.38	-	3,405.25		18.00
	10/30/09		-	24.41	-	3,405.22		
	11/10/09		-	24.40	-	3,405.23		20.00
	01/08/10		-	24.29	-	3,405.34		10.00
	01/22/10		-	24.08	-	3,405.55		10.00
	01/26/10		-	24.32	-	3,405.31		
	02/03/10		-	24.26	-	3,405.37		
	02/10/10		-	24.28	-	3,405.35		30.00
	02/22/10		-	24.22	-	3,405.41		30.00
	03/09/10		-	24.20	-	3,405.43		
	03/24/10		-	24.21	-	3,405.42		
	04/12/10		-	24.20	-	3,405.43		
	04/27/10		-	24.23	-	3,405.40		
	05/27/10		-	24.40	-	3,405.23		
	06/21/10		-	24.63	-	3,405.00		
	07/07/10		-	24.54	-	3,405.09		
	07/20/10		-	24.42	-	3,405.21		
	08/03/10		-	24.60	-	3,405.03		
	08/16/10		-	24.77	-	3,404.86		
	09/02/10		-	24.76	-	3,404.87		
	09/17/10		-	24.84	-	3,404.79		50.00
	10/05/10		-	24.83	-	3,404.80		50.00
	11/10/10		-	24.77	-	3,404.86		50.00
	02/17/11		-	24.73	-	3,404.90		
	04/29/11		-	24.90	-	3,404.73		
	05/06/11		-	24.95	-	3,404.68		
	05/20/11		-	25.12	-	3,404.51		
	05/24/11		-	25.12	-	3,404.51		
	08/19/11		-	26.11	-	3,403.52		
	09/20/11		-	26.20	-	3,403.43		
	10/03/11		-	26.28	-	3,403.35		
	11/10/11		-	26.23	-	3,403.40		
	12/09/11		-	26.19	-	3,403.44		
	02/24/12		-	26.13	-	3,403.50		
	02/28/12		-	26.13	-	3,403.50		
	03/27/12		-	26.38	-	3,403.25		
	04/12/12		-	26.28	-	3,403.35		
	05/05/12		-	26.58	-	3,403.05		
	05/17/12		-	26.58	-	3,403.05		
	06/21/12		-	26.88	-	3,402.75		
	07/09/12		-	27.13	-	3,402.50		
	08/02/12		-	27.30	-	3,402.33		
	08/16/12		-	27.18	-	3,402.45		5.00
	08/28/12		-	27.25	-	3,402.38		
	09/12/12		-	27.35	-	3,402.28		
	09/26/12		-	27.75	-	3,401.88		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-5	10/10/12	3,429.63	-	27.35	-	3,402.28		
	10/26/12		-	27.40	-	3,402.23		
	11/07/12		-	27.30	-	3,402.33		5.00
	11/20/12		-	27.26	-	3,402.37		
	12/06/12		-	27.29	-	3,402.34		
	12/18/12		-	27.30	-	3,402.33		
	01/03/13		-	27.33	-	3,402.30		
	01/11/13		-	27.16	-	3,402.47		
	01/25/13		-	27.20	-	3,402.43		
	02/07/13		-	27.24	-	3,402.39		
	02/28/13		-	27.58	-	3,402.05		
	03/08/13		-	27.24	-	3,402.39		
	03/21/13		-	27.20	-	3,402.43		
	04/04/13		-	27.33	-	3,402.30		
	04/17/13		-	27.23	-	3,402.40		
	05/01/13		-	28.65	-	3,400.98		
	05/23/13		-	27.33	-	3,402.30		
	06/14/13		-	27.50	-	3,402.13		
	06/28/13		-	27.66	-	3,401.97		
	07/10/13		-	27.79	-	3,401.84		
	07/24/13		-	27.87	-	3,401.76		
	08/09/13		-	28.02	-	3,401.61		
	08/22/13		-	28.16	-	3,401.47		
	09/05/13		-	28.27	-	3,401.36		
	09/19/13		-	28.35	-	3,401.28		
	10/07/13		-	28.39	-	3,401.24		
	10/17/13		-	28.27	-	3,401.36		
	10/31/13		-	28.06	-	3,401.57		
	11/14/13		-	27.95	-	3,401.68		
	11/27/13		-	27.97	-	3,401.66		
	12/11/13		-	27.96	-	3,401.67		
	12/22/13		-	27.96	-	3,401.67		
	01/09/14		-	27.92	-	3,401.71		
	01/23/14		-	27.95	-	3,401.68		
	02/05/14		-	27.94	-	3,401.69		
	02/19/14		-	27.86	-	3,401.77		
	03/05/14		-	27.88	-	3,401.75		
	03/19/14		-	27.90	-	3,401.73		
	04/02/14		-	27.85	-	3,401.78		
	04/15/14		-	27.86	-	3,401.77		
	05/01/14		-	27.86	-	3,401.77		
	05/13/14		-	27.90	-	3,401.73		
	05/28/14		-	28.04	-	3,401.59		
	06/10/14		-	28.35	-	3,401.28		
	06/24/14		-	28.50	-	3,401.13		
	07/10/14		-	28.64	-	3,400.99		
	07/23/14		-	28.76	-	3,400.87		
	08/05/14		-	28.90	-	3,400.73		
	08/12/14		-	28.96	-	3,400.67		
	09/03/14		-	29.13	-	3,400.50		
	09/16/14		-	28.26	-	3,401.37		
	10/05/14		-	24.38	-	3,405.25		
	10/21/14		-	24.82	-	3,404.81		
	10/28/14		-	24.97	-	3,404.66		
	11/13/14		-	25.14	-	3,404.49		
	11/25/14		-	25.24	-	3,404.39		
	12/10/14		-	25.30	-	3,404.33		
	12/21/14		-	25.37	-	3,404.26		
	01/14/15		-	25.61	-	3,404.02		
	01/21/15		-	25.65	-	3,403.98		
	02/17/15		-	25.85	-	3,403.78		
	03/04/15		-	25.94	-	3,403.69		
	03/20/15		-	25.98	-	3,403.65		
	04/01/15		-	25.97	-	3,403.66		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-5	04/15/15	3,429.63	-	25.99	-	3,403.64		
	04/28/15		-	26.10	-	3,403.53		
	05/12/15		-	26.16	-	3,403.47		
	05/27/15		-	26.22	-	3,403.41		
	06/09/15		-	26.33	-	3,403.30		
	06/23/15		-	25.48	-	3,404.15		
	07/14/15		-	26.70	-	3,402.93		
	08/05/15		-	27.00	-	3,402.63		
	08/18/15		-	27.09	-	3,402.54		
	09/12/15		-	28.21	-	3,401.42		
	10/01/15		-	27.37	-	3,402.26		
	10/14/15		-	27.33	-	3,402.30		
	10/27/15		-	27.26	-	3,402.37		
	11/12/15		-	27.24	-	3,402.39		
	11/24/15		-	27.17	-	3,402.46		
	12/09/15		-	27.12	-	3,402.51		
	12/22/15		-	27.12	-	3,402.51		
	01/06/16		-	27.15	-	3,402.48		
	01/21/16		-	27.20	-	3,402.43		
	03/01/16		-	27.21	-	3,402.42		
	03/15/16		-	27.18	-	3,402.45		
	03/30/16		-	27.13	-	3,402.50		
	04/27/16		-	27.09	-	3,402.54		
	06/01/16		-	27.42	-	3,402.21		
	06/14/16		-	27.52	-	3,402.11		
	06/28/16		-	27.70	-	3,401.93		
	07/14/16		-	27.92	-	3,401.71		
	08/11/16		-	28.28	-	3,401.35		
	08/23/16		-	28.31	-	3,401.32		
	09/06/16		-	27.99	-	3,401.64		
	09/20/16		-	24.86	-	3,404.77		
	10/05/16		25.08	25.20	0.12	3,404.43		100.00
	10/17/16		-	25.38	-	3,404.25		
	10/31/16		-	25.60	-	3,404.03		
	11/17/16		-	25.57	-	3,404.06		
	12/01/16		-	25.83	-	3,403.80		
	12/21/16		-	25.68	-	3,403.95		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-6	07/10/02	3,429.30	-	27.16	-	3,402.14		
	04/15/03		-	27.93	-	3,401.37		
	07/14/03		-	28.90	-	3,400.40		
	04/20/04		-	23.65	-	3,405.65		
	05/07/04		-	24.72	-	3,404.58		
	05/25/04		-	25.30	-	3,404.00		
	06/10/04		-	25.75	-	3,403.55		
	07/14/04		-	23.15	-	3,406.15		
	07/21/04		-	24.41	-	3,404.89		
	08/02/04		-	23.78	-	3,405.52		
	09/10/04		-	23.86	-	3,405.44		
	09/14/04		-	24.10	-	3,405.20		
	10/05/04		-	16.96	-	3,412.34		
	10/19/04		-	16.84	-	3,412.46		
	11/02/04		-	16.86	-	3,412.44		
	11/15/04		-	19.33	-	3,409.97		
	12/06/04		-	19.77	-	3,409.53		
	12/21/04		-	19.98	-	3,409.32		
	01/03/05		-	20.42	-	3,408.88		
	01/18/05		-	20.70	-	3,408.60		
	02/01/05		-	20.90	-	3,408.40		
	03/21/05		-	21.52	-	3,407.78		
	04/21/05		-	21.64	-	3,407.66		
	05/05/05		-	21.62	-	3,407.68		
	05/17/05		-	21.77	-	3,407.53		
	08/15/05		-	21.91	-	3,407.39		
	10/05/05		-	21.98	-	3,407.32		
	11/18/05		-	22.25	-	3,407.05		
	01/12/06		-	22.36	-	3,406.94		
	02/16/06		-	22.51	-	3,406.79		
	03/16/06		-	22.71	-	3,406.59		
	04/10/06		-	22.65	-	3,406.65		
	05/22/06		-	22.82	-	3,406.48		
	07/20/06		-	23.26	-	3,406.04		
	08/07/06		-	24.37	-	3,404.93		
	09/11/06		-	22.28	-	3,407.02		
	10/17/06		-	22.54	-	3,406.76		
	11/21/06		-	22.66	-	3,406.64		
	12/13/06		-	22.69	-	3,406.61		
	01/09/07		-	22.83	-	3,406.47		
	02/14/07		-	22.75	-	3,406.55		
	02/22/07		-	22.78	-	3,406.52		
	03/01/07		-	22.75	-	3,406.55		
	03/13/07		-	22.78	-	3,406.52		
	05/10/07		-	22.06	-	3,407.24		
	08/10/07		-	22.56	-	3,406.74		
	08/20/07		-	22.67	-	3,406.63		
	11/15/07		-	22.46	-	3,406.84		
	02/28/08		-	22.91	-	3,406.39		
	05/28/08		-	23.19	-	3,406.11		
	08/20/08		-	23.82	-	3,405.48		
	11/07/08		-	23.41	-	3,405.89		
	02/09/09		-	23.53	-	3,405.77		
	05/14/09		-	23.77	-	3,405.53		
	08/12/09		-	24.19	-	3,405.11		
	11/10/09		-	24.46	-	3,404.84		
	02/03/10		-	24.32	-	3,404.98		
	05/27/10		-	24.50	-	3,404.80		
	08/16/10		-	24.89	-	3,404.41		
	11/10/10		-	24.98	-	3,404.32		
	02/17/11		-	24.84	-	3,404.46		
	05/24/11		-	25.20	-	3,404.10		
	08/19/11		-	26.16	-	3,403.14		
	10/03/11		-	26.36	-	3,402.94		

1. PSH = Phase Separated Hydrocarbons

Table 3
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Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-6	11/10/11	3,429.30	-	26.33	-	3,402.97		
	12/09/11		-	26.31	-	3,402.99		
	02/24/12		-	26.26	-	3,403.04		
	02/28/12		-	26.26	-	3,403.04		
	03/27/12		-	26.33	-	3,402.97		
	04/12/12		-	26.43	-	3,402.87		
	05/05/12		-	26.70	-	3,402.60		
	05/17/12		-	26.72	-	3,402.58		
	06/21/12		-	26.65	-	3,402.65		
	07/09/12		-	27.23	-	3,402.07		
	08/02/12		-	27.12	-	3,402.18		
	08/16/12		-	27.27	-	3,402.03		
	08/28/12		-	27.35	-	3,401.95		
	09/12/12		-	27.45	-	3,401.85		
	09/26/12		-	28.86	-	3,400.44		
	10/10/12		-	27.47	-	3,401.83		
	10/26/12		-	27.52	-	3,401.78		
	11/07/12		-	27.44	-	3,401.86		
	11/20/12		-	27.43	-	3,401.87		
	12/06/12		-	27.44	-	3,401.86		
	12/18/12		-	27.46	-	3,401.84		
	01/03/13		-	27.49	-	3,401.81		
	01/11/13		-	27.31	-	3,401.99		
	01/25/13		-	27.35	-	3,401.95		
	02/07/13		-	27.39	-	3,401.91		
	02/28/13		-	27.75	-	3,401.55		
	03/08/13		-	27.24	-	3,402.06		
	03/21/13		-	27.35	-	3,401.95		
	04/04/13		-	27.48	-	3,401.82		
	04/17/13		-	27.38	-	3,401.92		
	05/01/13		-	27.75	-	3,401.55		
	05/23/13		-	27.48	-	3,401.82		
	06/14/13		-	27.67	-	3,401.63		
	06/28/13		-	27.80	-	3,401.50		
	07/10/13		-	27.95	-	3,401.35		
	07/24/13		-	28.02	-	3,401.28		
	08/09/13		-	28.03	-	3,401.27		
	08/22/13		-	28.31	-	3,400.99		
	09/05/13		-	28.43	-	3,400.87		
	09/19/13		-	28.50	-	3,400.80		
	10/07/13		-	28.54	-	3,400.76		
	10/17/13		-	28.45	-	3,400.85		
	10/31/13		-	28.24	-	3,401.06		
	11/14/13		-	28.16	-	3,401.14		
	11/27/13		-	28.16	-	3,401.14		
	12/11/13		-	28.15	-	3,401.15		
	12/22/13		-	28.15	-	3,401.15		
	01/09/14		-	28.11	-	3,401.19		
	01/23/14		-	28.13	-	3,401.17		
	02/05/14		-	28.13	-	3,401.17		
	02/19/05		-	28.07	-	3,401.23		
	03/05/14		-	28.07	-	3,401.23		
	03/19/14		-	28.09	-	3,401.21		
	04/02/14		-	28.05	-	3,401.25		
	04/15/14		-	28.05	-	3,401.25		
	05/01/14		-	28.06	-	3,401.24		
	05/13/14		-	28.09	-	3,401.21		
	05/28/14		-	28.24	-	3,401.06		
	06/10/14		-	28.53	-	3,400.77		
	06/24/14		-	28.66	-	3,400.64		
	07/10/14		-	28.81	-	3,400.49		
	07/23/14		-	28.93	-	3,400.37		
	08/05/14		-	29.06	-	3,400.24		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-6	08/12/14	3,429.30	-	29.12	-	3,400.18		
	09/03/14		-	29.29	-	3,400.01		
	09/16/14		-	28.67	-	3,400.63		
	10/05/14		-	24.50	-	3,404.80		
	10/21/14		-	24.96	-	3,404.34		
	10/28/14		-	25.13	-	3,404.17		
	11/13/14		-	25.29	-	3,404.01		
	11/25/14		-	25.39	-	3,403.91		
	12/10/14		-	25.44	-	3,403.86		
	12/21/14		-	25.53	-	3,403.77		
	01/14/15		-	25.75	-	3,403.55		
	01/21/15		-	25.81	-	3,403.49		
	02/17/15		-	26.00	-	3,403.30		
	03/04/15		-	26.11	-	3,403.19		
	03/20/15		-	26.15	-	3,403.15		
	04/01/15		-	26.12	-	3,403.18		
	04/15/15		-	26.14	-	3,403.16		
	04/28/15		-	26.26	-	3,403.04		
	05/12/15		-	26.32	-	3,402.98		
	05/27/15		-	26.39	-	3,402.91		
	06/09/15		-	26.50	-	3,402.80		
	06/23/15		-	26.65	-	3,402.65		
	07/14/15		-	26.87	-	3,402.43		
	08/05/15		-	27.16	-	3,402.14		
	08/18/15		-	27.27	-	3,402.03		
	09/12/15		-	27.47	-	3,401.83		
	10/01/15		-	27.53	-	3,401.77		
	10/14/15		-	27.52	-	3,401.78		
	10/27/15		-	27.43	-	3,401.87		
	11/12/15		-	27.42	-	3,401.88		
	11/24/15		-	27.35	-	3,401.95		
	12/09/15		-	27.31	-	3,401.99		
	12/22/15		-	27.32	-	3,401.98		
	01/06/16		-	27.34	-	3,401.96		
	01/21/16		-	27.40	-	3,401.90		
	03/01/16		-	27.40	-	3,401.90		
	03/15/16		-	27.36	-	3,401.94		
	03/30/16		-	27.31	-	3,401.99		
	04/27/16		-	27.29	-	3,402.01		
	05/17/16		-	27.46	-	3,401.84		
	06/01/16		-	27.59	-	3,401.71		
	06/14/16		-	27.70	-	3,401.60		
	06/28/16		-	27.87	-	3,401.43		
	07/14/16		-	28.10	-	3,401.20		
	08/11/16		-	28.44	-	3,400.86		
	08/23/16		-	28.48	-	3,400.82		
	09/06/16		-	28.20	-	3,401.10		
	09/20/16		-	24.89	-	3,404.41		
	10/05/16		-	25.28	-	3,404.02		
	10/17/16		-	25.54	-	3,403.76		
	10/31/16		-	25.78	-	3,403.52		
	11/17/16		-	25.78	-	3,403.52		
	12/01/16		-	25.83	-	3,403.47		
	12/21/16		-	25.88	-	3,403.42		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

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Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-7	06/10/04	3,431.37	-	27.15	-	3,404.22		
	07/14/04		-	25.69	-	3,405.68		
	07/21/04		-	25.93	-	3,405.44		
	08/02/04		-	26.10	-	3,405.27		
	09/10/04		-	25.73	-	3,405.64		
	09/14/04		-	25.75	-	3,405.62		
	10/05/04		-	22.65	-	3,408.72		
	10/19/04		-	21.55	-	3,409.82		
	11/02/04		-	21.58	-	3,409.79		
	11/15/04		-	21.68	-	3,409.69		
	12/06/04		-	21.80	-	3,409.57		
	12/21/04		-	21.43	-	3,409.94		
	01/03/05		-	22.03	-	3,409.34		
	01/18/05		-	22.18	-	3,409.19		
	02/01/05		-	22.29	-	3,409.08		
	03/21/05		-	22.49	-	3,408.88		
	04/21/05		-	22.76	-	3,408.61		
	05/05/05		-	22.74	-	3,408.63		
	05/17/05		-	22.86	-	3,408.51		
	08/15/05		-	23.30	-	3,408.07		
	10/05/05		-	23.01	-	3,408.36		
	11/18/05		-	23.18	-	3,408.19		
	01/12/06		-	23.25	-	3,408.12		
	02/16/06		-	23.41	-	3,407.96		
	03/16/06		-	23.60	-	3,407.77		
	04/10/06		-	23.52	-	3,407.85		
	05/22/06		-	23.75	-	3,407.62		
	07/20/06		-	24.24	-	3,407.13		
	08/07/06		-	24.33	-	3,407.04		
	09/11/06		-	23.41	-	3,407.96		
	10/17/06		-	23.44	-	3,407.93		
	11/21/06		-	23.49	-	3,407.88		
	12/13/06		-	23.48	-	3,407.89		
	01/09/07		-	23.61	-	3,407.76		
	02/14/07		-	23.50	-	3,407.87		
	02/22/07		-	23.54	-	3,407.83		
	03/01/07		-	23.49	-	3,407.88		
	03/13/07		-	23.54	-	3,407.83		
	05/10/07		-	23.20	-	3,408.17		
	08/10/07		-	23.58	-	3,407.79		
	08/20/07		-	23.66	-	3,407.71		
	11/15/07		-	23.85	-	3,407.52		
	02/28/08		-	23.73	-	3,407.64		
	05/28/08		-	24.09	-	3,407.28		
	08/20/08		-	24.76	-	3,406.61		
	11/07/08		-	24.21	-	3,407.16		
	02/09/09		-	24.32	-	3,407.05		
	04/16/09		-	24.35	-	3,407.02		
	05/14/09		-	24.56	-	3,406.81		
	08/12/09		-	25.14	-	3,406.23		
	11/10/09		-	25.31	-	3,406.06		
	02/03/10		-	25.11	-	3,406.26		
	05/27/10		-	25.32	-	3,406.05		
	08/16/10		-	25.74	-	3,405.63		
	11/10/10		-	25.67	-	3,405.70		
	02/17/11		-	25.60	-	3,405.77		
	05/24/11		-	26.08	-	3,405.29		
	08/19/11		-	25.11	-	3,406.26		
	10/03/11		-	27.25	-	3,404.12		
	11/10/11		-	27.15	-	3,404.22		
	12/09/11		-	27.09	-	3,404.28		
	02/24/12		-	26.99	-	3,404.38		
	02/28/12		-	26.89	-	3,404.48		
	03/27/12		-	27.03	-	3,404.34		

1. PSH = Phase Separated Hydrocarbons

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Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-7	04/12/12	3,431.37	-	27.12	-	3,404.25		
	05/05/12		-	27.46	-	3,403.91		
	05/17/12		-	27.43	-	3,403.94		
	06/21/12		-	27.79	-	3,403.58		
	07/09/12		-	28.05	-	3,403.32		
	08/02/12		-	27.98	-	3,403.39		
	08/16/12		-	28.11	-	3,403.26		
	08/28/12		-	28.18	-	3,403.19		
	09/12/12		-	28.28	-	3,403.09		
	09/26/12		-	28.67	-	3,402.70		
	10/10/12		-	28.23	-	3,403.14		
	10/26/12		-	28.29	-	3,403.08		
	11/07/12		-	28.22	-	3,403.15		
	11/20/12		-	28.15	-	3,403.22		
	12/06/12		-	28.18	-	3,403.19		
	12/18/12		-	28.20	-	3,403.17		
	01/03/13		-	28.23	-	3,403.14		
	01/11/13		-	28.02	-	3,403.35		
	01/25/13		-	28.06	-	3,403.31		
	02/07/13		-	28.76	-	3,402.61		
	02/28/13		-	28.42	-	3,402.95		
	03/08/13		-	28.76	-	3,402.61		
	03/21/13		-	28.35	-	3,403.02		
	04/04/13		-	28.17	-	3,403.20		
	04/17/13		-	28.05	-	3,403.32		
	05/01/13		-	28.15	-	3,403.22		
	05/23/13		-	28.20	-	3,403.17		
	06/14/13		-	28.43	-	3,402.94		
	06/28/13		-	28.58	-	3,402.79		
	07/10/13		-	28.73	-	3,402.64		
	07/24/13		-	28.80	-	3,402.57		
	08/09/13		-	28.99	-	3,402.38		
	08/22/13		-	29.11	-	3,402.26		
	09/05/13		-	29.22	-	3,402.15		
	09/19/13		-	29.28	-	3,402.09		
	10/07/13		-	29.32	-	3,402.05		
	10/17/13		-	29.19	-	3,402.18		
	10/31/13		-	28.94	-	3,402.43		
	11/14/13		-	28.83	-	3,402.54		
	11/27/13		-	28.81	-	3,402.56		
	12/11/13		-	28.79	-	3,402.58		
	12/22/13		-	28.79	-	3,402.58		
	01/09/14		-	28.73	-	3,402.64		
	01/23/14		-	28.76	-	3,402.61		
	02/05/14		-	28.76	-	3,402.61		
	02/19/14		-	28.66	-	3,402.71		
	03/05/14		-	28.68	-	3,402.69		
	03/19/14		-	28.70	-	3,402.67		
	04/02/14		-	28.64	-	3,402.73		
	04/15/14		-	28.65	-	3,402.72		
	05/01/14		-	28.65	-	3,402.72		
	05/13/14		-	28.69	-	3,402.68		
	05/28/14		-	28.86	-	3,402.51		
	06/10/14		-	29.22	-	3,402.15		
	06/24/14		-	29.40	-	3,401.97		
	07/10/14		-	29.54	-	3,401.83		
	07/23/14		-	29.57	-	3,401.80		
	08/05/14		-	29.82	-	3,401.55		
	08/12/14		-	29.88	-	3,401.49		
	09/03/14		-	30.05	-	3,401.32		
	09/16/14		-	29.25	-	3,402.12		
	10/05/14		-	26.28	-	3,405.09		
	10/21/14		-	26.19	-	3,405.18		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-7	10/28/14	3,431.07	-	26.25	-	3,405.12		
	11/13/14		-	26.29	-	3,405.08		
	11/25/14		-	26.33	-	3,405.04		
	12/10/14		-	26.30	-	3,405.07		
	12/21/14		-	26.34	-	3,405.03		
	01/21/15		-	26.55	-	3,404.82		
	02/17/15		-	26.71	-	3,404.66		
	03/04/15		-	26.84	-	3,404.53		
	03/20/15		-	26.85	-	3,404.52		
	04/01/15		-	26.79	-	3,404.58		
	04/15/15		-	26.81	-	3,404.56		
	05/12/15		-	27.01	-	3,404.36		
	05/27/15		-	27.07	-	3,404.30		
	06/09/15		-	27.22	-	3,404.15		
	06/23/15		-	27.40	-	3,403.97		
	07/14/15		-	27.63	-	3,403.74		
	08/05/15		-	27.93	-	3,403.44		
	08/18/15		-	28.02	-	3,403.35		
	09/12/15		-	28.21	-	3,403.16		
	10/01/15		-	28.27	-	3,403.10		
	10/14/15		-	28.20	-	3,403.17		
	10/27/15		-	28.12	-	3,403.25		
	11/12/15		-	28.10	-	3,403.27		
	11/24/15		-	28.01	-	3,403.36		
	12/09/15		-	27.96	-	3,403.41		
	12/22/15		-	27.96	-	3,403.41		
	01/06/16		-	27.98	-	3,403.39		
	01/21/16		-	28.03	-	3,403.34		
	03/01/16		-	28.03	-	3,403.34		
	03/15/16		-	27.98	-	3,403.39		
	03/30/16		-	27.93	-	3,403.44		
	04/27/16		-	27.91	-	3,403.46		
	06/01/16		-	28.31	-	3,403.06		
	06/14/16		-	28.43	-	3,402.94		
	06/28/16		-	28.63	-	3,402.74		
	07/14/16		-	28.88	-	3,402.49		
	08/11/16		-	29.23	-	3,402.14		
	08/23/16		-	29.26	-	3,402.11		
	09/06/16		-	28.93	-	3,402.44		
	09/20/16		-	27.49	-	3,403.88		
	10/05/16		-	26.65	-	3,404.72		
	10/17/16		-	26.59	-	3,404.78		
	10/31/16		-	25.65	-	3,405.72		
	11/17/16		-	26.45	-	3,404.92		
	12/01/16		-	26.44	-	3,404.93		
	12/21/16		-	26.45	-	3,404.92		

1. PSH = Phase Separated Hydrocarbons

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All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-8	06/10/04	3,431.07	-	27.52	-	3,403.55		
	07/14/04		-	25.69	-	3,405.38		
	07/21/04		-	25.46	-	3,405.61		
	08/02/04		-	25.88	-	3,405.19		
	09/10/04		-	25.35	-	3,405.72		
	09/14/04		-	25.51	-	3,405.56		
	10/05/04		-	20.30	-	3,410.77		
	10/19/04		-	19.44	-	3,411.63		
	11/02/04		-	19.46	-	3,411.61		
	11/15/04		-	21.07	-	3,410.00		
	12/06/04		-	21.48	-	3,409.59		
	12/21/04		-	21.58	-	3,409.49		
	01/03/05		-	21.98	-	3,409.09		
	01/18/05		-	22.21	-	3,408.86		
	02/01/05		-	22.37	-	3,408.70		
	03/21/05		-	22.72	-	3,408.35		
	04/21/05		-	22.92	-	3,408.15		
	05/05/05		-	22.90	-	3,408.17		
	05/17/05		-	23.16	-	3,407.91		
	08/15/05		-	23.41	-	3,407.66		
	10/05/05		-	23.29	-	3,407.78		
	11/18/05		-	23.55	-	3,407.52		
	01/12/06		-	23.58	-	3,407.49		
	02/16/06		-	23.80	-	3,407.27		
	03/16/06		-	23.92	-	3,407.15		
	04/10/06		-	24.09	-	3,406.98		
	05/22/06		-	24.25	-	3,406.82		
	07/20/06		-	24.57	-	3,406.50		
	08/07/06		-	24.66	-	3,406.41		
	09/11/06		-	23.65	-	3,407.42		
	10/17/06		-	23.83	-	3,407.24		
	11/21/06		-	24.18	-	3,406.89		
	12/13/06		-	24.23	-	3,406.84		
	01/09/07		-	24.36	-	3,406.71		
	02/14/07		-	24.64	-	3,406.43		
	02/22/07		-	23.95	-	3,407.12		
	03/01/07		-	23.92	-	3,407.15		
	03/13/07		-	23.95	-	3,407.12		
	05/10/07		-	23.37	-	3,407.70		
	08/10/07		-	23.78	-	3,407.29		
	08/20/07		-	23.91	-	3,407.16		
	09/07/07		-	24.09	-	3,406.98		
	09/19/07		-	24.13	-	3,406.94		
	10/01/07		-	25.68	-	3,405.39		
	10/15/07		-	24.16	-	3,406.91		
	11/02/07		-	24.22	-	3,406.85		
	11/15/07		-	24.24	-	3,406.83		
	11/28/07		-	24.23	-	3,406.84		
	12/27/07		-	24.08	-	3,406.99		
	01/18/08		-	24.20	-	3,406.87		
	02/20/08		-	24.23	-	3,406.84		
	02/28/08		-	24.17	-	3,406.90		
	03/11/08		-	24.24	-	3,406.83		
	04/30/08		-	24.30	-	3,406.77		
	05/28/08		-	24.42	-	3,406.65		
	05/30/08		-	24.30	-	3,406.77		
	06/25/08		-	24.74	-	3,406.33		
	07/02/08		-	24.72	-	3,406.35		30.00
	07/07/08		-	24.87	-	3,406.20		
	07/14/08		-	24.90	-	3,406.17		
	07/22/08		-	24.91	-	3,406.16		10.00
	07/30/08		-	25.01	-	3,406.06		20.00
	08/05/08		-	25.05	-	3,406.02		20.00
	08/14/08		-	25.09	-	3,405.98		21.00

1. PSH = Phase Separated Hydrocarbons

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NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-8	08/20/08	3,431.07	-	24.98	-	3,406.09		
	09/20/08		-	24.64	-	3,406.43		35.00
	09/29/08		-	24.86	-	3,406.21		40.00
	11/07/08		-	24.59	-	3,406.48		
	11/15/08		-	24.73	-	3,406.34		50.00
	11/24/08		-	24.61	-	3,406.46		25.00
	11/26/08		-	24.64	-	3,406.43		25.00
	12/20/08		-	24.66	-	3,406.41		50.00
	01/16/09		-	24.69	-	3,406.38		
	02/09/09		-	24.72	-	3,406.35		
	04/08/09		-	25.05	-	3,406.02		50.00
	04/16/09		-	25.02	-	3,406.05		50.00
	04/23/09		-	24.80	-	3,406.27		50.00
	04/29/08		-	24.98	-	3,406.09		40.00
	05/06/09		-	24.82	-	3,406.25		50.00
	05/14/09		-	24.90	-	3,406.17		
	07/08/09		-	25.29	-	3,405.78		50.00
	07/24/09		-	25.34	-	3,405.73		0.00
	08/04/09		-	25.32	-	3,405.75		55.00
	08/12/09		-	25.41	-	3,405.66		
	08/19/09		-	25.43	-	3,405.64	0.1	40.00
	09/01/09		-	25.54	-	3,405.53		44.50
	09/22/09		-	25.65	-	3,405.42		5.00
	10/12/09		-	25.66	-	3,405.41		19.00
	10/30/09		-	25.70	-	3,405.37		
	11/10/09		-	25.68	-	3,405.39		10.00
	01/08/10		-	25.56	-	3,405.51		10.00
	01/22/10		-	25.44	-	3,405.63		10.00
	01/26/10		-	25.58	-	3,405.49		
	02/03/10		-	25.50	-	3,405.57		
	02/10/10		-	25.54	-	3,405.53		30.00
	03/09/10		-	25.45	-	3,405.62		30.00
	03/24/10		-	25.46	-	3,405.61		50.00
	04/12/10		-	25.45	-	3,405.62		50.00
	04/27/10		-	25.48	-	3,405.59		50.00
	05/27/10		-	25.67	-	3,405.40		
	06/21/10		-	25.90	-	3,405.17		55.00
	07/07/10		-	25.83	-	3,405.24		50.00
	07/20/10		-	25.68	-	3,405.39		55.00
	08/03/10		-	25.87	-	3,405.20		50.00
	08/16/10		-	26.04	-	3,405.03		45.00
	09/02/10		-	26.02	-	3,405.05		45.00
	09/17/10		-	26.11	-	3,404.96		
	11/10/10		-	26.03	-	3,405.04		
	12/29/10		-	25.86	-	3,405.21		20.00
	02/17/11		-	25.98	-	3,405.09		
	03/02/11		-	25.99	-	3,405.08		30.00
	03/16/11		-	26.06	-	3,405.01		30.00
	03/29/11		-	25.95	-	3,405.12		30.00
	04/15/11		-	26.15	-	3,404.92		30.00
	04/18/11		-	26.08	-	3,404.99		25.00
	05/06/11		-	26.20	-	3,404.87		25.00
	05/20/11		-	26.39	-	3,404.68		25.00
	05/24/11		-	26.39	-	3,404.68		
	06/01/11		-	26.46	-	3,404.61		20.00
	06/14/11		-	26.62	-	3,404.45		25.00
	06/30/11		-	26.81	-	3,404.26		25.00
	07/30/11		-	27.17	-	3,403.90		25.00
	08/19/11		-	27.35	-	3,403.72		
	09/20/11		-	27.45	-	3,403.62		
	10/03/11		-	27.54	-	3,403.53		
	11/10/11		-	27.51	-	3,403.56		20.00
	12/09/11		-	27.47	-	3,403.60		20.00

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-8	02/24/12	3,431.07	-	27.42	-	3,403.65		20.00
	02/28/12		-	27.40	-	3,403.67		
	03/27/12		-	27.47	-	3,403.60		20.00
	04/12/12		-	27.56	-	3,403.51		20.00
	05/05/12		-	27.85	-	3,403.22		20.00
	05/17/12		-	27.85	-	3,403.22		
	06/21/12		-	28.15	-	3,402.92		
	07/09/12		-	28.39	-	3,402.68		25.00
	08/02/12		-	28.29	-	3,402.78		25.00
	08/16/12		-	28.44	-	3,402.63		5.00
	08/28/12		-	28.52	-	3,402.55		
	09/12/12		-	28.63	-	3,402.44		25.00
	09/26/12		-	29.02	-	3,402.05		25.00
	10/10/12		-	28.65	-	3,402.42		25.00
	10/26/12		-	28.69	-	3,402.38		25.00
	11/07/12		-	28.61	-	3,402.46		5.00
	11/20/12		-	28.57	-	3,402.50		25.00
	12/06/12		-	28.59	-	3,402.48		25.00
	12/18/12		-	28.62	-	3,402.45		25.00
	01/03/13		-	28.65	-	3,402.42		25.00
	01/11/13		-	28.46	-	3,402.61		25.00
	01/25/13		-	28.50	-	3,402.57		25.00
	02/07/13		-	28.56	-	3,402.51		25.00
	02/28/13		-	28.86	-	3,402.21		25.00
	03/08/13		-	28.56	-	3,402.51		25.00
	03/21/13		-	28.50	-	3,402.57		25.00
	04/04/13		-	28.90	-	3,402.17	1	25.00
	04/17/13		-	28.50	-	3,402.57	0.3	25.00
	05/01/13		-	28.65	-	3,402.42	1	25.00
	05/23/13		-	28.60	-	3,402.47	0.2	25.00
	06/14/13		-	28.80	-	3,402.27		25.00
	06/28/13		-	28.95	-	3,402.12		25.00
	07/10/13		-	29.08	-	3,401.99		25.00
	07/24/13		-	29.17	-	3,401.90		
	08/09/13		-	29.32	-	3,401.75		
	08/22/13		-	29.46	-	3,401.61		25.00
	09/05/13		-	29.58	-	3,401.49		5.00
	09/19/13		-	29.66	-	3,401.41		
	10/07/13		-	29.70	-	3,401.37		25.00
	10/17/13		-	29.59	-	3,401.48		25.00
	10/31/13		-	29.38	-	3,401.69		25.00
	11/14/13		-	29.28	-	3,401.79		25.00
	11/27/13		-	29.29	-	3,401.78		25.00
	12/11/13		-	29.30	-	3,401.77		25.00
	12/22/13		-	29.30	-	3,401.77		25.00
	01/09/14		-	29.23	-	3,401.84	0.15	25.00
	01/23/14		-	29.28	-	3,401.79	0.15	25.00
	02/05/14		-	29.27	-	3,401.80	0.20	25.00
	02/19/14		-	29.23	-	3,401.84	0.20	25.00
	03/05/14		-	29.20	-	3,401.87	0.10	25.00
	03/19/14		-	29.22	-	3,401.85	0.20	25.00
	04/02/14		-	29.15	-	3,401.92	0.50	30.00
	04/15/14		-	29.19	-	3,401.88		
	05/01/14		-	29.18	-	3,401.89	0.75	30.00
	05/13/14		-	29.22	-	3,401.85	0.25	30.00
	05/28/14		-	29.35	-	3,401.72	0.10	30.00
	06/10/14		-	29.66	-	3,401.41	0.30	30.00
	06/24/14		-	29.80	-	3,401.27	0.15	25.00
	07/10/14		-	29.93	-	3,401.14		
	07/23/14		-	30.06	-	3,401.01		
	08/05/14		-	30.20	-	3,400.87		
	08/12/14		-	30.27	-	3,400.80		
	09/03/14		-	30.43	-	3,400.64		

1. PSH = Phase Separated Hydrocarbons

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Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-8	09/16/14	3,431.07	-	29.63	-	3,401.44		
	10/05/14		-	26.16	-	3,404.91		
	10/21/14		-	26.37	-	3,404.70	0.05	30.00
	10/28/14		-	26.48	-	3,404.59		30.00
	11/13/14		-	26.58	-	3,404.49		30.00
	11/25/14		-	26.66	-	3,404.41		30.00
	12/10/14		-	26.67	-	3,404.40		30.00
	12/21/14		-	26.73	-	3,404.34		30.00
	01/14/15		-	26.97	-	3,404.10		
	01/21/15		-	27.00	-	3,404.07		30.00
	02/17/15		-	27.18	-	3,403.89		
	03/04/15		-	27.40	-	3,403.67		
	03/20/15		-	27.30	-	3,403.77	0.30	30.00
	04/01/15		-	27.28	-	3,403.79		30.00
	04/15/15		-	27.25	-	3,403.82		30.00
	04/28/15		-	27.42	-	3,403.65		30.00
	05/12/15		-	27.47	-	3,403.60		30.00
	05/27/15		-	27.54	-	3,403.53		30.00
	06/09/15		-	27.65	-	3,403.42		30.00
	06/23/15		-	27.79	-	3,403.28		30.00
	07/14/15		-	28.01	-	3,403.06		30.00
	08/05/15		-	28.30	-	3,402.77		
	08/18/15		-	28.40	-	3,402.67		
	09/12/15		-	28.62	-	3,402.45		
	10/01/15		-	28.70	-	3,402.37		30.00
	10/14/15		-	28.63	-	3,402.44		
	10/27/15		-	28.59	-	3,402.48		30.00
	11/12/15		-	28.58	-	3,402.49		
	11/24/15		-	28.50	-	3,402.57		
	12/09/15		-	28.45	-	3,402.62		
	12/22/15		-	28.46	-	3,402.61		
	01/06/16		-	28.48	-	3,402.59		
	01/21/16		-	28.52	-	3,402.55		
	03/01/16		-	28.54	-	3,402.53		
	03/15/16		-	28.51	-	3,402.56		
	03/30/16		-	28.45	-	3,402.62		
	04/27/16		-	28.41	-	3,402.66		
	06/01/16		-	28.75	-	3,402.32		
	06/14/16		-	28.85	-	3,402.22		
	06/28/16		-	29.03	-	3,402.04		
	07/14/16		-	29.24	-	3,401.83		
	08/11/16		-	29.60	-	3,401.47		
	08/23/16		-	29.65	-	3,401.42		
	09/06/16		-	29.35	-	3,401.72		
	09/20/16		-	26.89	-	3,404.18		
	10/05/16		-	26.71	-	3,404.36		
	10/17/16		-	26.84	-	3,404.23		
	10/31/16		-	27.01	-	3,404.06		
	11/17/16		-	26.91	-	3,404.16		
	12/01/16		-	26.97	-	3,404.10		
	12/21/16		-	27.00	-	3,404.07		

1. PSH = Phase Separated Hydrocarbons

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Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-9	06/10/04	3,429.79	Screen Filled With Mud					
	07/14/04		-	24.02	-	3,405.77		
	07/21/04		-	23.84	-	3,405.95		
	08/02/04		-	24.77	-	3,405.02		
	09/10/04		-	24.21	-	3,405.58		
	09/14/04		-	24.27	-	3,405.52		
	10/05/04		-	15.51	-	3,414.28		
	10/19/04		-	16.54	-	3,413.25		
	11/02/04		-	16.57	-	3,413.22		
	11/15/04		-	19.53	-	3,410.26		
	12/06/04		-	20.02	-	3,409.77		
	12/21/04		-	20.36	-	3,409.43		
	01/03/05		-	20.83	-	3,408.96		
	01/18/05		-	21.10	-	3,408.69		
	02/01/05		-	21.30	-	3,408.49		
	03/21/05		-	21.69	-	3,408.10		
	04/21/05		-	22.08	-	3,407.71		
	05/05/05		-	22.06	-	3,407.73		
	05/17/05		-	22.23	-	3,407.56		
	08/15/05		-	22.30	-	3,407.49		
	10/05/05		-	22.41	-	3,407.38		
	11/18/05		-	22.68	-	3,407.11		
	01/12/06		-	22.71	-	3,407.08		
	02/16/06		-	22.93	-	3,406.86		
	03/16/06		-	23.12	-	3,406.67		
	04/10/06		-	23.10	-	3,406.69		
	05/22/06		-	23.21	-	3,406.58		
	07/20/06		-	23.69	-	3,406.10		
	08/07/06		-	24.02	-	3,405.77		
	09/11/06		-	22.61	-	3,407.18		
	10/17/06		-	22.98	-	3,406.81		
	11/21/06		-	23.06	-	3,406.73		
	12/13/06		-	23.71	-	3,406.08		
	01/09/07		-	23.24	-	3,406.55		
	02/14/07		-	23.19	-	3,406.60		
	02/22/07		-	23.09	-	3,406.70		
	03/01/07		-	23.07	-	3,406.72		
	03/13/07		-	23.10	-	3,406.69		
	05/10/07		-	22.04	-	3,407.75		
	05/29/07		-	22.08	-	3,407.71		
	06/06/07		-	24.68	-	3,405.11		
	06/21/07		-	22.35	-	3,407.44		
	08/10/07		-	22.86	-	3,406.93		
	08/20/07		-	22.99	-	3,406.80		
	11/15/07		-	23.28	-	3,406.51		
	02/28/08		-	23.24	-	3,406.55		
	04/30/08		-	23.30	-	3,406.49		
	05/28/08		-	23.53	-	3,406.26		
	05/30/08		-	23.30	-	3,406.49		
	08/20/08		-	24.14	-	3,405.65		
	09/20/08		-	23.71	-	3,406.08		
	09/29/08		-	23.77	-	3,406.02		
	11/07/08		-	23.74	-	3,406.05		
	11/15/08		-	23.86	-	3,405.93		
	11/24/08		-	23.76	-	3,406.03		
	11/26/08		-	23.79	-	3,406.00		
	12/20/08		-	23.82	-	3,405.97		
	01/16/09		-	23.85	-	3,405.94		
	02/09/09		-	23.78	-	3,406.01		
	04/08/09		-	24.15	-	3,405.64		
	04/16/09		-	24.23	-	3,405.56		
	04/23/09		-	25.45	-	3,404.34		
	04/29/08		-	23.95	-	3,405.84		
	05/06/09		-	24.02	-	3,405.77		

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MW-9	05/14/09	3,429.79	-	24.10	-	3,405.69		
	07/08/09		-	24.41	-	3,405.38		
	07/24/09		-	24.48	-	3,405.31		
	08/04/09		-	24.43	-	3,405.36		
	08/12/09		-	24.52	-	3,405.27		
	08/19/09		-	24.55	-	3,405.24		
	09/01/09		-	24.68	-	3,405.11		
	09/22/09		-	24.79	-	3,405.00		
	10/12/09		-	24.78	-	3,405.01		
	10/30/09		-	24.83	-	3,404.96		
	11/10/09		-	24.80	-	3,404.99		
	01/08/10		-	24.74	-	3,405.05		
	01/22/10		-	24.62	-	3,405.17		
	01/26/10		-	24.75	-	3,405.04		
	02/03/10		-	24.69	-	3,405.10		
	02/10/10		-	24.72	-	3,405.07		
	03/09/10		-	24.62	-	3,405.17		
	03/24/10		-	24.65	-	3,405.14		
	04/12/10		-	24.64	-	3,405.15		
	04/27/10		-	24.67	-	3,405.12		
	05/27/10		-	24.85	-	3,404.94		
	06/21/10		-	25.05	-	3,404.74		
	07/07/10		-	24.93	-	3,404.86		
	07/20/10		-	24.88	-	3,404.91		
	08/03/10		-	25.03	-	3,404.76		
	08/16/10		-	25.19	-	3,404.60		
	09/02/10		-	25.18	-	3,404.61		
	09/17/10		-	25.27	-	3,404.52		
	11/10/10		-	25.21	-	3,404.58		
	02/17/11		-	25.19	-	3,404.60		
	05/24/11		-	25.54	-	3,404.25		
	08/19/11		-	26.50	-	3,403.29		
	10/03/11		-	26.72	-	3,403.07		
	11/10/11		-	26.68	-	3,403.11		
	12/09/11		-	26.63	-	3,403.16		
	02/24/12		-	26.55	-	3,403.24		
	02/28/12		-	26.57	-	3,403.22		
	03/27/12		-	26.64	-	3,403.15		
	04/12/12		-	26.75	-	3,403.04		
	05/05/12		-	27.02	-	3,402.77		
	05/17/12		-	27.04	-	3,402.75		
	06/21/12		-	26.95	-	3,402.84		
	07/09/12		-	27.55	-	3,402.24		
	08/02/12		-	27.44	-	3,402.35		
	08/16/12		-	27.60	-	3,402.19		1.50
	08/28/12		-	27.67	-	3,402.12		
	09/12/12		-	27.77	-	3,402.02		
	09/26/12		-	28.16	-	3,401.63		
	10/10/12		-	27.75	-	3,402.04		
	10/26/12		-	27.80	-	3,401.99		
	11/07/12		-	27.72	-	3,402.07		5.00
	11/20/12		-	27.68	-	3,402.11		
	12/06/12		-	27.70	-	3,402.09		
	12/18/12		-	27.72	-	3,402.07		
	01/03/13		-	27.73	-	3,402.06		
	01/11/13		-	27.57	-	3,402.22		
	01/25/13		-	27.61	-	3,402.18		
	02/07/13		-	27.63	-	3,402.16		
	02/28/13		-	28.00	-	3,401.79		
	03/08/13		-	27.63	-	3,402.16		
	03/21/13		-	27.61	-	3,402.18		
	04/03/13		-	27.73	-	3,402.06		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-9	04/17/13	3,429.79	-	27.63	-	3,402.16		
	05/01/13		-	27.79	-	3,402.00		
	05/23/13		-	27.72	-	3,402.07		
	06/14/13		-	27.93	-	3,401.86		
	06/28/13		-	28.10	-	3,401.69		
	07/10/13		-	28.21	-	3,401.58		
	07/24/13		-	28.30	-	3,401.49		
	08/09/13		-	28.47	-	3,401.32		
	08/22/13		-	28.58	-	3,401.21		
	09/05/13		-	28.71	-	3,401.08		
	09/19/13		-	28.77	-	3,401.02		
	10/07/13		-	28.81	-	3,400.98		
	10/17/13		-	28.70	-	3,401.09		
	10/31/13		-	28.48	-	3,401.31		
	11/14/13		-	28.38	-	3,401.41		
	11/27/13		-	28.39	-	3,401.40		
	12/11/13		-	28.37	-	3,401.42		
	12/22/13		-	28.37	-	3,401.42		
	01/09/14		-	28.34	-	3,401.45		
	01/23/14		-	28.36	-	3,401.43		
	02/05/14		-	28.35	-	3,401.44		
	02/19/14		-	28.29	-	3,401.50		
	03/05/14		-	28.29	-	3,401.50		
	03/19/14		-	28.31	-	3,401.48		
	04/02/14		-	28.27	-	3,401.52		
	04/15/14		-	28.27	-	3,401.52		
	05/01/14		-	28.30	-	3,401.49		
	05/13/14		-	28.32	-	3,401.47		
	05/28/14		-	28.46	-	3,401.33		
	06/10/14		-	28.78	-	3,401.01		
	06/24/14		-	28.93	-	3,400.86		
	07/10/14		-	29.06	-	3,400.73		
	07/23/14		-	29.21	-	3,400.58		3.50
	08/05/14		-	29.34	-	3,400.45	0.10	3.50
	08/12/14		-	29.34	-	3,400.45		3.50
	09/03/14		-	29.56	-	3,400.23		3.50
	09/16/14		-	28.81	-	3,400.98	0.15	4.00
	10/05/14		-	24.31	-	3,405.48		
	10/21/14		-	24.99	-	3,404.80		
	10/28/14		-	25.18	-	3,404.61		
	11/13/14		-	25.41	-	3,404.38		
	11/25/14		-	25.54	-	3,404.25		
	12/10/14		-	25.64	-	3,404.15		
	12/21/14		-	25.72	-	3,404.07		
	01/21/15		-	26.05	-	3,403.74		
	02/17/15		-	26.24	-	3,403.55		
	03/04/15		-	26.30	-	3,403.49		
	03/20/15		-	26.38	-	3,403.41		
	04/01/15		-	26.39	-	3,403.40		
	04/15/15		-	26.39	-	3,403.40		
	04/28/15		-	26.51	-	3,403.28		
	05/12/15		-	26.57	-	3,403.22		
	05/27/15		-	26.62	-	3,403.17		
	06/09/15		-	26.73	-	3,403.06		
	06/23/15		-	26.88	-	3,402.91		
	07/14/15		-	27.10	-	3,402.69		
	08/05/15		-	27.40	-	3,402.39		
	08/18/15		-	27.50	-	3,402.29		
	09/12/15		-	27.70	-	3,402.09		
	10/01/15		-	27.78	-	3,402.01		
	10/14/15		-	27.75	-	3,402.04		
	10/27/15		-	27.66	-	3,402.13		
	11/12/15		-	27.64	-	3,402.15		
	11/24/15		-	27.57	-	3,402.22		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-9	12/09/15	3,429.79	-	27.54	-	3,402.25		
	12/22/15		-	27.54	-	3,402.25		
	01/06/16		-	27.56	-	3,402.23		
	01/21/16		-	27.62	-	3,402.17		
	03/01/16		-	27.62	-	3,402.17		
	03/15/16		-	27.58	-	3,402.21		
	03/30/16		-	27.54	-	3,402.25		
	04/27/16		-	27.51	-	3,402.28		
	05/17/16		-	27.68	-	3,402.11		
	06/01/16		-	27.82	-	3,401.97		
	06/14/16		-	27.92	-	3,401.87		
	06/28/16		-	28.10	-	3,401.69		
	07/14/16		-	28.34	-	3,401.45		
	08/11/16		-	28.68	-	3,401.11		
	08/23/16		-	28.72	-	3,401.07		
	09/06/16		-	28.40	-	3,401.39		
	09/20/16		-	24.18	-	3,405.61		
	10/05/16		-	25.29	-	3,404.50		
	10/17/16		-	25.65	-	3,404.14		
	10/31/16		-	25.95	-	3,403.84		
	11/17/16		-	25.94	-	3,403.85		
	12/01/16		-	26.02	-	3,403.77		
	12/21/16		-	26.06	-	3,403.73		

1. PSH = Phase Separated Hydrocarbons

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2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-10	11/15/04	3,429.49	-	19.61	-	3,409.88		
	12/06/04		-	19.95	-	3,409.54		
	12/21/04		-	20.13	-	3,409.36		
	01/03/05		-	20.56	-	3,408.93		
	01/18/05		-	20.79	-	3,408.70		
	02/01/05		-	20.98	-	3,408.51		
	03/21/05		-	21.36	-	3,408.13		
	04/21/05		-	21.64	-	3,407.85		
	05/05/05		-	21.69	-	3,407.80		
	05/17/05		-	21.81	-	3,407.68		
	08/15/05		-	21.93	-	3,407.56		
	10/05/05		-	21.98	-	3,407.51		
	11/18/05		-	22.22	-	3,407.27		
	01/12/06		-	22.33	-	3,407.16		
	02/16/06		-	22.47	-	3,407.02		
	03/16/06		-	22.77	-	3,406.72		
	04/10/06		-	22.60	-	3,406.89		
	05/22/06		-	22.78	-	3,406.71		
	07/20/06		-	23.18	-	3,406.31		
	08/07/06		-	23.25	-	3,406.24		
	09/11/06		-	22.11	-	3,407.38		
	10/17/06		-	22.46	-	3,407.03		
	11/21/06		-	22.57	-	3,406.92		
	12/13/06		-	22.61	-	3,406.88		
	01/09/07		-	22.71	-	3,406.78		
	02/14/07		-	22.65	-	3,406.84		
	02/22/07		-	22.64	-	3,406.85		
	03/01/07		-	22.58	-	3,406.91		
	03/13/07		-	22.64	-	3,406.85		
	05/10/07		-	21.61	-	3,407.88		
	08/10/07		-	22.48	-	3,407.01		
	08/20/07		-	22.59	-	3,406.90		
	11/15/07		-	22.87	-	3,406.62		
	02/28/08		-	22.81	-	3,406.68		
	05/28/08		-	23.09	-	3,406.40		
	08/20/08		-	23.73	-	3,405.76		
	11/07/08		-	23.38	-	3,406.11		
	02/09/09		-	23.41	-	3,406.08		
	04/16/09		-	23.51	-	3,405.98		
	05/14/09		-	23.62	-	3,405.87		
	08/12/09		-	24.11	-	3,405.38		
	11/10/09		-	24.36	-	3,405.13		
	02/03/10		-	24.20	-	3,405.29		
	05/27/10		-	24.38	-	3,405.11		
	08/16/10		-	24.74	-	3,404.75		
	11/10/10		-	24.75	-	3,404.74		
	02/17/11		-	24.72	-	3,404.77		
	04/29/11		-	24.88	-	3,404.61		
	05/06/11		-	24.92	-	3,404.57		
	05/20/11		-	25.09	-	3,404.40		
	05/24/11		-	25.09	-	3,404.40		
	08/19/11		-	26.10	-	3,403.39		
	09/20/11		-	26.20	-	3,403.29		
	10/03/11		-	26.27	-	3,403.22		
	11/10/11		-	26.39	-	3,403.10		
	12/09/11		-	26.15	-	3,403.34		
	02/24/12		-	26.06	-	3,403.43		
	02/28/12		-	26.07	-	3,403.42		
	03/27/12		-	26.12	-	3,403.37		
	04/12/12		-	26.43	-	3,403.06		
	05/05/12		-	26.54	-	3,402.95		
	05/17/12		-	26.53	-	3,402.96		
	06/21/12		-	26.50	-	3,402.99		
	07/09/12		-	27.10	-	3,402.39		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-10	08/02/12	3,429.49	-	26.08	-	3,403.41		
	08/16/12		-	27.14	-	3,402.35		5.00
	08/28/12		-	27.20	-	3,402.29		
	09/12/12		-	27.31	-	3,402.18		
	09/26/12		-	27.70	-	3,401.79		
	10/10/12		-	27.28	-	3,402.21		
	10/26/12		-	27.32	-	3,402.17		
	11/07/12		-	27.22	-	3,402.27		5.00
	11/20/12		-	27.18	-	3,402.31		
	12/06/12		-	27.21	-	3,402.28		
	12/18/12		-	27.23	-	3,402.26		
	01/03/13		-	27.29	-	3,402.20		
	08/16/12		-	27.14	-	3,402.35		5.00
	08/28/12		-	27.20	-	3,402.29		
	09/12/12		-	27.31	-	3,402.18		
	09/26/12		-	27.70	-	3,401.79		
	10/10/12		-	27.28	-	3,402.21		
	10/26/12		-	27.32	-	3,402.17		
	11/07/12		-	27.22	-	3,402.27		5.00
	11/20/12		-	27.18	-	3,402.31		
	12/06/12		-	27.21	-	3,402.28		
	12/18/12		-	27.23	-	3,402.26		
	01/03/13		-	27.29	-	3,402.20		
	01/11/13		-	27.06	-	3,402.43		
	01/25/13		-	27.10	-	3,402.39		
	02/07/13		-	27.19	-	3,402.30		
	02/28/13		-	27.48	-	3,402.01		
	03/08/13		-	27.19	-	3,402.30		
	03/21/13		-	27.10	-	3,402.39		
	04/03/13		-	27.21	-	3,402.28		
	04/17/13		-	27.10	-	3,402.39		
	05/01/13		-	27.12	-	3,402.37		
	05/23/13		-	27.19	-	3,402.30		
	06/14/13		-	27.42	-	3,402.07		
	06/28/13		-	27.58	-	3,401.91		
	07/10/13		-	27.72	-	3,401.77		
	07/24/13		-	27.80	-	3,401.69		
	08/09/13		-	27.95	-	3,401.54		
	08/22/13		-	28.08	-	3,401.41		
	09/05/13		-	28.21	-	3,401.28		
	09/19/13		-	28.27	-	3,401.22		
	10/07/13		-	28.30	-	3,401.19		
	10/17/13		-	28.16	-	3,401.33		
	10/31/13		-	27.93	-	3,401.56		
	11/14/13		-	27.84	-	3,401.65		
	11/27/13		-	27.85	-	3,401.64		
	12/11/13		-	27.86	-	3,401.63		
	12/22/13		-	27.85	-	3,401.64		
	01/09/14		-	27.80	-	3,401.69		
	01/23/14		-	27.83	-	3,401.66		
	02/05/14		-	27.82	-	3,401.67		
	02/19/14		-	27.73	-	3,401.76		
	03/05/14		-	27.75	-	3,401.74		
	03/19/14		-	27.77	-	3,401.72		
	04/02/14		-	27.71	-	3,401.78		
	04/15/14		-	27.74	-	3,401.75		
	05/01/14		-	27.73	-	3,401.76		
	05/13/14		-	27.77	-	3,401.72		
	05/28/14		-	27.90	-	3,401.59		
	06/10/14		-	28.24	-	3,401.25		
	06/24/14		-	28.39	-	3,401.10		
	07/10/14		-	28.53	-	3,400.96		
	07/23/14		-	28.67	-	3,400.82		
	08/05/14		-	28.80	-	3,400.69		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

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Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-10	08/12/14	3,429.49	-	28.87	-	3,400.62		
	09/03/14		-	29.03	-	3,400.46		
	09/16/14		-	27.84	-	3,401.65		
	10/05/14		-	23.97	-	3,405.52		
	10/21/14		-	24.55	-	3,404.94		
	10/28/14		-	24.73	-	3,404.76		
	11/13/14		-	24.95	-	3,404.54		
	11/25/14		-	25.07	-	3,404.42		
	12/10/14		-	25.15	-	3,404.34		
	12/21/14		-	25.23	-	3,404.26		
	01/14/15		-	25.47	-	3,404.02		
	01/21/15		-	25.54	-	3,403.95		
	02/17/15		-	25.73	-	3,403.76		
	03/04/15		-	25.84	-	3,403.65		
	03/20/15		-	25.87	-	3,403.62		
	04/01/15		-	25.85	-	3,403.64		
	04/15/15		-	25.86	-	3,403.63		
	04/28/15		-	25.99	-	3,403.50		
	05/12/15		-	26.03	-	3,403.46		
	05/27/15		-	26.10	-	3,403.39		
	06/09/15		-	26.21	-	3,403.28		
	06/23/15		-	26.35	-	3,403.14		
	07/14/15		-	26.57	-	3,402.92		
	08/05/15		-	26.86	-	3,402.63		
	08/18/15		-	26.96	-	3,402.53		
	09/12/15		-	27.16	-	3,402.33		
	10/01/15		-	27.24	-	3,402.25		
	10/14/15		-	27.18	-	3,402.31		
	10/27/15		-	27.13	-	3,402.36		
	11/12/15		-	27.11	-	3,402.38		
	11/24/15		-	27.03	-	3,402.46		
	12/09/15		-	26.98	-	3,402.51		
	12/22/15		-	27.00	-	3,402.49		
	01/06/16		-	27.02	-	3,402.47		
	01/21/16		-	27.06	-	3,402.43		
	03/01/16		-	27.08	-	3,402.41		
	03/15/16		-	27.05	-	3,402.44		
	03/30/16		-	26.99	-	3,402.50		
	04/27/16		-	26.99	-	3,402.50		
	06/01/16		-	27.29	-	3,402.20		
	06/14/16		-	27.40	-	3,402.09		
	06/28/16		-	27.57	-	3,401.92		
	07/14/16		-	27.81	-	3,401.68		
	08/11/16		-	28.17	-	3,401.32		
	08/23/16		-	28.19	-	3,401.30		
	09/06/16		-	27.85	-	3,401.64		
	09/20/16		-	24.27	-	3,405.22		
	10/05/16		-	24.92	-	3,404.57		
	10/17/16		-	25.18	-	3,404.31		
	10/31/16		-	25.45	-	3,404.04		
	11/17/16		-	25.41	-	3,404.08		
	12/01/16		-	25.47	-	3,404.02		
	12/21/16		-	25.52	-	3,403.97		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

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Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-11	11/15/04	3,428.32	-	18.26	-	3,410.06		
	12/06/04		-	18.67	-	3,409.65		
	12/21/04		-	18.93	-	3,409.39		
	01/03/05		-	19.40	-	3,408.92		
	01/18/05		-	19.68	-	3,408.64		
	02/01/05		-	19.90	-	3,408.42		
	03/21/05		-	20.34	-	3,407.98		
	04/21/05		-	20.70	-	3,407.62		
	05/05/05		-	20.71	-	3,407.61		
	05/17/05		-	20.87	-	3,407.45		
	08/15/05		-	20.95	-	3,407.37		
	10/05/05		-	21.04	-	3,407.28		
	11/18/05		-	21.31	-	3,407.01		
	01/12/06		-	21.55	-	3,406.77		
	02/16/06		-	21.58	-	3,406.74		
	03/16/06		-	21.77	-	3,406.55		
	04/10/06		-	21.75	-	3,406.57		
	05/22/06		-	21.90	-	3,406.42		
	08/07/06		-	22.32	-	3,406.00		
	09/11/06		-	21.19	-	3,407.13		
	10/17/06		-	21.49	-	3,406.83		
	11/21/06		-	21.61	-	3,406.71		
	12/13/06		-	21.64	-	3,406.68		
	01/09/07		-	21.47	-	3,406.85		
	02/14/07		-	21.70	-	3,406.62		
	02/22/07		-	21.72	-	3,406.60		
	03/01/07		-	21.69	-	3,406.63		
	03/13/07		-	21.73	-	3,406.59		
	05/10/07		-	20.04	-	3,408.28		
	08/10/07		-	22.54	-	3,405.78		
	08/20/07		-	21.63	-	3,406.69		
	11/15/07		-	21.94	-	3,406.38		
	02/28/08		-	21.89	-	3,406.43		
	05/28/08		-	21.17	-	3,407.15		
	08/20/08		-	22.77	-	3,405.55		
	11/07/08		-	22.38	-	3,405.94		
	02/09/09		-	22.51	-	3,405.81		
	04/16/09		-	22.44	-	3,405.88		
	05/14/09		-	22.73	-	3,405.59		
	08/12/09		-	23.17	-	3,405.15		
	11/10/09		-	23.42	-	3,404.90		
	02/03/10		-	23.30	-	3,405.02		
	05/27/10		-	23.46	-	3,404.86		
	08/16/10		-	23.81	-	3,404.51		
	11/10/10		-	23.85	-	3,404.47		
	02/17/11		-	23.81	-	3,404.51		
	05/24/11		-	24.16	-	3,404.16		
	08/19/11		-	25.19	-	3,403.13		
	10/03/11		-	25.34	-	3,402.98		
	11/10/11		-	25.28	-	3,403.04		
	12/09/11		-	25.23	-	3,403.09		
	02/24/12		-	25.14	-	3,403.18		
	02/28/12		-	25.19	-	3,403.13		
	03/27/12		-	25.21	-	3,403.11		
	04/12/12		-	25.33	-	3,402.99		
	05/05/12		-	25.65	-	3,402.67		
	05/17/12		-	25.65	-	3,402.67		
	06/21/12		-	25.60	-	3,402.72		
	07/09/12		-	26.21	-	3,402.11		
	08/02/12		-	26.08	-	3,402.24		
	08/16/12		-	26.24	-	3,402.08		5.00
	08/28/12		-	26.32	-	3,402.00		
	09/12/12		-	26.40	-	3,401.92		
	09/26/12		-	26.81	-	3,401.51		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-11	10/10/12	3,428.32	-	26.36	-	3,401.96		
	10/26/12		-	26.41	-	3,401.91		
	11/07/12		-	26.33	-	3,401.99		5.00
	11/20/12		-	26.29	-	3,402.03		
	12/06/12		-	26.21	-	3,402.11		
	12/18/12		-	26.24	-	3,402.08		
	01/03/13		-	26.29	-	3,402.03		
	01/11/13		-	26.18	-	3,402.14		
	01/25/13		-	26.23	-	3,402.09		
	02/07/13		-	26.20	-	3,402.12		
	02/28/13		-	26.60	-	3,401.72		
	03/08/13		-	26.20	-	3,402.12		
	03/21/13		-	26.23	-	3,402.09		
	04/04/13		-	23.35	-	3,404.97		
	04/17/13		-	26.22	-	3,402.10		
	05/01/13		-	26.25	-	3,402.07		
	05/23/13		-	26.32	-	3,402.00		
	06/14/13		-	26.53	-	3,401.79		
	06/28/13		-	26.69	-	3,401.63		
	07/10/13		-	26.83	-	3,401.49		
	07/24/13		-	26.92	-	3,401.40		
	08/09/13		-	27.05	-	3,401.27		
	08/22/13		-	27.19	-	3,401.13		
	09/05/13		-	27.30	-	3,401.02		
	09/19/13		-	27.37	-	3,400.95		
	10/07/13		-	27.41	-	3,400.91		
	10/17/13		-	27.28	-	3,401.04		
	10/31/13		-	27.04	-	3,401.28		
	11/14/13		-	26.96	-	3,401.36		
	11/27/13		-	26.97	-	3,401.35		
	12/11/13		-	26.94	-	3,401.38		
	12/22/13		-	26.94	-	3,401.38		
	01/09/14		-	26.91	-	3,401.41		
	01/23/14		-	26.93	-	3,401.39		
	02/05/14		-	26.91	-	3,401.41		
	02/19/14		-	26.87	-	3,401.45		
	03/05/14		-	26.86	-	3,401.46		
	03/19/14		-	26.88	-	3,401.44		
	04/02/14		-	26.84	-	3,401.48		
	04/15/14		-	26.86	-	3,401.46		
	05/01/14		-	26.86	-	3,401.46		
	05/13/14		-	26.89	-	3,401.43		
	05/28/14		-	27.03	-	3,401.29		
	06/10/14		-	27.36	-	3,400.96		
	06/24/14		-	27.51	-	3,400.81		
	07/10/14		-	27.65	-	3,400.67		
	07/23/14		-	27.78	-	3,400.54		
	08/05/14		-	27.92	-	3,400.40		
	08/12/14		-	27.98	-	3,400.34		
	09/03/14		-	28.14	-	3,400.18		
	09/16/14		-	27.36	-	3,400.96		
	10/05/14		-	22.74	-	3,405.58		
	10/21/14		-	23.47	-	3,404.85		
	10/28/14		-	23.68	-	3,404.64		
	11/13/14		-	23.95	-	3,404.37		
	11/25/14		-	24.09	-	3,404.23		
	12/10/14		-	24.20	-	3,404.12		
	12/21/14		-	24.30	-	3,404.02		
	01/14/15		-	24.56	-	3,403.76		
	01/21/15		-	24.62	-	3,403.70		
	02/17/15		-	24.83	-	3,403.49		
	03/04/15		-	24.91	-	3,403.41		
	03/20/15		-	24.97	-	3,403.35		
	04/01/15		-	24.96	-	3,403.36		

1. PSH = Phase Separated Hydrocarbons

Table 3
2017 Annual Groundwater Monitoring Report

GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006

All measurements are in feet above mean sea level

Monitor Well	Date Gauged	Relative Top of Casing Elevation (TOC)	Depth to PSH Below Top of Casing	Depth to Water Below Top of Casing	PSH Thickness	Corrected Relative Groundwater Elevation	PSH Recovered (gallons)	Volume Purged (gallons)
MW-11	04/15/15	3,428.32	-	24.98	-	3,403.34		
	04/28/15		-	25.09	-	3,403.23		
	05/12/15		-	25.15	-	3,403.17		
	05/27/15		-	25.21	-	3,403.11		
	06/09/15		-	25.32	-	3,403.00		
	06/23/15		-	25.47	-	3,402.85		
	07/14/15		-	25.69	-	3,402.63		
	08/05/15		-	26.00	-	3,402.32		
	08/18/15		-	26.09	-	3,402.23		
	09/12/15		-	26.27	-	3,402.05		
	10/01/15		-	26.35	-	3,401.97		
	10/14/15		-	26.31	-	3,402.01		
	10/27/15		-	26.23	-	3,402.09		
	11/12/15		-	26.21	-	3,402.11		
	11/24/15		-	26.14	-	3,402.18		
	12/09/15		-	26.11	-	3,402.21		
	12/22/15		-	26.11	-	3,402.21		
	01/06/16		-	26.13	-	3,402.19		
	01/21/16		-	26.18	-	3,402.14		
	03/01/16		-	26.19	-	3,402.13		
	03/15/16		-	26.16	-	3,402.16		
	03/30/16		-	26.11	-	3,402.21		
	04/27/16		-	26.10	-	3,402.22		
	05/17/16		-	26.27	-	3,402.05		
	06/01/16		-	26.41	-	3,401.91		
	06/14/16		-	26.52	-	3,401.80		
	06/28/16		-	26.69	-	3,401.63		
	07/14/16		-	26.93	-	3,401.39		
	08/11/16		-	27.27	-	3,401.05		
	08/23/16		-	27.30	-	3,401.02		
	09/06/16		-	26.98	-	3,401.34		
	09/20/16		-	22.19	-	3,406.13		
	10/05/16		-	23.80	-	3,404.52		
	10/17/16		-	24.20	-	3,404.12		
	10/31/16		-	24.53	-	3,403.79		
	11/17/16		-	24.53	-	3,403.79		
	12/01/16		-	24.60	-	3,403.72		
	12/21/16		-	24.69	-	3,403.63		

1. PSH = Phase Separated Hydrocarbons

Table 4
2017 Annual Groundwater Monitoring Report

Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number A4187003
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-1	09/13/01	0.002	0.003	<0.001	<0.001
	01/24/02	<0.001	<0.001	<0.001	<0.001
	04/12/02	<0.001	<0.001	<0.001	<0.001
	07/10/02	0.0019	<0.001	0.0019	<0.001
	04/15/03	<0.001	<0.001	<0.001	<0.001
	07/14/03	<0.001	<0.001	<0.001	<0.001
	04/20/04	<0.001	<0.001	<0.001	<0.001
	07/14/04	<0.001	<0.001	<0.001	<0.001
	09/14/04	<0.001	<0.001	<0.001	<0.001
	12/21/04	<0.001	<0.001	<0.001	<0.001
	03/21/05	<0.001	<0.001	<0.001	<0.001
	08/15/05	<0.001	<0.001	<0.001	<0.001
	02/16/06	<0.001	<0.001	<0.001	<0.001
	05/22/06	<0.001	<0.001	<0.001	<0.001
	02/22/07	<0.001	<0.001	<0.001	<0.002
	05/10/07	<0.001	<0.001	<0.001	<0.001
	08/10/07	<0.001	<0.001	<0.001	<0.001
	11/15/07	Dry - Not Sampled			
	02/28/08				
	05/28/08				
	08/20/08				
	11/07/08				
	02/09/09				
	05/14/09				
	08/12/09				
	11/11/09				
	02/05/10				
	05/27/10				
NWMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NWMQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NWMQCC Groundwater Standards

Table 4
2017 Annual Groundwater Monitoring Report

Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187003
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-1	08/19/10	Dry - Not Sampled			
	02/29/12				
	05/17/12				
	08/16/12				
	11/07/12				
	02/28/13				
	05/31/13				
	08/09/13				
	11/14/13				
	02/19/14				
	04/15/14				
	07/10/14				
	10/05/14				
	01/14/15				
	04/15/15				
	08/05/15				
	10/14/15				
	01/22/16				
	04/27/16				
	07/14/16				
	10/05/16				
NWMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NWMQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NWMQCC Groundwater Standards

Table 4
2017 Annual Groundwater Monitoring Report

Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-2	01/24/02	0.3680	<0.001	0.0537	0.0125
	04/12/02	0.1270	<0.001	0.0254	0.0083
	07/10/02	0.0674	0.0019	0.0176	0.0039
	04/15/03	0.2290	0.0010	0.0588	0.0124
	07/14/03	0.1850	<0.001	0.0351	0.0082
	04/20/04	0.1250	<0.001	0.0341	0.0153
	07/14/04	0.2090	0.0062	0.0470	0.0154
	09/14/04	0.1250	0.0028	0.0358	0.0070
	12/21/04	0.2670	0.0012	0.0357	0.0011
	03/21/05	0.1860	<0.001	0.0136	0.0020
	05/17/05	0.3420	0.0010	0.0281	0.0147
	08/15/05	0.1450	0.0072	0.0187	0.0085
	11/18/05	0.4130	0.0021	0.1140	0.0349
	02/16/06	0.4330	<0.001	0.1460	0.0047
	05/22/06	0.6940	0.1620	0.1720	0.0182
	08/07/06	0.6640	0.0060	0.0496	0.0081
	11/21/06	0.4610	<0.005	0.0638	<0.005
	02/22/07	0.2920	<0.001	0.0437	0.0337
	05/10/07	0.1900	0.0049	0.0341	0.0233
	08/10/07	0.0881	0.0012	0.0295	<0.001
	11/15/07	0.0615	<0.002	0.0031	<0.001
	02/28/08	<0.001	<0.002	<0.001	<0.001
	05/28/08	0.0949	<0.002	0.0060	<0.001
	08/20/08	0.1011	<0.002	0.0050	0.0021
	11/07/08	0.0462	<0.002	0.0044	<0.001
	02/09/09	0.0908	<0.002	0.0019	<0.001
	05/14/09	0.7167	<0.02	<0.01	<0.01
	11/11/09	0.0476	<0.002	0.0068	<0.001
NMWQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NMWQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NMWQCC Groundwater Standards

Table 4
2017 Annual Groundwater Monitoring Report

Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-2	02/05/10	0.0287	<0.002	0.0046	0.0015
	05/27/10	0.0262	<0.002	0.0082	<0.001
	08/16/10	0.0095	<0.002	0.0041	<0.001
	11/19/10	0.0100	<0.002	0.0043	<0.001
	02/18/11	0.0101	<0.002	0.0095	<0.001
	05/24/11	0.0026	<0.002	0.0060	<0.001
	08/19/11	0.0163	<0.002	0.0058	<0.001
	11/16/11	0.0092	<0.002	0.0025	<0.001
	02/29/12	0.0060	<0.0100	0.0050	<0.00500
	05/17/12	0.0057	<0.001	<0.001	<0.001
	08/16/12	0.0293	<0.001	<0.001	<0.001
	11/07/12	<0.001	<0.001	<0.001	<0.001
	02/28/13	<0.001	<0.002	<0.001	<0.001
	05/31/13	Not Sampled Due To Presence Of PSH ³			
	08/09/13	<0.0005	<0.0005	<0.001	<0.0007
	11/14/13	0.7520	<0.0005	<0.001	<0.0007
	02/19/14	<0.0005	<0.001	<0.0007	<0.0007
	04/15/14	<0.0008	<0.0012	<0.0008	<0.0007
	07/10/14	<0.0008	<0.0012	<0.0008	<0.0007
	10/05/14	0.0017	<0.0012	<0.0008	<0.0007
	01/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	04/15/15	<0.0008	<0.0012	<0.0008	<0.0007
	08/05/15	<0.0008	<0.0012	<0.0008	<0.0007
	10/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	01/22/16	<0.0008	<0.0012	<0.0008	<0.0007
	04/27/16	<0.000408	<0.000367	<0.000657	<0.000642
	07/14/16	<0.000408	<0.000367	<0.000657	<0.000630
	10/05/16	<0.000408	<0.000367	<0.000657	<0.000630
NWMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NWMQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NWMQCC Groundwater Standards

Table 4
2017 Annual Groundwater Monitoring Report

Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-3	09/13/01	<0.001	<0.001	<0.001	<0.001
	01/24/02	<0.001	<0.001	<0.001	<0.001
	04/12/02	<0.001	<0.001	<0.001	<0.001
	07/10/02	<0.001	<0.001	<0.001	<0.001
	04/15/03	<0.001	<0.001	<0.001	<0.001
	07/14/03	<0.001	<0.001	<0.001	<0.001
	04/20/04	<0.001	<0.001	<0.001	<0.001
	07/14/04	<0.001	<0.001	<0.001	<0.001
	09/14/04	<0.001	<0.001	<0.001	<0.001
	12/21/04	<0.001	<0.001	<0.001	<0.001
	08/15/05	<0.001	<0.001	<0.001	<0.001
	02/16/06	<0.001	<0.001	<0.001	<0.001
	05/22/06	<0.001	<0.001	<0.001	<0.001
	02/22/07	<0.001	<0.001	<0.001	<0.002
	05/10/07	<0.001	<0.001	<0.001	<0.001
	08/10/07	<0.001	<0.001	<0.001	<0.001
	11/15/07	<0.001	<0.002	<0.001	<0.001
	02/28/08	0.0193	<0.002	0.0032	<0.001
	05/28/08	<0.001	<0.002	<0.001	<0.001
	08/20/08	<0.001	<0.002	<0.001	<0.001
	11/07/08	<0.001	<0.002	<0.001	<0.001
	08/12/09	<0.001	<0.002	<0.001	<0.001
	11/11/09	<0.001	<0.002	<0.001	<0.001
	02/05/10	<0.001	<0.002	<0.001	<0.001
	05/27/10	<0.001	<0.002	<0.001	<0.001
	08/16/10	<0.001	<0.002	<0.001	<0.001
	11/19/10	<0.001	<0.002	<0.001	<0.001
	08/16/12	<0.001	<0.001	<0.001	<0.001
NMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NMQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NMQCC Groundwater Standards

Table 4
2017 Annual Groundwater Monitoring Report

Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-3	11/07/12	<0.001	<0.001	<0.001	<0.001
	02/28/13	<0.001	<0.002	<0.001	<0.001
	05/31/13	<0.0005	<0.001	<0.0007	<0.0007
	08/09/13	<0.0005	<0.001	<0.0007	<0.0007
	11/14/13	<0.0005	<0.001	<0.0007	<0.0007
	02/19/14	<0.0008	<0.0012	<0.0008	<0.0007
	04/15/14	<0.0008	<0.0012	<0.0008	<0.0007
	07/10/14	<0.0008	<0.0012	<0.0008	<0.0007
	10/05/14	<0.0008	<0.0012	<0.0008	<0.0007
	01/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	04/15/15	<0.0008	<0.0012	<0.0008	<0.0007
	08/05/15	<0.0008	<0.0012	<0.0008	<0.0007
	10/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	01/22/16	<0.0008	<0.0012	<0.0008	<0.0007
	04/27/16	<0.000408	<0.000367	<0.000657	<0.000642
	07/14/16	<0.000408	<0.000367	<0.000657	<0.000630
	10/05/16	<0.000408	<0.000367	<0.000657	<0.000630
NMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NMQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NMQCC Groundwater Standards

Table 4
2017 Annual Groundwater Monitoring Report

Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-4	01/24/02	Not Sampled Due To Presence Of PSH			
	04/12/02	0.4800	0.3610	0.1990	0.2160
	07/10/02	Not Sampled Due To Presence Of PSH			
	04/15/03				
	07/14/03				
	04/20/04	3.210	2.310	0.845	1.0300
	07/14/04	Not Sampled Due To Presence Of PSH			
	09/14/04				
	12/21/04	0.8290	0.0066	0.1730	0.0595
	03/21/05	Not Sampled Due To Presence Of PSH			
	05/17/05				
	08/15/05				
	11/18/05	2.620	<0.002	0.3790	0.0365
	02/16/06	2.100	<0.001	0.4140	<0.001
	05/22/06	2.110	<0.005	0.3720	<0.005
	08/07/06	2.840	0.0060	0.0490	0.0081
	11/21/06	Not Sampled Due To Presence Of PSH			
	02/22/07	1.420	<0.001	0.2910	0.4430
	05/10/07	1.210	<0.001	0.2670	0.3820
	08/10/07	1.227	0.0075	0.2418	<0.005
	11/15/07	Not Sampled Due To Presence Of PSH			
	02/28/08	0.0073	<0.002	0.0026	<0.001
	05/28/08	Not Sampled Due To Presence Of PSH			
	08/20/08				
	11/07/08				
	02/09/09	0.7677	<0.002	0.0590	0.0026
	05/14/09	0.492	<0.001	0.0312	<0.005
	08/12/09	1.357	<0.04	0.1026	<0.02
NWMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NWMQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NWMQCC Groundwater Standards

Table 4
2017 Annual Groundwater Monitoring Report

Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-4	11/11/09	Not Sampled Due To Presence Of PSH			
	02/05/10	2.019	0.0551	0.0880	<0.01
	05/27/10	Not Sampled Due To Presence Of PSH			
	08/19/10				
	11/16/11				
	02/29/12				
	05/17/12				
	08/16/12				
	09/12/12	0.355	<0.0500	<0.0500	<0.0500
	11/07/12	1.430	<0.0200	0.1770	0.1270
	02/28/13	Not Sampled Due To Presence Of PSH			
	05/31/13	0.499	<0.005	0.1180	0.0378
	08/09/13	0.400	0.0041	0.1140	0.0340
	11/14/13	0.281	<0.001	0.0425	0.0082
	02/19/14	0.174	<0.001	0.0332	0.0177
	04/15/14	0.121	<0.0012	0.0299	0.0264
	07/10/14	0.134	<0.0012	0.0629	0.0133
	10/05/14	0.033	<0.0012	0.0148	<0.0007
	01/14/15	0.00885	<0.0012	0.0517	0.00829
	04/15/15	0.00717	<0.0012	0.049	0.00674
	08/05/15	0.00343	<0.0012	0.0568	0.0102
	10/14/15	0.00306	<0.0012	0.0355	<0.0007
	01/22/16	0.00141	<0.0012	0.0124	0.00226
	04/27/16	0.00259	<0.000367	0.0117	0.00306
	07/14/16	0.00234	<0.000367	0.00533	<0.000630
	10/05/16	0.00693	<0.000367	0.0008	0.00152
NMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NMQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NMQCC Groundwater Standards

Table 4
2017 Annual Groundwater Monitoring Report

Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-5	09/13/01	0.5350	0.0750	0.0840	0.0400
	01/24/02	0.2800	0.0032	0.1070	0.0057
	04/12/02	0.3030	0.0095	0.1290	0.0132
	04/15/03	0.1290	0.0035	0.0366	0.0024
	07/14/03	0.0814	<0.001	0.0344	<0.001
	04/20/04	0.4820	0.0024	0.1010	0.0313
	07/14/04	0.0708	<0.001	0.0486	0.0021
	09/14/04	0.1180	0.0014	0.0588	0.0016
	12/21/04	0.2040	<0.001	0.0667	<0.001
	03/21/05	0.0308	<0.001	0.0171	<0.001
	05/17/05	0.0097	<0.001	<0.001	<0.001
	08/15/05	0.0138	0.0017	0.0044	<0.001
	11/18/05	0.0107	0.0012	<0.001	<0.001
	02/16/06	0.0075	<0.001	0.0029	<0.001
	05/22/06	0.0032	<0.001	<0.001	<0.001
	08/07/06	0.0964	0.0076	0.0028	0.0013
	11/21/06	0.0883	0.0241	0.0099	0.0073
	02/22/07	0.0443	<0.001	0.0289	0.0123
	05/10/07	0.0462	<0.001	0.0357	0.0159
	08/10/07	0.0266	<0.005	0.0141	<0.005
	11/15/07	0.0110	<0.002	0.0036	<0.001
	02/28/08	0.5605	0.0192	0.1301	0.0070
	05/28/08	0.0112	<0.002	0.0021	<0.001
	08/20/08	0.0048	<0.002	0.0017	0.0013
	11/07/08	0.0350	<0.002	0.0081	<0.001
	02/09/09	0.0930	<0.002	0.0045	0.0012
	05/14/09	0.1093	<0.002	0.0043	<0.001
	08/12/09	0.0570	<0.002	0.0041	0.0020
	11/11/09	0.1185	<0.01	0.0248	<0.005
NMWQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NMWQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NMWQCC Groundwater Standards

Table 4
2017 Annual Groundwater Monitoring Report

Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-5	02/05/10	0.0432	<0.002	0.0072	<0.001
	05/27/10	0.0824	<0.002	0.0174	<0.001
	08/18/10	0.2479	<0.002	0.0380	<0.001
	11/19/10	0.0133	<0.002	0.0018	<0.001
	02/18/11	0.0638	<0.002	0.0104	0.0011
	05/24/11	0.1060	<0.003	0.0104	<0.001
	08/19/11	0.1630	<0.040	<0.020	<0.020
	11/16/11	0.1150	<0.020	<0.010	<0.010
	02/29/12	0.0370	<0.010	<0.005	<0.005
	05/17/12	0.0729	<0.001	0.0011	<0.001
	08/16/12	0.0200	<0.0200	<0.0200	<0.030
	11/07/12	0.0621	<0.001	<0.001	<0.001
	02/28/13	0.0396	<0.002	<0.001	<0.001
	05/31/13	0.0342	<0.001	<0.0007	<0.0007
	08/09/13	0.0019	<0.001	<0.0007	<0.0007
	11/14/13	<0.0005	<0.001	<0.0007	<0.0007
	02/19/14	<0.0008	<0.0012	<0.0008	<0.0007
	04/15/14	0.0011	<0.0012	<0.0008	<0.0007
	07/10/14	0.2360	<0.0012	0.0799	0.0114
	10/05/14	<0.0008	<0.0012	<0.0008	<0.0007
	01/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	04/15/15	<0.0008	<0.0012	<0.0008	<0.0007
	08/05/15	<0.0008	<0.0012	<0.0008	<0.0007
	10/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	01/22/16	<0.0008	<0.0012	<0.0008	<0.0007
	04/27/16	<0.000408	<0.000367	<0.000657	<0.000630
	07/14/16	<0.000408	<0.000367	<0.000657	<0.000630
	10/05/16	0.0139	<0.000367	0.00500	0.00168
	10/20/16	0.100	<0.000367	0.00331	0.00135
NMQCC ² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NMQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NMQCC Groundwater Standards

Table 4
2017 Annual Groundwater Monitoring Report

Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-6	01/24/02	<0.001	<0.001	<0.001	<0.001
	04/12/02	<0.001	<0.001	<0.001	<0.001
	07/10/02	0.0015	<0.001	<0.001	<0.001
	04/15/03	0.0027	<0.001	<0.001	<0.001
	07/14/03	0.0025	<0.001	<0.001	<0.001
	04/20/04	0.0011	<0.001	<0.001	<0.001
	07/14/04	0.0020	<0.001	<0.001	<0.001
	09/14/04	0.0100	<0.001	<0.001	<0.001
	12/21/04	<0.001	<0.001	<0.001	<0.001
	03/21/05	<0.001	<0.001	<0.001	<0.001
	05/17/05	<0.001	<0.001	<0.001	<0.001
	08/15/05	<0.001	<0.001	<0.001	<0.001
	11/18/05	<0.001	<0.001	<0.001	<0.001
	02/16/06	<0.001	<0.001	<0.001	<0.001
	05/22/06	<0.001	<0.001	<0.001	<0.001
	08/07/06	<0.001	<0.001	<0.001	<0.001
	11/21/06	<0.001	<0.001	<0.001	<0.001
	02/22/07	<0.001	<0.001	<0.001	<0.002
	05/10/07	0.0238	<0.001	0.0140	0.0076
	08/10/07	0.0152	<0.001	<0.001	<0.001
	11/15/07	0.0149	<0.002	<0.001	<0.001
	02/28/08	0.0444	<0.002	0.0299	<0.001
	05/28/08	0.0021	<0.002	<0.001	<0.001
	08/20/08	0.0121	<0.002	<0.001	<0.001
	11/07/08	0.0069	<0.002	<0.001	<0.001
	02/09/09	<0.001	<0.002	<0.001	<0.001
	05/14/09	<0.001	<0.002	<0.001	<0.001
	08/12/09	0.0080	<0.002	<0.001	<0.001
NMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NMQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NMQCC Groundwater Standards

Table 4
2017 Annual Groundwater Monitoring Report

Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-6	11/11/09	0.0072	<0.002	<0.001	<0.001
	02/05/10	0.0051	<0.002	<0.001	<0.001
	05/27/10	0.0078	<0.002	<0.001	<0.001
	08/16/10	0.0088	<0.002	0.0011	<0.001
	11/19/10	0.0024	<0.002	<0.001	<0.001
	02/18/11	0.0031	<0.002	<0.001	<0.001
	05/24/11	0.0038	<0.002	<0.001	<0.001
	08/19/11	0.0027	<0.002	<0.001	<0.001
	11/16/11	0.0026	<0.002	<0.001	<0.001
	02/29/12	<0.001	<0.002	<0.001	<0.001
	05/17/12	0.0019	<0.001	<0.001	<0.001
	08/16/12	<0.001	<0.001	<0.001	<0.001
	11/07/12	0.0019	<0.001	<0.001	<0.0018
	02/28/13	<0.001	<0.002	<0.001	<0.001
	05/31/13	<0.0005	<0.001	<0.0007	<0.0007
	08/09/13	<0.0005	<0.001	<0.0007	<0.0007
	11/14/13	<0.0005	<0.001	<0.0007	<0.0007
	02/19/14	<0.0008	<0.0012	<0.0008	<0.0007
	04/15/14	<0.0008	<0.0012	<0.0008	<0.0007
	07/10/14	<0.0008	<0.0012	<0.0008	<0.0007
	10/05/14	<0.0008	<0.0012	<0.0008	<0.0007
	01/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	04/15/15	<0.0008	<0.0012	<0.0008	<0.0007
	08/05/15	<0.0008	<0.0012	<0.0008	<0.0007
	10/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	01/22/16	<0.0008	<0.0012	<0.0008	<0.0007
	04/27/16	<0.000408	<0.000367	<0.000657	<0.000642
	07/14/16	<0.000408	<0.000367	<0.000657	<0.000630
	10/05/16	<0.000408	<0.000367	<0.000657	<0.000630
NWMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NWMQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NWMQCC Groundwater Standards

Table 4
2017 Annual Groundwater Monitoring Report

Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-7	07/14/04	<0.001	<0.001	<0.001	<0.001
	09/14/04	<0.001	<0.001	<0.001	<0.001
	12/21/04	<0.001	<0.001	<0.001	<0.001
	03/21/05	<0.001	<0.001	<0.001	<0.001
	05/17/05	<0.001	<0.001	<0.001	<0.001
	08/15/05	<0.001	<0.001	<0.001	<0.001
	11/18/05	<0.001	<0.001	<0.001	<0.001
	02/16/06	<0.001	<0.001	<0.001	<0.001
	05/22/06	<0.001	<0.001	<0.001	<0.001
	08/07/06	<0.001	<0.001	<0.001	<0.001
	11/21/06	<0.001	<0.001	<0.001	<0.001
	02/22/07	<0.001	<0.001	<0.001	<0.002
	05/10/07	<0.001	<0.001	<0.001	<0.001
	08/10/07	<0.001	<0.001	<0.001	<0.001
	11/15/07	<0.001	<0.002	<0.001	<0.001
	02/28/08	0.0486	<0.002	0.0599	0.0546
	05/28/08	<0.001	<0.002	<0.001	<0.001
	08/20/08	<0.001	<0.002	<0.001	<0.001
	11/07/08	<0.001	<0.002	<0.001	<0.001
	02/09/09	<0.001	<0.002	<0.001	<0.001
	05/14/09	0.0013	<0.002	<0.001	<0.001
	08/12/09	<0.001	<0.002	<0.001	<0.001
	11/11/09	<0.001	<0.002	<0.001	<0.001
	02/05/10	<0.001	<0.002	<0.001	<0.001
	05/27/10	<0.001	<0.002	<0.001	<0.001
	08/16/10	<0.001	<0.002	<0.001	<0.001
	11/19/10	<0.001	<0.002	<0.001	<0.001
	02/18/11	<0.001	<0.002	<0.001	<0.001
NMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NMQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NMQCC Groundwater Standards

Table 4
2017 Annual Groundwater Monitoring Report

Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-7	05/24/11	<0.001	<0.002	<0.001	<0.001
	08/19/11	<0.001	<0.002	<0.001	<0.001
	11/16/11	<0.001	<0.002	<0.001	<0.001
	02/29/12	<0.001	<0.002	<0.001	<0.001
	05/17/12	<0.001	<0.001	<0.001	<0.001
	08/16/12	<0.001	<0.001	<0.001	<0.001
	11/07/12	<0.001	<0.001	<0.001	<0.001
	02/28/13	<0.001	<0.002	<0.001	<0.001
	05/31/13	<0.0005	<0.001	<0.0007	<0.0007
	08/09/13	<0.0005	<0.001	<0.0007	<0.0007
	11/14/13	<0.0005	<0.001	<0.0007	<0.0007
	02/19/14	<0.0005	<0.001	<0.0007	<0.0007
	04/15/14	<0.0008	<0.0012	<0.0008	<0.0007
	07/10/14	<0.0008	<0.0012	<0.0008	<0.0007
	10/05/14	<0.0008	<0.0012	<0.0008	<0.0007
	01/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	04/15/15	<0.0008	<0.0012	<0.0008	<0.0007
	08/05/15	<0.0008	<0.0012	<0.0008	<0.0007
	10/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	01/22/16	<0.0008	<0.0012	<0.0008	<0.0007
	04/27/16	<0.000408	<0.000367	<0.000657	<0.000630
	07/14/16	<0.000408	<0.000367	<0.000657	<0.000630
	10/05/16	<0.000408	<0.000367	<0.000657	<0.000630
NMWQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NMWQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NMWQCC Groundwater Standards

Table 4
2017 Annual Groundwater Monitoring Report

Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-8	07/14/04	0.575	0.1410	0.0884	0.0868
	09/14/04	0.482	0.0356	0.1060	0.0551
	12/21/04	4.220	0.1130	0.6950	0.0750
	03/21/05	3.410	<0.001	0.4520	0.0152
	05/17/05	2.290	<0.001	0.1150	0.0057
	08/15/05	1.210	<0.001	0.0749	0.0015
	11/18/05	0.670	<0.001	0.0299	<0.001
	02/16/06	0.243	<0.001	0.0359	<0.001
	05/22/06	0.0974	<0.001	0.0278	<0.001
	08/07/06	0.133	<0.001	0.0076	<0.001
	02/22/07	0.118	<0.001	0.0384	0.0429
	05/10/07	0.209	<0.001	0.0473	0.0529
	08/10/07	0.050	0.0012	0.0254	<0.001
	11/15/07	0.0186	<0.002	0.0079	<0.001
	02/28/08	0.0056	<0.002	<0.001	<0.001
	05/28/08	Not Sampled Due To Presence Of PSH			
	08/20/08				
	11/07/08	0.012	<0.002	0.0043	<0.001
	02/09/09	<0.001	<0.002	<0.001	<0.001
	05/14/09	0.0121	<0.002	0.0044	<0.001
	08/12/09	0.0138	<0.002	0.0057	<0.001
	11/11/09	0.0085	<0.002	0.0024	<0.001
	02/05/10	0.0010	<0.002	<0.001	<0.001
	05/27/10	0.0268	<0.002	0.0126	<0.001
	08/16/10	0.0478	<0.002	0.0088	<0.001
	11/19/10	0.0081	<0.002	0.0023	<0.001
	02/18/11	0.0100	<0.002	0.0046	<0.001
	08/19/11	<0.001	<0.002	0.0046	<0.001
NMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NMQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NMQCC Groundwater Standards

Table 4
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Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-8	11/16/11	0.0241	<0.002	0.0090	<0.001
	02/29/12	0.0200	<0.002	<0.001	<0.001
	05/17/12	0.0044	<0.001	0.0017	<0.001
	08/16/12	<0.001	<0.001	<0.001	<0.001
	11/07/12	<0.001	<0.001	<0.001	<0.001
	02/28/13	<0.001	<0.002	<0.001	<0.001
	05/31/13	<0.0005	<0.001	<0.0007	<0.0007
	08/09/13	0.0077	<0.001	0.0014	<0.0007
	11/14/13	<0.0005	<0.001	<0.0007	<0.0007
	02/19/14	<0.0005	<0.001	<0.0007	<0.0007
	04/15/14	<0.0008	<0.0012	<0.0008	<0.0007
	07/10/14	<0.0008	<0.0012	<0.0008	<0.0007
	10/05/14	0.0062	<0.0012	<0.0008	<0.0007
	01/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	04/15/15	<0.0008	<0.0012	<0.0008	<0.0007
	08/05/15	<0.0008	<0.0012	<0.0008	<0.0007
	10/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	01/22/16	<0.0008	<0.0012	<0.0008	<0.0007
	04/27/16	<0.000408	<0.000367	<0.000657	<0.000642
	07/14/16	<0.000408	<0.000367	<0.000657	<0.000630
	10/05/16	<0.000408	<0.000367	<0.000657	<0.000630
NWMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NWMQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NWMQCC Groundwater Standards

Table 4
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Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-9	07/14/04	0.0275	0.0109	0.4870	0.3190
	09/14/04	0.1500	0.0022	0.2250	0.1190
	12/21/04	<0.001	<0.001	0.0335	0.0204
	03/21/05	0.0093	<0.001	0.0151	0.0209
	05/17/05	0.0050	<0.001	0.0148	0.0311
	08/15/05	0.0228	<0.001	0.0630	0.0357
	11/18/05	0.0040	<0.001	0.0281	0.0607
	02/16/06	0.0088	<0.001	0.0327	0.0727
	05/22/06	0.0074	<0.001	0.0346	0.0743
	08/07/06	0.0043	<0.001	0.0228	0.0423
	11/21/06	0.0034	<0.001	0.0271	0.0480
	02/22/07	0.0467	<0.001	0.1090	0.1690
	05/10/07	0.0607	<0.001	0.0815	0.0532
	08/10/07	<0.05	<0.05	<0.05	<0.05
	11/15/07	<0.001	0.0022	0.0012	0.0540
	02/28/08	<0.001	<0.002	<0.001	<0.001
	05/28/08	0.0581	0.0023	0.0537	0.0427
	08/20/08	0.0512	<0.002	0.0700	0.0499
	11/07/08	0.0597	<0.002	0.0353	0.0251
	02/09/09	0.0509	<0.002	0.0382	0.0472
	05/14/09	0.0336	<0.002	0.0381	0.0305
	08/12/09	0.0452	<0.04	0.0568	0.0288
	11/11/09	0.0363	<0.002	0.0403	0.0089
	02/05/10	0.0092	<0.002	0.0126	<0.001
	05/27/10	0.0279	<0.002	0.0487	<0.01
	08/16/10	0.0373	<0.002	0.0689	<0.01
	11/19/10	0.0345	0.0019	0.0768	0.0029
	02/18/11	0.0328	<0.002	0.0629	0.0041
NMWQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NMWQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NMWQCC Groundwater Standards

Table 4
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Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-9	05/24/11	0.0374	<0.002	0.0602	0.0060
	08/19/11	0.1260	<0.040	0.1810	0.0214
	11/16/11	0.0371	<0.002	0.0609	0.0038
	02/29/12	0.0198	<0.0100	0.0322	<0.00500
	05/17/12	0.0523	<0.001	0.0655	0.0019
	08/16/12	<0.0100	<0.0100	<0.0100	<0.001
	11/07/12	0.0213	<0.005	<0.005	<0.005
	02/28/13	0.0106	<0.002	<0.00635	<0.00254
	05/31/13	0.0289	<0.001	0.0362	<0.0007
	08/09/13	0.0626	0.0015	0.0805	0.0074
	11/14/13	0.0267	<0.001	0.0352	0.0060
	02/19/14	0.0066	<0.0012	0.0084	<0.0007
	04/15/14	0.0221	<0.0012	0.0346	<0.0007
	07/10/14	0.0159	<0.0012	0.0413	<0.0007
	10/05/14	<0.0008	<0.0012	<0.0008	<0.0007
	01/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	04/15/15	<0.0008	<0.0012	0.00364	<0.0007
	08/05/15	0.00146	<0.0012	0.027	<0.0007
	10/14/15	0.00253	<0.0012	0.0199	<0.0007
	01/22/16	<0.0008	<0.0012	0.00398	<0.0007
	04/27/16	<0.000408	<0.000367	<0.000657	<0.000642
	07/14/16	<0.000408	<0.000367	<0.000657	<0.000630
	10/05/16	0.00099	0.00038	0.00074	<0.000630
NWMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NWMQCC = New Mexico Water Quality Control Commission

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Bold text indicates a concentration exceeding the NWMQCC Groundwater Standards

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Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-10	11/15/04	1.2500	0.0967	0.1400	0.0108
	03/21/05	1.1300	0.0141	0.1380	0.0048
	05/17/05	2.1700	0.0144	0.1940	0.0076
	08/15/05	0.7910	<0.001	0.0740	<0.001
	11/18/05	1.2500	<0.001	0.9160	<0.001
	02/16/06	0.2760	<0.001	0.5380	<0.001
	05/22/06	1.3200	<0.005	0.1050	<0.005
	08/07/06	1.5100	<0.001	0.1030	<0.001
	11/21/06	0.2220	<0.005	0.0215	<0.005
	02/22/07	0.0791	<0.001	0.0061	<0.002
	05/10/07	0.0023	<0.001	0.0072	<0.001
	08/10/07	0.0883	0.0011	0.0047	<0.001
	11/15/07	0.0728	0.0281	0.0279	0.0940
	02/28/08	<0.001	<0.002	<0.001	<0.001
	05/28/08	0.0193	<0.002	0.0023	0.0024
	08/20/08	0.1847	0.0031	0.2710	0.1267
	11/07/08	0.0012	<0.002	<0.001	0.0012
	02/09/09	<0.001	<0.002	0.0010	<0.001
	05/14/09	0.0028	<0.002	<0.001	0.0013
	08/12/09	0.0014	<0.002	0.0021	0.0016
	11/11/09	<0.001	<0.002	0.0022	0.0011
	02/05/10	<0.001	<0.002	0.0011	<0.001
	05/27/10	<0.001	<0.002	0.0026	<0.001
	08/16/10	<0.001	<0.002	0.0033	<0.001
	11/19/10	0.0007	<0.002	0.0014	<0.001
	02/18/11	0.0010	<0.002	0.0012	<0.001
	05/24/11	<0.001	<0.002	<0.001	<0.001
	08/19/11	0.0016	<0.002	0.0025	<0.001
NWMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

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Bold text indicates a concentration exceeding the NWMQCC Groundwater Standards

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Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-10	11/16/11	<0.001	<0.002	0.0032	<0.001
	02/29/12	<0.001	<0.002	0.0025	<0.001
	05/17/12	<0.001	<0.001	0.0025	<0.001
	08/16/12	<0.001	<0.001	<0.001	<0.001
	11/07/12	<0.001	<0.001	<0.001	<0.001
	02/28/13	<0.001	<0.002	<0.001	<0.001
	05/31/13	<0.0005	<0.001	<0.0007	<0.0007
	08/09/13	<0.0005	<0.001	0.0010	<0.0007
	11/14/13	<0.0005	<0.001	<0.0007	<0.0007
	02/19/14	<0.0008	<0.0012	<0.0008	<0.0007
	04/15/14	<0.0008	<0.0012	<0.0008	<0.0007
	07/10/14	<0.0008	<0.0012	<0.0008	<0.0007
	10/05/14	<0.0008	<0.0012	<0.0008	<0.0007
	01/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	04/15/15	<0.0008	<0.0012	<0.0008	<0.0007
	08/05/15	<0.0008	<0.0012	<0.0008	<0.0007
	10/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	01/21/16	<0.0008	<0.0012	<0.0008	<0.0007
	04/27/16	<0.000408	<0.000367	<0.000657	<0.000642
	07/14/16	<0.000408	<0.000367	<0.000657	<0.000630
	10/05/16	<0.000408	<0.000367	<0.000657	<0.000630
NWMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

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Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-11	11/15/04	<0.001	<0.001	<0.001	<0.001
	03/21/05	<0.001	<0.001	<0.001	<0.001
	05/17/05	<0.001	<0.001	<0.001	<0.001
	08/15/05	<0.001	<0.001	<0.001	<0.001
	11/18/05	<0.001	<0.001	<0.001	<0.001
	02/16/06	<0.001	<0.001	<0.001	<0.001
	05/22/06	<0.001	<0.001	<0.001	<0.001
	08/07/06	<0.001	<0.001	<0.001	<0.001
	11/21/06	<0.001	<0.001	<0.001	<0.001
	02/22/07	<0.001	<0.001	<0.001	<0.002
	05/10/07	<0.001	<0.001	<0.001	<0.001
	08/10/07	<0.001	<0.001	<0.001	<0.001
	11/15/07	<0.001	<0.002	<0.001	<0.001
	02/28/08	0.0050	<0.002	0.0019	0.0025
	05/28/08	<0.001	<0.002	0.0012	<0.001
	08/20/08	<0.001	<0.002	<0.001	<0.001
	11/07/08	<0.001	<0.002	<0.001	<0.001
	02/09/09	<0.001	<0.002	<0.001	<0.001
	05/14/09	<0.001	<0.002	<0.001	<0.001
	08/12/09	<0.001	<0.002	<0.001	<0.001
	11/11/09	<0.001	<0.002	<0.001	<0.001
	02/05/10	<0.001	<0.002	<0.001	<0.001
	05/27/10	<0.001	<0.002	<0.001	<0.001
	08/16/10	<0.001	<0.002	<0.001	<0.001
	11/19/10	<0.001	<0.002	<0.001	<0.001
	02/18/11	<0.001	<0.002	<0.001	<0.001
	05/24/11	<0.001	<0.002	<0.001	<0.001
	08/19/11	<0.001	<0.002	<0.001	<0.001
NMWQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NMWQCC = New Mexico Water Quality Control Commission

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Bold text indicates a concentration exceeding the NMWQCC Groundwater Standards

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Groundwater Analytical Summary - BTEX¹
Livingston Line - Bob McCasland Pipeline Leak
Lea County, New Mexico
Plains Pipeline, LP SRS Number 2001-11226
NMOCD File Number: 1R-0395
Terracon Project Number AR187006
All concentrations are in milligrams per liter (mg/L)

SAMPLE LOCATION	SAMPLE DATE	EPA Method 8021B			
		BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
MW-11	11/16/11	<0.001	<0.002	0.0015	<0.001
	02/29/12	<0.001	<0.002	<0.001	<0.001
	05/17/12	<0.001	<0.001	<0.001	<0.001
	08/16/12	<0.001	<0.001	<0.001	<0.001
	11/07/12	<0.001	<0.001	<0.001	<0.001
	02/28/13	<0.001	<0.002	<0.001	<0.001
	05/31/13	<0.0005	<0.001	<0.0007	<0.0007
	08/09/13	<0.0005	<0.001	<0.0007	<0.0007
	11/14/13	<0.0005	<0.001	<0.0007	<0.0007
	02/19/14	<0.0008	<0.0012	<0.0008	<0.0007
	04/15/14	<0.0008	<0.0012	<0.0008	<0.0007
	07/10/14	<0.0008	<0.0012	<0.0008	<0.0007
	10/05/14	<0.0008	<0.0012	<0.0008	<0.0007
	01/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	04/15/15	<0.0008	<0.0012	<0.0008	<0.0007
	08/05/15	<0.0008	<0.0012	<0.0008	<0.0007
	10/14/15	<0.0008	<0.0012	<0.0008	<0.0007
	01/21/16	<0.0008	<0.0012	<0.0008	<0.0007
	04/27/16	<0.000408	<0.000367	<0.000657	<0.000630
	07/14/16	<0.000408	<0.000367	<0.000657	<0.000630
	10/05/16	<0.000408	<0.000367	<0.000657	<0.000630
NWMQCC² Groundwater Standards		0.01	0.75	0.75	0.62

1. BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes

2. NWMQCC = New Mexico Water Quality Control Commission

3. PSH = Phase Separated Hydrocarbons

Bold text indicates a concentration exceeding the NWMQCC Groundwater Standards

APPENDIX E

CD of the 2017 Annual Groundwater Monitoring Report