

1R-398

**Plains
Livingston Ridge
to Hugh P Sims**

**Annual Report
2013**



PLAINS ALL AMERICAN

March 18, 2014

Mr. Jim Griswold
New Mexico Oil Conservation Division
Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Re: Plains All American – 2013 Annual Monitoring Reports
2 Sites in Lea County, New Mexico

Dear Mr. Griswold:

Plains All American is an operator of crude oil pipelines and terminal facilities in the state of New Mexico. Plains All American actively monitors certain historical release sites exhibiting groundwater impacts, consistent with assessments and work plans developed in consultation with the New Mexico Oil Conservation Division (NMOCD). In accordance with the rules and regulations of the NMOCD, Plains All American hereby submits our Annual Monitoring reports for the following sites:

<u>Livingston Line-Bob McCasland</u>	<u>1R-0395</u>	<u>Section 3, T21S, R37E, Lea County</u>
<u>Livingston Ridge to Hugh-P. Sims</u>	<u>1R-0398</u>	<u>Section 3, T21S, R37E, Lea County</u>

Terracon prepared these documents and has vouched for their accuracy and completeness, and on behalf of Plains All American, I have personally reviewed the documents and interviewed Terracon personnel in order to verify the accuracy and completeness of these documents. It is based upon these inquiries and reviews that Plains All American submits the enclosed Annual Monitoring Reports for the above facilities.

If you have any questions or require further information, please contact me at (575) 441-1099.

Sincerely,

Camille Bryant
Remediation Coordinator
Plains All American

CC: Geoff Leking, NMOCD, Hobbs, NM

Enclosures

2013 ANNUAL GROUNDWATER MONITORING REPORT

**Livingston Ridge to Hugh - P. Sims
NE ¼ of the SE ¼ of Section 3, Township 21 South, Range 37 East
Plains Pipeline SRS Number 2001-11005
Lea County, New Mexico
NMOCD File Number 1R-0398**

Terracon Project Number A4147008 (Formerly A4077008)

March 21, 2014

Prepared for:

**Plains Pipeline, L.P.
2530 State Highway 214
Denver City, Texas 79323**

Prepared by:

Terracon

Midland, Texas



March 21, 2014

Plains Pipeline, L.P.
2530 State Highway 214
Denver City, Texas 79323
Attn: Mrs. Camille Bryant

Telephone: (806) 592-8305
Fax: (806) 592-7479

Re: 2013 Annual Groundwater Monitoring Report
Livingston Ridge to Hugh - P. Sims
NE ¼ of the SE ¼, Section 3, T21S, R37E
Lea County, New Mexico
NMOCD File Number 1R – 0398
Plains Pipeline, L.P. SRS Number 2001-11005
Terracon Project Number A4147008 (Formerly A4077008)

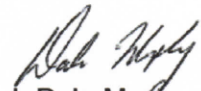
Dear Mrs. Bryant:

Terracon is pleased to submit four copies of the 2013 Annual Groundwater Monitoring Report for the above referenced site.

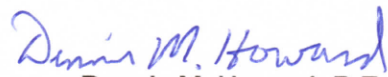
We appreciate the opportunity to perform these services for Plains Pipeline, L.P. Please contact either of the undersigned at (432) 684-9600 if you have questions regarding the information provided in the report.

Sincerely,
Terracon

Prepared by:


J. Dale Moxley
Project Scientist I

Reviewed by:


Dennis M. Howard, P.E.
Environmental Engineer



Terracon Consultants, Inc. 1211 West Florida Avenue Midland, Texas 79701
P 432-684-9600 F 432-684-9608 terracon.com

Environmental

Facilities

Geotechnical

Materials

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2013 Annual Groundwater Monitoring Report

**Livingston Ridge to Hugh - P. Sims Site
NE ¼ of the SE ¼ of Section 3, T21S, R37E
Plains SRS Number 2001-11005
Lea County, New Mexico
NMOCD File Number 1R – 0398**

Terracon Project Number A4147008 (Formerly A4077008)

1.0 INTRODUCTION

1.1 Site Description

Site Name	Livingston Ridge to Hugh - P. Sims
Site Location	Approximately 5 miles north-northeast of Eunice, Lea County, New Mexico on Loop 207.
General Site Description	Pipeline right-of-way surrounded by native pasture land, in close proximity of the Carbon Black Plant.

A topographic map is included as Figure 1 and a site plan is included as Figure 2 of Appendix A.

On June 22, 2001, a release of six barrels of crude oil was reported to the New Mexico Oil Conservation District (NMOCD). Initial excavation activities were reportedly conducted by Environmental Plus, Inc. (EPI) in an effort to stockpile saturated soils and expose the leak origin in order to repair the pipeline. The pipeline excavation activities continued during July 2001. A total of approximately 148 cubic yards of hydrocarbon impacted soil were excavated at the site and transported to EPI's landfarm south of Eunice, New Mexico. A temporary groundwater monitoring well (TMW-1) was installed in the bottom of the excavation. Phase-separated hydrocarbons (PSH) were detected on the groundwater surface and the NMOCD and landowner reportedly were immediately notified of the release. EPI installed three groundwater monitoring wells at the site to determine the extent and magnitude of the release and determine the groundwater gradient.

Environmental Technology Group, Inc. (ETGI), assumed control of remedial activities in August 2002 and installed twelve additional groundwater monitor wells at the site. These wells were installed to complete the delineation activities initiated by EPI. At the time of ETGI's investigation, the groundwater monitor wells had adequately delineated the dissolved phase plume and PSH plume at the site.

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Plains appointed EPI to take over the remediation and sampling activities in 2004. Terracon assumed consulting duties on February 1, 2007. Available files for this site were given to Terracon at this time.

In July 2007, Terracon oversaw the installation of a PVC liner on the floor of the excavation and backfilling the excavation with remediated soils from the previous land treatment area at the site in accordance with the NMOCD approved work plan. Details of these activities can be found in Plains Soil Closure Compliance Report dated August 17, 2007.

1.2 Scope of Work

Terracon's scope of work included assuming oversight of remedial activities on February 1, 2007. Oversight activities included the preparation of 2006 through 2013 Annual Groundwater Monitoring Reports for submittal to the NMOCD. Quarterly groundwater monitoring and sampling events were conducted on February 21, 2013, May 23, 2013, August 08, 2013 and November 13, 2013. Mico purging and the use of absorbant socks in select monitor wells were used to recover PSH. The events were performed on at the Livingston Ridge to Hugh - P. Sims site located in Lea County, New Mexico.

The objective of the quarterly sampling events was to gauge the fifteen groundwater monitor wells (MW-1 through MW-15) and temporary monitor well (TMW-1), which is currently located in the center of the former excavation, and to collect samples of groundwater from each well not containing PSH for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX, quarterly)) and polycyclic aromatic hydrocarbons (PAHs, annually). Groundwater samples for PAH analysis were collected from all the monitoring wells on September 19, 2013.

1.3 Standard of Care

Terracon was awarded this project on February 1, 2007. Activities prior to February 1, 2007 were performed by previous consultants hired by Plains Pipeline. 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.

1.4 Additional Scope Limitations

Findings, conclusions and recommendations resulting from these services are based upon

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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.

1.5 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 Groundwater Monitoring and Sampling

Quarterly monitoring and sampling events were performed on February 21, 2013, May 23, 2013, August 08, 2013 and November 11, 2013 by Terracon. 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).

Monitoring wells were gauged to determine the depth to groundwater and to check for the presence of PSH. Based on the gauging data, measurable PSH was present in MW-4 (ranging from a 0.03 to 0.06 feet thick), and temporary monitor well TMW-1 (ranging from a 0.44 to 4.48 feet thick) during 2013. Groundwater gradient maps for each quarter are included as Figures 3 through 6 (Appendix A). Gauging data is included in Appendix B as Table 1.

A mobile dual phase extraction (MDPE) schedule was established for 2013 to recover liquid, vapor, and dissolved phase volatile organic compounds (VOCs) from onsite monitor wells

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displaying measurable PSH thicknesses, in an effort to control the movement of PSH. The MDPE event took place on April 9, 2013. The event recovered 3 gallons of PSH and 7.79 gallons of vapor in a 24 hour period. A copy of the report is included in Appendix D.

A groundwater sample was collected and analyzed from all of the groundwater monitor wells in accordance with the NMOCD requirements. Groundwater samples were not collected from wells containing PSH or wells that were dry during sampling events in 2013. 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 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 standard turnaround for analysis of BTEX using EPA SW-846 Method 8021B in each of the four quarters, and PAHs using EPA SW-846 Method 8270C in September 2013.

3.0 DATA EVALUATION

3.1 Water Level Data

Water level measurement data collected during the respective quarterly sampling events were used to construct groundwater gradient maps that are included as Figures 3, 4, 5, and 6 (Appendix A). Groundwater elevation contours generated from the quarterly sampling events of 2013 indicated the general groundwater gradient was consistent with previous sampling events:

- The gradient/direction during the February 2013 sampling event was 0.002 ft/ft toward the southeast.
- The gradient/direction during the May 2013 sampling event was 0.002 ft/ft toward the southeast.
- The gradient/direction during the August 2013 sampling event was 0.002 ft/ft toward the southeast.
- The gradient/direction during the November 2013 sampling event was 0.002 ft/ft toward the southeast.

Groundwater flow direction remained relatively consistent throughout 2013, to the southeast.

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Water level measurement data is summarized in Table 1 in Appendix B.

Groundwater elevations in 2013 decreased an average of approximately 0.28 feet. Monitor well MW-3 has been dry, containing no fluids, since September 2011.

3.2 Groundwater Analysis Data

Laboratory results from the analysis of groundwater samples collected from the monitor wells are summarized in Tables 2 and 3 in Appendix B and presented as Figures 7 through Figure 10 in Appendix A. The executed chain-of-custody forms and laboratory data sheets are provided in Appendix C.

1st Quarter 2013

Groundwater samples were collected and analyzed for BTEX constituents during the first quarter on February 22, 2013. The first quarter results are summarized below:

- Groundwater was not collected from monitor well MW-3, as the well was dry.
- Groundwater was not collected from monitor wells MW-1, MW-4, MW-5, and TMW-1 due to either the presence of PSH; or PSH entering the well during purging process.
- Benzene was not detected in the groundwater samples collected from monitor wells MW-2 and MW-6 through MW-15 at concentrations which exceeded the NMWQCC groundwater standard.
- Toluene, ethylbenzene and total xylene concentrations that exceeded their respective NMWQCC groundwater standards were not detected in any of the groundwater samples collected at the site.

2nd Quarter 2013

Groundwater samples were collected during the second quarter on May 24, 2013. The second quarter results are summarized below.

- Groundwater was not collected from monitor wells MW-3 and MW-14, as the wells were dry.
- Groundwater was not collected from monitor wells MW-9, MW-11, MW-12, MW-15 and TMW-1 due to either the presence of PSH, or entering the well during purging process.

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- Benzene was detected in the groundwater samples collected from monitor wells MW-1, MW-4, and MW-5, at concentrations of **0.578** mg/l, **0.0347** mg/l, and **0.0833** mg/l, respectfully, which exceeded the NMWQCC groundwater standard of **0.01** mg/l.
- Benzene was not detected in the groundwater samples collected from monitor wells MW-2, MW-6, MW-7, MW-8, MW-10 and MW-13 at concentrations which exceeded NMWQCC groundwater standard.
- Toluene, ethylbenzene and total xylene concentrations that exceeded their respective NMWQCC groundwater standards were not detected in any of the groundwater samples collected at the site.

3rd Quarter 2013

Groundwater samples were collected analyzed for BTEX on August 08, 2013 and PAH constituents on September 19, 2013 during the third quarter. The third quarter results are summarized below:

- Groundwater was not collected from monitor well MW-3, as the well was dry.
- Groundwater was not collected from monitor wells TMW-1 due to the presence of PSH.
- Groundwater from all the monitor wells was collected and analyzed for PAH constituents.
- Benzene was detected in the groundwater samples collected from monitor wells MW-1, MW-4, MW-5, and MW-12 at concentrations of **0.0966** mg/l, **0.0659** mg/l, **0.0637** mg/l, and **0.0121** mg/l, respectfully, which exceeded the NMWQCC groundwater standard of **0.01** mg/l.
- Benzene was not detected in the groundwater samples collected from monitor wells MW-2, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-13, MW-14 and MW-15 at concentrations which exceeded the NMWQCC groundwater standard.
- Toluene, ethylbenzene and total xylene concentrations that exceeded their respective NMWQCC groundwater standards were not detected in any of the groundwater samples collected at the site.
- PAH constituents were not detected in the groundwater sample collected from all the monitor wells at concentrations which exceeded their respective NMWQCC groundwater standards (where established).

4th Quarter 2013

Groundwater samples were collected during the fourth quarter on November 13, 2013. The fourth quarter results are summarized below.

- Groundwater was not collected from monitor well MW-3, as the well was dry.
- Groundwater was not collected from monitor well TMW-1 due to the presence of PSH.
- Benzene was detected in the groundwater samples collected from monitor wells MW-1, MW-4, MW-5, MW-14, and MW-15 at concentrations of **0.0553** mg/l, **0.0106** mg/l, **0.038** mg/l, **0.022** mg/l, **0.0132** mg/l respectively which exceeded the NMWQCC groundwater standard of **0.01** mg/l.
- Benzene was not detected in the groundwater samples collected from monitor wells MW-2, and MW-6 through MW-13 at concentrations which exceeded the NMWQCC groundwater standard.
- Toluene, ethylbenzene and total xylene concentrations that exceeded their respective NMWQCC groundwater standards were not detected in any of the groundwater samples collected at the site.

3.3 Historical Data Comparisons

Measurable PSH has not been present in the groundwater monitor wells MW-2, MW-3, and MW-5 through MW-15 since they were installed at the site. Monitor wells that historically have contained PSH are MW-1, and MW-4, of which only MW-4 ranged from a sheen to 0.07 feet thick in 2013. With a few exceptions, the temporary monitor well (TMW-1) which was installed in the center of the excavation, in August 2002, has contained measurable PSH at thicknesses ranging from non-detect to 4.91 feet. With a few exceptions, historically, benzene has not been present in groundwater samples collected from monitor wells MW-2, MW-3 and MW-6, through MW-15. Benzene has been present in the groundwater samples collected from monitor wells MW-1, MW-4, MW-5 and TMW-1 at concentrations exceeding the NMWQCC groundwater standard. Toluene, ethylbenzene and total xylenes were not detected in the groundwater at concentrations exceeding their respective NMWQCC groundwater standards in any of the

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March 21, 2014

groundwater samples in 2013. With the exception of periodic concentrations of naphthalene detected in monitor wells MW-1 and MW-5, PAHs have not been detected at concentrations exceeding the laboratory reporting limits and/or NMWQCC groundwater standards since the monitor wells were installed. Terracon purged large volumes of dissolved phase groundwater from monitor wells MW-1, MW-4, MW-5, and TMW-1 during 2013 in an attempt to enhance remediation of the plume at the site.

4.0 FINDINGS AND RECOMMENDATION

4.1 Findings

The annual groundwater report presents the results of four groundwater monitoring and sampling events for the 2013 calendar year.

- Groundwater was not collected from monitor well MW-3 in 2013 and from monitor well MW-14 during the second quarter, as the wells were dry.
- Measurable PSH was detected in monitor wells MW-1 (sheen to 0.03 feet), MW-4 (sheen to 0.07 feet), and TMW-1 (0.44 to 4.48 feet).
- Groundwater samples collected from monitor wells MW-2, MW-6 through MW-11, and MW-13 have not contained benzene concentrations exceeding the NMWQCC groundwater standard in 2013.
- Groundwater samples collected from monitor wells MW-12, MW-14, and MW-15 contained benzene at concentrations exceeding the NMWQCC groundwater standard during one of the four quarters in 2013.
- Toluene, ethylbenzene, and xylenes were not detected in the groundwater samples collected from monitoring wells in 2013 at concentrations which exceeded their respective NMWQCC groundwater standards.
- PAH constituents were not detected in the groundwater sample collected from the monitor wells at concentrations which exceeded their respective NMWQCC groundwater standards (where established).
- The extent of the PSH plume and the dissolved phase plume exceeding the NMWQCC groundwater standards has been defined. Detected concentrations of BTEX and PAHs have demonstrated a decreasing trend since groundwater sampling activities were initiated.

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4.2 RECOMMENDATIONS

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

- Continue PSH recovery and purging groundwater from select wells at the site on a bi-monthly schedule to enhance recovery at the site.
- Continue quarterly groundwater sampling for BTEX for all monitor wells and PAH for select monitor wells during the 2014 calendar year, in accordance with the NMOCD standards.
- Submit an annual report to the NMOCD detailing the 2014 site activities.

Plains Pipeline, L.P.
Livingston Ridge to Hugh P. Sims
Terracon Project Number A4147008
March 21, 2014

DISTRIBUTION

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Terracon Consultants, Inc.
1211 West Florida Avenue
Midland, Texas 79701
jdmoxley@terracon.com

APPENDIX A

Figure 1 – Topographic Map

Figure 2 – Site Plan

Figure 3 – Groundwater Gradient Map (02/21/13)

Figure 4 – Groundwater Gradient Map (05/23/13)

Figure 5 – Groundwater Gradient Map (08/08/13)

Figure 6 – Groundwater Gradient Map (11/13/13)

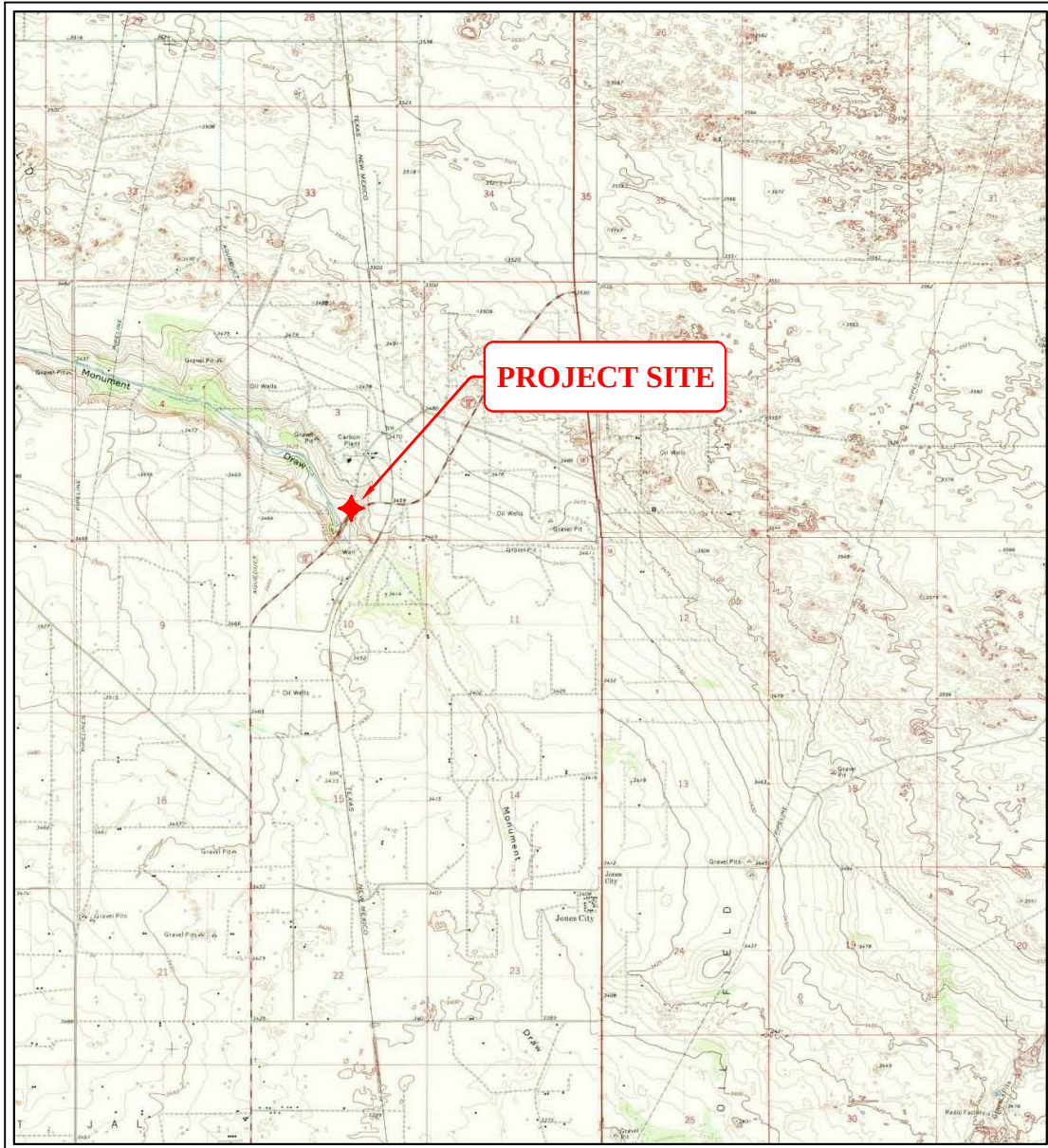
Figure 7 – Groundwater Contaminant Concentration Map (02/21/13)

Figure 8 – Groundwater Contaminant Concentration Map (05/23/13)

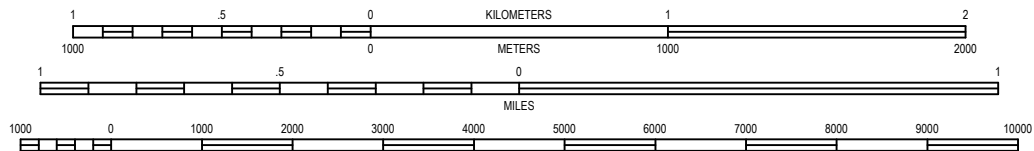
Figure 9 – Groundwater Contaminant Concentration Map (08/08/13)

Figure 10 – Groundwater Contaminant Concentration Map (11/13/13)

UNITED STATES – DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY



SCALE 1:24 000



CONTOUR INTERVAL FIVE FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

HOBBS SW, NM
PHOTOREVISED 1969
7.5 MINUTE SERIES (TOPOGRAPHIC)

Project Mng:	DM
Drawn By:	RF
Checked By:	DM
Approved By:	DM

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Date:	3/18/2014

Terracon
Consulting Engineers & Scientists

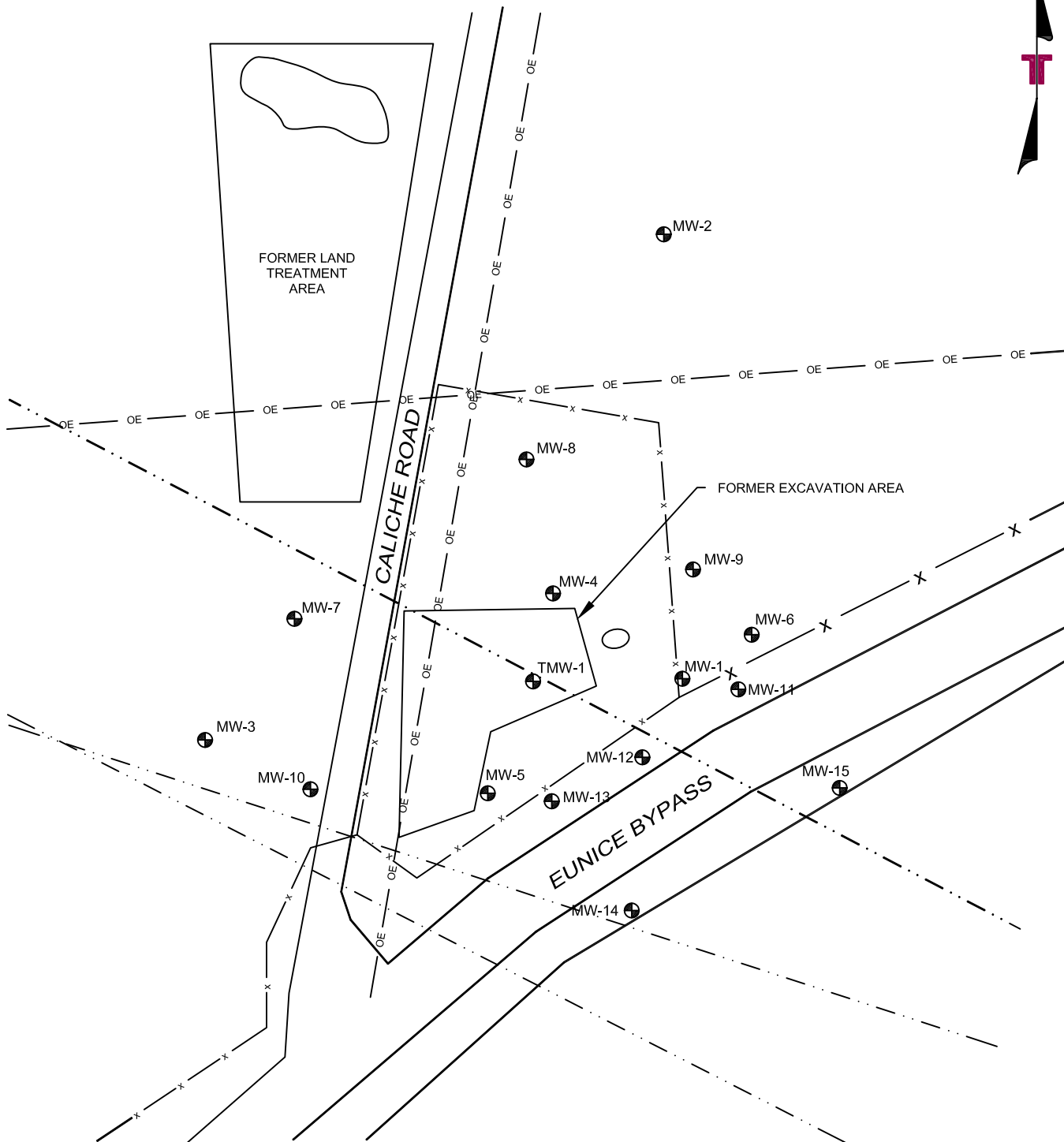
1211 WEST FLORIDA MIDLAND, TEXAS
PH. (432) 684-9600 FAX. (432) 684-9608

TOPOGRAPHIC QUADRANGLE MAP

PLAINS PIPELINE, L.P.
LIVINGSTON RIDGE TO HUGH P. SIMS
LEA COUNTY, NEW MEXICO
SRS# 2001-11005, NMOCD FILE# 1R-0398

FIG. No.

1



LEGEND	
	MONITORING WELL LOCATIONS



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

DWG. No. A4137008 base map

Project Manager:	DM	Project No.	A4137008
Drawn by:	RF	Scale:	AS SHOWN
Checked by:	DM	File Name:	A4137008
Approved by:	DM	Date:	12/17/2013

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Consulting Engineers & Scientists

1211 West Florida Avenue Midland, Texas 79701
PH: (432) 684-9600 FAX: (432) 684-9608

BASE MAP
PLAINS PIPELINE, L.P. LIVINGSTON RIDGE TO HUGH P. SIMS LEA COUNTY, NEW MEXICO SRS# 2001-11005, NMOCD FILE# 1R-0398

Figure
2

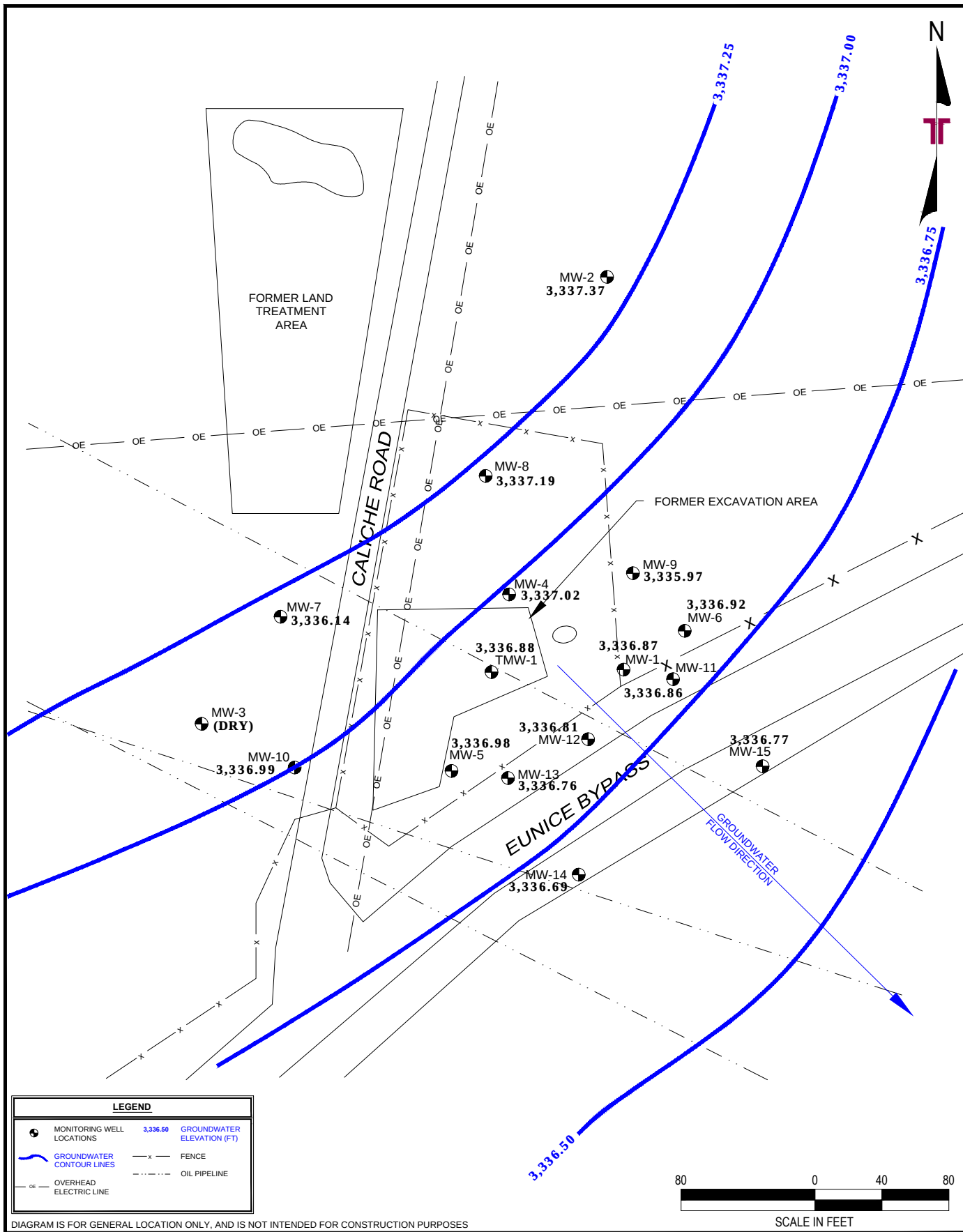


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Project Manager:	DM
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Date:	2/9/2014

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PH: (432) 684-9600 FAX: (432) 684-9608

GROUNDWATER GRADIENT MAP (2/21/2013)

PLAINS PIPELINE, L.P.
LIVINGSTON RIDGE TO HUGH P. SIMS
LEA COUNTY, NEW MEXICO
SRS# 2001-11005, NMOCD FILE# 1R-0398

Figure

3

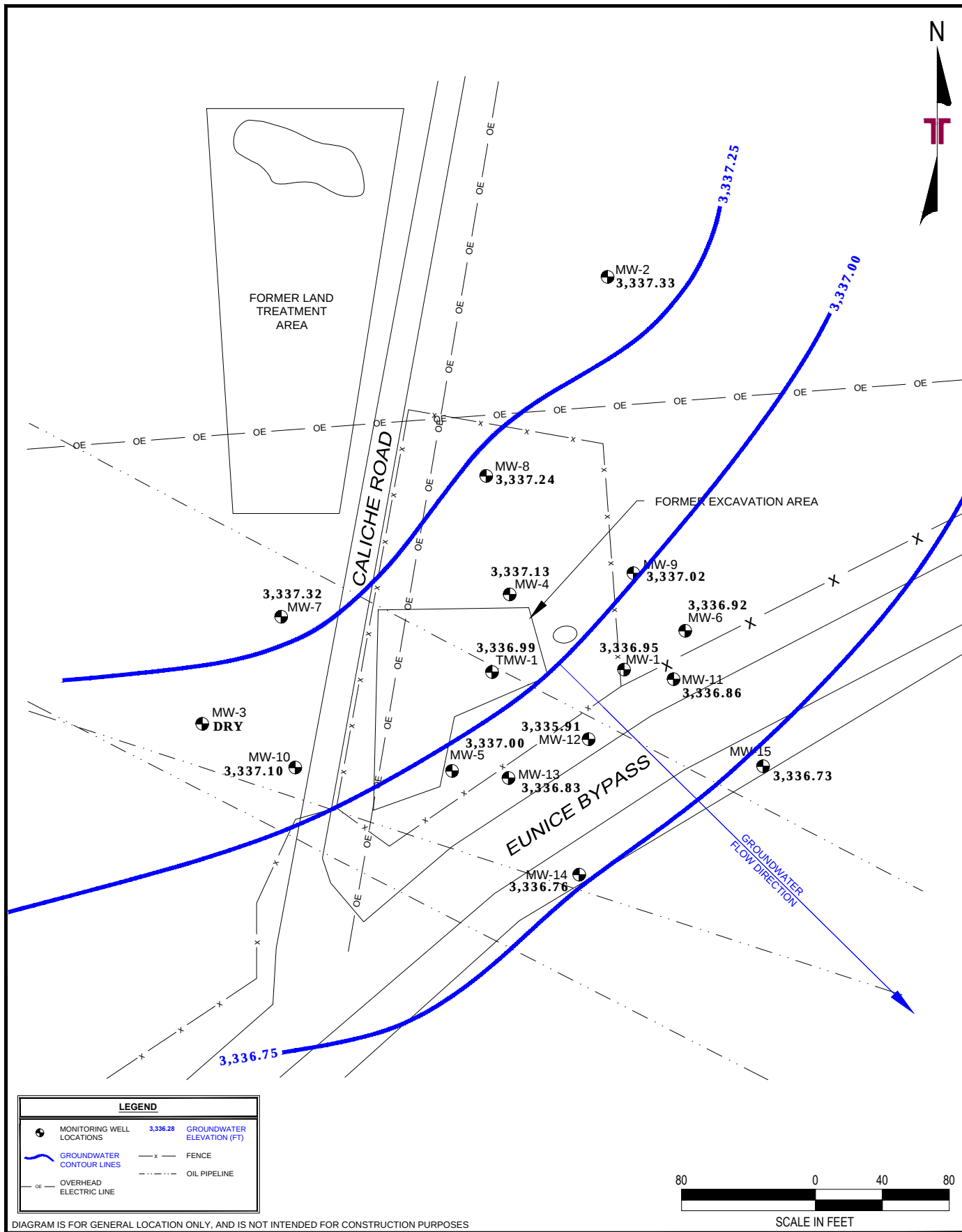


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Project Manager: DM Drawn by: RF Checked by: DM Approved by: DM	Project No. A4137008 Scale: AS SHOWN File Name: A4137008 Date: 2/9/2014	 Consulting Engineers & Scientists 1211 West Florida Avenue Midland, Texas 79701 PH: (432) 684-9600 FAX: (432) 684-9608	GROUNDWATER GRADIENT MAP (5/23/2013) PLAINS PIPELINE, L.P. LIVINGSTON RIDGE TO HUGH P. SIMS LEA COUNTY, NEW MEXICO SRS# 2001-11005, NMOCD FILE# 1R-0398	Figure 4
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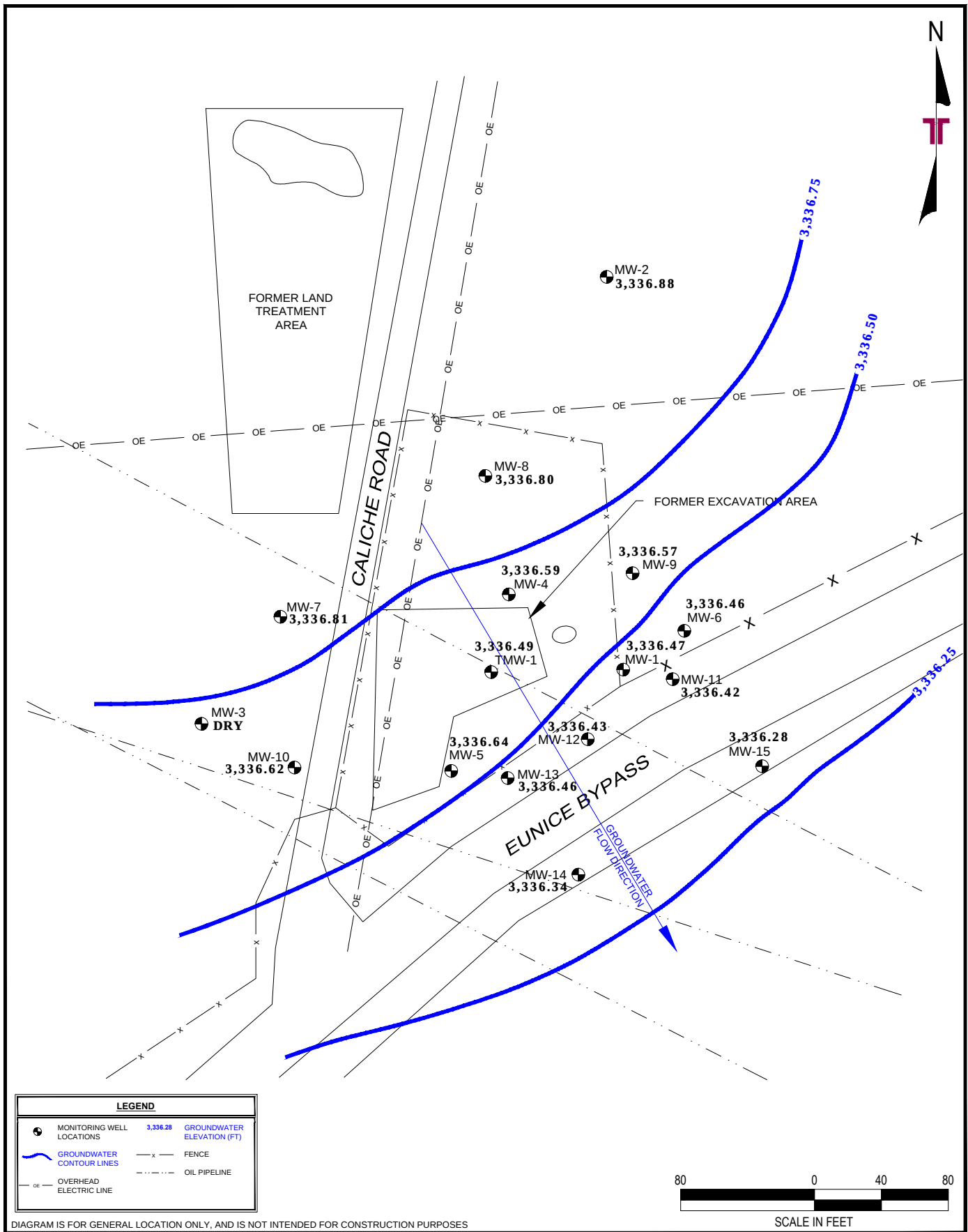
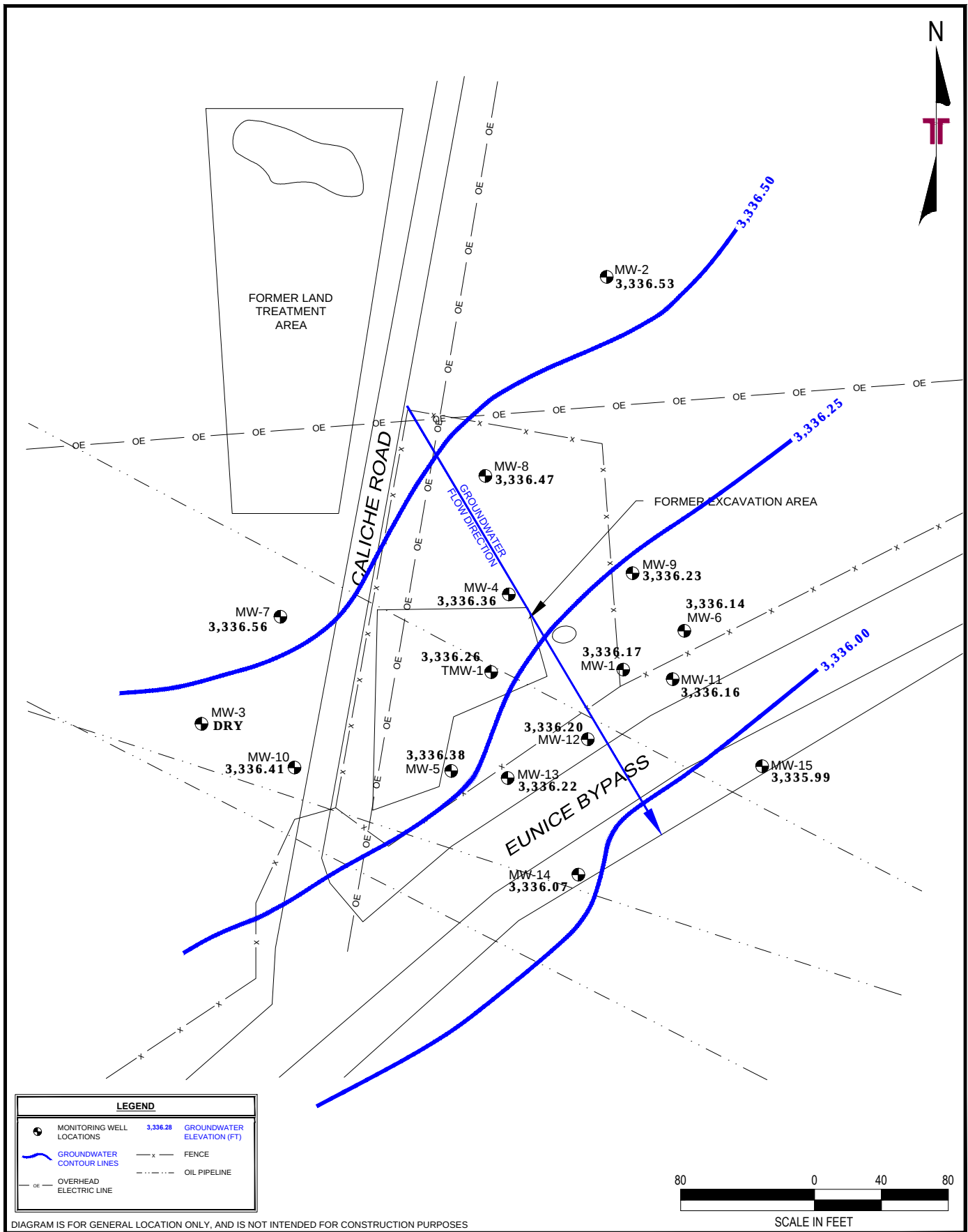


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Project Manager: DM	Project No. A4137008	Terracon Consulting Engineers & Scientists 1211 West Florida Avenue Midland, Texas 79701 PH: (432) 684-9600 FAX: (432) 684-9608	GROUNDWATER GRADIENT MAP (8/8/2013) PLAINS PIPELINE, L.P. LIVINGSTON RIDGE TO HUGH P. SIMS LEA COUNTY, NEW MEXICO SRS# 2001-11005, NMOCD FILE# 1R-0398	Figure 5
Drawn by: RF	Scale: AS SHOWN			
Checked by: DM	File Name: A4137008			
Approved by: DM	Date: 10/1/2013			



Project Manager: DM		Project No. A4137008		 1211 West Florida Avenue PH: (432) 684-9600 Midland, Texas 79701 FAX: (432) 684-9608	GROUNDWATER GRADIENT MAP (11/13/2013)		Figure		
Drawn by: RF		Scale: AS SHOWN			PLAINS PIPELINE, L.P.				
Checked by: DM		File Name: A4137008			LIVINGSTON RIDGE TO HUGH P. SIMS				
Approved by: DM		Date: 12/27/2013			LEA COUNTY, NEW MEXICO				
					SRS# 2001-11005, NMOCD FILE# 1R-0398				
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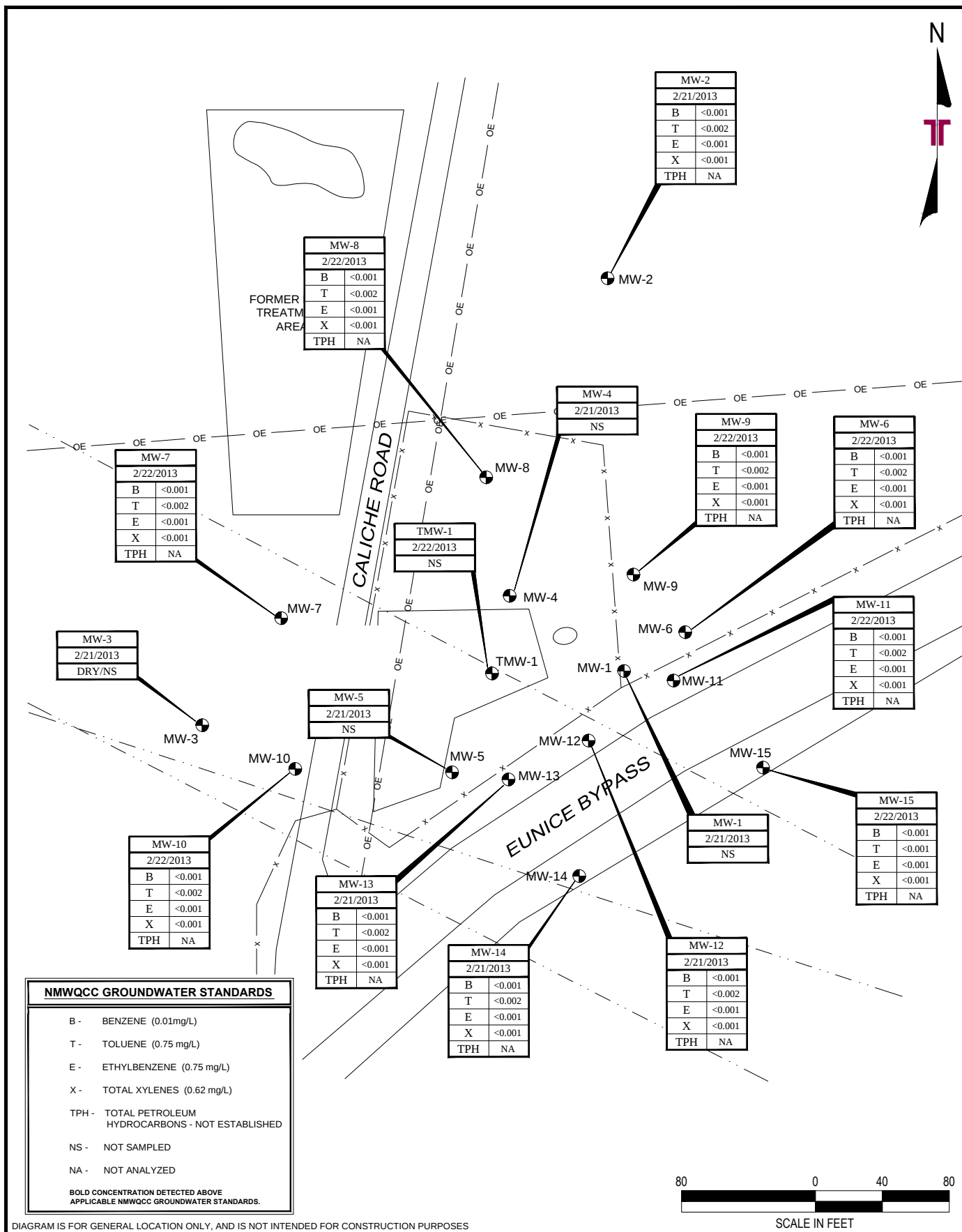
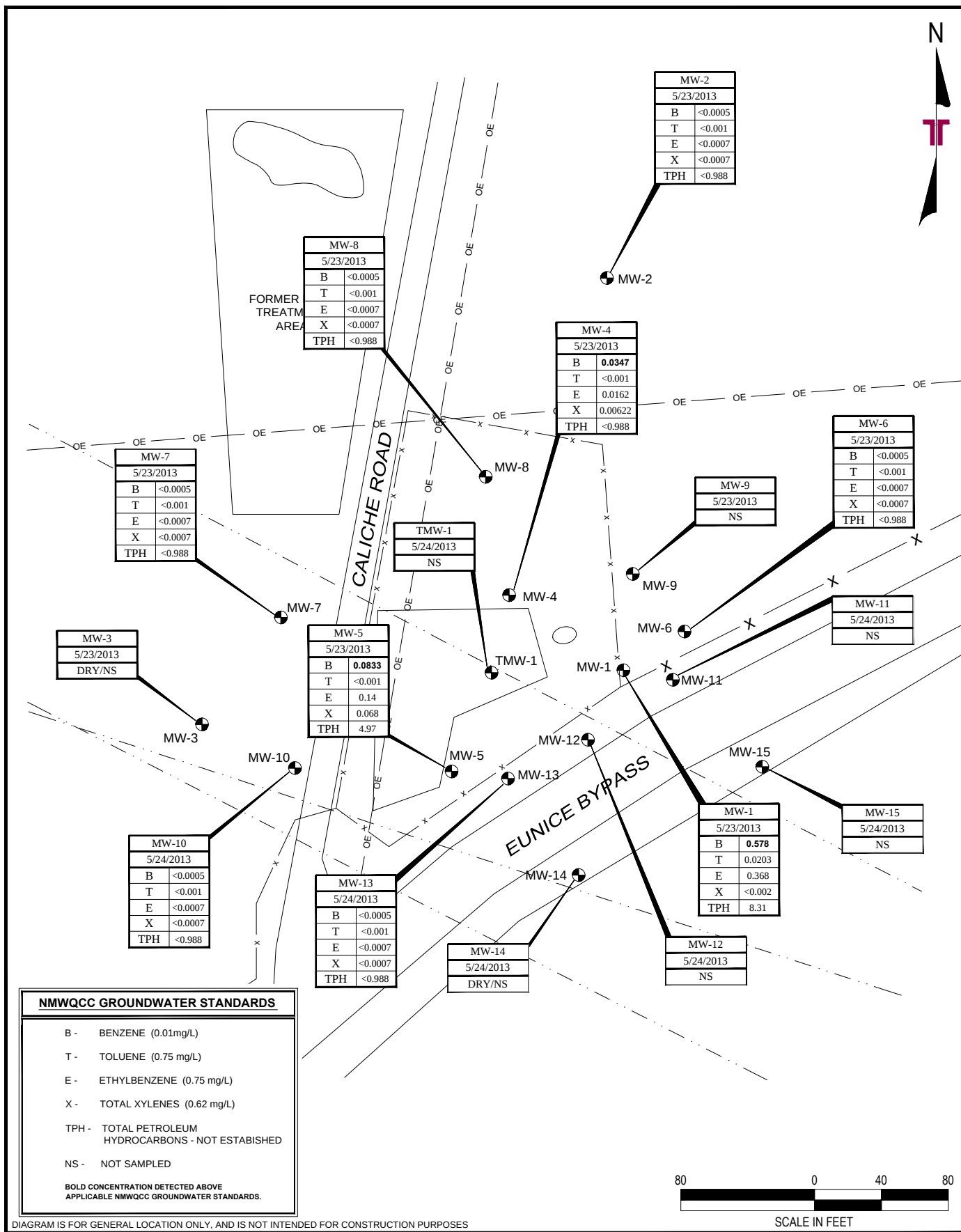


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: DM Drawn by: RF Checked by: DM Approved by: DM	Project No.: A4137008 Scale: AS SHOWN File Name: A4137008 Date: 2/9/2014	 Terracon Consulting Engineers & Scientists 1211 West Florida Avenue Midland, Texas 79701 PH. (432) 684-9600 FAX. (432) 684-9608	GROUNDWATER CONTAMINANT CONCENTRATION MAP (2/21/2013) PLAINS PIPELINE, L.P. LIVINGSTON RIDGE TO HUGH P. SIMS LEA COUNTY, NEW MEXICO SRS# 2001-11005, NMOCDFILE# 1R-0398	Figure 7
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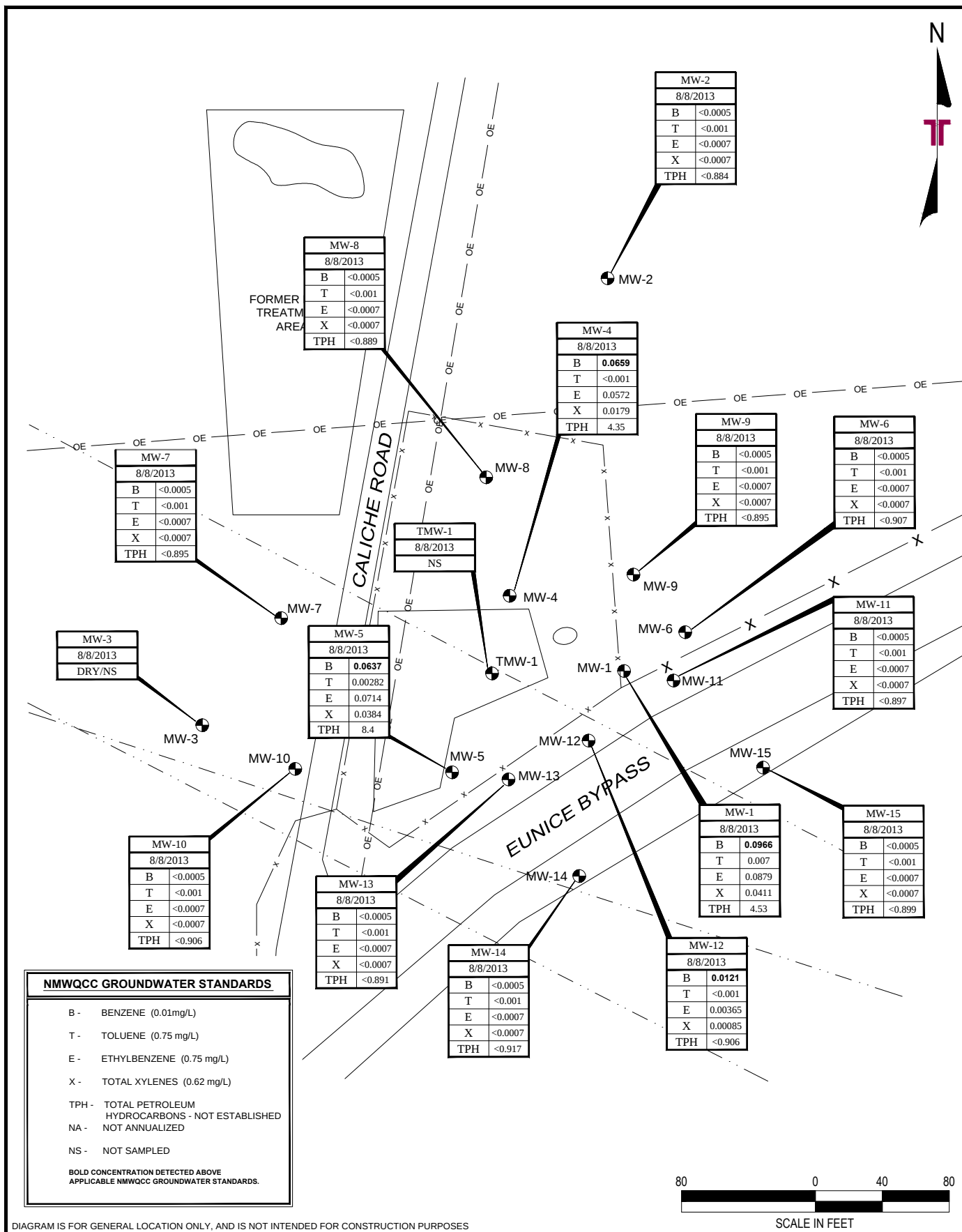


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: DM		Project No. A4137008		 1211 West Florida Avenue PH. (432) 684-9600 Midland, Texas 79701 FAX. (432) 684-9608	GROUNDWATER CONTAMINANT CONCENTRATION MAP (AUGUST 2013)		Figure		
Drawn by: RF		Scale: AS SHOWN			PLAINS PIPELINE, L.P. LIVINGSTON RIDGE TO HUGH P. SIMS LEA COUNTY, NEW MEXICO SRS# 2001-11005, NMOCDFILE# 1R-0398				9
Checked by: DM		File Name: A4137008							
Approved by: DM		Date: 10/1/2013							

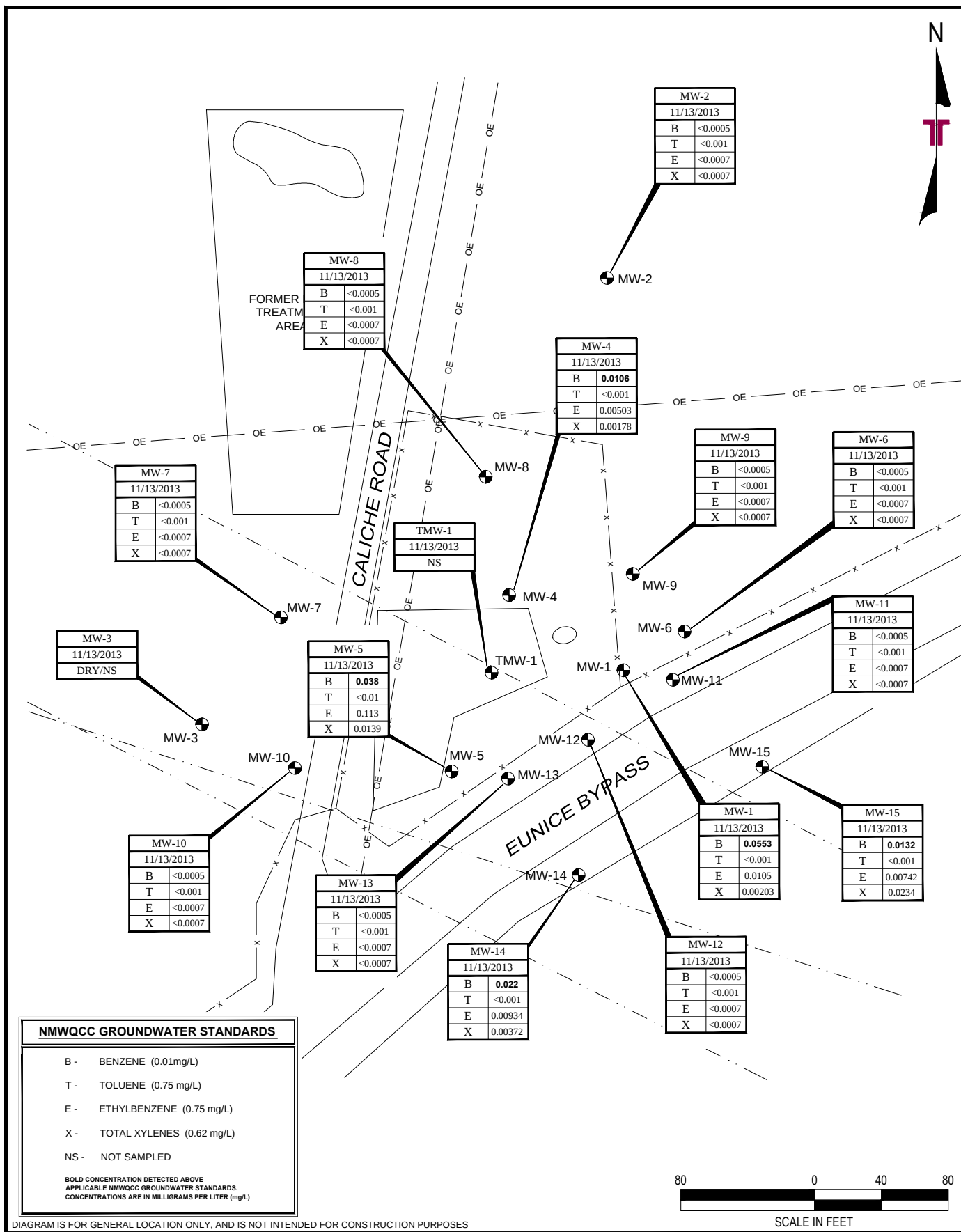


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: DM	Project No. A4137008	Consulting Engineers & Scientists 1211 West Florida Avenue Midland, Texas 79701 PH: (432) 684-9600 FAX: (432) 684-9608	GROUNDWATER CONTAMINANT CONCENTRATION MAP (11/13/2013)	Figure
Drawn by: RF	Scale: AS SHOWN		PLAINS PIPELINE, L.P. LIVINGSTON RIDGE TO HUGH P. SIMS LEA COUNTY, NEW MEXICO SRS# 2001-11005, NMOCDFILE# 1R-0398	10
Checked by: DM	File Name: A4137008			
Approved by: DM	Date: 12/27/2013			

APPENDIX B

Tables

2013 Annual Report
Table 1
GROUNDWATER ELEVATION AND PSH¹ DATA
Livingston Ridge to Hugh - P. Sims Pipeline Leak
Lea County, New Mexico
NMOCD File Number 1R-0398
Plains Pipeline, L. P. SRS Number 2001-1005
Terracon Project Number A4137008

All elevations are measured 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	Volume Purged
MW-1	12/27/07	3,374.23	-	32.44	-	3,341.79		
	01/18/08		-	32.56	-	3,341.67		
	02/20/08		-	32.58	-	3,341.65		
	02/29/08		-	32.57	-	3,341.66		
	03/11/08		-	32.66	-	3,341.57		
	04/30/08		-	32.65	-	3,341.58		
	05/28/08		-	32.78	-	3,341.45		
	06/25/08		-	32.92	-	3,341.31		
	07/02/08		-	32.97	-	3,341.26	0.10	20.00
	07/07/08		-	33.00	-	3,341.23	0.10	10.00
	07/14/08		-	33.07	-	3,341.16	0.10	25.00
	07/22/08		-	33.09	-	3,341.14	0.10	10.00
	07/30/08		-	29.15	-	3,345.08		
	08/05/08		-	29.24	-	3,344.99		15.00
	08/14/08		-	33.25	-	3,340.98	0.10	5.00
	08/21/08		-	33.12	-	3,341.11		
	08/27/08		-	33.13	-	3,341.10		25.00
	09/20/08		-	33.07	-	3,341.16		30.00
	09/29/08		-	33.11	-	3,341.12		40.00
	11/06/08		-	33.08	-	3,341.15		
	11/15/08		-	33.11	-	3,341.12		25.00
	11/24/08		-	33.04	-	3,341.19		50.00
	11/26/08		-	33.04	-	3,341.19		50.00
	12/20/08		-	33.09	-	3,341.14		50.00
	01/16/09		-	33.13	-	3,341.10		50.00
	02/09/09		-	33.10	-	3,341.13		50.00
	04/08/09		-	33.21	-	3,341.02		50.00
	04/16/09		-	33.25	-	3,340.98		50.00
	04/22/09		-	32.32	-	3,341.91		40.00
	04/29/09		-	33.24	-	3,340.99		50.00
	05/06/09		-	33.85	-	3,340.38		50.00
	05/14/09		-	33.33	-	3,340.90		
	07/08/09		-	33.51	-	3,340.72		30.00
	07/24/09		-	33.53	-	3,340.70		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-1	08/04/09	3,374.23	-	34.35	-	3,339.88		55.00
	08/13/09		-	33.58	-	3,340.65		
	08/19/09		-	33.24	-	3,340.99		45.00
	09/01/09		33.68	33.72	0.04	3,340.54	5.00	49.50
	09/22/09		33.79	33.81	0.02	3,340.44	0.25	5.00
	10/12/09		-	33.85	-	3,340.39		23.00
	10/30/09		-	33.94	-	3,340.29		
	11/10/09		-	33.97	-	3,340.26	1.00	24.00
	01/08/10		-	33.93	-	3,340.30		15.00
	01/22/10		-	33.94	-	3,340.29		10.00
	01/26/10		-	33.09	-	3,341.14		50.00
	02/03/10		-	34.08	-	3,340.15		50.00
	02/10/10		-	33.97	-	3,340.26		30.00
	02/22/10		-	33.92	-	3,340.31		30.00
	03/09/10		-	33.95	-	3,340.28		50.00
	03/24/10		-	34.00	-	3,340.23		50.00
	04/12/10		-	33.92	-	3,340.31		50.00
	04/27/10		-	34.93	-	3,339.30		50.00
	05/27/10		-	34.09	-	3,340.14		
	06/21/10		-	34.15	-	3,340.08		45.00
	07/07/10		-	34.13	-	3,340.10		50.00
	07/20/10		-	34.00	-	3,340.23		55.00
	08/03/10		-	34.16	-	3,340.07		50.00
	08/16/10		-	34.23	-	3,340.00		45.00
	09/02/10		-	34.28	-	3,339.95		30.00
	09/17/10		-	34.36	-	3,339.87		30.00
	10/05/10		-	34.43	-	3,339.80		20.00
	11/11/10		-	34.55	-	3,339.68		
	12/15/10		34.39	34.42	0.03	3,339.84		
	12/29/10		34.36	34.40	0.04	3,339.86		20.00
	02/18/11		34.44	34.50	0.06	3,339.78		
	03/02/11		34.45	34.65	0.20	3,339.75	0.10	25.00
	03/16/11		34.57	34.64	0.07	3,339.65	0.10	20.00
	03/29/11		34.51	34.54	0.03	3,339.72		30.00
	04/15/11		-	34.57	-	3,339.67		20.00
	04/18/11		-	34.53	-	3,339.70		25.00
	04/29/11		-	34.58	-	3,339.65		20.00
	05/06/11		-	34.58	-	3,339.65		20.00
	05/20/11		-	34.65	-	3,339.58		25.00
	05/25/11		-	34.69	-	3,339.54		
	06/01/11		-	34.75	-	3,339.48		20.00
	06/14/11		-	25.60	-	3,348.63		
	07/30/11		-	35.24	-	3,338.99		
	09/20/11		-	35.60	-	3,338.64		
	10/03/11		35.75	36.05	0.30	3,338.44	0.10	25.00

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-1	10/28/11	3,374.23	35.80	35.88	0.08	3,338.42		
	11/10/11		35.80	35.87	0.07	3,338.42		20.00
	12/09/11		-	36.30	-	3,337.93		20.00
	02/24/12		-	36.02	-	3,338.21		20.00
	02/29/12		-	36.11	-	3,338.12		
	03/27/12		-	36.21	-	3,338.02		20.00
	04/12/12		-	36.33	-	3,337.90		20.00
	04/19/12		-	36.28	-	3,337.95		20.00
	05/05/12		-	36.35	-	3,337.88		20.00
	05/17/12		-	36.40	-	3,337.83		
	06/21/12		-	36.40	-	3,337.83		20.00
	07/09/12		-	36.53	-	3,337.70		25.00
	08/02/12		-	36.60	-	3,337.63		
	08/15/12		-	36.72	-	3,337.51		
	08/28/12		-	36.80	-	3,337.43		
	09/12/12		-	37.12	-	3,337.11		25.00
	09/26/12		-	37.10	-	3,337.13		
	10/10/12		-	37.07	-	3,337.16		25.00
	10/26/12		-	37.08	-	3,337.15		
	11/06/12		-	37.12	-	3,337.11		
	11/07/12		-	37.11	-	3,337.12		5.00
	11/20/12		-	37.16	-	3,337.07		25.00
	01/11/13		-	37.18	-	3,337.05		25.00
	01/25/13		-	37.20	-	3,337.03		25.00
	02/22/13		-	37.36	-	3,336.87		
	02/07/13		37.17	37.20	0.03	3,337.06		25.00
	03/08/13		-	37.20	-	3,337.03		25.00
	03/21/13		-	37.25	-	3,336.98		25.00
	04/04/13		37.35	37.38	0.03	3,336.88		25.00
	04/17/13		-	37.24	-	3,337.01		25.00
	05/01/13		-	37.35	-	3,336.89		25.00
	05/23/13		-	37.29	-	3,336.95		25.00
	06/13/13		-	37.42	-	3,336.81		25.00
	06/28/13		-	37.52	-	3,336.72		25.00
	07/10/13		-	37.60	-	3,336.63		25.00
	07/24/13		-	37.67	-	3,336.56		
	08/08/13		-	37.76	-	3,336.47		
	08/22/13		-	37.90	-	3,336.33		
	09/05/13		-	38.01	-	3,336.23		
	09/19/13		-	38.11	-	3,336.13		5.00
	10/07/13		-	38.19	-	3,336.05		25.00
	10/17/13		-	38.19	-	3,336.05		35.00
	10/31/13		-	38.07	-	3,336.17		25.00
	11/13/13		-	38.06	-	3,336.17		
	11/27/13		-	38.04	-	3,336.20		25.00

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-1	12/11/13	3,374.23	-	38.05	-	3,336.19		25.00
	12/22/13		-	38.06	-	3,336.18		25.00

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-2	11/16/07	3,378.27	-	35.88	-	3,342.39		
	02/29/08		-	36.04	-	3,342.23		
	05/28/08		-	36.15	-	3,342.12		
	08/21/08		-	36.65	-	3,341.62		
	11/06/08		-	36.49	-	3,341.78		
	02/09/09		-	36.55	-	3,341.72		
	05/14/09		-	36.70	-	3,341.57		
	08/12/09		-	37.05	-	3,341.22		
	11/10/09		-	37.34	-	3,340.93		
	02/03/10		-	37.35	-	3,340.92		
	05/27/10		-	37.43	-	3,340.84		
	08/16/10		-	37.64	-	3,340.63		
	11/11/10		-	37.81	-	3,340.46		
	02/18/11		-	37.86	-	3,340.41		
	05/25/11		-	38.11	-	3,340.16		
	10/03/11		-	39.14	-	3,339.13		
	10/28/11		-	39.22	-	3,339.05		
	11/10/11		-	39.25	-	3,339.02		
	12/09/11		-	39.38	-	3,338.89		
	02/24/12		-	39.40	-	3,338.87		
	02/29/12		-	39.41	-	3,338.86		
	03/27/12		-	39.49	-	3,338.78		
	04/12/12		-	39.65	-	3,338.62		
	04/19/12		-	39.64	-	3,338.63		
	05/05/12		-	39.64	-	3,338.63		
	05/17/12		-	39.63	-	3,338.64		
	06/21/12		-	39.83	-	3,338.44		
	07/09/12		-	39.90	-	3,338.37		
	08/02/12		-	40.11	-	3,338.16		
	08/15/12		-	40.23	-	3,338.04		
	08/28/12		-	40.35	-	3,337.92		
	09/12/12		-	40.56	-	3,337.71		
	09/26/12		-	40.62	-	3,337.65		
	10/10/12		-	40.60	-	3,337.67		
	10/26/12		-	40.65	-	3,337.62		
	11/06/12		-	40.66	-	3,337.61		5.00
	11/07/12		-	40.67	-	3,337.60		5.00
	11/20/12		-	40.73	-	3,337.54		
	01/11/13		-	40.61	-	3,337.66		
	01/25/13		-	40.78	-	3,337.49		
	02/07/13		-	40.79	-	3,337.48		
	02/22/13		-	40.90	-	3,337.37		
	03/08/13		-	41.78	-	3,336.49		
	03/21/13		-	40.80	-	3,337.47		
	04/04/13		-	40.95	-	3,337.32		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-2	04/17/13	3,378.27	-	40.89	-	3,337.38		
	05/01/13		-	40.98	-	3,337.29		
	05/23/13		-	40.94	-	3,337.33		
	06/13/13		-	41.02	-	3,337.25		
	06/28/13		-	41.10	-	3,337.18		
	07/10/13		-	41.22	-	3,337.07		
	07/24/13		-	41.27	-	3,337.00		
	08/08/13		-	41.39	-	3,336.88		
	08/22/13		-	41.50	-	3,336.77		
	09/05/13		-	41.62	-	3,336.66		
	09/19/13		-	41.73	-	3,336.55		5.00
	10/07/13		-	41.81	-	3,336.47		
	10/17/13		-	41.83	-	3,336.45		
	10/31/13		-	41.77	-	3,336.51		
	11/13/13		-	41.75	-	3,336.53		
	11/27/13		-	41.74	-	3,336.54		
	12/11/13		-	41.74	-	3,336.54		
	12/22/13		-	41.74	-	3,336.54		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-3	11/16/07	3,367.36	-	25.28	-	3,342.08	0.00	0.00
	02/29/08		-	25.44	-	3,341.92	0.00	0.00
	05/28/08		-	25.55	-	3,341.81	0.00	0.00
	08/21/08		-	26.11	-	3,341.25	0.00	0.00
	11/06/08		-	25.89	-	3,341.47	0.00	0.00
	02/09/09		-	25.98	-	3,341.38	0.00	0.00
	05/14/09		-	26.18	-	3,341.18	0.00	0.00
	08/13/09		-	26.48	-	3,340.88	0.00	0.00
	11/10/09		-	26.83	-	3,340.53	0.00	0.00
	02/03/10		-	26.80	-	3,340.56	0.00	0.00
	05/25/10		-	30.79	-	3,336.57	0.00	0.00
	05/27/10		-	26.88	-	3,340.48	0.00	0.00
	08/16/10		-	27.13	-	3,340.23	0.00	0.00
	11/11/10		-	27.15	-	3,340.21	0.00	0.00
	09/20/11		DRY					
	10/03/11		DRY					
	10/28/11		DRY					
	11/10/11		DRY					
	12/09/11		DRY					
	02/24/12		DRY					
	02/29/12		DRY					
	03/27/12		DRY					
	04/12/12		DRY					
	04/19/12		DRY					
	05/05/12		DRY					
	05/17/12		DRY					
	06/21/12		DRY					
	07/09/12		DRY					
	08/02/12		DRY					
	08/15/12		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					
	01/11/13		DRY					
	01/25/13		DRY					
	02/07/13		DRY					
	02/22/13		DRY					
	03/08/13		DRY					

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-3	03/21/13	3,367.36				DRY		
	04/04/13					DRY		
	04/17/13					DRY		
	05/01/13					DRY		
	05/23/13					DRY		
	06/13/13					DRY		
	06/28/13					DRY		
	07/10/13					DRY		
	07/24/13					DRY		
	08/08/13					DRY		
	08/22/13					DRY		
	09/05/13					DRY		
	09/19/13					DRY		
	10/07/13					DRY		
	10/17/13					DRY		
	10/31/13					DRY		
	11/13/13					DRY		
	11/27/13					DRY		
	12/11/13					DRY		
	12/22/13					DRY		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-4	12/27/07	3,372.73	-	30.69	-	3,342.04		
	01/18/08		-	30.78	-	3,341.95		
	02/20/08		-	31.83	-	3,340.90		
	02/29/08		-	30.86	-	3,341.87		
	04/30/08		-	30.82	-	3,341.91		
	05/28/08		-	31.09	-	3,341.64		
	06/25/08		-	37.66	-	3,335.07		
	07/02/08		-	31.28	-	3,341.45		20.00
	07/07/08		-	31.34	-	3,341.39		10.00
	07/14/08		-	34.51	-	3,338.22		25.00
	07/22/08		-	31.39	-	3,341.34		10.00
	07/30/08		-	31.40	-	3,341.33		10.00
	08/05/08		-	31.50	-	3,341.23		10.00
	08/14/08		-	31.55	-	3,341.18		5.00
	08/21/08		-	31.43	-	3,341.30		
	08/27/08		-	31.42	-	3,341.31		25.00
	09/20/08		-	31.34	-	3,341.39		30.00
	09/29/08		-	31.34	-	3,341.39		40.00
	11/06/08		-	31.38	-	3,341.35		
	11/15/08		-	31.40	-	3,341.33		50.00
	11/24/08		-	31.35	-	3,341.38		25.00
	11/26/08		-	31.34	-	3,341.39		25.00
	12/20/08		-	31.39	-	3,341.34		50.00
	01/16/09		-	31.42	-	3,341.31		50.00
	02/09/09		-	31.39	-	3,341.34		50.00
	04/08/09		-	31.10	-	3,341.63		50.00
	04/16/09		-	31.50	-	3,341.23		35.00
	04/22/09		-	31.57	-	3,341.16		50.00
	05/14/09		-	31.58	-	3,341.15		45.00
	07/08/09		-	31.79	-	3,340.94		35.00
	07/24/09		-	31.85	-	3,340.88		50.00
	08/04/09		-	31.85	-	3,340.88		55.00
	08/12/09		-	31.96	-	3,340.77		
	08/19/09		-	31.90	-	3,340.83		32.00
	09/01/09		-	32.00	-	3,340.73		53.50
	09/22/09		-	32.08	-	3,340.65		10.00
	10/12/09		-	32.13	-	3,340.60		17.00
	10/30/09		-	32.27	-	3,340.46		
	11/10/09		-	32.22	-	3,340.51		25.00
	01/08/10		-	32.23	-	3,340.50		5.00
	01/22/10		-	32.17	-	3,340.56		10.00
	01/26/10		-	32.26	-	3,340.47		50.00

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-4	02/03/10	3,372.73	-	32.25	-	3,340.48		50.00
	02/10/10		-	32.28	-	3,340.45		50.00
	03/09/10		-	32.20	-	3,340.53		30.00
	03/24/10		-	32.24	-	3,340.49		30.00
	04/12/10		-	32.24	-	3,340.49		30.00
	04/27/10		-	32.25	-	3,340.48		30.00
	05/27/10		-	32.28	-	3,340.45		
	06/21/10		-	32.50	-	3,340.23		40.00
	07/07/10		-	32.40	-	3,340.33		50.00
	07/20/10		-	32.43	-	3,340.30		50.00
	08/03/10		-	32.44	-	3,340.29		50.00
	08/16/10		-	32.53	-	3,340.20		45.00
	09/02/10		-	32.67	-	3,340.06		50.00
	09/17/10		-	32.65	-	3,340.08		50.00
	10/05/10		-	32.70	-	3,340.03		20.00
	11/10/10		-	32.73	-	3,340.00		20.00
	12/15/10		-	32.71	-	3,340.02		20.00
	12/29/10		-	32.68	-	3,340.05		30.00
	02/18/11		-	32.76	-	3,339.97		
	03/02/11		-	32.74	-	3,339.99		25.00
	03/16/11		-	32.73	-	3,340.00		20.00
	03/29/11		-	32.70	-	3,340.03		25.00
	04/15/11		-	32.88	-	3,339.85		30.00
	04/18/11		-	32.85	-	3,339.88		30.00
	04/29/11		-	32.85	-	3,339.88		30.00
	05/06/11		-	32.91	-	3,339.82		25.00
	05/20/11		-	32.98	-	3,339.75		25.00
	05/25/11		-	33.00	-	3,339.73		
	06/01/11		-	32.95	-	3,339.78		20.00
	07/30/11		-	33.53	-	3,339.20		20.00
	09/20/11		-	33.95	-	3,338.79		
	10/03/11		34.06	35.10	1.04	3,338.51		
	10/28/11		34.12	34.23	0.11	3,338.59		
	11/10/11		34.12	34.30	0.18	3,338.58	1.00	20.00
	12/09/11		34.21	34.38	0.17	3,338.49	1.00	20.00
	02/24/12		34.20	34.40	0.20	3,338.50	1.00	20.00
	03/27/12		34.30	34.50	0.20	3,338.40	1.00	20.00
	04/12/12		34.45	34.60	0.15	3,338.26	1.00	20.00
	04/19/12		34.47	34.60	0.13	3,338.24	1.00	20.00
	05/05/12		34.50	34.80	0.30	3,338.19	1.00	20.00
	05/17/12		34.55	34.70	0.15	3,338.16		
	06/21/12		34.75	35.06	0.31	3,337.93	2.00	23.00

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-4	07/09/12	3,372.73	34.92	35.11	0.19	3,337.78		25.00
	08/02/12		29.50	30.00	0.50	3,343.16		
	08/15/12		35.04	35.17	0.13	3,337.67		
	08/28/12		35.14	35.35	0.21	3,337.56		
	09/12/12		35.47	35.70	0.23	3,337.23		25.00
	09/26/12		35.60	35.66	0.06	3,337.12		
	10/10/12		35.39	35.53	0.14	3,337.32		25.00
	10/26/12		35.46	35.50	0.04	3,337.26		
	11/06/12		35.49	35.75	0.26	3,337.20		5.00
	11/20/12		35.56	35.70	0.14	3,337.15	2.00	23.00
	01/11/13		-	35.48	-	3,337.25		25.00
	01/25/13		-	35.50	-	3,337.23		25.00
	02/07/13		-	35.52	-	3,337.21		25.00
	02/22/13		35.70	35.76	0.06	3,337.02		
	03/08/13		-	35.65	-	3,337.08		25.00
	03/21/13		-	35.54	-	3,337.19		25.00
	04/04/13		-	35.58	-	3,337.15		25.00
	04/17/13		-	35.57	-	3,337.16		25.00
	05/01/13		-	35.60	-	3,337.13		25.00
	05/23/13		-	35.60	-	3,337.13		25.00
	06/13/13		-	35.71	-	3,337.02		25.00
	06/28/13		-	35.81	-	3,336.93		25.00
	07/10/13		35.90	35.93	0.03	3,336.83		25.00
	07/24/13		35.99	36.03	0.04	3,336.73		
	08/08/13		36.13	36.20	0.07	3,336.59		
	08/22/13		-	36.24	-	3,336.50		25.00
	09/05/13		-	36.34	-	3,336.39		5.00
	09/19/13		-	36.46	-	3,336.28		
	10/07/13		36.51	36.55	0.04	3,336.21	0.25	25.00
	10/17/13		36.49	36.52	0.03	3,336.24	1.00	25.00
	10/31/13		-	36.41	-	3,336.33		25.00
	11/13/13		-	36.38	-	3,336.36		
	11/27/13		-	36.38	-	3,336.36		25.00
	12/11/13		-	36.39	-	3,336.35		25.00
	12/22/13		-	36.40	-	3,336.34		25.00

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-5	12/27/07	3,370.92	-	29.29	-	3,341.63		
	01/18/08		-	29.40	-	3,341.52		
	02/20/08		-	29.43	-	3,341.49		
	02/29/08		-	29.43	-	3,341.49		
	03/11/08		-	29.87	-	3,341.05		
	04/30/08		-	29.45	-	3,341.47		
	05/28/08		-	29.55	-	3,341.37		
	06/25/08		-	29.70	-	3,341.22		
	07/02/08		-	29.75	-	3,341.17		20.00
	07/07/08		-	28.83	-	3,342.09		10.00
	07/14/08		-	29.82	-	3,341.10		25.00
	07/22/08		-	29.87	-	3,341.05		10.00
	07/30/08		-	29.93	-	3,340.99		15.00
	08/05/08		-	29.94	-	3,340.98		15.00
	08/14/08		-	30.06	-	3,340.86		5.00
	08/21/08		-	29.83	-	3,341.09		50.00
	08/27/08		-	29.69	-	3,341.23		25.00
	09/20/08		-	29.75	-	3,341.17		30.00
	09/29/08		-	29.74	-	3,341.18		40.00
	11/06/08		-	29.75	-	3,341.17		50.00
	11/15/08		-	29.89	-	3,341.03		50.00
	11/24/08		-	29.76	-	3,341.16		25.00
	11/26/08		-	29.74	-	3,341.18		25.00
	12/20/08		-	29.79	-	3,341.13		50.00
	01/16/09		-	29.84	-	3,341.08		50.00
	02/09/09		-	29.78	-	3,341.14		50.00
	04/08/09		-	29.91	-	3,341.01		50.00
	04/16/09		-	29.90	-	3,341.02		45.00
	04/22/09		-	30.02	-	3,340.90		30.00
	04/29/08		-	29.92	-	3,341.00		50.00
	05/14/09		-	30.06	-	3,340.86		50.00
	07/08/09		-	30.19	-	3,340.73		30.00
	07/24/09		-	30.23	-	3,340.69		50.00
	08/04/09		-	30.28	-	3,340.64		55.00
	08/12/09		-	29.30	-	3,341.62		
	08/19/09		-	30.31	-	3,340.61		42.00
	09/01/09		-	30.39	-	3,340.53		52.30
	09/22/09		-	30.49	-	3,340.44		10.00
	10/12/09		-	30.54	-	3,340.38		23.00
	10/30/09		-	29.63	-	3,341.29		
	11/10/09		-	30.61	-	3,340.31		30.00
	01/08/10		-	30.62	-	3,340.30		5.00

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-5	01/22/10	3,370.92	-	30.56	-	3,340.37		10.00
	01/26/10		-	30.68	-	3,340.24		
	02/03/10		-	30.75	-	3,340.17		
	02/10/10		-	30.66	-	3,340.26		30.00
	02/22/10		-	30.60	-	3,340.32		30.00
	03/09/10		-	30.56	-	3,340.36		30.00
	03/24/10		-	30.60	-	3,340.32		30.00
	04/12/10		-	30.60	-	3,340.32		30.00
	04/27/10		-	30.61	-	3,340.31		30.00
	05/27/10		-	30.90	-	3,340.02		50.00
	06/21/10		-	30.85	-	3,340.07		18.00
	07/07/10		-	30.75	-	3,340.17		20.00
	07/20/10		-	30.67	-	3,340.25		50.00
	08/03/10		-	30.85	-	3,340.07		20.00
	08/16/10		-	30.94	-	3,339.98		20.00
	09/02/10		-	30.97	-	3,339.95		30.00
	09/17/10		-	31.03	-	3,339.89		30.00
	10/05/10		-	31.13	-	3,339.79		25.00
	11/11/10		-	31.12	-	3,339.80		20.00
	12/15/10		-	31.00	-	3,339.92		30.00
	12/29/10		-	31.08	-	3,339.84		20.00
	02/18/11		-	31.16	-	3,339.76		
	03/02/11		-	31.12	-	3,339.80		30.00
	03/16/11		-	31.31	-	3,339.61		20.00
	03/29/11		-	31.15	-	3,339.77		30.00
	04/15/11		-	31.23	-	3,339.69		20.00
	04/18/11		-	31.11	-	3,339.81		20.00
	04/29/11		-	31.16	-	3,339.76		20.00
	05/06/11		-	31.17	-	3,339.75		25.00
	05/20/11		-	31.26	-	3,339.66		25.00
	05/25/11		-	31.30	-	3,339.62		
	06/01/11		-	31.34	-	3,339.58		25.00
	08/18/11		-	32.05	-	3,338.87		
	09/20/11		-	32.23	-	3,338.69		
	10/03/11		-	32.35	-	3,338.57		
	10/28/11		-	32.45	-	3,338.47		
	11/10/11		-	32.42	-	3,338.50		20.00
	12/09/11		-	32.50	-	3,338.42		20.00
	02/24/12		-	32.45	-	3,338.47		20.00
	02/29/12		-	32.48	-	3,338.44		
	03/27/12		-	32.59	-	3,338.33		20.00
	04/12/12		-	32.73	-	3,338.19		20.00

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-5	04/19/12	3,370.92	-	32.85	-	3,338.07		20.00
	05/05/12		-	32.81	-	3,338.11		20.00
	05/17/12		-	32.87	-	3,338.05		
	06/21/12		-	33.01	-	3,337.91		20.00
	07/09/12		-	32.24	-	3,338.68		25.00
	08/02/12		-	33.17	-	3,337.75		
	08/15/12		-	33.27	-	3,337.65		
	08/28/12		-	33.37	-	3,337.55		
	09/12/12		-	33.77	-	3,337.15		25.00
	09/26/12		-	33.86	-	3,337.06		
	10/10/12		-	33.60	-	3,337.32		25.00
	10/26/12		-	33.67	-	3,337.25		
	11/06/12		-	33.65	-	3,337.27		
	11/07/12		-	33.65	-	3,337.27		5.00
	11/20/12		-	33.82	-	3,337.10		25.00
	01/11/13		-	33.82	-	3,337.10		25.00
	01/25/13		-	35.87	-	3,335.05		25.00
	02/07/13		-	33.86	-	3,337.06		25.00
	02/22/13		-	33.94	-	3,336.98		
	03/08/13		-	33.82	-	3,337.10		25.00
	03/21/13		-	33.90	-	3,337.02		25.00
	04/04/13		-	33.97	-	3,336.95		25.00
	04/17/13		-	33.90	-	3,337.02		25.00
	05/01/13		-	34.03	-	3,336.89		25.00
	05/23/13		-	33.92	-	3,337.00		25.00
	06/13/13		-	33.94	-	3,336.99		25.00
	06/28/13		-	34.06	-	3,336.87		25.00
	07/10/13		-	34.13	-	3,336.79		25.00
	07/24/13		-	34.20	-	3,336.72		5.00
	08/08/13		-	34.28	-	3,336.64		
	08/22/13		-	34.12	-	3,336.80		25.00
	09/05/13		-	34.54	-	3,336.39		
	09/19/13		-	34.63	-	3,336.29		5.00
	10/07/13		-	34.72	-	3,336.21		15.00
	10/17/13		-	34.69	-	3,336.24		8.00
	10/31/13		-	34.55	-	3,336.38		7.00
	11/13/13		-	34.55	-	3,336.38		
	11/27/13		-	34.52	-	3,336.41		7.00
	12/11/13		-	34.52	-	3,336.41		7.00
	12/22/13		-	34.53	-	3,336.40		7.00

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-6	11/16/07	3,377.02	-	35.22	-	3,341.80		
	02/29/08		-	35.36	-	3,341.66		
	03/11/08		-	35.37	-	3,341.65		
	05/28/08		-	35.46	-	3,341.56		
	08/21/08		-	35.99	-	3,341.03		
	11/06/08		-	35.94	-	3,341.08		
	02/09/09		-	35.91	-	3,341.11		
	05/14/09		-	35.96	-	3,341.06		
	08/12/09		-	36.53	-	3,340.49		
	11/10/09		-	36.77	-	3,340.25		
	02/03/10		-	36.77	-	3,340.25		
	05/27/10		-	36.83	-	3,340.19		
	08/16/10		-	37.12	-	3,339.90		
	11/11/10		-	37.29	-	3,339.73		
	02/18/11		-	37.61	-	3,339.41		
	05/25/11		-	37.51	-	3,339.51		
	08/18/11		-	38.25	-	3,338.77		
	09/20/11		-	38.40	-	3,338.62		
	10/03/11		-	38.54	-	3,338.48		
	10/28/11		-	38.60	-	3,338.42		
	11/10/11		-	38.60	-	3,338.42		
	12/09/11		-	38.70	-	3,338.32		
	02/24/12		-	38.68	-	3,338.34		
	02/29/12		-	38.73	-	3,338.29		
	03/27/12		-	38.79	-	3,338.23		
	04/12/12		-	38.88	-	3,338.14		
	04/19/12		-	38.90	-	3,338.12		
	05/05/12		-	38.90	-	3,338.12		
	05/17/12		-	38.95	-	3,338.07		
	06/21/12		-	39.14	-	3,337.88		
	07/09/12		-	39.26	-	3,337.76		
	08/02/12		-	39.40	-	3,337.62		
	08/15/12		-	39.53	-	3,337.49		5.00
	08/28/12		-	39.61	-	3,337.41		
	09/12/12		-	39.84	-	3,337.18		
	09/26/12		-	39.92	-	3,337.10		
	10/10/12		-	39.90	-	3,337.12		
	10/26/12		-	39.92	-	3,337.10		
	11/07/12		-	39.92	-	3,337.10		5.00
	11/20/12		-	39.95	-	3,337.07		
	01/11/13		-	39.96	-	3,337.06		
	01/25/13		-	39.98	-	3,337.04		
	02/07/13		-	40.00	-	3,337.02		
	02/22/13		-	40.10	-	3,336.92		
	03/08/13		-	38.86	-	3,338.16		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-6	03/21/13	3,377.02	-	39.96	-	3,337.06		
	04/04/13		-	40.14	-	3,336.88		
	04/17/13		-	40.07	-	3,336.95		
	05/01/13		-	40.17	-	3,336.85		
	05/23/13		-	40.10	-	3,336.92		
	06/13/13		-	40.19	-	3,336.83		
	06/28/13		-	40.30	-	3,336.73		
	07/10/13		-	40.40	-	3,336.62		
	07/24/13		-	40.45	-	3,336.57		
	08/08/13		-	40.56	-	3,336.46		
	08/22/13		-	40.69	-	3,336.33		
	09/05/13		-	40.82	-	3,336.21		
	09/19/13		-	40.92	-	3,336.10		5.00
	10/07/13		-	41.00	-	3,336.03		
	10/17/13		-	41.00	-	3,336.03		
	10/31/13		-	41.00	-	3,336.03		
	11/13/13		-	40.89	-	3,336.14		
	11/27/13		-	40.86	-	3,336.17		
	12/11/13		-	40.86	-	3,336.16		
	12/22/13		-	40.88	-	3,336.15		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-7	11/16/07	3,369.47	-	27.26	-	3,342.21		
	02/29/08		-	27.43	-	3,342.04		
	05/28/08		-	27.54	-	3,341.93		
	08/21/08		-	28.09	-	3,341.38		
	11/06/08		-	27.89	-	3,341.58		
	02/09/09		-	27.97	-	3,341.50		
	05/14/09		-	28.29	-	3,341.18		
	08/13/09		-	28.46	-	3,341.01		
	11/10/09		-	28.80	-	3,340.67		
	02/03/10		-	28.80	-	3,340.67		
	05/27/10		-	28.87	-	3,340.60		
	08/16/10		-	29.12	-	3,340.35		
	11/11/10		-	29.31	-	3,340.16		
	02/18/11		-	29.33	-	3,340.14		
	05/25/11		-	29.58	-	3,339.89		
	09/20/11		-	30.56	-	3,338.91		
	10/03/11		-	30.66	-	3,338.81		
	10/28/11		-	30.73	-	3,338.74		
	11/10/11		-	30.74	-	3,338.73		
	12/09/11		-	30.77	-	3,338.70		
	02/24/12		-	30.75	-	3,338.72		
	02/29/12		-	30.79	-	3,338.68		
	03/27/12		-	30.90	-	3,338.57		
	04/12/12		-	31.02	-	3,338.45		
	04/19/12		-	31.06	-	3,338.41		
	05/05/12		-	31.13	-	3,338.34		
	05/17/12		-	31.18	-	3,338.29		
	06/21/12		-	31.15	-	3,338.32		
	07/09/12		-	31.59	-	3,337.88		
	08/02/12		-	31.53	-	3,337.94		
	08/15/12		-	31.65	-	3,337.82		5.00
	08/28/12		-	31.76	-	3,337.71		
	09/12/12		-	32.16	-	3,337.31		
	09/26/12		-	32.23	-	3,337.24		
	10/10/12		-	31.98	-	3,337.49		
	10/26/12		-	31.99	-	3,337.48		
	11/06/12		-	32.03	-	3,337.44		5.00
	11/20/12		-	32.02	-	3,337.45		
	01/11/13		-	32.02	-	3,337.45		
	01/25/13		-	32.04	-	3,337.43		
	02/07/13		-	32.04	-	3,337.43		
	02/22/13		-	33.33	-	3,336.14		
	03/08/13		-	32.04	-	3,337.43		
	03/21/13		-	32.11	-	3,337.36		
	04/04/13		-	32.17	-	3,337.30		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-7	04/17/13	3,369.47	-	32.10	-	3,337.37		
	05/01/13		-	32.19	-	3,337.28		
	05/23/13		-	32.15	-	3,337.32		
	06/13/13		-	32.27	-	3,337.21		
	06/28/13		-	32.38	-	3,337.10		
	07/10/13		-	32.46	-	3,337.02		
	07/24/13		-	32.54	-	3,336.93		
	08/08/13		-	32.66	-	3,336.81		
	08/22/13		-	32.81	-	3,336.66		
	09/05/13		-	32.93	-	3,336.55		
	09/19/13		-	33.01	-	3,336.46		5.00
	10/07/13		-	33.08	-	3,336.39		
	10/17/13		-	33.07	-	3,336.40		
	10/31/13		-	32.94	-	3,336.53		
	11/13/13		-	32.91	-	3,336.56		
	11/27/13		-	32.90	-	3,336.58		
	12/11/13		-	32.90	-	3,336.58		
	12/22/13		-	32.89	-	3,336.59		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-8	11/16/07	3,373.77	-	31.58	-	3,342.19		
	02/29/08		-	31.72	-	3,342.05		
	05/28/08		-	31.96	-	3,341.81		
	08/21/08		-	32.33	-	3,341.44		
	11/06/08		-	32.19	-	3,341.58		
	02/09/09		-	32.27	-	3,341.50		
	05/14/09		-	32.52	-	3,341.25		
	08/12/09		-	32.78	-	3,340.99		
	11/10/09		-	33.09	-	3,340.68		
	02/03/10		-	33.09	-	3,340.68		
	05/27/10		-	33.16	-	3,340.61		
	08/16/10		-	33.39	-	3,340.38		
	11/11/10		-	33.59	-	3,340.18		
	02/18/11		-	33.63	-	3,340.14		
	05/25/11		-	33.85	-	3,339.92		
	09/20/11		-	34.80	-	3,338.97		
	10/03/11		-	34.92	-	3,338.85		
	10/28/11		-	35.00	-	3,338.77		
	11/10/11		-	35.30	-	3,338.47		
	12/09/11		-	35.10	-	3,338.67		
	02/24/12		-	35.06	-	3,338.71		
	02/29/12		-	35.02	-	3,338.75		
	03/27/12		-	35.21	-	3,338.56		
	04/12/12		-	35.33	-	3,338.44		
	04/19/12		-	35.35	-	3,338.42		
	05/05/12		-	35.40	-	3,338.37		
	05/17/12		-	35.45	-	3,338.32		
	06/21/12		-	35.63	-	3,338.14		
	07/09/12		-	35.79	-	3,337.98		
	08/02/12		-	35.82	-	3,337.95		
	08/15/12		-	35.93	-	3,337.84		5.00
	08/28/12		-	36.06	-	3,337.71		
	09/12/12		-	36.37	-	3,337.40		
	09/26/12		-	36.44	-	3,337.33		
	10/10/12		-	36.28	-	3,337.49		
	10/26/12		-	36.33	-	3,337.44		
	11/06/12		-	36.36	-	3,337.41		5.00
	11/20/12		-	36.39	-	3,337.38		
	01/11/13		-	36.40	-	3,337.37		
	01/25/13		-	38.75	-	3,335.02		
	02/07/13		-	36.40	-	3,337.37		
	02/22/13		-	36.58	-	3,337.19		
	03/08/13		-	36.44	-	3,337.33		
	03/21/13		-	36.40	-	3,337.37		
	04/04/13		-	36.54	-	3,337.23		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-8	04/17/13	3,373.77	-	36.47	-	3,337.30		
	05/01/13		-	36.61	-	3,337.16		
	05/23/13		-	36.53	-	3,337.24		
	06/13/13		-	36.64	-	3,337.14		
	06/28/13		-	36.74	-	3,337.04		
	07/10/13		-	36.83	-	3,336.94		
	07/24/13		-	36.89	-	3,336.88		
	08/08/13		-	36.97	-	3,336.80		
	08/22/13		-	37.14	-	3,336.63		
	09/05/13		-	37.25	-	3,336.53		
	09/19/13		-	37.36	-	3,336.42		5.00
	10/07/13		-	37.43	-	3,336.34		
	10/17/13		-	37.45	-	3,336.33		
	10/31/13		-	37.34	-	3,336.44		
	11/13/13		-	37.30	-	3,336.47		
	11/27/13		-	37.31	-	3,336.47		
	12/11/13		-	37.29	-	3,336.48		
	12/22/13		-	37.32	-	3,336.46		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-9	11/16/07	3,375.92	-	34.02	-	3,341.90		
	02/29/08		-	34.18	-	3,341.74		
	05/28/08		-	34.45	-	3,341.47		
	08/21/08		-	34.79	-	3,341.13		
	11/06/08		-	34.84	-	3,341.08		
	02/09/09		-	34.71	-	3,341.21		
	05/14/09		-	34.23	-	3,341.69		
	08/12/09		-	35.16	-	3,340.76		
	11/10/09		-	35.51	-	3,340.41		
	02/03/10		-	35.51	-	3,340.41		
	05/27/10		-	35.58	-	3,340.34		
	08/16/10		-	35.03	-	3,340.89		
	11/11/10		-	35.98	-	3,339.94		
	05/25/11		-	36.35	-	3,339.57		
	08/18/11		-	36.95	-	3,338.97		
	09/20/11		-	37.20	-	3,338.72		
	10/03/11		-	37.33	-	3,338.59		
	10/28/11		-	37.38	-	3,338.54		
	11/10/11		-	37.40	-	3,338.52		
	12/09/11		-	37.48	-	3,338.44		
	02/24/12		-	37.52	-	3,338.40		
	02/29/12		-	37.59	-	3,338.33		
	03/27/12		-	37.59	-	3,338.33		
	04/12/12		-	37.68	-	3,338.24		
	04/19/12		-	37.71	-	3,338.21		
	05/05/12		-	37.73	-	3,338.19		
	05/17/12		-	37.76	-	3,338.16		
	06/21/12		-	37.94	-	3,337.98		
	07/09/12		-	38.09	-	3,337.83		
	08/02/12		-	38.17	-	3,337.75		
	08/15/12		-	38.28	-	3,337.64		5.00
	08/28/12		-	38.40	-	3,337.52		
	09/12/12		-	38.52	-	3,337.40		
	09/26/12		-	38.75	-	3,337.17		
	10/10/12		-	38.68	-	3,337.24		
	10/26/12		-	38.72	-	3,337.20		
	11/06/12		-	38.71	-	3,337.21		5.00
	11/20/12		-	38.76	-	3,337.16		
	01/11/13		-	38.73	-	3,337.19		
	01/25/13		-	36.40	-	3,339.52		
	02/07/13		-	38.78	-	3,337.14		
	02/22/13		-	39.95	-	3,335.97		
	03/08/13		-	38.78	-	3,337.14		
	03/21/13		-	38.81	-	3,337.11		
	04/04/13		-	38.99	-	3,336.93		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-9	04/17/13	3,375.92	-	38.82	-	3,337.10		
	05/01/13		-	38.96	-	3,336.96		
	05/23/13		-	38.90	-	3,337.02		
	06/13/13		-	39.01	-	3,336.92		
	06/28/13		-	39.10	-	3,336.83		
	07/10/13		-	39.19	-	3,336.73		
	07/24/13		-	39.25	-	3,336.67		
	08/08/13		-	39.35	-	3,336.57		
	08/22/13		-	39.50	-	3,336.42		
	09/05/13		-	39.61	-	3,336.32		
	09/19/13		-	39.72	-	3,336.21		5.00
	10/07/13		-	39.80	-	3,336.13		
	10/17/13		-	39.81	-	3,336.12		
	10/31/13		-	39.70	-	3,336.23		
	11/13/13		-	39.70	-	3,336.23		
	11/27/13		-	39.68	-	3,336.25		
	12/11/13		-	39.68	-	3,336.25		
	12/22/13		-	39.69	-	3,336.24		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-10	11/16/07	3,370.17	-	28.20	-	3,341.97		
	02/29/08		-	28.42	-	3,341.75		
	05/28/08		-	28.48	-	3,341.69		
	08/21/08		-	29.04	-	3,341.13		
	11/06/08		-	28.82	-	3,341.35		
	02/09/09		-	28.91	-	3,341.26		
	05/14/09		-	29.07	-	3,341.10		
	08/12/09		-	29.34	-	3,340.83		
	11/10/09		-	29.77	-	3,340.40		
	02/03/10		-	29.75	-	3,340.42		
	05/27/10		-	29.82	-	3,340.35		
	08/16/10		-	30.06	-	3,340.11		
	11/11/10		-	30.32	-	3,339.85		
	02/18/11		-	30.30	-	3,339.87		
	05/25/11		-	30.51	-	3,339.66		
	08/18/11		-	32.05	-	3,338.12		
	09/20/11		-	31.50	-	3,338.67		
	10/03/11		-	31.61	-	3,338.56		
	10/28/11		-	31.66	-	3,338.51		
	11/10/11		-	31.66	-	3,338.51		
	12/09/11		-	31.69	-	3,338.48		
	02/24/12		-	31.68	-	3,338.49		
	02/29/12		-	31.70	-	3,338.47		
	03/27/12		-	31.70	-	3,338.47		
	04/12/12		-	31.91	-	3,338.26		
	04/19/12		-	31.97	-	3,338.20		
	05/05/12		-	32.04	-	3,338.13		
	05/17/12		-	32.07	-	3,338.10		
	06/21/12		-	32.03	-	3,338.14		
	07/09/12		-	32.46	-	3,337.71		
	08/02/12		-	32.43	-	3,337.74		
	08/15/12		-	32.55	-	3,337.62		5.00
	08/28/12		-	32.67	-	3,337.50		
	09/12/12		-	32.80	-	3,337.37		
	09/26/12		-	33.13	-	3,337.04		
	10/10/12		-	32.87	-	3,337.30		
	10/26/12		-	32.92	-	3,337.25		
	11/06/12		-	32.89	-	3,337.28		5.00
	11/20/12		-	32.91	-	3,337.26		
	01/11/13		-	32.38	-	3,337.79		
	01/25/13		-	32.09	-	3,338.08		
	02/07/13		-	32.92	-	3,337.25		
	02/22/13		-	33.18	-	3,336.99		
	03/08/13		-	32.90	-	3,337.27		
	03/21/13		-	33.00	-	3,337.17		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-10	04/04/13	3,370.17	-	33.05	-	3,337.12		
	04/17/13		-	32.90	-	3,337.27		
	05/01/13		-	33.08	-	3,337.09		
	05/23/13		-	33.07	-	3,337.10		
	06/13/13		-	33.12	-	3,337.05		
	06/28/13		-	33.25	-	3,336.93		
	07/10/13		-	33.36	-	3,336.82		
	07/24/13		-	33.45	-	3,336.73		
	08/08/13		-	33.55	-	3,336.62		
	08/22/13		-	33.69	-	3,336.48		
	09/05/13		-	33.81	-	3,336.37		
	09/19/13		-	33.90	-	3,336.27		5.00
	10/07/13		-	33.99	-	3,336.19		
	10/17/13		-	33.95	-	3,336.23		
	10/31/13		-	33.79	-	3,336.39		
	11/13/13		-	33.77	-	3,336.41		
	11/27/13		-	33.75	-	3,336.43		
	12/11/13		-	33.76	-	3,336.42		
	12/22/13		-	33.75	-	3,336.43		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-11	11/16/07	3,373.96	-	29.69	-	3,344.27		
	02/29/08		-	29.30	-	3,344.66		
	05/28/08		-	32.41	-	3,341.55		
	08/21/08		-	32.98	-	3,340.98		
	11/06/08		-	32.85	-	3,341.11		
	02/09/09		-	32.91	-	3,341.05		
	05/14/09		-	33.01	-	3,340.95		
	08/12/09		-	33.35	-	3,340.61		
	11/10/09		-	33.71	-	3,340.25		
	02/03/10		-	33.74	-	3,340.22		
	05/27/10		-	33.78	-	3,340.18		
	08/16/10		-	34.11	-	3,339.85		
	11/11/10		-	34.19	-	3,339.77		
	02/18/11		-	34.26	-	3,339.70		
	05/25/11		-	34.51	-	3,339.45		
	08/18/11		-	35.25	-	3,338.71		
	10/03/11		-	35.55	-	3,338.41		
	10/28/11		-	35.58	-	3,338.38		
	11/10/11		-	35.65	-	3,338.31		
	12/09/11		-	35.70	-	3,338.26		
	02/24/12		-	35.78	-	3,338.18		
	02/29/12		-	35.68	-	3,338.28		
	03/27/12		-	35.70	-	3,338.26		
	04/12/12		-	35.69	-	3,338.27		
	04/19/12		-	35.90	-	3,338.06		
	05/05/12		-	36.00	-	3,337.96		
	05/17/12		-	35.99	-	3,337.97		
	06/21/12		-	36.00	-	3,337.96		
	07/09/12		-	36.32	-	3,337.64		
	08/02/12		-	36.36	-	3,337.60		
	08/15/12		-	36.50	-	3,337.46		5.00
	08/28/12		-	36.60	-	3,337.36		
	09/12/12		-	36.87	-	3,337.09		
	09/26/12		-	36.95	-	3,337.01		
	10/10/12		-	36.85	-	3,337.11		
	10/26/12		-	36.90	-	3,337.06		
	11/06/12		-	36.90	-	3,337.06		5.00
	11/20/12		-	36.94	-	3,337.02		
	01/11/13		-	36.95	-	3,337.01		
	01/25/13		-	37.00	-	3,336.96		
	02/07/13		-	36.98	-	3,336.98		
	02/22/13		-	37.10	-	3,336.86		
	03/08/13		-	36.80	-	3,337.16		
	03/21/13		-	36.92	-	3,337.04		
	04/04/13		-	37.10	-	3,336.86		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-11	04/17/13	3,373.96	-	36.80	-	3,337.16		
	05/01/13		-	37.00	-	3,336.96		
	05/23/13		-	37.10	-	3,336.86		
	06/13/13		-	37.15	-	3,336.81		
	06/28/13		-	37.27	-	3,336.70		
	07/10/13		-	37.36	-	3,336.60		
	07/24/13		-	37.43	-	3,336.53		
	08/08/13		-	37.54	-	3,336.42		
	08/22/13		-	37.67	-	3,336.29		
	09/05/13		-	37.78	-	3,336.18		5.00
	09/19/13		-	37.88	-	3,336.08		
	10/07/13		-	37.97	-	3,336.00		
	10/17/13		-	37.98	-	3,335.99		
	10/31/13		-	37.85	-	3,336.12		
	11/13/13		-	37.81	-	3,336.16		
	11/27/13		-	37.83	-	3,336.13		
	12/11/13		-	37.85	-	3,336.11		
	12/22/13		-	37.85	-	3,336.12		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-12	11/16/07	3,372.41	-	33.32	-	3,339.09		
	02/29/08		-	27.29	-	3,345.12		
	05/28/08		-	27.35	-	3,345.06		
	08/21/08		-	27.92	-	3,344.49		
	11/06/08		-	27.74	-	3,344.67		
	02/09/09		-	27.83	-	3,344.58		
	05/14/09		-	27.96	-	3,344.45		
	08/13/09		-	28.26	-	3,344.15		
	11/10/09		-	28.66	-	3,343.75		
	02/03/10		-	28.69	-	3,343.72		
	05/27/10		-	28.71	-	3,343.70		
	08/16/10		-	28.95	-	3,343.46		
	11/11/10		-	32.69	-	3,339.72		
	02/18/11		-	29.16	-	3,343.25		
	05/25/11		-	32.92	-	3,339.49		
	08/18/11		-	33.67	-	3,338.74		
	10/03/11		-	35.45	-	3,336.96		
	10/28/11		-	34.10	-	3,338.31		
	11/10/11		-	34.23	-	3,338.18		
	12/09/11		-	34.32	-	3,338.09		
	02/24/12		-	34.40	-	3,338.01		
	02/29/12		-	34.11	-	3,338.30		
	03/27/12		-	34.24	-	3,338.17		
	04/12/12		-	34.21	-	3,338.20		
	04/19/12		-	34.40	-	3,338.01		
	05/05/12		-	34.43	-	3,337.98		
	05/17/12		-	34.47	-	3,337.94		
	06/21/12		-	34.45	-	3,337.96		
	07/09/12		-	34.81	-	3,337.60		
	08/02/12		-	34.85	-	3,337.56		
	08/15/12		-	34.95	-	3,337.46		5.00
	08/28/12		-	35.06	-	3,337.35		
	09/12/12		-	36.40	-	3,336.01		
	09/26/12		-	35.48	-	3,336.93		
	10/10/12		-	35.28	-	3,337.13		
	10/26/12		-	35.35	-	3,337.06		
	11/06/12		-	35.34	-	3,337.07		5.00
	11/20/12		-	35.39	-	3,337.02		
	01/11/13		-	37.38	-	3,335.03		
	01/25/13		-	35.36	-	3,337.05		
	02/07/13		-	35.40	-	3,337.01		
	02/22/13		-	35.60	-	3,336.81		
	03/08/13		-	35.40	-	3,337.01		
	03/21/13		-	35.35	-	3,337.06		
	04/04/13		-	35.50	-	3,336.91		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-12	04/17/13	3,372.41	-	35.40	-	3,337.01		
	05/01/13		-	35.47	-	3,336.94		
	05/23/13		-	36.50	-	3,335.91		
	06/13/13		-	35.59	-	3,336.82		
	06/28/13		-	35.68	-	3,336.73		
	07/10/13		-	35.80	-	3,336.61		
	07/24/13		-	35.88	-	3,336.53		
	08/08/13		-	35.98	-	3,336.43		
	08/22/13		-	36.10	-	3,336.31		
	09/05/13		-	36.22	-	3,336.19		5.00
	09/19/13		-	36.32	-	3,336.09		
	10/07/13		-	36.40	-	3,336.01		
	10/17/13		-	36.40	-	3,336.01		
	10/31/13		-	36.25	-	3,336.16		
	11/13/13		-	36.21	-	3,336.20		
	11/27/13		-	36.25	-	3,336.16		
	12/11/13		-	36.27	-	3,336.14		
	12/22/13		-	36.26	-	3,336.15		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-13	11/16/07	3,368.91	-	27.11	-	3,341.80		
	02/29/08		-	30.80	-	3,338.11		
	05/28/08		-	30.28	-	3,338.63		
	08/21/08		-	31.43	-	3,337.48		
	11/06/08		-	31.26	-	3,337.65		
	02/09/09		-	31.36	-	3,337.55		
	05/14/09		-	31.51	-	3,337.40		
	08/12/09		-	31.81	-	3,337.10		
	11/10/09		-	32.17	-	3,336.74		
	02/03/10		-	33.19	-	3,335.72		
	05/27/10		-	33.23	-	3,335.68		
	08/16/10		-	32.47	-	3,336.44		
	11/11/10		-	29.14	-	3,339.77		
	02/18/11		-	32.71	-	3,336.20		
	05/25/11		-	29.40	-	3,339.51		
	08/18/11		-	30.15	-	3,338.76		
	10/03/11		-	34.00	-	3,334.91		
	10/28/11		-	30.57	-	3,338.34		
	11/10/11		-	30.62	-	3,338.29		
	12/09/11		-	30.75	-	3,338.16		
	02/24/12		-	30.67	-	3,338.24		
	02/29/12		-	30.66	-	3,338.25		
	03/27/12		-	30.65	-	3,338.26		
	04/12/12		-	30.64	-	3,338.27		
	04/19/12		-	30.25	-	3,338.66		
	05/05/12		-	29.98	-	3,338.93		
	05/17/12		-	30.04	-	3,338.87		
	06/21/12		-	30.90	-	3,338.01		
	07/09/12		-	31.34	-	3,337.57		
	08/02/12		-	31.27	-	3,337.64		
	08/15/12		-	31.44	-	3,337.47		5.00
	08/28/12		-	31.55	-	3,337.36		
	09/12/12		-	31.98	-	3,336.93		
	09/26/12		-	32.05	-	3,336.86		
	10/10/12		-	31.77	-	3,337.14		
	10/26/12		-	31.84	-	3,337.07		
	11/06/12		-	31.78	-	3,337.13		5.00
	11/20/12		-	31.86	-	3,337.05		
	01/11/13		-	31.83	-	3,337.08		
	01/25/13		-	31.84	-	3,337.07		
	02/07/13		-	31.86	-	3,337.05		
	02/22/13		-	32.15	-	3,336.76		
	03/08/13		-	31.86	-	3,337.05		
	03/21/13		-	31.85	-	3,337.06		
	04/04/13		-	31.96	-	3,336.95		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-13	04/17/13	3,368.91	-	31.86	-	3,337.05		
	05/01/13		-	31.75	-	3,337.16		
	05/23/13		-	32.08	-	3,336.83		
	06/13/13		-	32.06	-	3,336.85		
	06/28/13		-	32.18	-	3,336.74		
	07/10/13		-	32.21	-	3,336.70		
	07/24/13		-	32.32	-	3,336.60		
	08/08/13		-	32.45	-	3,336.46		
	08/22/13		-	32.59	-	3,336.32		
	09/05/13		-	32.71	-	3,336.21		
	09/19/13		-	32.81	-	3,336.11		5.00
	10/07/13		-	32.89	-	3,336.03		
	10/17/13		-	32.87	-	3,336.05		
	10/31/13		-	32.73	-	3,336.19		
	11/13/13		-	32.69	-	3,336.22		
	11/27/13		-	32.70	-	3,336.22		
	12/11/13		-	32.71	-	3,336.21		
	12/22/13		-	32.72	-	3,336.20		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-14	11/16/07	3,371.54	-	29.94	-	3,341.60		
	02/29/08		-	30.08	-	3,341.46		
	05/28/08		-	30.27	-	3,341.27		
	08/21/08		-	30.70	-	3,340.84		
	11/06/08		-	30.55	-	3,340.99		
	02/09/09		-	30.65	-	3,340.89		
	05/14/09		-	30.75	-	3,340.79		
	08/12/09		-	31.11	-	3,340.43		
	11/10/09		-	31.46	-	3,340.08		
	02/03/10		-	31.48	-	3,340.06		
	05/27/10		-	31.52	-	3,340.02		
	08/16/10		-	31.76	-	3,339.78		
	11/11/10		-	31.97	-	3,339.57		
	02/18/11		-	31.99	-	3,339.55		
	05/25/11		-	32.20	-	3,339.34		
	08/18/11		-	32.95	-	3,338.59		
	10/03/11		-	33.30	-	3,338.24		
	10/28/11		-	33.32	-	3,338.22		
	11/10/11		-	33.53	-	3,338.01		
	12/09/11		-	33.82	-	3,337.72		
	02/24/12		-	33.93	-	3,337.61		
	02/29/12		-	33.41	-	3,338.13		
	03/27/12		-	33.44	-	3,338.10		
	04/12/12		-	33.48	-	3,338.06		
	04/19/12		-	33.60	-	3,337.94		
	05/05/12		-	33.68	-	3,337.86		
	05/17/12		-	33.75	-	3,337.79		
	06/21/12		-	33.70	-	3,337.84		
	07/09/12		-	31.10	-	3,340.44		
	08/02/12		-	34.09	-	3,337.45		
	08/15/12		-	34.21	-	3,337.33		5.00
	08/28/12		-	34.32	-	3,337.22		
	09/12/12		-	34.67	-	3,336.87		
	09/26/12		-	34.74	-	3,336.80		
	10/10/12		-	34.54	-	3,337.00		
	10/26/12		-	34.58	-	3,336.96		
	11/06/12		-	34.59	-	3,336.95		5.00
	11/20/12		-	34.65	-	3,336.89		
	01/11/13		-	34.56	-	3,336.98		
	01/25/13		-	34.60	-	3,336.94		
	02/07/13		-	34.60	-	3,336.94		
	02/22/13		-	34.85	-	3,336.69		
	03/08/13		-	34.60	-	3,336.94		
	03/21/13		-	34.60	-	3,336.94		
	04/04/13		-	34.73	-	3,336.81		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-14	04/17/13	3,371.54	-	34.60	-	3,336.94		
	05/01/13		-	34.77	-	3,336.77		
	05/23/13		-	34.78	-	3,336.76		
	06/13/13		-	34.82	-	3,336.73		
	06/28/13		-	34.93	-	3,336.62		
	07/10/13		-	35.02	-	3,336.52		
	07/24/13		-	35.11	-	3,336.43		
	08/08/13		-	35.20	-	3,336.34		
	08/22/13		-	35.34	-	3,336.20		
	09/05/13		-	35.44	-	3,336.10		5.00
	09/19/13		-	35.56	-	3,335.98		
	10/07/13		-	35.64	-	3,335.91		
	10/17/13		-	35.61	-	3,335.94		
	10/31/13		-	35.49	-	3,336.06		
	11/13/13		-	35.47	-	3,336.07		
	11/27/13		-	35.45	-	3,336.10		
	12/11/13		-	35.46	-	3,336.09		
	12/22/13		-	35.46	-	3,336.09		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-15	11/16/07	3,377.64	-	36.09	-	3,341.55		
	02/29/08		-	36.20	-	3,341.44		
	05/28/08		-	36.31	-	3,341.33		
	08/21/08		-	36.80	-	3,340.84		
	11/06/08		-	36.69	-	3,340.95		
	02/09/09		-	36.77	-	3,340.87		
	05/14/09		-	36.91	-	3,340.73		
	08/12/09		-	37.21	-	3,340.43		
	11/10/09		-	37.57	-	3,340.07		
	02/03/10		-	37.60	-	3,340.04		
	05/27/10		-	37.61	-	3,340.03		
	08/16/10		-	37.87	-	3,339.77		
	11/11/10		-	38.09	-	3,339.55		
	02/18/11		-	38.08	-	3,339.56		
	05/25/11		-	38.35	-	3,339.29		
	08/18/11		-	39.06	-	3,338.58		
	10/03/11		-	39.38	-	3,338.26		
	10/28/11		-	39.42	-	3,338.22		
	11/10/11		-	39.47	-	3,338.17		
	12/09/11		-	39.43	-	3,338.21		
	02/24/12		-	39.43	-	3,338.21		
	02/29/12		-	39.53	-	3,338.11		
	03/27/12		-	39.57	-	3,338.07		
	04/12/12		-	39.32	-	3,338.32		
	04/19/12		-	39.67	-	3,337.97		
	05/05/12		-	39.71	-	3,337.93		
	05/17/12		-	39.75	-	3,337.89		
	06/21/12		-	39.80	-	3,337.84		
	07/09/12		-	40.05	-	3,337.59		
	08/02/12		-	40.21	-	3,337.43		
	08/15/12		-	40.33	-	3,337.31		5.00
	08/28/12		-	40.45	-	3,337.19		
	09/12/12		-	40.65	-	3,336.99		
	09/26/12		-	40.69	-	3,336.95		
	10/10/12		-	40.69	-	3,336.95		
	10/26/12		-	40.73	-	3,336.91		
	11/06/12		-	40.73	-	3,336.91		5.00
	11/20/12		-	40.75	-	3,336.89		
	01/11/13		-	40.73	-	3,336.91		
	01/25/13		-	39.76	-	3,337.88		
	02/07/13		-	40.79	-	3,336.85		
	02/22/13		-	40.87	-	3,336.77		
	03/08/13		-	40.79	-	3,336.85		
	03/21/13		-	39.70	-	3,337.94		
	04/04/13		-	40.91	-	3,336.73		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
MW-15	04/17/13	3,377.64	-	40.79	-	3,336.85		
	05/01/13		-	40.98	-	3,336.66		
	05/23/13		-	40.91	-	3,336.73		
	06/13/13		-	40.98	-	3,336.67		
	06/28/13		-	41.10	-	3,336.55		
	07/10/13		-	41.19	-	3,336.45		
	07/24/13		-	41.26	-	3,336.38		
	08/08/13		-	41.36	-	3,336.28		
	08/22/13		-	41.50	-	3,336.14		
	09/05/13		-	41.61	-	3,336.03		5.00
	09/19/13		-	41.71	-	3,335.93		
	10/07/13		-	41.79	-	3,335.86		
	10/17/13		-	41.77	-	3,335.88		
	10/31/13		-	41.68	-	3,335.97		
	11/13/13		-	41.66	-	3,335.99		
	11/27/13		-	41.62	-	3,336.02		
	12/11/13		-	41.64	-	3,336.00		
	12/22/13		-	41.67	-	3,335.98		

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
TMW-1	12/27/07	3372.24	30.28	30.60	0.32	3,341.91	2.00	50.00
	01/18/08		30.51	30.59	0.08	3,341.72	0.10	50.00
	02/20/08		30.59	30.78	0.19	3,341.62	0.50	50.00
	02/29/08		30.53	30.55	0.02	3,341.71	1.00	50.00
	03/11/08		30.56	30.66	0.10	3,341.67	0.10	50.00
	04/30/08		30.42	30.93	0.51	3,341.74	0.20	50.00
	05/28/08		30.83	31.07	0.24	3,341.37		
	06/25/08		30.84	31.22	0.38	3,341.34	1.10	50.00
	07/02/08		29.90	31.64	1.74	3,342.08	0.10	20.00
	07/07/08		31.24	31.32	0.08	3,340.99	0.10	10.00
	07/14/08		31.00	32.00	1.00	3,341.09	1.00	25.00
	07/22/08		31.00	31.28	0.28	3,341.20	0.50	10.00
	07/30/08		31.03	31.43	0.40	3,341.15	0.10	10.00
	08/05/08		31.24	31.50	0.26	3,340.96	0.10	15.00
	08/14/08		31.18	31.58	0.40	3,341.00	0.25	5.00
	08/21/08		31.00	31.61	0.61	3,341.15		50.00
	08/27/08		31.06	31.39	0.33	3,341.13	0.25	25.00
	09/20/08		30.91	31.43	0.52	3,341.25	0.50	30.00
	09/29/08		30.88	31.55	0.67	3,341.26	0.50	40.00
	11/06/08		30.84	32.00	1.16	3,341.23	0.00	50.00
	11/15/08		30.94	31.82	0.88	3,341.17	0.50	50.00
	11/24/08		30.93	31.30	0.37	3,341.25	0.10	25.00
	11/26/08		30.91	31.43	0.52	3,341.25	0.10	25.00
	12/20/08		-	31.45	-	3,340.79	0.50	50.00
	01/16/09		30.96	31.70	0.74	3,341.17	0.50	25.00
	02/09/09		30.85	32.15	1.30	3,341.20	2.00	50.00
	04/08/09		31.10	31.80	0.70	3,341.04	0.50	50.00
	04/16/09		30.92	31.99	1.07	3,341.16	1.00	50.00
	04/22/09		31.01	31.80	0.79	3,341.11	0.50	50.00
	04/29/08		31.01	32.02	1.01	3,341.08	0.30	50.00
	05/14/09		31.56	32.09	0.53	3,340.60	2.00	15.00
	07/08/09		31.14	33.46	2.32	3,340.75	1.50	48.50
	07/24/09		31.35	32.35	1.00	3,340.74	1.00	49.00
	08/04/09		31.42	32.18	0.76	3,340.71	1.00	55.00
	08/12/09		31.41	32.36	0.95	3,340.69		
	08/19/09		31.41	32.55	1.14	3,340.66	3.00	15.00
	09/01/09		32.23	32.83	0.60	3,339.92	11.00	47.00
	09/22/09		31.52	33.27	1.75	3,340.46	10.00	40.00
	10/12/09		31.64	32.42	0.78	3,340.48	4.00	41.00
	10/30/09		31.78	31.80	0.02	3,340.46	0.25	0.00
	11/10/09		31.96	32.06	0.10	3,340.27	1.00	25.00
	01/08/10		31.86	32.49	0.63	3,340.29	1.00	15.00
	01/22/10		31.70	32.55	0.85	3,340.41	8.00	5.00
	01/26/10		32.65	32.80	0.15	3,339.57	0.10	10.00
	02/03/10		31.75	32.49	0.74	3,340.38	0.10	10.00
	02/10/10		31.75	32.77	1.02	3,340.34	0.10	20.00
	02/22/10		31.64	33.07	1.43	3,340.39	4.00	50.00
	03/09/10		31.65	32.87	1.22	3,340.41	4.00	50.00
	03/09/10		31.65	32.87	1.22	3,340.41	4.00	50.00
	03/24/10		31.65	33.07	1.42	3,340.38	4.00	30.00

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
TMW-1	04/12/10	3372.24	31.57	33.61	2.04	3,340.36	4.00	30.00
	04/27/10		31.66	33.02	1.36	3,340.38	4.00	50.00
	05/27/10		31.70	33.45	1.75	3,340.28	1.00	10.00
	06/21/10		31.70	34.24	2.54	3,340.16	2.50	50.00
	07/07/10		31.87	32.96	1.09	3,340.21		50.00
	07/20/10		31.81	32.94	1.13	3,340.26		50.00
	08/03/10		32.00	33.09	1.09	3,340.08		
	08/16/10		32.02	33.61	1.59	3,339.98	2.00	30.00
	09/02/10		32.02	33.74	1.72	3,339.96	2.00	50.00
	09/17/10		32.15	33.24	1.09	3,339.93	2.00	50.00
	10/05/10		32.12	33.94	1.82	3,339.85	2.00	30.00
	11/11/10		32.23	33.39	1.16	3,339.84		30.00
	12/15/10		32.16	33.56	1.40	3,339.87		
	12/29/10		32.05	33.93	1.88	3,339.91		30.00
	02/18/11		32.12	34.10	1.98	3,339.82		0.00
	03/02/11		31.16	34.68	3.52	3,340.55		30.00
	03/16/11		32.14	33.12	0.98	3,339.95		30.00
	03/29/11		32.05	34.55	2.50	3,339.82		25.00
	04/15/11		31.96	36.09	4.13	3,339.66		
	04/18/11		31.92	36.08	4.16	3,339.70	4.00	30.00
	04/29/11		31.85	31.87	0.02	3,340.39		20.00
	05/06/11		31.93	36.40	4.47	3,339.64	5.00	20.00
	05/20/11		32.26	34.97	2.71	3,339.57	5.00	20.00
	05/25/11		32.30	34.95	2.65	3,339.54	2.50	
	06/01/11		32.43	34.20	1.77	3,339.54	5.00	20.00
	06/14/11		32.56	34.16	1.60	3,339.44	5.00	
	06/30/11		32.65	34.49	1.84	3,339.31	5.00	
	07/30/11		32.79	35.75	2.96	3,339.01	4.00	40.00
	09/20/11		33.53	34.00	0.47	3,338.64		
	09/23/11		33.53	34.50	0.97	3,338.56		
	10/03/11		33.41	35.71	2.30	3,338.49		
	10/28/11		33.25	37.20	3.95	3,338.40	5.00	
	11/10/11		33.20	37.50	4.30	3,338.40	5.00	20.00
	12/09/11		33.33	37.43	4.10	3,338.30	5.00	20.00
	02/17/12		33.53	35.30	1.77	3,338.44		
	02/24/12		33.45	36.50	3.05	3,338.33	5.00	20.00
	03/27/12		33.70	36.60	2.90	3,338.11	5.00	20.00
	04/12/12		33.60	37.00	3.40	3,338.13	5.00	20.00
	04/19/12		33.55	37.50	3.95	3,338.10	8.00	60.00
	05/05/12		33.68	37.10	3.42	3,338.05	5.00	20.00
	05/17/12		33.73	37.00	3.27	3,338.02		
	06/21/12		33.56	38.47	4.91	3,337.94		
	07/09/12		33.91	38.61	4.70	3,337.63	10.00	25.00
	08/02/12		34.52	34.85	0.33	3,337.67		
	08/15/12		34.26	37.50	3.24	3,337.49	10.00	25.00
	08/28/12		34.33	37.70	3.37	3,337.40	5.00	75.00
	09/12/12		34.62	38.10	3.48	3,337.10		
	09/26/12		34.77	38.03	3.26	3,336.98	13.00	75.00
	10/10/12		34.60	37.74	3.14	3,337.17		
	10/26/12		34.58	38.13	3.55	3,337.13	8.00	75.00

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

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	Volume Purged
TMW-1	11/06/12	3372.24	34.68	37.53	2.85	3,337.13		
	11/20/12		34.57	38.04	3.47	3,337.15	8.00	18.00
	01/11/13		34.54	38.64	4.10	3,337.09	3.00	25.00
	01/25/13		34.56	38.34	3.78	3,337.11	4.75	25.00
	02/07/13		34.51	37.90	3.39	3,337.22	4.25	25.00
	02/22/13		34.80	38.55	3.75	3,336.88		
	03/08/13		34.55	38.90	4.35	3,337.04	5.50	25.00
	03/21/13		34.55	38.24	3.69	3,337.14	4.75	25.00
	04/04/13		34.64	39.12	4.48	3,336.93	5.50	25.00
	04/17/13		34.85	36.95	2.10	3,337.08	3.00	25.00
	05/01/13		34.74	38.53	3.79	3,336.93	4.75	25.00
	05/23/13		34.66	38.62	3.96	3,336.99	5.00	25.00
	06/13/13		34.65	38.66	4.01	3,336.99	5.00	25.00
	06/28/13		34.93	38.50	3.57	3,336.77	4.50	25.00
	07/10/13		34.95	39.12	4.17	3,336.66	5.25	25.00
	07/24/13		35.06	39.01	3.95	3,336.59	10.00	25.00
	08/08/13		35.28	38.40	3.12	3,336.49	10.00	25.00
	08/22/13		35.48	38.17	2.69	3,336.36	9.50	25.00
	09/05/13		35.61	38.06	2.45	3,336.26		
	09/19/13		35.61	39.15	3.54	3,336.10		
	10/07/13		36.08	36.52	0.44	3,336.09	1.00	25.00
	10/17/13		35.93	37.35	1.42	3,336.10	3.00	25.00
	10/31/13		35.77	37.44	1.67	3,336.22	4.00	25.00
	11/13/13		35.84	36.78	0.94	3,336.26	3.00	25.00
	11/27/13		35.78	37.12	1.34	3,336.26	3.50	25.00
	12/11/13		35.83	36.99	1.16	3,336.24	4.00	25.00
	12/22/13		35.84	36.96	1.12	3,336.23	4.00	25.00

1. PSH = Phase Separated Hydrocarbons

2. - = Measurable thickness of PSH not observed

2013 Annual Report
Table 2
Groundwater Analytical Summary - BTEX and TPH

Plains All American Pipeline
Livingston Ridge to Hugh - P. Sims
Lea County, New Mexico
Plains All American Leak Number 2001-1005
Terracon Project Number A4137008

All concentrations are in milligrams per liter (mg/l)

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-1	11/02/04	NA ²				0.725	0.321	0.995	0.537
	03/22/05	Not Sampled Due to the Presence of PSH ³							
	05/17/05	Not Sampled Due to the Presence of PSH							
	08/15/05	Not Sampled Due to the Presence of PSH							
	11/18/05	NA				0.104	<0.001	0.0328	0.00736
	02/16/06	NA				1.08	<0.001	0.4	0.0838
	05/22/06	NA				1.06	<0.005	1.1	0.0732
	08/07/06	NA				1.15	<0.001	0.323	0.0276
	11/21/06	Not Sampled Due to the Presence of PSH							
	02/28/07	NA				0.714	<0.02	0.439	0.498
	05/11/07	NA				0.966	0.0309	0.288	0.0397
	08/10/07	NA				1.031	<0.05	0.167	<0.05
	11/15/07	Not Sampled Due to the Presence of PSH							
	02/29/08	3.68	3.44	<1.5	7.12	0.0033	<0.002	<0.001	<0.001
	05/28/08	Not Sampled Due to the Presence of PSH							
	08/21/08	Not Sampled Due to the Presence of PSH							
	11/08/08	Not Sampled Due to the Presence of PSH							
	02/10/09	3.71	<2.5	<2.5	3.71	0.4048	0.0022	0.0436	<0.001
	05/15/09	NA				0.5686	<0.002	0.0719	<0.001
	08/13/09	NA				0.2665	<0.02	0.0628	<0.1
	11/11/09	Not Sampled Due to the Presence of PSH							
	02/05/10	NA				0.6889	0.0139	0.0796	0.0278
	05/27/10	Not Sampled Due to the Presence of PSH							
	08/16/10	Not Sampled Due to the Presence of PSH							
	11/11/10	Not Sampled Due to the Presence of PSH							
	02/29/12	Not Sampled Due to the Presence of PSH							
	05/18/12	Not Sampled Due to the Presence of PSH							
	08/15/12	Not Sampled Due to the Presence of PSH							
	11/07/12	NA				0.111	<0.02	0.0695	<0.02
	02/21/13	Not Sampled Due to the Presence of PSH							
NMWQCC⁴ Groundwater Standards		NE⁵				0.01	0.75	0.75	0.62

1. TPH = Total Petroleum Hydrocarbons

2. NA = Not Analyzed

3. PSH = Phase Separated Hydrocarbons

4. NMWQCC = New Mexico Water Quality Control Commission

5. NE = Not Established

Bold text indicates a concentration exceeding the NMWQCC Delineation and Remediation limits

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-1	05/23/13	3.03	5.28	NA	8.31	0.578	0.0203	0.368	0.208
	08/08/13	2.23	2.3	NA	4.53	0.0966	0.007	0.0879	0.0411
	11/13/13	1.48	1.49	NA	2.97	0.0553	<0.001	0.0105	0.00203
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-2	09/30/02	NA				<0.001	<0.001	<0.001	<0.001
	11/06/02	NA				<0.001	<0.001	<0.001	<0.001
	02/27/03	NA				<0.001	<0.001	<0.001	<0.001
	05/12/03	NA				<0.001	<0.001	<0.001	<0.001
	08/20/03	NA				<0.001	<0.001	<0.001	<0.001
	11/10/03	NA				<0.001	<0.001	<0.001	<0.001
	02/17/04	NA				<0.001	<0.001	<0.001	<0.001
	05/06/04	NA				<0.001	<0.001	<0.001	<0.001
	03/22/05	Not Sampled Due to the Presence of PSH							
	05/17/05	Not Sampled Due to the Presence of PSH							
	08/15/05	NA				<0.001	<0.001	<0.001	<0.001
	11/18/05			Not Sampled Due to Sample Reduction					
	02/16/06	NA				<0.001	<0.001	<0.001	<0.001
	05/22/06	Not Sampled Due to the Presence of PSH							
	08/07/06	Not Sampled Due to the Presence of PSH							
	02/28/07	NA				<0.001	<0.001	<0.001	<0.001
	05/11/07	Not Sampled Due to the Presence of PSH							
	08/10/07	Not Sampled Due to the Presence of PSH							
	11/15/07	Not Sampled Due to the Presence of PSH							
	02/29/08	<1.5	3.51	3.15	6.66	<0.001	<0.002	0.001	<0.001
	05/28/08	Not Sampled Due to the Presence of PSH							
	08/21/08	Not Sampled Due to the Presence of PSH							
	11/08/08	Not Sampled Due to the Presence of PSH							
	02/10/09	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/14/09	Not Sampled Due to the Presence of PSH							
	08/12/09	Not Sampled Due to the Presence of PSH							
	11/11/09	Not Sampled Due to the Presence of PSH							
	02/05/10	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/27/10	Not Sampled Due to the Presence of PSH							
	08/16/10	Not Sampled Due to the Presence of PSH							
	11/11/10	NA				<0.001	<0.001	<0.001	<0.001
	11/17/11	NA				<0.001	<0.001	<0.001	<0.001
	02/29/12	Not Sampled Due to the Presence of PSH							
	05/18/12	Not Sampled Due to the Presence of PSH							
	08/15/12	Not Sampled Due to the Presence of PSH							
	11/06/12	NA				<0.001	<0.001	<0.001	<0.001
	02/21/13	NA				<0.001	<0.002	<0.001	<0.001
	05/23/13	<0.988	<0.988	NA	<0.988	<0.0005	<0.001	<0.0007	<0.0007
	08/08/13	<0.884	<0.884	NA	<0.884	<0.0005	<0.001	<0.0007	<0.0007
	11/13/13	<0.740	<0.954	NA	<0.740	<0.0005	<0.001	<0.0007	<0.0007
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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Bold text indicates a concentration exceeding the NMWQCC Delineation and Remediation limits

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-3	09/30/02	NA				<0.001	<0.001	<0.001	<0.001
	11/06/02	NA				<0.001	<0.001	<0.001	<0.001
	02/27/03	NA				<0.001	<0.001	<0.001	<0.001
	05/12/03	NA				<0.001	<0.001	<0.001	<0.001
	08/20/03	NA				<0.001	<0.001	<0.001	<0.001
	11/10/03	NA				0.005	<0.001	<0.001	<0.001
	11/25/03	NA				0.001	<0.001	<0.001	<0.001
	02/17/04	NA				<0.001	<0.001	<0.001	<0.001
	05/06/04	NA				<0.001	<0.001	<0.001	<0.001
	03/22/05	Not Sampled Due to the Presence of PSH							
	05/17/05	Not Sampled Due to the Presence of PSH							
	08/15/05	NA				0.00976	0.00189	<0.001	<0.001
	11/18/05	Not Sampled Due to the Presence of PSH							
	02/16/06	NA				0.00816	<0.001	<0.001	<0.001
	05/22/06	Not Sampled Due to the Presence of PSH							
	08/07/06	Not Sampled Due to the Presence of PSH							
	11/21/06	Not Sampled Due to the Presence of PSH							
	02/28/07	NA				<0.001	<0.001	<0.001	<0.001
	05/11/07	Not Sampled Due to the Presence of PSH							
	08/10/07	Not Sampled Due to the Presence of PSH							
	11/15/07	Not Sampled Due to the Presence of PSH							
	02/29/08	<1.5	<1.5	<1.5	<1.5	<0.001	<0.002	<0.001	<0.001
	05/28/08	Not Sampled Due to the Presence of PSH							
	08/21/08	Not Sampled Due to the Presence of PSH							
	11/08/08	Not Sampled Due to the Presence of PSH							
	02/10/09	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/14/09	Not Sampled Due to the Presence of PSH							
	08/12/09	Not Sampled Due to the Presence of PSH							
	11/11/09	Not Sampled Due to the Presence of PSH							
	02/05/10	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/27/10	Not Sampled Due to the Presence of PSH							
	08/16/10	Not Sampled Due to the Presence of PSH							
	11/11/10	Not Sampled Due to the Presence of PSH							
	02/29/12	Dry							
	05/18/12	Dry							
	08/15/12	Dry							
	11/06/12	Dry							
	02/21/13	Dry							
	05/23/13	Dry							
	08/08/13	Dry							
	11/13/13	Dry							
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

1. TPH = Total Petroleum Hydrocarbons

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5. NE = Not Established

Bold text indicates a concentration exceeding the NMWQCC Delineation and Remediation limits

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-4	09/30/02	NA				2.43	0.74	0.466	0.284
	11/06/02	NA				3.96	0.015	0.174	0.108
	02/27/03	Not Sampled Due to the Presence of PSH							
	05/12/03	NA				1.88	0.004	0.723	0.056
	08/20/03	Not Sampled Due to the Presence of PSH							
	11/10/03	NA				0.408	0.001	0.011	0.001
	02/17/04	NA				0.069	0.001	0.003	0.001
	05/06/04	NA				0.549	0.213	0.394	0.194
	08/18/04	Not Sampled Due to the Presence of PSH							
	11/02/04	NA				0.745	<0.001	0.00856	0.00364
	03/22/05	Not Sampled Due to the Presence of PSH							
	05/17/05	Not Sampled Due to the Presence of PSH							
	08/15/05	NA				0.00375	<0.001	0.02	0.00844
	11/18/05	NA				0.103	<0.001	0.0909	<0.001
	02/16/06	NA				0.0282	<0.001	0.122	<0.001
	05/22/06	NA				0.0854	<0.001	0.355	<0.001
	08/07/06	NA				0.0331	<0.001	0.139	<0.001
	11/21/06	NA				0.0361	<0.005	0.252	<0.005
	02/28/07	NA				0.0221	<0.001	0.0142	0.116
	05/11/07	NA				0.039	0.00629	0.336	0.00725
	08/10/07	NA				0.0171	<0.01	0.3113	<0.01
	11/15/07	NA				0.0108	<0.002	<0.001	0.0031
	02/29/08	<1.5	<1.5	<1.5	<1.5	0.0578	<0.002	0.065	<0.001
	05/28/08	Not Sampled Due to the Presence of PSH							
	08/21/08	NA				0.0232	<0.002	0.0303	0.0147
	11/08/08	NA				0.0374	<0.002	0.0041	<0.001
	02/10/09	<2.5	<2.5	<2.5	<2.5	0.0539	<0.002	0.0206	<0.001
	05/15/09	NA				0.0632	0.0043	0.1016	<0.001
	08/12/09	NA				0.0322	<0.002	0.035	0.0025
	11/11/09	NA				0.0725	<0.002	0.0414	<0.001
	02/05/10	NA				0.0198	<0.002	0.0175	<0.001
	05/27/10	NA				0.0787	<0.002	0.0595	<0.001
	08/16/10	NA				0.208	<0.1	0.135	<0.05
	11/11/10	NA				0.0335	<0.002	0.0196	<0.001
	02/29/12	Not Sampled Due to the Presence of PSH							
	05/18/12	Not Sampled Due to the Presence of PSH							
	08/15/12	Not Sampled Due to the Presence of PSH							
	11/06/12	Not Sampled Due to the Presence of PSH							
	02/21/13	Not Sampled Due to the Presence of PSH							
	05/23/13	<0.988	<0.988	NA	<0.988	0.0347	<0.001	0.0162	0.00622
	08/08/13	2.44	1.91	NA	4.35	0.0659	<0.001	0.0572	0.0179
	11/13/13	0.84	<0.954	NA	0.84	0.0106	<0.001	0.00503	0.00178
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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Bold text indicates a concentration exceeding the NMWQCC Delineation and Remediation limits

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-5	09/30/02	Not Sampled Due to the Presence of PSH							
	11/06/02	Not Sampled Due to the Presence of PSH							
	02/27/03	Not Sampled Due to the Presence of PSH							
	05/12/03	NA				0.226	0.01	0.399	0.567
	08/20/03	Not Sampled Due to the Presence of PSH							
	11/10/03	NA				0.511	<0.001	1.07	0.02
	02/17/04	NA				0.445	0.048	3.33	0.153
	05/06/04	NA				0.0744	0.0207	0.222	0.148
	08/24/04	NA				0.156	0.00385	0.232	0.124
	11/02/04	NA				0.371	<0.001	0.0209	0.00102
	03/22/05	Not Sampled Due to the Presence of PSH							
	05/17/05	Not Sampled Due to the Presence of PSH							
	08/15/05	Not Sampled Due to the Presence of PSH							
	11/18/05	NA				0.0886	<0.001	0.0448	0.018
	02/16/06	NA				0.0108	<0.001	0.00861	0.00202
	05/22/06	NA				<0.001	<0.001	0.00152	<0.001
	08/07/06	NA				0.0386	<0.001	0.0619	0.0204
	11/21/06	Not Sampled Due to the Presence of PSH							
	02/28/07	NA				0.36	<0.005	0.412	5.04
	05/11/07	NA				0.397	0.0141	0.387	0.196
	08/10/07	NA				0.2765	<0.025	0.2858	0.1315
	11/15/07	NA				0.0039	<0.002	<0.001	<0.001
	02/29/08	9.46	11.7	<1.5	21.16	0.003	<0.002	0.0036	0.0018
	05/28/08	Not Sampled Due to the Presence of PSH							
	08/21/08	NA				0.0107	<0.002	0.0032	0.0027
	11/08/08	NA				0.2551	<0.01	0.2323	0.1145
	02/10/09	4.47	<2.5	<2.5	4.47	0.2425	<0.01	0.2885	0.117
	05/15/09	NA				0.2339	0.0234	0.1006	0.0782
	08/12/09	NA				0.2247	<0.01	0.2958	0.1264
	11/11/09	Not Sampled Due to the Presence of PSH							
	02/05/10	NA				0.7078	<0.01	0.4458	0.1105
	05/27/10	Not Sampled Due to the Presence of PSH							
	08/16/10	Not Sampled Due to the Presence of PSH							
	11/11/10	NA				0.226	<0.001	0.2402	0.1087
	02/17/11	NA				0.165	<0.001	0.202	0.0906
	08/18/11	NA				0.128	0.00336	0.162	0.0413
	02/29/12	Not Sampled Due to the Presence of PSH							
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-5	05/18/12	Not Sampled Due to the Presence of PSH							
	08/15/12	Not Sampled Due to the Presence of PSH							
	11/07/12	NA				0.125	<0.005	0.337	0.177
	02/21/13	Not Sampled Due to the Presence of PSH							
	05/23/13	2.01	2.98	NA	4.97	0.0833	<0.001	0.14	0.068
	08/08/13	5.56	2.84	NA	8.4	0.0637	0.00282	0.0714	0.0384
	11/13/13	1.77	2.39	NA	4.16	0.038	<0.001	0.113	0.0139
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-6	09/30/02	NA				<0.001	<0.001	<0.001	<0.001
	11/06/02	NA				<0.001	<0.001	<0.001	<0.001
	02/27/03	NA				<0.001	<0.001	<0.001	<0.001
	05/12/03	NA				<0.001	<0.001	<0.001	<0.001
	08/20/03	NA				<0.001	<0.001	<0.001	<0.001
	11/10/03	NA				<0.001	<0.001	<0.001	<0.001
	02/17/04	NA				<0.001	<0.001	<0.001	<0.001
	05/06/04	NA				0.00426	<0.001	<0.001	0.0013
	08/18/04	Not Sampled Due to the Presence of PSH							
	11/02/04	NA				<0.001	<0.001	<0.001	<0.001
	03/22/05	Not Sampled Due to the Presence of PSH							
	05/17/05	Not Sampled Due to the Presence of PSH							
	08/15/05	NA				<0.001	<0.001	<0.001	<0.001
	11/18/05	Not Sampled Due to the Presence of PSH							
	02/16/06	NA				0.00133	<0.001	0.00298	<0.001
	05/22/06	Not Sampled Due to the Presence of PSH							
	08/07/06	Not Sampled Due to the Presence of PSH							
	11/21/06	Not Sampled Due to the Presence of PSH							
	02/28/07	NA				<0.001	<0.001	<0.001	0.0027
	05/11/07	NA				0.0007	0.000698	0.00211	0.00672
	08/10/07	NA				0.0012	<0.001	0.0059	0.0014
	11/15/07	NA				<0.001	<0.002	0.001	<0.001
	02/29/08	<1.5	<1.5	<1.5	<1.5	<0.001	<0.002	<0.001	<0.001
	05/28/08	NA				<0.001	<0.002	<0.001	<0.001
	08/21/08	NA				0.0017	<0.002	<0.001	<0.001
	11/08/08	NA				<0.001	<0.002	<0.001	<0.001
	02/10/09	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/15/09	NA				<0.001	<0.002	<0.001	<0.001
	08/13/09	NA				<0.001	<0.002	<0.001	<0.001
	11/11/09	NA				<0.001	<0.002	<0.001	<0.001
	02/05/10	NA				<0.001	<0.002	<0.001	<0.001
	05/27/10	NA				<0.001	<0.002	<0.001	<0.001
	08/16/10	NA				<0.001	<0.002	<0.001	<0.001
	11/11/10	NA				<0.001	<0.002	<0.001	<0.001
	02/17/11	NA				<0.001	<0.002	<0.001	<0.001
	05/25/11	NA				<0.001	<0.002	<0.001	<0.001
	08/18/11	NA				<0.001	<0.002	<0.001	<0.001
	11/17/11	NA				<0.001	<0.002	<0.001	<0.001
	02/29/12	NA				<0.001	<0.002	<0.001	<0.001
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-6	05/18/12	NA				<0.001	<0.001	<0.001	<0.001
	08/15/12	<5.0	NA		<5.0	<0.001	<0.001	<0.001	<0.001
	11/06/12	NA				<0.001	<0.001	<0.001	<0.001
	02/22/13	NA				<0.001	<0.002	<0.001	<0.001
	05/23/13	<0.988	<0.988	NA	<0.988	<0.0005	<0.001	<0.0007	<0.0007
	08/08/13	<0.907	<0.907	NA	<0.907	<0.0005	<0.001	<0.0007	<0.0007
	11/13/13	<0.740	<0.954	NA	<0.740	<0.0005	<0.001	<0.0007	<0.0007
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-7	09/30/02	NA				<0.001	<0.001	<0.001	<0.001
	11/06/02	NA				<0.001	<0.001	<0.001	<0.001
	02/27/03	NA				<0.001	<0.001	<0.001	<0.001
	05/12/03	NA				<0.001	<0.001	<0.001	<0.001
	08/20/03	NA				<0.001	<0.001	<0.001	<0.001
	11/10/03	NA				<0.001	<0.001	<0.001	<0.001
	02/17/04	NA				<0.001	<0.001	<0.001	<0.001
	05/06/04	NA				<0.001	<0.001	<0.001	<0.001
	03/22/05	Not Sampled Due to the Presence of PSH							
	05/17/05	Not Sampled Due to the Presence of PSH							
	08/15/05	NA				0.0059	<0.001	<0.001	<0.001
	11/18/05	Not Sampled Due to the Presence of PSH							
	02/16/06	NA				<0.001	<0.001	<0.001	<0.001
	05/22/06	Not Sampled Due to the Presence of PSH							
	08/07/06	Not Sampled Due to the Presence of PSH							
	11/21/06	NA				Not Sampled			
	02/28/07	NA				<0.001	<0.001	<0.001	
	05/11/07	Not Sampled Due to the Presence of PSH							
	08/10/07	Not Sampled Due to the Presence of PSH							
	11/15/07	Not Sampled Due to the Presence of PSH							
	02/29/08	<1.5	<1.5	<1.5	<1.5	<0.001	<0.002	<0.001	<0.001
	05/28/08	Not Sampled Due to the Presence of PSH							
	08/21/08	Not Sampled Due to the Presence of PSH							
	11/08/08	Not Sampled Due to the Presence of PSH							
	02/10/09	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/14/09	Not Sampled Due to the Presence of PSH							
	08/12/09	Not Sampled Due to the Presence of PSH							
	11/11/09	Not Sampled Due to the Presence of PSH							
	02/05/10	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/27/10	Not Sampled Due to the Presence of PSH							
	08/16/10	Not Sampled Due to the Presence of PSH							
	11/11/10	NA				<0.001	<0.002	<0.001	<0.001
	11/17/11	NA				<0.001	<0.002	<0.001	<0.001
	02/29/12	NA				<0.001	<0.002	<0.001	<0.001
	05/18/12	NA				<0.001	<0.001	<0.001	<0.001
	08/15/12	<5.0	NA		<5.0	<0.001	<0.001	<0.001	<0.001
11/07/12	NA				<0.001	<0.001	<0.001	<0.001	
02/22/13	NA				<0.001	<0.002	<0.001	<0.001	
05/23/13	<0.988	<0.988	NA	<0.988	<0.0005	<0.001	<0.0007	<0.0007	
08/08/13	<0.895	<0.895	NA	<0.895	<0.0005	<0.001	<0.0007	<0.0007	
11/13/13	<0.740	<0.954	NA	<0.740	<0.0005	<0.001	<0.0007	<0.0007	
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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Bold text indicates a concentration exceeding the NMWQCC Delineation and Remediation limits

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-8	09/30/02	NA				<0.001	<0.001	<0.001	<0.001
	11/06/02	NA				<0.001	<0.001	<0.001	<0.001
	02/27/03	NA				<0.001	<0.001	<0.001	<0.001
	05/12/03	NA				<0.001	<0.001	<0.001	<0.001
	08/20/03	NA				<0.001	<0.001	<0.001	<0.001
	11/10/03	NA				<0.001	<0.001	<0.001	<0.001
	02/17/04	NA				<0.001	<0.001	<0.001	<0.001
	05/06/04	NA				<0.001	<0.001	<0.001	<0.001
	03/22/05	Not Sampled Due to the Presence of PSH							
	05/17/05	Not Sampled Due to the Presence of PSH							
	08/15/05	NA				<0.001	<0.001	<0.001	<0.001
	11/18/05	Not Sampled Due to the Presence of PSH							
	02/16/06	NA				<0.001	<0.001	<0.001	<0.001
	05/22/06	Not Sampled Due to the Presence of PSH							
	08/07/06	Not Sampled Due to the Presence of PSH							
	11/21/06	Not Sampled Due to the Presence of PSH							
	02/28/07	NA				<0.001	<0.001	<0.001	<0.001
	05/11/07	Not Sampled Due to the Presence of PSH							
	08/10/07	Not Sampled Due to the Presence of PSH							
	11/15/07	Not Sampled Due to the Presence of PSH							
	02/29/08	<1.5	<1.5	<1.5	<1.5	<0.001	<0.002	<0.001	<0.001
	05/28/08	Not Sampled Due to the Presence of PSH							
	08/21/08	Not Sampled Due to the Presence of PSH							
	11/08/08	Not Sampled Due to the Presence of PSH							
	02/10/09	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/14/09	Not Sampled Due to the Presence of PSH							
	08/12/09	Not Sampled Due to the Presence of PSH							
	11/11/09	Not Sampled Due to the Presence of PSH							
	02/05/10	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/27/10	Not Sampled Due to the Presence of PSH							
	08/16/10	Not Sampled Due to the Presence of PSH							
	11/11/10	NA				<0.001	<0.002	<0.001	<0.001
	11/17/11	NA				<0.001	<0.002	<0.001	<0.001
	02/29/12	Not Sampled Due to the Presence of PSH							
	05/18/12	NA				<0.001	<0.001	<0.001	<0.001
	08/15/12	<5.0	NA		<5.0	<0.001	<0.001	<0.001	<0.001
11/06/12	NA				<0.001	<0.001	<0.001	<0.001	
02/22/13	NA				<0.001	<0.001	<0.001	<0.001	
05/23/13	<0.988	<0.988	NA	<0.988	<0.0005	<0.001	<0.0007	<0.0007	
08/08/13	<0.889	<0.889	NA	<0.889	<0.0005	<0.001	<0.0007	<0.0007	
11/13/13	<0.740	<0.954	NA	<0.740	<0.0005	<0.001	<0.0007	<0.0007	
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

1. TPH = Total Petroleum Hydrocarbons

2. NA = Not Analyzed

3. PSH = Phase Separated Hydrocarbons

4. NMWQCC = New Mexico Water Quality Control Commission

5. NE = Not Established

Bold text indicates a concentration exceeding the NMWQCC Delineation and Remediation limits

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-9	09/30/02	NA				<0.001	<0.001	<0.001	<0.001
	11/06/02	NA				<0.001	<0.001	<0.001	<0.001
	02/27/03	NA				<0.001	<0.001	<0.001	<0.001
	05/12/03	NA				<0.001	<0.001	<0.001	<0.001
	08/20/03	NA				<0.001	<0.001	<0.001	<0.001
	11/10/03	NA				<0.001	<0.001	<0.001	<0.001
	02/17/04	NA				0.003	<0.001	<0.001	<0.001
	05/06/04	NA				0.00267	<0.001	<0.001	<0.001
	08/18/04	Not Sampled Due to the Presence of PSH							
	11/02/04	NA				0.136	<0.001	<0.001	0.00951
	03/22/05	NA				0.0146	<0.001	<0.001	<0.001
	05/17/05	NA				0.0036	<0.001	<0.001	<0.001
	08/15/05	NA				<0.001	<0.001	<0.001	<0.001
	11/18/05	NA				<0.001	<0.001	<0.001	<0.001
	02/16/06	NA				<0.001	<0.001	<0.001	<0.001
	05/22/06	NA				<0.001	<0.001	<0.001	<0.001
	08/07/06	NA				<0.001	<0.001	<0.001	<0.001
	11/21/06	NA				<0.001	<0.001	<0.001	<0.001
	02/28/07	NA				<0.001	<0.001	<0.001	<0.001
	05/11/07	NA				<0.001	<0.001	<0.001	<0.001
	08/10/07	NA				<0.001	<0.001	<0.001	<0.001
	11/15/07	NA				<0.001	<0.002	<0.001	<0.001
	02/29/08	<1.5	<1.5	<1.5	<1.5	<0.001	<0.002	<0.001	<0.001
	05/28/08	NA				<0.001	<0.002	<0.001	<0.001
	08/21/08	NA				<0.001	<0.002	<0.001	<0.001
	11/08/08	NA				<0.001	<0.002	<0.001	<0.001
	02/10/09	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/15/09	NA				<0.001	<0.002	<0.001	<0.001
	0813/09	NA				<0.001	<0.002	<0.001	<0.001
	11/11/09	NA				<0.001	<0.002	<0.001	<0.001
	02/05/10	NA				0.0016	<0.002	<0.001	<0.001
	05/27/10	NA				<0.001	<0.002	<0.001	<0.001
	08/16/10	NA				<0.001	<0.002	<0.001	<0.001
	11/11/10	NA				<0.001	<0.002	<0.001	<0.001
	02/17/11	NA				<0.001	<0.002	<0.001	<0.001
	05/25/11	NA				<0.001	<0.002	<0.001	<0.001
	08/18/11	NA				<0.001	<0.002	<0.001	<0.001
	11/17/11	NA				<0.001	<0.002	<0.001	<0.001
	02/29/12	NA				<0.001	<0.002	<0.001	<0.001
	05/18/12	NA				<0.001	<0.001	<0.001	<0.001
	08/15/12	<5.0	NA		<5.0	<0.001	<0.001	<0.001	<0.001
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

1. TPH = Total Petroleum Hydrocarbons

2. NA = Not Analyzed

3. PSH = Phase Separated Hydrocarbons

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5. NE = Not Established

Bold text indicates a concentration exceeding the NMWQCC Delineation and Remediation limits

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-9	11/06/12	NA				<0.001	<0.001	<0.001	<0.001
	02/22/13	NA				<0.001	<0.001	<0.001	<0.001
	05/23/13	Not Sampled Due to the Presence of PSH							
	08/08/13	<0.895	<0.895	NA	<0.895	<0.0005	<0.001	<0.0007	<0.0007
	11/13/13	<0.740	<0.954	NA	<0.740	<0.0005	<0.001	<0.0007	<0.0007
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-10	09/30/02	NA				<0.001	<0.001	<0.001	<0.001
	11/06/02	NA				<0.001	<0.001	<0.001	<0.001
	02/27/03	NA				<0.001	<0.001	<0.001	<0.001
	05/12/03	NA				<0.001	<0.001	<0.001	<0.001
	08/20/03	NA				<0.001	<0.001	<0.001	<0.001
	11/10/03	NA				<0.001	<0.001	<0.001	<0.001
	02/17/04	NA				<0.001	<0.001	<0.001	<0.001
	05/06/04	NA				<0.001	<0.001	<0.001	<0.001
	03/22/05	Not Sampled Due to the Presence of PSH							
	05/17/05	Not Sampled Due to the Presence of PSH							
	08/15/05	NA				0.0251	0.0106	0.00197	0.00102
	11/18/05	Not Sampled Due to the Presence of PSH							
	02/16/06	NA				0.0361	<0.001	0.00319	<0.001
	05/22/06	NA				0.151	<0.001	0.00279	<0.001
	08/07/06	NA				0.0247	<0.001	<0.001	<0.001
	11/21/06	NA				0.00557	<0.001	<0.001	<0.001
	02/28/07	NA				<0.001	<0.001	<0.001	<0.001
	05/11/07	NA				0.00145	<0.001	0.000361	<0.001
	08/10/07	NA				0.002	<0.001	0.0028	<0.001
	11/15/07	NA				0.004	<0.002	<0.001	<0.001
	02/29/08	<1.5	<1.5	<1.5	<1.5	<0.001	<0.002	<0.001	<0.001
	05/28/08	NA				<0.001	<0.002	<0.001	<0.001
	08/21/08	NA				<0.001	<0.002	<0.001	<0.001
	11/08/08	NA				<0.001	<0.002	<0.001	<0.001
	02/10/09	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/14/09	NA				<0.001	<0.002	<0.001	<0.001
	08/12/09	NA				<0.001	<0.002	<0.001	<0.001
	11/11/09	NA				<0.001	<0.002	<0.001	<0.001
	02/05/10	NA				<0.001	<0.002	<0.001	<0.001
	05/27/10	NA				<0.001	<0.002	<0.001	<0.001
	08/16/10	NA				0.0011	<0.002	<0.001	<0.001
	11/11/10	NA				<0.001	<0.002	<0.001	<0.001
	02/17/11	NA				<0.001	<0.002	0.0012	<0.001
	05/25/11	NA				<0.001	<0.002	0.0012	<0.001
	08/18/11	NA				<0.001	<0.002	<0.001	<0.001
	11/17/11	NA				<0.001	<0.002	<0.001	<0.001
	02/29/12	NA				<0.001	<0.002	<0.001	<0.001
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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Bold text indicates a concentration exceeding the NMWQCC Delineation and Remediation limits

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-10	05/18/12	NA				<0.001	<0.001	<0.001	<0.001
	08/15/12	<5.0	NA		<5.0	<0.001	<0.001	<0.001	<0.001
	11/06/12	NA				<0.001	<0.001	<0.001	<0.001
	02/22/13	NA				<0.001	<0.001	<0.001	<0.001
	05/24/13	<0.988	<0.988	NA	<0.988	<0.0005	<0.001	<0.0007	<0.0007
	08/08/13	<0.906	<0.906	NA	<0.906	<0.0005	<0.001	<0.0007	<0.0007
	11/13/13	<0.740	<0.954	NA	<0.740	<0.0005	<0.001	<0.0007	<0.0007
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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Bold text indicates a concentration exceeding the NMWQCC Delineation and Remediation limits

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-11	11/06/02	NA				<0.001	<0.001	<0.001	<0.001
	02/27/03	NA				<0.001	<0.001	<0.001	<0.001
	05/12/03	NA				<0.001	<0.001	<0.001	<0.001
	08/20/03	NA				0.147	<0.001	0.069	0.033
	11/10/03	NA				0.526	<0.001	<0.001	0.047
	02/17/04	NA				0.103	<0.001	<0.001	0.007
	05/06/04	NA				2.05	<0.005	0.253	0.119
	08/18/04	NA				0.0973	<0.001	<0.001	0.00137
	11/02/04	NA				0.087	<0.001	0.00163	<0.001
	03/22/05	NA				0.0246	<0.001	0.00163	<0.001
	05/17/05	NA				0.0263	<0.001	0.00353	<0.001
	08/15/05	NA				0.0127	<0.001	<0.001	<0.001
	11/18/05	NA				0.00922	<0.001	0.00115	<0.001
	02/16/06	NA				0.00283	<0.001	<0.001	<0.001
	05/22/06	NA				0.00173	<0.001	<0.001	<0.001
	08/07/06	NA				<0.001	<0.001	<0.001	<0.001
	11/21/06	NA				0.00166	<0.001	<0.001	<0.001
	02/28/07	NA				<0.001	<0.001	<0.001	0.0039
	05/11/07	NA				0.00348	0.00089	0.000537	0.00028
	08/10/07	NA				<0.001	<0.001	<0.001	0.0011
	11/15/07	NA				0.0021	<0.002	0.0014	0.0076
	02/29/08	<1.5	<1.5	<1.5	<1.5	<0.001	<0.002	<0.001	<0.001
	05/28/08	NA				<0.001	<0.002	<0.001	<0.001
	08/21/08	NA				<0.001	<0.002	<0.001	<0.001
	11/08/08	NA				0.0012	<0.002	<0.001	<0.001
	02/10/09	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/14/09	NA				<0.001	<0.002	<0.001	<0.001
	08/12/09	NA				<0.001	<0.002	<0.001	<0.001
	11/11/09	NA				<0.001	<0.002	<0.001	<0.001
	02/05/10	NA				<0.001	<0.002	<0.001	<0.001
	05/27/10	NA				<0.001	<0.002	<0.001	<0.001
	08/16/10	NA				<0.001	<0.002	<0.001	<0.001
	11/11/10	NA				<0.001	<0.002	<0.001	<0.001
	02/17/11	NA				<0.001	<0.002	<0.001	<0.001
	05/25/11	NA				<0.001	<0.002	<0.001	<0.001
	08/18/11	NA				<0.001	<0.002	<0.001	<0.001
	11/17/11	NA				<0.001	<0.002	<0.001	<0.001
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

1. TPH = Total Petroleum Hydrocarbons

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Bold text indicates a concentration exceeding the NMWQCC Delineation and Remediation limits

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ - C ₁₀	TPH C ₁₀ - C ₂₈	TPH C ₂₈ - C ₃₅	TPH C ₆ - C ₃₅	BENZENE	TOLUENE	ETHYL- BENZENE	TOTAL XYLENES
MW-11	02/29/12	NA				<0.001	<0.002	<0.001	<0.001
	05/18/12	NA				<0.001	<0.001	<0.001	<0.001
	08/15/12	<5.0	NA		<5.0	<0.001	<0.001	<0.001	<0.001
	11/06/12	NA				<0.001	<0.001	<0.001	<0.001
	02/22/13	NA				<0.001	<0.001	<0.001	<0.001
	05/23/13	Not Sampled Due to the Presence of PSH							
	08/08/13	<0.897	<0.897	NA	<0.897	<0.0005	<0.001	<0.0007	<0.0007
	11/13/13	<0.740	<0.954	NA	<0.740	<0.0005	<0.001	<0.0007	<0.0007
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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Bold text indicates a concentration exceeding the NMWQCC Delineation and Remediation limits

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-12	11/06/02	NA				2.3	0.012	0.005	0.092
	02/27/03	NA				<0.001	<0.001	<0.001	<0.001
	05/12/03	NA				0.24	<0.001	<0.001	0.015
	08/20/03	NA				0.257	<0.001	<0.001	0.013
	11/10/03	NA				0.544	<0.001	<0.001	0.01
	02/17/04	NA				1.21	<0.001	<0.001	0.002
	05/06/04	NA				1.17	<0.002	0.0659	0.0304
	08/18/04	NA				0.0612	<0.001	0.0222	<0.001
	11/02/04	NA				0.0322	<0.001	0.00253	<0.001
	03/22/05	NA				0.00545	<0.001	0.00366	<0.001
	05/17/05	NA				0.00103	<0.001	<0.001	<0.001
	08/15/05	NA				<0.001	<0.001	<0.001	<0.001
	11/18/05	NA				<0.001	<0.001	<0.001	<0.001
	02/16/06	NA				<0.001	<0.001	<0.001	<0.001
	05/22/06	NA				<0.001	<0.001	<0.001	<0.001
	08/07/06	NA				<0.001	<0.001	<0.001	<0.001
	11/21/06	NA				<0.001	<0.001	<0.001	<0.001
	02/28/07	NA				<0.001	<0.001	<0.001	0.0031
	05/11/07	NA				0.00205	0.000858	0.000546	0.00038
	08/10/07	NA				<0.005	<0.005	<0.005	<0.005
	11/15/07	NA				<0.001	<0.002	<0.001	<0.001
	02/29/08	<1.5	<1.5	<1.5	<1.5	0.0011	<0.002	<0.001	0.003
	05/28/08	NA				<0.001	<0.002	<0.001	0.002
	08/21/08	NA				0.0518	<0.002	0.0398	<0.001
	11/08/08	NA				0.0033	<0.002	<0.001	<0.001
	02/10/09	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/14/09	NA				<0.001	<0.002	<0.001	<0.001
	08/12/09	NA				<0.001	<0.002	<0.001	<0.001
	11/11/09	NA				0.002	<0.002	0.002	0.0071
	02/05/10	NA				<0.001	<0.002	<0.001	<0.001
	05/27/10	NA				0.001	<0.002	<0.001	<0.001
	08/16/10	NA				<0.001	<0.002	<0.001	0.0017
	11/11/10	NA				<0.001	<0.002	<0.001	<0.001
	02/17/11	NA				<0.001	<0.002	<0.001	0.00261
	05/25/11	NA				0.00219	<0.002	<0.001	0.00271
	08/18/11	NA				0.0248	<0.002	0.00744	<0.001
	11/17/11	NA				0.00235	<0.002	<0.001	0.00283
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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Bold text indicates a concentration exceeding the NMWQCC Delineation and Remediation limits

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ - C ₁₀	TPH C ₁₀ - C ₂₈	TPH C ₂₈ - C ₃₅	TPH C ₆ - C ₃₅	BENZENE	TOLUENE	ETHYL- BENZENE	TOTAL XYLENES
MW-12	02/29/12	NA				<0.001	<0.002	<0.001	<0.001
	05/18/12	NA				0.00517	<0.001	0.0026	<0.001
	08/15/12	<5.0	NA		<5.0	0.132	<0.001	0.0432	0.0065
	11/06/12	NA				<0.001	<0.001	<0.001	0.0014
	02/22/13	NA				<0.001	<0.001	<0.001	0.0014
	05/23/13	Not Sampled Due to the Presence of PSH							
	08/08/13	<0.906	<0.906	NA	<0.906	0.0121	<0.001	0.00365	0.00085
	11/13/13	<0.740	<0.954	NA	<0.740	<0.0005	<0.001	<0.0007	<0.0007
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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Bold text indicates a concentration exceeding the NMWQCC Delineation and Remediation limits

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-13	11/06/02	NA				0.08	<0.001	<0.001	0.001
	02/27/03	NA				2.14	0.001	0.095	0.111
	05/12/03	NA				1.65	0.001	0.202	0.17
	08/20/03	NA				1.71	<0.001	0.138	0.511
	11/10/03	NA				1.55	<0.001	0.084	0.002
	02/17/04	NA				0.043	<0.001	0.015	<0.001
	05/06/04	NA				0.0873	<0.001	<0.001	0.00242
	08/18/04	NA				0.0903	<0.001	0.00982	<0.001
	11/02/04	NA				0.233	<0.001	0.00348	0.0038
	03/22/05	NA				0.18	<0.001	0.00239	<0.001
	05/17/05	NA				0.0758	<0.001	0.00277	<0.001
	08/15/05	NA				0.00668	<0.001	0.00121	<0.001
	11/18/05	NA				0.00134	<0.001	0.00121	<0.001
	02/16/06	NA				<0.001	<0.001	<0.001	<0.001
	05/22/06	NA				<0.001	<0.001	<0.001	<0.001
	08/07/06	NA				0.0013	<0.001	<0.001	<0.001
	11/21/06	NA				0.00214	<0.001	<0.001	<0.001
	02/28/07	NA				<0.001	0.0022	0.0049	0.112
	05/11/07	NA				0.00068	0.000352	0.00293	0.00625
	08/10/07	NA				<0.005	<0.005	<0.005	0.0079
	11/15/07	NA				0.0013	<0.002	<0.001	0.007
	02/29/08	<1.5	<1.5	<1.5	<1.5	<0.001	<0.002	<0.001	0.0028
	05/28/08	NA				<0.001	<0.002	<0.001	0.0018
	08/21/08	NA				<0.001	<0.002	<0.001	<0.001
	11/08/08	NA				<0.001	<0.002	<0.001	<0.001
	02/10/09	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/14/09	NA				<0.001	<0.002	<0.001	<0.001
	08/12/09	NA				<0.001	<0.002	<0.001	<0.001
	11/11/09	NA				<0.001	<0.002	<0.001	<0.001
	02/05/10	NA				<0.001	<0.002	<0.001	<0.001
	05/27/10	NA				<0.001	<0.002	<0.001	<0.001
	08/16/10	NA				0.0014	<0.002	<0.001	0.002
	11/11/10	NA				<0.001	<0.002	<0.001	<0.001
	02/17/11	NA				<0.001	<0.002	<0.001	<0.001
	05/25/11	NA				<0.001	<0.002	<0.001	0.00365
	08/18/11	NA				<0.001	<0.002	0.00143	<0.001
	11/17/12	NA				0.00118	<0.002	<0.001	<0.001
	02/29/12	NA				<0.001	<0.002	<0.001	<0.001
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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Bold text indicates a concentration exceeding the NMWQCC Delineation and Remediation limits

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-13	05/18/12	NA				<0.001	<0.001	<0.001	<0.001
	08/15/12	<5.0	NA		<5.0	<0.001	<0.001	<0.001	<0.001
	11/06/12	NA				<0.001	<0.001	<0.001	<0.001
	02/22/13	NA				<0.001	<0.001	<0.001	<0.001
	05/24/13	<0.988	<0.988	NA	<0.988	<0.0005	<0.001	<0.0007	<0.0007
	08/08/13	<0.891	<0.891	NA	<0.891	<0.0005	<0.001	<0.0007	<0.0007
	11/13/13	<0.740	<0.954	NA	<0.740	<0.0005	<0.001	<0.0007	<0.007
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-14	11/06/02	NA				<0.001	<0.001	<0.001	<0.001
	02/27/03	NA				<0.001	<0.001	<0.001	<0.001
	05/12/03	NA				<0.001	<0.001	<0.001	<0.001
	08/20/03	NA				<0.001	<0.001	<0.001	<0.001
	11/10/03	NA				<0.001	<0.001	<0.001	<0.001
	02/17/04	NA				<0.001	<0.001	<0.001	<0.001
	05/06/04	NA				<0.001	<0.001	<0.001	<0.001
	08/18/04	NA				<0.001	<0.001	<0.001	0.00796
	11/02/04	NA				0.0106	<0.001	<0.001	0.00537
	03/22/05	NA				<0.001	<0.001	<0.001	<0.001
	05/17/05	NA				0.00906	<0.001	<0.001	<0.001
	08/15/05	NA				<0.001	<0.001	<0.001	<0.001
	11/18/05	NA				0.00494	<0.001	<0.001	<0.001
	02/16/06	NA				<0.001	<0.001	<0.001	<0.001
	05/22/06	NA				<0.001	<0.001	<0.001	<0.001
	08/07/06	NA				<0.001	<0.001	<0.001	<0.001
	11/21/06	NA				<0.001	<0.001	<0.001	<0.001
	02/28/07	NA				<0.001	<0.001	<0.001	<0.001
	05/11/07	NA				0.00084	<0.001	<0.001	<0.001
	08/10/07	NA				<0.001	<0.001	<0.001	<0.001
	11/15/07	NA				0.0012	<0.002	<0.001	<0.001
	02/29/08	<1.5	<1.5	<1.5	<1.5	<0.001	<0.002	<0.001	<0.001
	05/28/08	NA				<0.001	<0.002	<0.001	<0.001
	08/21/08	NA				<0.001	<0.002	<0.001	<0.001
	11/08/08	NA				<0.001	0.0023	0.001	0.0012
	02/10/09	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/14/09	NA				<0.001	<0.002	<0.001	<0.001
	08/12/09	NA				<0.001	<0.002	<0.001	<0.001
	11/11/09	NA				<0.001	<0.002	<0.001	<0.001
	02/05/10	NA				<0.001	<0.002	<0.001	<0.001
	05/27/10	NA				<0.001	<0.002	<0.001	<0.001
	08/16/10	NA				<0.001	<0.002	<0.001	<0.001
	11/11/10	NA				<0.001	<0.002	<0.001	<0.001
	02/17/11	NA				<0.001	<0.002	<0.001	<0.001
	05/25/11	NA				<0.001	<0.002	<0.001	<0.001
	08/18/11	NA				<0.001	<0.002	<0.001	<0.001
	11/17/11	NA				<0.001	<0.002	<0.001	<0.001
	02/29/12	NA				<0.001	<0.002	<0.001	0.00121
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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Bold text indicates a concentration exceeding the NMWQCC Delineation and Remediation limits

SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
MW-14	05/18/12	NA				<0.001	<0.001	<0.001	<0.001
	08/15/12	<5.0	NA		<5.0	<0.001	<0.001	<0.001	<0.001
	11/06/12	NA				<0.001	<0.001	<0.001	<0.001
	02/22/13	NA				<0.001	<0.001	<0.001	<0.001
	05/24/13	Dry - Not Sampled							
	08/08/13	<0.917	<0.917	NA	<0.917	<0.0005	<0.001	<0.0007	<0.0007
	11/13/13	0.957	<0.954	NA	0.957	0.022	<0.001	0.00934	0.00372
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ - C ₁₀	TPH C ₁₀ - C ₂₈	TPH C ₂₈ - C ₃₅	TPH C ₆ - C ₃₅	BENZENE	TOLUENE	ETHYL- BENZENE	TOTAL XYLENES
MW-15	11/06/02	NA				<0.001	<0.001	<0.001	<0.001
	02/27/03	NA				<0.001	<0.001	<0.001	<0.001
	05/12/03	NA				<0.001	<0.001	<0.001	<0.001
	08/20/03	NA				<0.001	<0.001	<0.001	<0.001
	11/10/03	NA				<0.001	<0.001	<0.001	<0.001
	02/17/04	NA				<0.001	<0.001	<0.001	<0.001
	05/06/04	NA				<0.001	<0.001	<0.001	<0.001
	08/24/04	NA				<0.001	<0.001	<0.001	<0.001
	03/22/05	Not Sampled Due to the Presence of PSH							
	05/17/05	Not Sampled Due to the Presence of PSH							
	08/15/05	NA				0.137	<0.001	<0.001	0.0102
	11/18/05	Not Sampled Due to the Presence of PSH							
	02/16/06	NA				0.0693	<0.001	<0.001	<0.001
	05/22/06	NA				0.0183	<0.001	<0.001	<0.001
	08/07/06	NA				0.00957	<0.001	<0.001	<0.001
	11/21/06	NA				0.00546	<0.001	<0.001	<0.001
	02/28/07	NA				<0.001	<0.001	<0.001	<0.001
	05/11/07	NA				0.00046	<0.001	<0.001	<0.001
	08/10/07	NA				<0.001	<0.001	<0.001	<0.001
	11/15/07	NA				<0.001	<0.002	<0.001	<0.001
	02/29/08	<1.5	<1.5	<1.5	<1.5	<0.001	<0.002	<0.001	<0.001
	05/28/08	NA				<0.001	<0.002	<0.001	<0.001
	08/21/08	NA				0.0041	<0.002	<0.001	<0.001
	11/08/08	NA				<0.001	<0.002	<0.001	<0.001
	02/10/09	<2.5	<2.5	<2.5	<2.5	<0.001	<0.002	<0.001	<0.001
	05/14/09	NA				<0.001	<0.002	<0.001	<0.001
	08/12/09	NA				<0.001	<0.002	<0.001	<0.001
	11/11/09	NA				<0.001	<0.002	<0.001	<0.001
	02/05/10	NA				<0.001	<0.002	<0.001	<0.001
	05/27/10	NA				<0.001	<0.002	<0.001	<0.001
	08/16/10	NA				<0.001	<0.002	<0.001	<0.001
	11/11/10	NA				<0.001	<0.002	<0.001	<0.001
	02/17/11	NA				<0.001	<0.002	<0.001	<0.001
	05/25/11	NA				<0.001	<0.002	<0.001	<0.001
	08/18/11	NA				<0.001	<0.002	<0.001	<0.001
	11/17/11	NA				<0.001	<0.002	<0.001	<0.001
	02/29/12	NA				<0.001	<0.002	<0.001	<0.001
	05/18/12	NA				<0.001	<0.001	<0.001	<0.001
	08/15/12	<5.0	NA		<5.0	<0.001	<0.001	<0.001	<0.001
	11/06/12	NA				<0.001	<0.001	<0.001	<0.001
	02/22/13	NA				<0.001	<0.001	<0.001	<0.001
	05/24/13	Not Sampled Due to the Presence of PSH							
	08/08/13	<0.899	<0.899	NA	<0.899	<0.0005	<0.001	<0.0007	<0.0007
	11/13/13	0.881	<0.954	NA	0.881	0.0132	<0.001	0.0074	0.0275
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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SAMPLE LOCATION	SAMPLE DATE	Method SW 8015B				EPA 8021B			
		TPH ¹ C ₆ -C ₁₀	TPH C ₁₀ -C ₂₈	TPH C ₂₈ -C ₃₅	TPH C ₆ -C ₃₅	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES
TMW-1	11/02/04	NA				4.95	2.78	1.72	0.783
	11/18/05	NA				1.86	<0.002	1.06	0.435
	02/16/06	NA				1.69	<0.002	1.03	0.604
	05/22/06	Not Sampled Due to the Presence of PSH							
	08/07/06	Not Sampled Due to the Presence of PSH							
	11/21/06	Not Sampled Due to the Presence of PSH							
	02/28/07	NA				1.66	<0.05	0.777	1.6
	05/11/07	NA				0.843	0.334	1.03	0.439
	08/10/07	Not Sampled Due to the Presence of PSH							
	11/15/07	Not Sampled Due to the Presence of PSH							
	02/29/08	16.6	7.06	<1.5	23.66	3.004	<0.04	1.046	0.0402
	05/28/08	Not Sampled Due to the Presence of PSH							
	08/21/08	Not Sampled Due to the Presence of PSH							
	11/08/08	Not Sampled Due to the Presence of PSH							
	02/25/09	32.7	44.3	4.00	81.00	2.044	<2.0	<1.0	<1.0
	05/14/09	Not Sampled Due to the Presence of PSH							
	08/12/09	Not Sampled Due to the Presence of PSH							
	11/11/09	Not Sampled Due to the Presence of PSH							
	02/05/10	Not Sampled Due to the Presence of PSH							
	05/27/10	Not Sampled Due to the Presence of PSH							
	08/16/10	Not Sampled Due to the Presence of PSH							
	11/11/10	Not Sampled Due to the Presence of PSH							
	02/29/12	Not Sampled Due to the Presence of PSH							
	05/18/12	Not Sampled Due to the Presence of PSH							
	08/15/12	Not Sampled Due to the Presence of PSH							
	11/06/12	Not Sampled Due to the Presence of PSH							
	02/21/13	Not Sampled Due to the Presence of PSH							
	05/24/13	Not Sampled Due to the Presence of PSH							
	08/08/13	Not Sampled Due to the Presence of PSH							
	11/13/13	Not Sampled Due to the Presence of PSH							
NMWQCC Groundwater Standards		NE				0.01	0.75	0.75	0.62

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2013 Annual Report
Table 3
CONCENTRATIONS OF PAHS IN GROUNDWATER
Livingston Ridge to Hught - P. Sims
Lea County, New Mexico
NMOC File Number: 1R-0398
Plains Pipeline, L. P. SRS Number 2001-11005
Terracon Project Number A4147008

All concentrations are in mg/L
EPA SW846-8270C and 3510

SAMPLE LOCATION	SAMPLE DATE	EPA SW846-8270C and 3510																			
		Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	2-Methylnaphthalene	Benzo(k)fluoranthene	1-Methylnaphthalene	
MW - 1	02/16/06	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00229	<0.00005	0.0000136	0.00399	<0.00005	NA	NA	NA		
	05/11/07	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<0.001	<0.001	<0.001	0.001	<0.001	0.017	0.012	<0.001	0.028	<0.001	NA		
	02/29/08	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008		
	11/07/12	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.0438	0.0180	<0.002	0.0792	<0.002	0.0842	
	09/19/13	0.000128	0.000162	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.000736	<0.000500	0.00592	0.000649	<0.000500	<0.000500	<0.000500	<0.000500	
MW - 2	06/18/03	0.000118	<0.00005	0.000061	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000056	0.000078	<0.00005	<0.00005	<0.00005	<0.00005	0.000121	NA	NA	NA	
	03/22/05	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NA	NA	NA	
	02/16/06	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NA	NA	NA	
	05/11/07	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	
	02/29/08	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
MW - 3	11/07/12	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	
	09/19/13	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	0.000115	<0.0000513	0.00056	0.000174	<0.0000513	<0.0000513	<0.0000513	<0.0000513		
	06/18/03	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NA	NA	NA	
	02/16/06	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NA	NA	NA	
	05/11/07	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	NA	
MW - 4	02/29/08	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
	09/19/13	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513		
	Dry - Not Sampled																				
	06/18/03	0.000156	0.000144	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000498	<0.00005	0.000167	0.000891	<0.00005	NA	NA	NA	NA	
	11/02/04	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.0025	0.000227	<0.00005	NA	NA	NA	NA	
MW - 5	02/16/06	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000068	<0.00005	<0.00005	0.000251	<0.00005	0.000482	0.000312	<0.00005	NA	NA	NA
	05/11/07	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<0.001	<0.001	<0.001	<0.001	<0.001	0.034	0.006	<0.001	0.042	<0.001	NA	
	02/29/08	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
	12/30/11	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
	11/07/12	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.0448	0.0161	<0.002	0.0596	<0.002	0.0615	
MW - 6	09/19/13	0.00028	0.000397	<0.000256	0.000377	<0.000256	<0.000256	<0.000256	<0.000256	<0.000256	<0.000256	0.00213	<0.000256	0.0405	0.00374	<0.000256	<0.000256	<0.000256	<0.000256	<0.000256	
	06/18/03	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NA	NA	NA	
	11/02/04	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NA	NA	NA	
	02/16/06	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000126	<0.00005	<0.00005	<0.00005	NA	NA	NA	
	05/11/07	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	NA	
MW - 7	02/29/08	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
	09/19/13	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	
	06/18/03	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NA	NA	NA	
	02/16/06	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NA	NA	NA	
	05/11/07	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	
MW - 8	02/29/08	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
	09/19/13	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	
	06/18/03	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NA	NA	NA	
	02/16/06	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NA	NA	NA	
	05/11/07	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	
MW - 9	02/29/08	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
	09/19/13	0.000052	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	<0.0000513	
	06/18/03	<0.00005	<0.00005	<0.00005	<0.00005																

SAMPLE LOCATION	SAMPLE DATE	EPA SW846-8270C and 3510																		
		Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(j,k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	2-Methylnaphthalene	Benzo(k)fluoranthene	
MW - 12	11/06/02	0.00007	0.000151	0.000096	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000662	<0.00005	0.000198	0.000722	0.000071	NA	NA	NA
	09/18/04	0.000079	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000078	<0.00005	0.000262	0.000246	<0.00005	NA	NA	NA
	03/22/05	0.0011	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000166	<0.00005	0.000107	0.000285	<0.00005	NA	NA	NA
	02/16/06	0.000055	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000053	<0.00005	<0.00005	0.000174	<0.00005	NA	NA	NA
	05/11/07	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA
	02/29/08	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	09/19/13	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
MW - 13	11/06/02	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000232	<0.00005	<0.00005	NA	NA	NA	NA
	09/18/04	0.000139	0.000086	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000141	<0.00005	0.000234	0.000702	<0.00005	NA	NA	NA
	03/22/05	0.000105	0.000072	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000366	<0.00005	0.000746	0.000426	<0.00005	NA	NA	NA
	02/16/06	0.000079	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000079	<0.00005	0.000054	0.000132	<0.00005	NA	NA	NA
	05/11/07	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA
	02/29/08	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	09/19/13	<0.0000508	<0.0000508	<0.0000508	<0.0000508	<0.0000508	<0.0000508	<0.0000508	<0.0000508	<0.0000508	<0.0000508	<0.0000508	<0.0000508	<0.0000508	<0.0000508	<0.0000508	<0.0000508	<0.0000508	<0.0000508	<0.0000508
MW - 14	11/06/02	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NA	NA	NA
	09/18/04	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.001119	0.000079	<0.00005	NA	NA
	03/22/05	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000071	<0.00005	<0.00005	NA	NA	NA
	02/16/06	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NA	NA	NA
	05/11/07	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.001	<0.001	NA
	02/29/08	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	09/19/13	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
MW - 15	11/06/02	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NA	NA	NA
	09/24/04	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NA	NA	NA
	02/16/06	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.0033	<0.00005	<0.00005	NA	NA	NA
	05/11/07	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA
	02/29/08	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	09/19/13	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
	09/19/13	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
TMW - 1	02/16/06	0.00146	0.00147	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00221	<0.00005	<0.00005	0.00818	<0.00005	0.0886	0.0149	0.000788	NA	NA	NA
	05/11/07	<0.002	<0.002	<0.004	<0.002	<0.003	<0.002	<0.006	NA	<0.002	<0.001	<0.002	0.008	<0.003	0.062	<0.002	<0.002	0.197	<0.002	NA
	02/29/08	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	NA	<0.025	<0.025	<0.025	<0.025	<0.025	0.069	<0.025	<0.025	0.04	<0.025	0.042
	09/19/13	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled
NMWQCC Standards		NE	NE	NE	NE	0.0007	NE	NE	NE	NE	NE	NE	NE	NE	0.03	NE	NE	NE	NE	NE

PAHs - Polycyclic Aromatic Hydrocarbons

NMWQCC - New Mexico Water Quality Control Commission

NE - Standards for these constituents has not been established by the NMWQCC

APPENDIX C

Laboratory Data Sheets

Analytical Report 458145

for

PLAINS ALL AMERICAN EH&S

Project Manager: Wesley Ty Burrow

Livingstone Ridge

7008

01-MAR-13

Collected By: Client



12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD (L10-135)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Lakeland: Florida (E84098)

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

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

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

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

Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)



01-MAR-13

Project Manager: **Wesley Ty Burrow**
PLAINS ALL AMERICAN EH&S
1301 S. COUNTY ROAD 1150
Midland, TX 79706

Reference: XENCO Report No(s): **458145**
Livingstone Ridge
Project Address: Texas

Wesley Ty Burrow:

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) 458145. 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. 458145 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,

Nicholas Straccione
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 - Odessa - San Antonio - Tampa - Lakeland - Atlanta - Phoenix - Oklahoma - Latin America



Sample Cross Reference 458145



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingstone Ridge

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-8	W	02-21-13 11:30	N/A	458145-001
MW-2	W	02-21-13 12:15	N/A	458145-002
MW-6	W	02-22-13 11:50	N/A	458145-003
MW-9	W	02-22-13 11:30	N/A	458145-004
MW-7	W	02-22-13 12:00	N/A	458145-005
MW-10	W	02-22-13 12:20	N/A	458145-006
MW-12	W	02-22-13 12:15	N/A	458145-007
MW-13	W	02-22-13 12:30	N/A	458145-008
MW-11	W	02-22-13 12:45	N/A	458145-009
MW-15	W	02-22-13 13:50	N/A	458145-010
MW-14	W	02-22-13 13:20	N/A	458145-011



CASE NARRATIVE

Client Name: PLAINS ALL AMERICAN EH&S

Project Name: Livingstone Ridge



Project ID: 7008
Work Order Number(s): 458145

Report Date: 01-MAR-13
Date Received: 02/22/2013

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 458145

PLAINS ALL AMERICAN EH&S, Midland, TX



Project Id: 7008

Contact: Wesley Ty Burrow

Project Name: Livingstone Ridge

Date Received in Lab: Fri Feb-22-13 04:12 pm

Report Date: 01-MAR-13

Project Location: Texas

Project Manager: Nicholas Straccione

<i>Analysis Requested</i>	<i>Lab Id:</i>	458145-001	458145-002	458145-003	458145-004	458145-005	458145-006
	<i>Field Id:</i>	MW-8	MW-2	MW-6	MW-9	MW-7	MW-10
	<i>Depth:</i>	N/A	N/A	N/A	N/A	N/A	N/A
	<i>Matrix:</i>	WATER	WATER	WATER	WATER	WATER	WATER
	<i>Sampled:</i>	Feb-21-13 11:30	Feb-21-13 12:15	Feb-22-13 11:50	Feb-22-13 11:30	Feb-22-13 12:00	Feb-22-13 12:20
BTEX by EPA 8021B	<i>Extracted:</i>	Feb-27-13 09:20	Feb-27-13 09:20	Feb-27-13 09:20	Feb-27-13 09:20	Feb-27-13 09:20	Feb-27-13 09:20
	<i>Analyzed:</i>	Feb-27-13 10:46	Feb-27-13 12:08	Feb-27-13 14:19	Feb-27-13 12:41	Feb-27-13 12:57	Feb-27-13 13:13
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Benzene		ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100
Toluene		ND 0.00200	ND 0.00200	ND 0.00200	ND 0.00200	ND 0.00200	ND 0.00200
Ethylbenzene		ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100
m_p-Xylenes		ND 0.00200	ND 0.00200	ND 0.00200	ND 0.00200	ND 0.00200	ND 0.00200
o-Xylene		ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100
Total Xylenes		ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100
Total BTEX		ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	ND 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.

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Nicholas Straccione
Project Manager

Certificate of Analysis Summary 458145

PLAINS ALL AMERICAN EH&S, Midland, TX



Project Id: 7008

Contact: Wesley Ty Burrow

Project Name: Livingstone Ridge

Date Received in Lab: Fri Feb-22-13 04:12 pm

Report Date: 01-MAR-13

Project Location: Texas

Project Manager: Nicholas Straccione

<i>Analysis Requested</i>	<i>Lab Id:</i>	458145-007	458145-008	458145-009	458145-010	458145-011	
	<i>Field Id:</i>	MW-12	MW-13	MW-11	MW-15	MW-14	
	<i>Depth:</i>	N/A	N/A	N/A	N/A	N/A	
	<i>Matrix:</i>	WATER	WATER	WATER	WATER	WATER	
	<i>Sampled:</i>	Feb-22-13 12:15	Feb-22-13 12:30	Feb-22-13 12:45	Feb-22-13 13:50	Feb-22-13 13:20	
BTEX by EPA 8021B	<i>Extracted:</i>	Feb-27-13 09:20	Feb-27-13 09:20	Feb-27-13 09:20	Feb-27-13 09:20	Feb-27-13 09:20	
	<i>Analyzed:</i>	Feb-27-13 13:30	Feb-27-13 14:35	Feb-27-13 14:52	Feb-27-13 15:08	Feb-27-13 15:25	
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	
Benzene		ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	
Toluene		ND 0.00200	ND 0.00200	ND 0.00200	ND 0.00200	ND 0.00200	
Ethylbenzene		ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	
m_p-Xylenes		ND 0.00200	ND 0.00200	ND 0.00200	ND 0.00200	ND 0.00200	
o-Xylene		ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	
Total Xylenes		ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	
Total BTEX		ND 0.00100	ND 0.00100	ND 0.00100	ND 0.00100	ND 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.

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Nicholas Straccione
Project Manager

Flagging Criteria

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

* Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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(813) 620-2000	(813) 620-2033
(432) 563-1800	(432) 563-1713
(770) 449-8800	(770) 449-5477
(602) 437-0330	

Form 2 - Surrogate Recoveries

Project Name: Livingstone Ridge

Work Orders : 458145, 458145

Project ID: 7008

Lab Batch #: 907860

Sample: 458145-001 / SMP

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 02/27/13 10:46	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0264	0.0300	88	80-120
4-Bromofluorobenzene		0.0270	0.0300	90	80-120

Lab Batch #: 907860

Sample: 458145-002 / SMP

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 02/27/13 12:08	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0261	0.0300	87	80-120
4-Bromofluorobenzene		0.0292	0.0300	97	80-120

Lab Batch #: 907860

Sample: 458145-004 / SMP

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 02/27/13 12:41	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0274	0.0300	91	80-120
4-Bromofluorobenzene		0.0260	0.0300	87	80-120

Lab Batch #: 907860

Sample: 458145-005 / SMP

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 02/27/13 12:57	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0290	0.0300	97	80-120
4-Bromofluorobenzene		0.0284	0.0300	95	80-120

Lab Batch #: 907860

Sample: 458145-006 / SMP

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 02/27/13 13:13	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0264	0.0300	88	80-120
4-Bromofluorobenzene		0.0275	0.0300	92	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: Livingstone Ridge

Work Orders : 458145, 458145

Project ID: 7008

Lab Batch #: 907860

Sample: 458145-007 / SMP

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 02/27/13 13:30	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0273	0.0300	91	80-120
4-Bromofluorobenzene		0.0313	0.0300	104	80-120

Lab Batch #: 907860

Sample: 458145-003 / SMP

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 02/27/13 14:19	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0288	0.0300	96	80-120
4-Bromofluorobenzene		0.0290	0.0300	97	80-120

Lab Batch #: 907860

Sample: 458145-008 / SMP

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 02/27/13 14:35	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0259	0.0300	86	80-120
4-Bromofluorobenzene		0.0317	0.0300	106	80-120

Lab Batch #: 907860

Sample: 458145-009 / SMP

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 02/27/13 14:52	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0277	0.0300	92	80-120
4-Bromofluorobenzene		0.0315	0.0300	105	80-120

Lab Batch #: 907860

Sample: 458145-010 / SMP

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 02/27/13 15:08	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0304	0.0300	101	80-120
4-Bromofluorobenzene		0.0304	0.0300	101	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: Livingstone Ridge

Work Orders : 458145, 458145

Project ID: 7008

Lab Batch #: 907860

Sample: 458145-011 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/27/13 15:25

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0263	0.0300	88	80-120	
4-Bromofluorobenzene	0.0308	0.0300	103	80-120	

Lab Batch #: 907860

Sample: 634362-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/27/13 10:30

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0313	0.0300	104	80-120	
4-Bromofluorobenzene	0.0262	0.0300	87	80-120	

Lab Batch #: 907860

Sample: 634362-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/27/13 09:57

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0293	0.0300	98	80-120	
4-Bromofluorobenzene	0.0309	0.0300	103	80-120	

Lab Batch #: 907860

Sample: 634362-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/27/13 10:13

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0284	0.0300	95	80-120	
4-Bromofluorobenzene	0.0261	0.0300	87	80-120	

Lab Batch #: 907860

Sample: 458145-001 S / MS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/27/13 11:35

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0310	0.0300	103	80-120	
4-Bromofluorobenzene	0.0333	0.0300	111	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: Livingstone Ridge

Work Orders : 458145, 458145

Project ID: 7008

Lab Batch #: 907860

Sample: 458145-001 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 02/27/13 11:52

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0336	0.0300	112	80-120	
4-Bromofluorobenzene	0.0333	0.0300	111	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.

Project Name: Livingstone Ridge

Work Order #: 458145, 458145

Analyst: KEB

Date Prepared: 02/27/2013

Project ID: 7008

Date Analyzed: 02/27/2013

Lab Batch ID: 907860

Sample: 634362-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00100	0.100	0.0869	87	0.100	0.0821	82	6	70-125	25	
Toluene	<0.00200	0.100	0.0861	86	0.100	0.0821	82	5	70-125	25	
Ethylbenzene	<0.00100	0.100	0.0914	91	0.100	0.0845	85	8	71-129	25	
m_p-Xylenes	<0.00200	0.200	0.180	90	0.200	0.164	82	9	70-131	25	
o-Xylene	<0.00100	0.100	0.0886	89	0.100	0.0813	81	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: Livingstone Ridge

Work Order # : 458145

Project ID: 7008

Lab Batch ID: 907860

QC- Sample ID: 458145-001 S

Batch #: 1 Matrix: Water

Date Analyzed: 02/27/2013

Date Prepared: 02/27/2013

Analyst: KEB

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00100	0.100	0.0867	87	0.100	0.0946	95	9	70-125	25	
Toluene	<0.00200	0.100	0.0863	86	0.100	0.0872	87	1	70-125	25	
Ethylbenzene	<0.00100	0.100	0.0879	88	0.100	0.0936	94	6	71-129	25	
m_p-Xylenes	<0.00200	0.200	0.168	84	0.200	0.179	90	6	70-131	25	
o-Xylene	<0.00100	0.100	0.0856	86	0.100	0.0963	96	12	71-133	25	

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

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

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

ApplicableN = See Narrative, EQL = Estimated Quantitation Limit

Terracon
Consulting Engineers & Scientists

Office Location Midland

Project Manager Ty Burrows

Sampler's Name Michael O'Terrall

Laboratory: Xenco

Address: _____

Contact: _____

Phone: _____

PO/SO #: 2001-11005

Sampler's Signature

Michael O'Terrall

Proj. No. 7008

Project Name Livingstone Ridge

No. of Containers 40

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 L	250 ml	P/O
W-21	11:30				MW-8						
	12:15				MW-2						
2-22	11:50				MW-6						
	11:30				MW-9						
	12:00				MW-7						
	12:20				MW-10						
	12:15				MW-12						
	12:30				MW-13						
	12:45				MW-11						
	1:50				M-W-15						

ANALYSIS REQUESTED

BT EX
TPH

Lab use only

Due Date: _____

Temp. of coolers when received (C°): 6.0

1 2 3 4 5

Page 1 of 2

458145

Lab Sample ID (Lab Use Only)

Turn around time ☒ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush

Relinquished by (Signature) <u>Michael O'Terrall</u>	Date: <u>2-22-13</u> Time: <u>4:11</u>	Received by: (Signature) <u>Maureen</u>	Date: <u>2/22/13</u> Time: <u>4:12</u>
Relinquished by (Signature)	Date: Time:	Received by: (Signature)	Date: Time:
Relinquished by (Signature)	Date: Time:	Received by: (Signature)	Date: Time:
Relinquished by (Signature)	Date: Time:	Received by: (Signature)	Date: Time:

NOTES: Email results to btburrows@terracon.com
Standard TAT
6.0

Matrix Container WW - Wastewater VOA - 40 ml vial W - Water A/G - Amber / Or Glass 1 Liter S - Soil SD - Solid L - Liquid A - Air Bag 250 ml - Glass wide mouth C - Charcoal tube P/O - Plastic or other SL - sludge O - Oil

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 24 Smith Rd., # 261 Midland, Texas 79705 (432) 684-9600 Fax (432) 684-9608
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Final 1.001



Prelogin/Nonconformance Report- Sample Log-In

Client: PLAINS ALL AMERICAN EH&S

Date/ Time Received: 02/22/2013 04:12:00 PM

Work Order #: 458145

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

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 Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Sample instructions complete on Chain of Custody?	Yes
#9 Any missing/extra samples?	No
#10 Chain of Custody signed when relinquished/ received?	Yes
#11 Chain of Custody agrees with sample label(s)?	Yes
#12 Container label(s) legible and intact?	Yes
#13 Sample matrix/ properties agree with Chain of Custody?	Yes
#14 Samples in proper container/ bottle?	Yes
#15 Samples properly preserved?	Yes
#16 Sample container(s) intact?	Yes
#17 Sufficient sample amount for indicated test(s)?	Yes
#18 All samples received within hold time?	Yes
#19 Subcontract of sample(s)?	Yes
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	Yes
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	Yes
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	Yes

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

Analyst:	PH Device/Lot#:
----------	-----------------

Checklist completed by: _____

Date: _____

Checklist reviewed by: _____

Date: _____

Analytical Report 463846

for

PLAINS ALL AMERICAN EH&S

Project Manager: Dale Moxley

Livingston Ridge-Sims

A 413 7008

05-JUN-13

Collected By: Client



12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD (L10-135)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Lakeland: Florida (E84098)

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

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

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

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

Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

05-JUN-13

Project Manager: **Dale Moxley**
PLAINS ALL AMERICAN EH&S
1301 S. COUNTY ROAD 1150
Midland, TX 79706

Reference: XENCO Report No(s): **463846**
Livingston Ridge-Sims
Project Address: Midland TX

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) 463846. 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. 463846 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

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Sample Cross Reference 463846



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge-Sims

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW7	W	05-24-13 09:38		463846-001
MW10	W	05-24-13 10:55		463846-002
MW13	W	05-24-13 12:04		463846-003



CASE NARRATIVE



Client Name: *PLAINS ALL AMERICAN EH&S*

Project Name: *Livingston Ridge-Sims*

Project ID: A 413 7008
Work Order Number(s): 463846

Report Date: 05-JUN-13
Date Received: 05/28/2013

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge-Sims

Sample Id: MW7

Matrix: Water

Sample Depth:

Lab Sample Id: 463846-001

Date Collected: 05.24.13 09.38

Date Received: 05.28.13 10.00

Analytical Method: **TPH By SW8015B Mod**

Prep Method: 1005

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 915388

Date Prep: 06.04.13 13.00

Prep seq: 639179

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.988	mg/L	06.04.13 22:44	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.988	mg/L	06.04.13 22:44	U	1
Total TPH	PHC635	ND		0.988	mg/L	06.04.13 22:44	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	91	70 - 135	%		
o-Terphenyl	99	70 - 135	%		

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

Prep Method: 5030B

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 914877

Date Prep: 05.29.13 10.30

Prep seq: 638861

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	05.29.13 14:40	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	05.29.13 14:40	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	05.29.13 14:40	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	05.29.13 14:40	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	05.29.13 14:40	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	05.29.13 14:40	U	
Total BTEX		ND		0.000500	mg/L	05.29.13 14:40	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	84	80 - 120	%		
4-Bromofluorobenzene	110	80 - 120	%		



Certificate of Analytical Results 463846



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge-Sims

Sample Id: MW10

Matrix: Water

Sample Depth:

Lab Sample Id: 463846-002

Date Collected: 05.24.13 10.55

Date Received: 05.28.13 10.00

Analytical Method: TPH By SW8015B Mod

Prep Method: 1005

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 915388

Date Prep: 06.04.13 13.00

Prep seq: 639179

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.988	mg/L	06.04.13 23:09	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.988	mg/L	06.04.13 23:09	U	1
Total TPH	PHC635	ND		0.988	mg/L	06.04.13 23:09	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	96	70 - 135	%		
o-Terphenyl	105	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 914877

Date Prep: 05.29.13 10.30

Prep seq: 638861

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	05.29.13 15:29	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	05.29.13 15:29	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	05.29.13 15:29	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	05.29.13 15:29	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	05.29.13 15:29	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	05.29.13 15:29	U	
Total BTEX		ND		0.000500	mg/L	05.29.13 15:29	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	99	80 - 120	%		
4-Bromofluorobenzene	92	80 - 120	%		

PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge-Sims

Sample Id: MW13

Matrix: Water

Sample Depth:

Lab Sample Id: 463846-003

Date Collected: 05.24.13 12.04

Date Received: 05.28.13 10.00

Analytical Method: TPH By SW8015B Mod

Prep Method: 1005

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 915388

Date Prep: 06.04.13 13.00

Prep seq: 639179

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.988	mg/L	06.04.13 23:36	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.988	mg/L	06.04.13 23:36	U	1
Total TPH	PHC635	ND		0.988	mg/L	06.04.13 23:36	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	96	70 - 135	%		
o-Terphenyl	102	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 914877

Date Prep: 05.29.13 10.30

Prep seq: 638861

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	05.30.13 07:40	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	05.30.13 07:40	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	05.30.13 07:40	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	05.30.13 07:40	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	05.30.13 07:40	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	05.30.13 07:40	U	
Total BTEX		ND		0.000500	mg/L	05.30.13 07:40	U	

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



Certificate of Analytical Results 463846



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge-Sims

Sample Id: 638861-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 638861-1-BLK

Date Collected:

Date Received:

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 914877

Date Prep: 05.29.13 10.30

Prep seq: 638861

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	05.29.13 14:08	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	05.29.13 14:08	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	05.29.13 14:08	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	05.29.13 14:08	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	05.29.13 14:08	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	109	80 - 120	%		
4-Bromofluorobenzene	94	80 - 120	%		

Sample Id: 639179-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 639179-1-BLK

Date Collected:

Date Received:

Analytical Method: TPH By SW8015B Mod

Prep Method: 1005

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 915388

Date Prep: 06.04.13 13.00

Prep seq: 639179

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.988	mg/L	06.04.13 21:01	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.988	mg/L	06.04.13 21:01	U	1
Total TPH	PHC635	ND		0.988	mg/L	06.04.13 21:01	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	99	70 - 135	%		
o-Terphenyl	109	70 - 135	%		

- 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
(770) 449-8800	(770) 449-5477
(602) 437-0330	

Form 2 - Surrogate Recoveries

Project Name: Livingston Ridge-Sims

Work Orders : 463846,

Project ID: A 413 7008

Lab Batch #: 914877

Sample: 638861-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 05/29/13 13:35		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0281	0.0300	94	80-120
4-Bromofluorobenzene		0.0274	0.0300	91	80-120

Lab Batch #: 914877

Sample: 638861-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 05/29/13 13:51		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0277	0.0300	92	80-120
4-Bromofluorobenzene		0.0274	0.0300	91	80-120

Lab Batch #: 914877

Sample: 638861-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 05/29/13 14:08		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0326	0.0300	109	80-120
4-Bromofluorobenzene		0.0283	0.0300	94	80-120

Lab Batch #: 914877

Sample: 463846-001 S / MS

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 05/29/13 14:56		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0251	0.0300	84	80-120
4-Bromofluorobenzene		0.0279	0.0300	93	80-120

Lab Batch #: 914877

Sample: 463846-001 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 05/29/13 15:13		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0269	0.0300	90	80-120
4-Bromofluorobenzene		0.0273	0.0300	91	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 Ridge-Sims

Work Orders : 463846,

Project ID: A 413 7008

Lab Batch #: 915388

Sample: 639179-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 06/04/13 20:09		SURROGATE RECOVERY STUDY			
TPH By SW8015B Mod		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		9.87	10.0	99	70-135
o-Terphenyl		5.73	5.00	115	70-135

Lab Batch #: 915388

Sample: 639179-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 06/04/13 20:35		SURROGATE RECOVERY STUDY			
TPH By SW8015B Mod		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		9.83	10.0	98	70-135
o-Terphenyl		6.39	5.00	128	70-135

Lab Batch #: 915388

Sample: 639179-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 06/04/13 21:01		SURROGATE RECOVERY STUDY			
TPH By SW8015B Mod		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		9.94	10.0	99	70-135
o-Terphenyl		5.44	5.00	109	70-135

Lab Batch #: 915388

Sample: 463936-001 S / MS

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 06/05/13 05:32		SURROGATE RECOVERY STUDY			
TPH By SW8015B Mod		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		9.58	10.0	96	70-135
o-Terphenyl		5.55	5.00	111	70-135

* 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.

Project Name: Livingston Ridge-Sims

Work Order #: 463846

Analyst: DYV

Date Prepared: 05/29/2013

Project ID: A 413 7008

Date Analyzed: 05/29/2013

Lab Batch ID: 914877

Sample: 638861-1-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	<0.00100	0.100	0.0957	96	0.100	0.0934	93	2	70-125	25	
Toluene	<0.00200	0.100	0.0958	96	0.100	0.0959	96	0	70-125	25	
Ethylbenzene	<0.00100	0.100	0.106	106	0.100	0.0957	96	10	71-129	25	
m,p-Xylenes	<0.00200	0.200	0.198	99	0.200	0.204	102	3	70-131	25	
o-Xylene	<0.00100	0.100	0.0957	96	0.100	0.0971	97	1	71-133	25	

Analyst: DYV

Date Prepared: 06/04/2013

Date Analyzed: 06/04/2013

Lab Batch ID: 915388

Sample: 639179-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015B Mod	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											
C6-C10 Gasoline Range Hydrocarbons	<1.50	100	105	105	100	106	106	1	70-135	25	
C10-C28 Diesel Range Hydrocarbons	<1.50	100	114	114	100	116	116	2	70-135	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 Recoveries



Project Name: Livingston Ridge-Sims

Work Order #: 463846

Lab Batch #: 915388

Date Analyzed: 06/05/2013

Date Prepared: 06/04/2013

Project ID: A 413 7008

Analyst: DYV

QC- Sample ID: 463936-001 S

Batch #: 1

Matrix: Water

Reporting Units: mg/L

MATRIX / MATRIX SPIKE RECOVERY STUDY

TPH by SW 8015B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
C6-C10 Gasoline Range Hydrocarbons	<1.50	100	103	103	70-135	
C10-C28 Diesel Range Hydrocarbons	<1.50	100	109	109	70-135	

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

Relative Percent Difference [E] = $200 \times (C-A)/(C+B)$

All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Form 3 - MS / MSD Recoveries



Project Name: Livingston Ridge-Sims

Work Order # : 463846

Project ID: A 413 7008

Lab Batch ID: 914877

QC- Sample ID: 463846-001 S

Batch #: 1 Matrix: Water

Date Analyzed: 05/29/2013

Date Prepared: 05/29/2013

Analyst: DYV

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00100	0.100	0.103	103	0.100	0.0937	94	9	70-125	25	
Toluene	<0.00200	0.100	0.0989	99	0.100	0.100	100	1	70-125	25	
Ethylbenzene	<0.00100	0.100	0.104	104	0.100	0.108	108	4	71-129	25	
m,p-Xylenes	<0.00200	0.200	0.198	99	0.200	0.200	100	1	70-131	25	
o-Xylene	<0.00100	0.100	0.0975	98	0.100	0.0972	97	0	71-133	25	

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

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

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

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

Terracon

Consulting Engineers & Scientists

Office Location MidlandLaboratory: XencoAddress: Odessa, Tx 79765Contact: Dale MoxleyPhone: 432-684-9600Project Manager Dale MoxleySampler's Name Hiram LopezSampler's Signature [Signature]

PO/ISO #:

ANALYSIS
REQUESTEDLab use only
Due Date:Temp. of coolers
when received (C°): 9.6

1 2 3 4 5

Page 1 of 1Proj. No. A413 7008Project Name Livingston Ridge - SimsNo/Type of Containers VOAMatrix WDate 5/24/13Time 938Identifying Marks of Sample(s) MW 7Start Depth 4End Depth 4VOA 4AG 1L 4250 ml 4P/O XLab Sample ID (Lab Use Only) 403840Matrix WDate 5/24/13Time 1055Identifying Marks of Sample(s) MW 10Start Depth 4End Depth 4VOA 4AG 1L 4250 ml 4P/O XLab Sample ID (Lab Use Only) 403840Matrix WDate 5/24/13Time 1204Identifying Marks of Sample(s) MW 13Start Depth 4End Depth 4VOA 4AG 1L 4250 ml 4P/O XLab Sample ID (Lab Use Only) 403840Turn around time ☒ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% RushRelinquished by (Signature) [Signature]Date: 5/24/13Time: 1314Received by: (Signature) [Signature]Date: 5/24/13Time: 1344Received by: (Signature) [Signature]Date: 5/24/13Time: 10:00Lab Sample ID (Lab Use Only) 403840Relinquished by (Signature) [Signature]Date: 5/24/13Time: 1314Received by: (Signature) [Signature]Date: 5/24/13Time: 1344Received by: (Signature) [Signature]Date: 5/24/13Time: 10:00Lab Sample ID (Lab Use Only) 403840Relinquished by (Signature) [Signature]Date: 5/24/13Time: 1314Received by: (Signature) [Signature]Date: 5/24/13Time: 1344Received by: (Signature) [Signature]Date: 5/24/13Time: 10:00Lab Sample ID (Lab Use Only) 403840

NOTES:

Please forward results to

Dale Moxley

jd.moxley@terracon.com

Matrix WW - WastewaterContainer VOA - 40 ml vial

W - Water

S - Soil

SD - Solid

L - Liquid

A - Air Bag

C - Charcoal tube

P/O - Plastic or other

SL - sludge

O - Oil

Houston Office
11555 Clay Road, Suite 100
Houston, Texas 77043
(713) 690-8989 Fax (713) 690-8787Dallas Office
8901 Carpenter Freeway, Suite 100
Dallas, Texas 75247
(214) 630-1010 Fax (214) 630-7070Fort Worth Office
2601 Gravel Drive
Fort Worth, Texas 76118
(817) 268-8600 Fax (817) 268-8602Austin Office
5307 Industrial Oaks Blvd. # 160
Austin, Texas 78735
(512) 442-1122 Fax (512) 442-1181Midland Office
24 Smith Rd., # 261
Midland, Texas 79705
(432) 684-9600 Fax (432) 684-9608



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: Terracon Consultants, Inc.- Midland

Date/ Time Received: 05/28/2013 10:00:00 AM

Work Order #: 463846

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	1.5
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Sample instructions complete on Chain of Custody?	Yes
#9 Any missing/extra samples?	No
#10 Chain of Custody signed when relinquished/ received?	Yes
#11 Chain of Custody agrees with sample label(s)?	Yes
#12 Container label(s) legible and intact?	Yes
#13 Sample matrix/ properties agree with Chain of Custody?	Yes
#14 Samples in proper container/ bottle?	Yes
#15 Samples properly preserved?	Yes
#16 Sample container(s) intact?	Yes
#17 Sufficient sample amount for indicated test(s)?	Yes
#18 All samples received within hold time?	Yes
#19 Subcontract of sample(s)?	Yes
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	Yes
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	Yes
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	Yes

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

Analyst:	PH Device/Lot#:
----------	-----------------

Checklist completed by:

Kelsey Brooks

Date: 05/28/2013

Checklist reviewed by:

Kelsey Brooks

Date: 05/28/2013

Analytical Report 463759

for

PLAINS ALL AMERICAN EH&S

Project Manager: Dale Moxley

Livingston Ridge-Sims

A413 7008

06-JUN-13

Collected By: Client



12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD (L10-135)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Lakeland: Florida (E84098)

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

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

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

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

Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

06-JUN-13

Project Manager: **Dale Moxley**
PLAINS ALL AMERICAN EH&S
1301 S. COUNTY ROAD 1150
Midland, TX 79706

Reference: XENCO Report No(s): **463759**
Livingston Ridge-Sims
Project Address: Midland TX

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) 463759. 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. 463759 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

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Sample Cross Reference 463759



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge-Sims

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW4	W	05-23-13 11:45		463759-001
MW5	W	05-23-13 12:55		463759-002
MW8	W	05-23-13 15:10		463759-003



CASE NARRATIVE



Client Name: *PLAINS ALL AMERICAN EH&S*

Project Name: *Livingston Ridge-Sims*

Project ID: A413 7008
Work Order Number(s): 463759

Report Date: 06-JUN-13
Date Received: 05/24/2013

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None



Certificate of Analytical Results 463759



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge-Sims

Sample Id: MW4

Matrix: Water

Sample Depth:

Lab Sample Id: 463759-001

Date Collected: 05.23.13 11.45

Date Received: 05.24.13 10.25

Analytical Method: TPH By SW8015B Mod

Prep Method: 1005

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 915388

Date Prep: 06.04.13 13.00

Prep seq: 639179

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.988	mg/L	06.04.13 21:27	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.988	mg/L	06.04.13 21:27	U	1
Total TPH	PHC635	ND		0.988	mg/L	06.04.13 21:27	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	98	70 - 135	%		
o-Terphenyl	105	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 915499

Date Prep: 06.06.13 14.50

Prep seq: 639246

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	0.0347	0.00100	0.000500	mg/L	06.06.13 17:07		1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	06.06.13 17:07	U	1
Ethylbenzene	100-41-4	0.0162	0.00100	0.000700	mg/L	06.06.13 17:07		1
m,p-Xylenes	179601-23-1	0.00622	0.00200	0.00140	mg/L	06.06.13 17:07		1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	06.06.13 17:07	U	1
Total Xylenes	1330-20-7	0.00622		0.000700	mg/L	06.06.13 17:07		
Total BTEX		0.0571		0.000500	mg/L	06.06.13 17:07		

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



Certificate of Analytical Results 463759



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge-Sims

Sample Id: MW5

Matrix: Water

Sample Depth:

Lab Sample Id: 463759-002

Date Collected: 05.23.13 12.55

Date Received: 05.24.13 10.25

Analytical Method: TPH By SW8015B Mod

Prep Method: 1005

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 915388

Date Prep: 06.04.13 13.00

Prep seq: 639179

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	2.01	1.50	0.988	mg/L	06.04.13 21:53		1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	2.96	1.50	0.988	mg/L	06.04.13 21:53		1
Total TPH	PHC635	4.97		0.988	mg/L	06.04.13 21:53		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	97	70 - 135	%		
o-Terphenyl	105	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 915499

Date Prep: 06.06.13 14.50

Prep seq: 639246

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	0.0833	0.00100	0.000500	mg/L	06.06.13 16:03		1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	06.06.13 16:03	U	1
Ethylbenzene	100-41-4	0.140	0.00100	0.000700	mg/L	06.06.13 16:03		1
m,p-Xylenes	179601-23-1	0.0562	0.00200	0.00140	mg/L	06.06.13 16:03		1
o-Xylene	95-47-6	0.0118	0.00100	0.000700	mg/L	06.06.13 16:03		1
Total Xylenes	1330-20-7	0.0680		0.000700	mg/L	06.06.13 16:03		
Total BTEX		0.291		0.000500	mg/L	06.06.13 16:03		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	81	80 - 120	%		
4-Bromofluorobenzene	99	80 - 120	%		



Certificate of Analytical Results 463759



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge-Sims

Sample Id: **MW8**

Matrix: Water

Sample Depth:

Lab Sample Id: 463759-003

Date Collected: 05.23.13 15.10

Date Received: 05.24.13 10.25

Analytical Method: TPH By SW8015B Mod

Prep Method: 1005

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 915388

Date Prep: 06.04.13 13.00

Prep seq: 639179

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.988	mg/L	06.04.13 22:19	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.988	mg/L	06.04.13 22:19	U	1
Total TPH	PHC635	ND		0.988	mg/L	06.04.13 22:19	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	95	70 - 135	%		
o-Terphenyl	103	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 914669

Date Prep: 05.24.13 16.30

Prep seq: 638730

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	05.24.13 23:31	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	05.24.13 23:31	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	05.24.13 23:31	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	05.24.13 23:31	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	05.24.13 23:31	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	05.24.13 23:31	U	
Total BTEX		ND		0.000500	mg/L	05.24.13 23:31	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	93	80 - 120	%		
4-Bromofluorobenzene	95	80 - 120	%		



Certificate of Analytical Results 463759



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge-Sims

Sample Id: 638730-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 638730-1-BLK

Date Collected:

Date Received:

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 914669

Date Prep: 05.24.13 16.30

Prep seq: 638730

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	05.24.13 20:48	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	05.24.13 20:48	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	05.24.13 20:48	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	05.24.13 20:48	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	05.24.13 20:48	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	109	80 - 120	%		
4-Bromofluorobenzene	91	80 - 120	%		

Sample Id: 639179-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 639179-1-BLK

Date Collected:

Date Received:

Analytical Method: TPH By SW8015B Mod

Prep Method: 1005

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 915388

Date Prep: 06.04.13 13.00

Prep seq: 639179

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.988	mg/L	06.04.13 21:01	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.988	mg/L	06.04.13 21:01	U	1
Total TPH	PHC635	ND		0.988	mg/L	06.04.13 21:01	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	99	70 - 135	%		
o-Terphenyl	109	70 - 135	%		



Certificate of Analytical Results 463759



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge-Sims

Sample Id: 639246-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 639246-1-BLK

Date Collected:

Date Received:

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 915499

Date Prep: 06.05.13 15.00

Prep seq: 639246

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	06.05.13 16:57	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	06.05.13 16:57	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	06.05.13 16:57	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	06.05.13 16:57	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	06.05.13 16:57	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	110	80 - 120	%		
4-Bromofluorobenzene	83	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 **SQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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 12600 West I-20 East, Odessa, TX 79765
 6017 Financial Drive, Norcross, GA 30071
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(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(432) 563-1800	(432) 563-1713
(770) 449-8800	(770) 449-5477
(602) 437-0330	

Form 2 - Surrogate Recoveries

Project Name: Livingston Ridge-Sims

Work Orders : 463759,

Project ID: A413 7008

Lab Batch #: 914669

Sample: 638730-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 05/24/13 20:15	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0311	0.0300	104	80-120
4-Bromofluorobenzene		0.0309	0.0300	103	80-120

Lab Batch #: 914669

Sample: 638730-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 05/24/13 20:31	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0321	0.0300	107	80-120
4-Bromofluorobenzene		0.0338	0.0300	113	80-120

Lab Batch #: 914669

Sample: 638730-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 05/24/13 20:48	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0328	0.0300	109	80-120
4-Bromofluorobenzene		0.0274	0.0300	91	80-120

Lab Batch #: 914669

Sample: 463548-001 S / MS

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 05/24/13 21:37	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0347	0.0300	116	80-120
4-Bromofluorobenzene		0.0304	0.0300	101	80-120

Lab Batch #: 914669

Sample: 463548-001 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 05/24/13 21:53	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0277	0.0300	92	80-120
4-Bromofluorobenzene		0.0309	0.0300	103	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 Ridge-Sims

Work Orders : 463759,

Project ID: A413 7008

Lab Batch #: 915499

Sample: 639246-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 06/05/13 16:09	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0286	0.0300	95	80-120
4-Bromofluorobenzene		0.0342	0.0300	114	80-120

Lab Batch #: 915499

Sample: 639246-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 06/05/13 16:25	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0277	0.0300	92	80-120
4-Bromofluorobenzene		0.0322	0.0300	107	80-120

Lab Batch #: 915499

Sample: 639246-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 06/05/13 16:57	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		0.0249	0.0300	83	80-120

Lab Batch #: 915499

Sample: 464202-007 S / MS

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 06/05/13 19:54	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0319	0.0300	106	80-120
4-Bromofluorobenzene		0.0318	0.0300	106	80-120

Lab Batch #: 915499

Sample: 464202-007 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 06/05/13 20:10	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0311	0.0300	104	80-120
4-Bromofluorobenzene		0.0304	0.0300	101	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 Ridge-Sims

Work Orders : 463759,

Project ID: A413 7008

Lab Batch #: 915388

Sample: 639179-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 06/04/13 20:09

SURROGATE RECOVERY STUDY

TPH By SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	9.87	10.0	99	70-135	
o-Terphenyl	5.73	5.00	115	70-135	

Lab Batch #: 915388

Sample: 639179-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 06/04/13 20:35

SURROGATE RECOVERY STUDY

TPH By SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	9.83	10.0	98	70-135	
o-Terphenyl	6.39	5.00	128	70-135	

Lab Batch #: 915388

Sample: 639179-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 06/04/13 21:01

SURROGATE RECOVERY STUDY

TPH By SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	9.94	10.0	99	70-135	
o-Terphenyl	5.44	5.00	109	70-135	

Lab Batch #: 915388

Sample: 463936-001 S / MS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 06/05/13 05:32

SURROGATE RECOVERY STUDY

TPH By SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	9.58	10.0	96	70-135	
o-Terphenyl	5.55	5.00	111	70-135	

* 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.

Project Name: Livingston Ridge-Sims

Work Order #: 463759

Analyst: DYV

Date Prepared: 05/24/2013

Project ID: A413 7008

Date Analyzed: 05/24/2013

Lab Batch ID: 914669

Sample: 638730-1-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	<0.00100	0.100	0.101	101	0.100	0.106	106	5	70-125	25	
Toluene	<0.00200	0.100	0.109	109	0.100	0.116	116	6	70-125	25	
Ethylbenzene	<0.00100	0.100	0.114	114	0.100	0.116	116	2	71-129	25	
m,p-Xylenes	<0.00200	0.200	0.216	108	0.200	0.232	116	7	70-131	25	
o-Xylene	<0.00100	0.100	0.113	113	0.100	0.111	111	2	71-133	25	

Analyst: KEB

Date Prepared: 06/05/2013

Date Analyzed: 06/05/2013

Lab Batch ID: 915499

Sample: 639246-1-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	<0.00100	0.100	0.105	105	0.100	0.103	103	2	70-125	25	
Toluene	<0.00200	0.100	0.0945	95	0.100	0.0911	91	4	70-125	25	
Ethylbenzene	<0.00100	0.100	0.0914	91	0.100	0.0875	88	4	71-129	25	
m,p-Xylenes	<0.00200	0.200	0.179	90	0.200	0.171	86	5	70-131	25	
o-Xylene	<0.00100	0.100	0.0933	93	0.100	0.0895	90	4	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

Project Name: Livingston Ridge-Sims

Work Order #: 463759

Analyst: DYV

Date Prepared: 06/04/2013

Project ID: A413 7008

Date Analyzed: 06/04/2013

Lab Batch ID: 915388

Sample: 639179-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015B Mod	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											
C6-C10 Gasoline Range Hydrocarbons	<1.50	100	105	105	100	106	106	1	70-135	25	
C10-C28 Diesel Range Hydrocarbons	<1.50	100	114	114	100	116	116	2	70-135	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 Recoveries



Project Name: Livingston Ridge-Sims

Work Order #: 463759

Lab Batch #: 915388

Date Analyzed: 06/05/2013

Date Prepared: 06/04/2013

Project ID: A413 7008

Analyst: DYV

QC- Sample ID: 463936-001 S

Batch #: 1

Matrix: Water

Reporting Units: mg/L

MATRIX / MATRIX SPIKE RECOVERY STUDY

TPH by SW 8015B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
C6-C10 Gasoline Range Hydrocarbons	<1.50	100	103	103	70-135	
C10-C28 Diesel Range Hydrocarbons	<1.50	100	109	109	70-135	

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

Relative Percent Difference [E] = $200 \times (C-A)/(C+B)$

All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Form 3 - MS / MSD Recoveries



Project Name: Livingston Ridge-Sims

Work Order # : 463759

Project ID: A413 7008

Lab Batch ID: 914669

QC- Sample ID: 463548-001 S

Batch #: 1 Matrix: Water

Date Analyzed: 05/24/2013

Date Prepared: 05/24/2013

Analyst: DYV

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00100	0.100	0.114	114	0.100	0.0930	93	20	70-125	25	
Toluene	<0.00200	0.100	0.108	108	0.100	0.104	104	4	70-125	25	
Ethylbenzene	<0.00100	0.100	0.116	116	0.100	0.108	108	7	71-129	25	
m,p-Xylenes	<0.00200	0.200	0.226	113	0.200	0.193	97	16	70-131	25	
o-Xylene	<0.00100	0.100	0.113	113	0.100	0.0961	96	16	71-133	25	

Lab Batch ID: 915499

QC- Sample ID: 464202-007 S

Batch #: 1 Matrix: Water

Date Analyzed: 06/05/2013

Date Prepared: 06/05/2013

Analyst: KEB

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	0.00272	0.100	0.112	109	0.100	0.104	101	7	70-125	25	
Toluene	<0.00200	0.100	0.0928	93	0.100	0.0880	88	5	70-125	25	
Ethylbenzene	0.00360	0.100	0.0887	85	0.100	0.0858	82	3	71-129	25	
m,p-Xylenes	0.00313	0.200	0.167	82	0.200	0.163	80	2	70-131	25	
o-Xylene	0.00165	0.100	0.0859	84	0.100	0.0829	81	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.

Terracon

Consulting Engineers & Scientists

Office Location MidlandProject Manager Dale MorleySampler's Name Hiram LoyaSampler's Signature [Signature]Laboratory: XenocoAddress: Odessa, TXContact: Dale MorleyPhone: 432-684-9600

PO/SO #: _____

ANALYSIS
REQUESTEDLab use only
Due Date: _____Temp. of coolers
when received (C°):

1 2 3 4 5

Page _____ of _____

Proj. No. A413 7008Project Name Livingston Ridge-Sims

No/Type of Containers

Matrix	Date	Time	C o m p	G r a b	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	AG 1L	250 ml	P/O
W	5/23/13	1145			MW4			4			
W	5/23/13	1255			MW5			4			
W	5/23/13	1510			MW8			4			

Lab Sample ID (Lab Use Only)

403759

16.4°C

Turn around time ☒ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush

Relinquished by (Signature) [Signature]Date: 5/23/13 Time: 1034Received by (Signature) [Signature]Date: 5/23/13 Time: 1635Relinquished by (Signature) [Signature]

Date: _____ Time: _____

Received by (Signature) _____

Date: _____ Time: _____

Relinquished by (Signature) _____

Date: _____ Time: _____

Received by (Signature) _____

Date: _____ Time: _____

Relinquished by (Signature) _____

Date: _____ Time: _____

Received by (Signature) [Signature]Date: 5/24/13 Time: 10:25

NOTES:

Please forward Results to 1.5
Dale Morley
jdmorley@terracon.com

Matrix WW - Wastewater W - Water S - Soil SD - Solid L - Liquid A - Air Bag
 Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other SL - sludge O - Oil

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
24 Smith Rd., # 261
Midland, Texas 79705
(432) 684-9600 Fax (432) 684-9608



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: Terracon Consultants, Inc.- Midland

Date/ Time Received: 05/24/2013 10:25:00 AM

Work Order #: 463759

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	1.5
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Sample instructions complete on Chain of Custody?	Yes
#9 Any missing/extra samples?	No
#10 Chain of Custody signed when relinquished/ received?	Yes
#11 Chain of Custody agrees with sample label(s)?	Yes
#12 Container label(s) legible and intact?	Yes
#13 Sample matrix/ properties agree with Chain of Custody?	Yes
#14 Samples in proper container/ bottle?	Yes
#15 Samples properly preserved?	Yes
#16 Sample container(s) intact?	Yes
#17 Sufficient sample amount for indicated test(s)?	Yes
#18 All samples received within hold time?	Yes
#19 Subcontract of sample(s)?	Yes
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	Yes
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	Yes
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	Yes

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

Analyst:	PH Device/Lot#:
----------	-----------------

Checklist completed by:

Kelsey Brooks
Kelsey Brooks

Date: 05/24/2013

Checklist reviewed by:

Kelsey Brooks
Kelsey Brooks

Date: 05/24/2013

Analytical Report 466147

for

PLAINS ALL AMERICAN EH&S

Project Manager: Dale Moxley

Livingston ridge A413 7008

PLAINS-Terracon

09-JUL-13

Collected By: Client



12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD (L10-135)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Lakeland: Florida (E84098)

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

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

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

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

Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

09-JUL-13

Project Manager: **Dale Moxley**
PLAINS ALL AMERICAN EH&S
1301 S. COUNTY ROAD 1150
Midland, TX 79706

Reference: XENCO Report No(s): **466147**
Livington ridge A413 7008
Project Address: NM

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) 466147. 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. 466147 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 - Odessa - San Antonio - Tampa - Lakeland - Atlanta - Phoenix - Oklahoma - Latin America



Sample Cross Reference 466147



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston ridge A413 7008

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW1	W	07-01-13 16:57		466147-001
MW2	W	07-01-13 18:09		466147-002
MW6	W	07-01-13 17:24		466147-003



CASE NARRATIVE



Client Name: *PLAINS ALL AMERICAN EH&S*

Project Name: *Livingston ridge A413 7008*

Project ID: *PLAINS-Terracon*
Work Order Number(s): *466147*

Report Date: *09-JUL-13*
Date Received: *07/02/2013*

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 466147



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston ridge A413 7008

Sample Id: MW1

Matrix: Water

Sample Depth:

Lab Sample Id: 466147-001

Date Collected: 07.01.13 16.57

Date Received: 07.02.13 17.11

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 917958

Date Prep: 07.08.13 11.30

Prep seq: 640757

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	3.03	1.50	0.988	mg/L	07.08.13 16:16		1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	5.28	1.50	0.988	mg/L	07.08.13 16:16		1
Total TPH	PHC635	8.31		0.988	mg/L	07.08.13 16:16		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	107	70 - 135	%		
o-Terphenyl	126	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 917965

Date Prep: 07.08.13 08.30

Prep seq: 640753

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	0.578	0.00500	0.00250	mg/L	07.09.13 14:44		5
Toluene	108-88-3	0.0203	0.0100	0.00500	mg/L	07.09.13 14:44		5
Ethylbenzene	100-41-4	0.386	0.00500	0.00350	mg/L	07.09.13 14:44		5
m,p-Xylenes	179601-23-1	0.201	0.0100	0.00700	mg/L	07.09.13 14:44		5
o-Xylene	95-47-6	0.00730	0.00500	0.00350	mg/L	07.09.13 14:44		5
MTBE	1634-04-4	0.0498	0.0250	0.0100	mg/L	07.09.13 14:44		5

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	98	80 - 120	%		
4-Bromofluorobenzene	112	80 - 120	%		

PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston ridge A413 7008

Sample Id: MW2

Matrix: Water

Sample Depth:

Lab Sample Id: 466147-002

Date Collected: 07.01.13 18.09

Date Received: 07.02.13 17.11

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 917958

Date Prep: 07.08.13 11.30

Prep seq: 640757

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.988	mg/L	07.08.13 16:43	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.988	mg/L	07.08.13 16:43	U	1
Total TPH	PHC635	ND		0.988	mg/L	07.08.13 16:43	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	94	70 - 135	%		
o-Terphenyl	112	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 917965

Date Prep: 07.08.13 08.30

Prep seq: 640753

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	07.08.13 16:26	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	07.08.13 16:26	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	07.08.13 16:26	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	07.08.13 16:26	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	07.08.13 16:26	U	1
MTBE	1634-04-4	ND	0.00500	0.00200	mg/L	07.08.13 16:26	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	112	80 - 120	%		
4-Bromofluorobenzene	82	80 - 120	%		



Certificate of Analytical Results 466147



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston ridge A413 7008

Sample Id: MW6

Matrix: Water

Sample Depth:

Lab Sample Id: 466147-003

Date Collected: 07.01.13 17.24

Date Received: 07.02.13 17.11

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 917958

Date Prep: 07.08.13 11.30

Prep seq: 640757

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.988	mg/L	07.08.13 17:09	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.988	mg/L	07.08.13 17:09	U	1
Total TPH	PHC635	ND		0.988	mg/L	07.08.13 17:09	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	90	70 - 135	%		
o-Terphenyl	106	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 917965

Date Prep: 07.08.13 08.30

Prep seq: 640753

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	07.08.13 14:10	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	07.08.13 14:10	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	07.08.13 14:10	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	07.08.13 14:10	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	07.08.13 14:10	U	1
MTBE	1634-04-4	ND	0.00500	0.00200	mg/L	07.08.13 14:10	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	117	80 - 120	%		
4-Bromofluorobenzene	89	80 - 120	%		



Certificate of Analytical Results 466147



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston ridge A413 7008

Sample Id: 640753-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 640753-1-BLK

Date Collected:

Date Received:

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 917965

Date Prep: 07.08.13 08.30

Prep seq: 640753

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	07.08.13 11:29	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	07.08.13 11:29	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	07.08.13 11:29	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	07.08.13 11:29	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	07.08.13 11:29	U	1
MTBE	1634-04-4	ND	0.00500	0.00200	mg/L	07.08.13 11:29	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	117	80 - 120	%		
4-Bromofluorobenzene	85	80 - 120	%		

Sample Id: 640757-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 640757-1-BLK

Date Collected:

Date Received:

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: DYV

% Moist:

Tech: DYV

Seq Number: 917958

Date Prep: 07.08.13 11.30

Prep seq: 640757

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.988	mg/L	07.08.13 15:23	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.988	mg/L	07.08.13 15:23	U	1
Total TPH	PHC635	ND		0.988	mg/L	07.08.13 15:23	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	89	70 - 135	%		
o-Terphenyl	107	70 - 135	%		

- 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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(813) 620-2000	(813) 620-2033
(432) 563-1800	(432) 563-1713
(770) 449-8800	(770) 449-5477
(602) 437-0330	

Form 2 - Surrogate Recoveries

Project Name: Livingston ridge A413 7008

Work Orders : 466147,

Project ID: PLAINS-Terracon

Lab Batch #: 917965

Sample: 640753-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 07/08/13 10:41	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0341	0.0300	114	80-120
4-Bromofluorobenzene		0.0243	0.0300	81	80-120

Lab Batch #: 917965

Sample: 640753-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 07/08/13 10:57	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0351	0.0300	117	80-120
4-Bromofluorobenzene		0.0254	0.0300	85	80-120

Lab Batch #: 917965

Sample: 640753-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 07/08/13 11:29	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0352	0.0300	117	80-120
4-Bromofluorobenzene		0.0256	0.0300	85	80-120

Lab Batch #: 917965

Sample: 466188-015 S / MS

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 07/08/13 14:26	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0350	0.0300	117	80-120
4-Bromofluorobenzene		0.0262	0.0300	87	80-120

Lab Batch #: 917965

Sample: 466188-015 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 07/08/13 14:42	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0326	0.0300	109	80-120
4-Bromofluorobenzene		0.0245	0.0300	82	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 ridge A413 7008

Work Orders : 466147,

Project ID: PLAINS-Terracon

Lab Batch #: 917958

Sample: 640757-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 07/08/13 14:30		SURROGATE RECOVERY STUDY			
TPH by SW 8015B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		9.27	10.0	93	70-135
o-Terphenyl		6.26	5.00	125	70-135

Lab Batch #: 917958

Sample: 640757-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 07/08/13 14:56		SURROGATE RECOVERY STUDY			
TPH by SW 8015B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		9.29	10.0	93	70-135
o-Terphenyl		6.19	5.00	124	70-135

Lab Batch #: 917958

Sample: 640757-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 07/08/13 15:23		SURROGATE RECOVERY STUDY			
TPH by SW 8015B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		8.90	10.0	89	70-135
o-Terphenyl		5.35	5.00	107	70-135

Lab Batch #: 917958

Sample: 466148-001 S / MS

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 07/08/13 18:28		SURROGATE RECOVERY STUDY			
TPH by SW 8015B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		9.14	10.0	91	70-135
o-Terphenyl		5.41	5.00	108	70-135

* 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.

Project Name: Livingston ridge A413 7008

Work Order #: 466147

Analyst: DYV

Date Prepared: 07/08/2013

Project ID: PLAINS-Terracon

Date Analyzed: 07/08/2013

Lab Batch ID: 917965

Sample: 640753-1-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	<0.000500	0.100	0.117	117	0.100	0.119	119	2	70-125	25	
Toluene	<0.00100	0.100	0.0916	92	0.100	0.0951	95	4	70-125	25	
Ethylbenzene	<0.000700	0.100	0.0804	80	0.100	0.0847	85	5	71-129	25	
m,p-Xylenes	<0.00140	0.200	0.160	80	0.200	0.170	85	6	70-131	25	
o-Xylene	<0.000700	0.100	0.0813	81	0.100	0.0864	86	6	71-133	25	
MTBE	<0.00200	0.500	0.480	96	0.500	0.508	102	6	71-133	25	

Analyst: DYV

Date Prepared: 07/08/2013

Date Analyzed: 07/08/2013

Lab Batch ID: 917958

Sample: 640757-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW 8015B	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											
C6-C10 Gasoline Range Hydrocarbons	<0.988	100	75.4	75	100	76.9	77	2	70-135	25	
C10-C28 Diesel Range Hydrocarbons	<0.988	100	91.9	92	100	92.1	92	0	70-135	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 Recoveries



Project Name: Livingston ridge A413 7008

Work Order #: 466147

Lab Batch #: 917958

Date Analyzed: 07/08/2013

QC- Sample ID: 466148-001 S

Reporting Units: mg/L

Date Prepared: 07/08/2013

Batch #: 1

Project ID: PLAINS-Terracon

Analyst: DYV

Matrix: Water

MATRIX / MATRIX SPIKE RECOVERY STUDY						
TPH by SW 8015B	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
C6-C10 Gasoline Range Hydrocarbons	<0.988	100	76.4	76	70-135	
C10-C28 Diesel Range Hydrocarbons	<0.988	100	90.9	91	70-135	

Matrix Spike Percent Recovery [D] = $100 \times (C-A)/B$
Relative Percent Difference [E] = $200 \times (C-A)/(C+B)$
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Form 3 - MS / MSD Recoveries



Project Name: Livingston ridge A413 7008

Work Order # : 466147

Project ID: PLAINS-Terracon

Lab Batch ID: 917965

QC- Sample ID: 466188-015 S

Batch #: 1 Matrix: Water

Date Analyzed: 07/08/2013

Date Prepared: 07/08/2013

Analyst: DYV

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	<0.000500	0.100	0.119	119	0.100	0.111	111	7	70-125	25	
Toluene	<0.00100	0.100	0.0943	94	0.100	0.0899	90	5	70-125	25	
Ethylbenzene	<0.000700	0.100	0.0865	87	0.100	0.0805	81	7	71-129	25	
m,p-Xylenes	<0.00140	0.200	0.167	84	0.200	0.162	81	3	70-131	25	
o-Xylene	<0.000700	0.100	0.0869	87	0.100	0.0823	82	5	71-133	25	
MTBE	<0.00200	0.500	0.546	109	0.500	0.492	98	10	71-133	25	

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

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

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

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

☐ 4143 Greenbriar Drive, Stafford, TX 77477 281-240-4200
☐ 5332 Blackberry Drive, San Antonio, TX 78238 210-509-3334

☐ 9701 Harry Hines Blvd., Dallas, TX 75220 214-902-0300
☒ 12600 West I-20 East, Odessa, TX 79765 432-563-1800

Serial #: 322645 Page of

Company-City Terraco Midland		Phone 432.684.2600	
Project Name-Location Livingston Ridge NM		Project ID 4413 4008	
Proj. State: TX, AL, FL, GA, LA, MS, NC, NJ, PA, SC, TN, UT Other NM		Proj. Manager (PM) Dale Morley	
E-mail Results to JD Morley@terraco.com		Fax No:	
Invoice to ☐ Accounting ☐ Inc. Invoice with Final Report ☐ Invoice must have a P.O. Bill to: 200111005		P.O. No:	
Quote/Pricing:		☐ Call for P.O.	
Reg Program: UST DRY-CLEAN Land-Fill Waste-Disp NPDES DW TRRP			
QAPP Per-Contract CLP AGCEE NAVY DOE DOD USACE OTHER:			
Special DLS (GW DW QAPP MDLs RLS See Lab PM Included Call PM)			
Sampler Name PAVON PERD	Signature <i>[Signature]</i>		
Sample ID	Sampling Date	Time	Depth ft' In" m
Matrix	Composite	Grab	# Containers
Container Size	Container Type	Preservatives	
1 MW 1	7.1.13	4:57P	X 4
2 MW 2	7.1.13	6:09P	X 4
3 MW 6	7.1.13	5:24P	X 4
4			
5			
6			
7			
8			
9			
10			
Relinquished by (Initials and Sign) <i>[Signature]</i>		Date & Time 7.2.13/5:11P	
Relinquished to (Initials and Sign) <i>[Signature]</i>		Date & Time 7.2.13.17.11	
Total Containers per COC:		Cooler Temp: 3.0 °C	
Preservatives: Various (V), HCl pH<2 (H), H2SO4 pH<2 (S), HNO3 pH<2 (N), Aspic Acid&NaOH (A), ZnAc&NaOH (Z), (Cool, <4C) (C), None (NA), See Label (L), Other (O) Cont. Size: 4oz (4), 8oz (8), 32oz (32), 40ml VOA (40), 1L (1), 500ml (5), Tedlar Bag (B), Various (V), Other _____ Cont. Type: Glass Amb (A), Glass Clear (C), Plastic (P), Various (V) Matrix: Air (A), Product (P), Solid (S), Water (W), Liquid (L) Notice: Signature of this document and relinquishment of these samples constitutes a valid purchase order from client company to Xenco Laboratories and its affiliates, subcontractors and assigns under Xenco's standard terms and conditions of service unless previously negotiated under a fully executed client contract.			
VOA: Full-List BTEX-MTBE EtOH Oxyg VOHS VOAs VOA: PP TCL DW Appdx-1 Appdx-2 CALL Other: PAHs SIM 8310 8270 TX-1005 DRO GRO MA EPH MA VPH SVOCs: Full-List DW BN&AE TCLP PP Appdx-2 CALL OC Pesticides PCBs Herbicides OP Pesticides Metals: RCRA-8 RCRA-4 Pb 13PP 23TAL Appdx 1 Appdx2 SPLP - TCLP (Metals VOCs SVOCs Pest. Herb. PCBs) EDB / DBCP X TPH-NM-3015B TATASAP 5h 12h 24h 48h 3d 5d 7d 10d 21d Addn: PAH above mg/L W, mg/Kg S Highest Hit Hold Samples (Surcharges will apply and are pre-approved) Sample Clean-ups are pre-approved as needed Remarks Addn: Date Rcv. by: From:			



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: PLAINS ALL AMERICAN EH&S

Date/ Time Received: 07/02/2013 05:11:00 PM

Work Order #: 466147

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	3
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Sample instructions complete on Chain of Custody?	Yes
#9 Any missing/extra samples?	No
#10 Chain of Custody signed when relinquished/ received?	Yes
#11 Chain of Custody agrees with sample label(s)?	Yes
#12 Container label(s) legible and intact?	Yes
#13 Sample matrix/ properties agree with Chain of Custody?	Yes
#14 Samples in proper container/ bottle?	Yes
#15 Samples properly preserved?	Yes
#16 Sample container(s) intact?	Yes
#17 Sufficient sample amount for indicated test(s)?	Yes
#18 All samples received within hold time?	Yes
#19 Subcontract of sample(s)?	Yes
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	Yes
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	Yes
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	Yes

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

Analyst:	PH Device/Lot#:
----------	-----------------

Checklist completed by:

Kelsey Brooks

Date: 07/02/2013

Checklist reviewed by:

Kelsey Brooks

Date: 07/02/2013

Analytical Report 468306

for

PLAINS ALL AMERICAN EH&S

Project Manager: Dale Moxley
SRS# 2001-11005 Livingston Ridge
A4137007
05-SEP-13

Collected By: Client



12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-13-14-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD (L10-135)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Lakeland: Florida (E84098)

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

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

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

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

Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

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05-SEP-13

Project Manager: **Dale Moxley**
PLAINS ALL AMERICAN EH&S
1301 S. COUNTY ROAD 1150
Midland, TX 79706

Reference: XENCO Report No(s): **468306**
SRS# 2001-11005 Livingston Ridge
Project Address: NM

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) 468306. 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. 468306 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.

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PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-2	W	08-08-13 08:35		468306-011
MW-6	W	08-08-13 09:19		468306-012
MW-9	W	08-08-13 10:05		468306-013
MW-11	W	08-08-13 10:57		468306-014
MW-12	W	08-08-13 11:42		468306-015
MW-13	W	08-08-13 12:24		468306-016
MW-14	W	08-08-13 13:13		468306-017
MW-15	W	08-08-13 13:58		468306-018
MW-7	W	08-08-13 14:50		468306-019
MW-10	W	08-08-13 15:30		468306-020
MW-8	W	08-08-13 16:20		468306-021
MW-1	W	08-08-13 17:02		468306-022
MW-5	W	08-08-13 17:45		468306-023
MW-4	W	08-08-13 18:23		468306-024
MW-3	W	08-09-13 12:36		Not Analyzed



CASE NARRATIVE



Client Name: *PLAINS ALL AMERICAN EH&S*

Project Name: *SRS# 2001-11005 Livingston Ridge*

Project ID: A4137007
Work Order Number(s): 468306

Report Date: 05-SEP-13
Date Received: 08/09/2013

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 468306



PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: MW-2

Matrix: Water

Sample Depth:

Lab Sample Id: 468306-011

Date Collected: 08.08.13 08.35

Date Received: 08.09.13 16.07

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920654

Date Prep: 08.13.13 10.24

Subcontractor: SUB: E871002

Prep seq: 642405

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.34	0.884	mg/L	08.14.13 23:25	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.34	0.884	mg/L	08.14.13 23:25	U	1
Total TPH	PHC635	ND		0.884	mg/L	08.14.13 23:25	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	101	70 - 135	%		
o-Terphenyl	109	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920801

Date Prep: 08.15.13 16.45

Prep seq: 642627

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	08.15.13 19:27	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	08.15.13 19:27	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	08.15.13 19:27	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	08.15.13 19:27	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	08.15.13 19:27	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	08.15.13 19:27	U	
Total BTEX		ND		0.000500	mg/L	08.15.13 19:27	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	101	80 - 120	%		
4-Bromofluorobenzene	83	80 - 120	%		



Certificate of Analytical Results 468306



PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: **MW-6**

Matrix: Water

Sample Depth:

Lab Sample Id: 468306-012

Date Collected: 08.08.13 09.19

Date Received: 08.09.13 16.07

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920654

Date Prep: 08.13.13 10.27

Subcontractor: SUB: E871002

Prep seq: 642405

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.38	0.907	mg/L	08.14.13 23:47	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.38	0.907	mg/L	08.14.13 23:47	U	1
Total TPH	PHC635	ND		0.907	mg/L	08.14.13 23:47	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	115	70 - 135	%		
o-Terphenyl	123	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920801

Date Prep: 08.15.13 16.45

Prep seq: 642627

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	08.15.13 19:43	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	08.15.13 19:43	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	08.15.13 19:43	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	08.15.13 19:43	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	08.15.13 19:43	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	08.15.13 19:43	U	
Total BTEX		ND		0.000500	mg/L	08.15.13 19:43	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	102	80 - 120	%		
4-Bromofluorobenzene	82	80 - 120	%		



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PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: **MW-9**

Matrix: Water

Sample Depth:

Lab Sample Id: 468306-013

Date Collected: 08.08.13 10.05

Date Received: 08.09.13 16.07

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920654

Date Prep: 08.13.13 10.30

Subcontractor: SUB: E871002

Prep seq: 642405

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.36	0.895	mg/L	08.15.13 00:09	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.36	0.895	mg/L	08.15.13 00:09	U	1
Total TPH	PHC635	ND		0.895	mg/L	08.15.13 00:09	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	115	70 - 135	%		
o-Terphenyl	127	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920801

Date Prep: 08.15.13 16.45

Prep seq: 642627

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	08.15.13 19:59	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	08.15.13 19:59	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	08.15.13 19:59	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	08.15.13 19:59	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	08.15.13 19:59	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	08.15.13 19:59	U	
Total BTEX		ND		0.000500	mg/L	08.15.13 19:59	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	101	80 - 120	%		
4-Bromofluorobenzene	81	80 - 120	%		



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PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: MW-11

Matrix: Water

Sample Depth:

Lab Sample Id: 468306-014

Date Collected: 08.08.13 10.57

Date Received: 08.09.13 16.07

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920654

Date Prep: 08.13.13 10.33

Subcontractor: SUB: E871002

Prep seq: 642405

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.36	0.897	mg/L	08.15.13 00:30	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.36	0.897	mg/L	08.15.13 00:30	U	1
Total TPH	PHC635	ND		0.897	mg/L	08.15.13 00:30	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	113	70 - 135	%		
o-Terphenyl	126	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920801

Date Prep: 08.15.13 16.45

Prep seq: 642627

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	08.15.13 20:15	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	08.15.13 20:15	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	08.15.13 20:15	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	08.15.13 20:15	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	08.15.13 20:15	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	08.15.13 20:15	U	
Total BTEX		ND		0.000500	mg/L	08.15.13 20:15	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	105	80 - 120	%		
4-Bromofluorobenzene	81	80 - 120	%		



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PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: MW-12

Matrix: Water

Sample Depth:

Lab Sample Id: 468306-015

Date Collected: 08.08.13 11.42

Date Received: 08.09.13 16.07

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920654

Date Prep: 08.13.13 10.36

Subcontractor: SUB: E871002

Prep seq: 642405

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.38	0.906	mg/L	08.15.13 00:52	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.38	0.906	mg/L	08.15.13 00:52	U	1
Total TPH	PHC635	ND		0.906	mg/L	08.15.13 00:52	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	116	70 - 135	%		
o-Terphenyl	127	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920801

Date Prep: 08.15.13 16.45

Prep seq: 642627

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	0.0121	0.00100	0.000500	mg/L	08.15.13 20:31		1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	08.15.13 20:31	U	1
Ethylbenzene	100-41-4	0.00365	0.00100	0.000700	mg/L	08.15.13 20:31		1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	08.15.13 20:31	U	1
o-Xylene	95-47-6	0.000850	0.00100	0.000700	mg/L	08.15.13 20:31	J	1
Total Xylenes	1330-20-7	0.000850		0.000700	mg/L	08.15.13 20:31	J	
Total BTEX		0.0166		0.000500	mg/L	08.15.13 20:31		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	97	80 - 120	%		
4-Bromofluorobenzene	87	80 - 120	%		



Certificate of Analytical Results 468306



PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: MW-13

Matrix: Water

Sample Depth:

Lab Sample Id: 468306-016

Date Collected: 08.08.13 12.24

Date Received: 08.09.13 16.07

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920654

Date Prep: 08.13.13 10.39

Subcontractor: SUB: E871002

Prep seq: 642405

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.35	0.891	mg/L	08.15.13 01:14	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.35	0.891	mg/L	08.15.13 01:14	U	1
Total TPH	PHC635	ND		0.891	mg/L	08.15.13 01:14	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	100	70 - 135	%		
o-Terphenyl	113	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920801

Date Prep: 08.15.13 16.45

Prep seq: 642627

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	08.15.13 20:47	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	08.15.13 20:47	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	08.15.13 20:47	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	08.15.13 20:47	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	08.15.13 20:47	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	08.15.13 20:47	U	
Total BTEX		ND		0.000500	mg/L	08.15.13 20:47	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	96	80 - 120	%		
4-Bromofluorobenzene	82	80 - 120	%		



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PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: **MW-14**

Matrix: Water

Sample Depth:

Lab Sample Id: 468306-017

Date Collected: 08.08.13 13.13

Date Received: 08.09.13 16.07

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920654

Date Prep: 08.13.13 10.42

Subcontractor: SUB: E871002

Prep seq: 642405

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.39	0.917	mg/L	08.15.13 01:35	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.39	0.917	mg/L	08.15.13 01:35	U	1
Total TPH	PHC635	ND		0.917	mg/L	08.15.13 01:35	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	111	70 - 135	%		
o-Terphenyl	126	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920801

Date Prep: 08.15.13 16.45

Prep seq: 642627

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	08.15.13 21:03	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	08.15.13 21:03	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	08.15.13 21:03	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	08.15.13 21:03	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	08.15.13 21:03	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	08.15.13 21:03	U	
Total BTEX		ND		0.000500	mg/L	08.15.13 21:03	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	103	80 - 120	%		
4-Bromofluorobenzene	83	80 - 120	%		



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PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: MW-15

Matrix: Water

Sample Depth:

Lab Sample Id: 468306-018

Date Collected: 08.08.13 13.58

Date Received: 08.09.13 16.07

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920654

Date Prep: 08.13.13 10.45

Subcontractor: SUB: E871002

Prep seq: 642405

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.37	0.899	mg/L	08.15.13 01:57	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.37	0.899	mg/L	08.15.13 01:57	U	1
Total TPH	PHC635	ND		0.899	mg/L	08.15.13 01:57	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	113	70 - 135	%		
o-Terphenyl	124	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920801

Date Prep: 08.16.13 09.00

Prep seq: 642627

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	08.16.13 10:03	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	08.16.13 10:03	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	08.16.13 10:03	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	08.16.13 10:03	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	08.16.13 10:03	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	08.16.13 10:03	U	
Total BTEX		ND		0.000500	mg/L	08.16.13 10:03	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	100	80 - 120	%		
4-Bromofluorobenzene	88	80 - 120	%		



Certificate of Analytical Results 468306



PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: MW-7

Matrix: Water

Sample Depth:

Lab Sample Id: 468306-019

Date Collected: 08.08.13 14.50

Date Received: 08.09.13 16.07

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920654

Date Prep: 08.13.13 10.48

Subcontractor: SUB: E871002

Prep seq: 642405

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.36	0.895	mg/L	08.15.13 02:19	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.36	0.895	mg/L	08.15.13 02:19	U	1
Total TPH	PHC635	ND		0.895	mg/L	08.15.13 02:19	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	121	70 - 135	%		
o-Terphenyl	131	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920801

Date Prep: 08.16.13 09.00

Prep seq: 642627

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	08.16.13 10:19	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	08.16.13 10:19	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	08.16.13 10:19	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	08.16.13 10:19	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	08.16.13 10:19	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	08.16.13 10:19	U	
Total BTEX		ND		0.000500	mg/L	08.16.13 10:19	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	100	80 - 120	%		
4-Bromofluorobenzene	88	80 - 120	%		



Certificate of Analytical Results 468306



PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: **MW-10**

Matrix: Water

Sample Depth:

Lab Sample Id: 468306-020

Date Collected: 08.08.13 15.30

Date Received: 08.09.13 16.07

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920654

Date Prep: 08.13.13 10.51

Subcontractor: SUB: E871002

Prep seq: 642405

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.38	0.906	mg/L	08.15.13 03:23	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.38	0.906	mg/L	08.15.13 03:23	U	1
Total TPH	PHC635	ND		0.906	mg/L	08.15.13 03:23	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	120	70 - 135	%		
o-Terphenyl	125	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920801

Date Prep: 08.16.13 09.00

Prep seq: 642627

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	08.16.13 10:35	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	08.16.13 10:35	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	08.16.13 10:35	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	08.16.13 10:35	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	08.16.13 10:35	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	08.16.13 10:35	U	
Total BTEX		ND		0.000500	mg/L	08.16.13 10:35	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	100	80 - 120	%		
4-Bromofluorobenzene	86	80 - 120	%		



Certificate of Analytical Results 468306



PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: **MW-8**

Matrix: Water

Sample Depth:

Lab Sample Id: 468306-021

Date Collected: 08.08.13 16.20

Date Received: 08.09.13 16.07

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920654

Date Prep: 08.13.13 10.54

Subcontractor: SUB: E871002

Prep seq: 642405

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.35	0.889	mg/L	08.15.13 03:44	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.35	0.889	mg/L	08.15.13 03:44	U	1
Total TPH	PHC635	ND		0.889	mg/L	08.15.13 03:44	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	117	70 - 135	%		
o-Terphenyl	125	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920801

Date Prep: 08.16.13 09.00

Prep seq: 642627

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	08.16.13 10:51	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	08.16.13 10:51	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	08.16.13 10:51	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	08.16.13 10:51	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	08.16.13 10:51	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	08.16.13 10:51	U	
Total BTEX		ND		0.000500	mg/L	08.16.13 10:51	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	99	80 - 120	%		
4-Bromofluorobenzene	91	80 - 120	%		



Certificate of Analytical Results 468306



PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: **MW-1**

Matrix: Water

Sample Depth:

Lab Sample Id: 468306-022

Date Collected: 08.08.13 17.02

Date Received: 08.09.13 16.07

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920656

Date Prep: 08.13.13 11.24

Subcontractor: SUB: E871002

Prep seq: 642409

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	2.23	1.36	0.899	mg/L	08.14.13 15:38		1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	2.30	1.36	0.899	mg/L	08.14.13 15:38		1
Total TPH	PHC635	4.53		0.899	mg/L	08.14.13 15:38		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	109	70 - 135	%		
o-Terphenyl	128	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920801

Date Prep: 08.16.13 09.00

Prep seq: 642627

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	0.0966	0.00100	0.000500	mg/L	08.16.13 12:11		1
Toluene	108-88-3	0.00700	0.00200	0.00100	mg/L	08.16.13 12:11		1
Ethylbenzene	100-41-4	0.0879	0.00100	0.000700	mg/L	08.16.13 12:11		1
m,p-Xylenes	179601-23-1	0.0403	0.00200	0.00140	mg/L	08.16.13 12:11		1
o-Xylene	95-47-6	0.000810	0.00100	0.000700	mg/L	08.16.13 12:11	J	1
Total Xylenes	1330-20-7	0.0411		0.000700	mg/L	08.16.13 12:11		
Total BTEX		0.233		0.000500	mg/L	08.16.13 12:11		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	90	80 - 120	%		
4-Bromofluorobenzene	117	80 - 120	%		



Certificate of Analytical Results 468306



PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: MW-5

Matrix: Water

Sample Depth:

Lab Sample Id: 468306-023

Date Collected: 08.08.13 17.45

Date Received: 08.09.13 16.07

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920656

Date Prep: 08.13.13 11.27

Subcontractor: SUB: E871002

Prep seq: 642409

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	5.56	1.36	0.898	mg/L	08.14.13 16:04		1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	2.84	1.36	0.898	mg/L	08.14.13 16:04		1
Total TPH	PHC635	8.40		0.898	mg/L	08.14.13 16:04		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	99	70 - 135	%		
o-Terphenyl	112	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920801

Date Prep: 08.16.13 09.00

Prep seq: 642627

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	0.0637	0.00100	0.000500	mg/L	08.16.13 13:16		1
Toluene	108-88-3	0.00282	0.00200	0.00100	mg/L	08.16.13 13:16		1
Ethylbenzene	100-41-4	0.0714	0.00100	0.000700	mg/L	08.16.13 13:16		1
m,p-Xylenes	179601-23-1	0.0330	0.00200	0.00140	mg/L	08.16.13 13:16		1
o-Xylene	95-47-6	0.00540	0.00100	0.000700	mg/L	08.16.13 13:16		1
Total Xylenes	1330-20-7	0.0384		0.000700	mg/L	08.16.13 13:16		
Total BTEX		0.176		0.000500	mg/L	08.16.13 13:16		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	95	80 - 120	%		
4-Bromofluorobenzene	119	80 - 120	%		



Certificate of Analytical Results 468306



PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: **MW-4**

Matrix: Water

Sample Depth:

Lab Sample Id: 468306-024

Date Collected: 08.08.13 18.23

Date Received: 08.09.13 16.07

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920656

Date Prep: 08.13.13 11.30

Subcontractor: SUB: E871002

Prep seq: 642409

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	2.44	1.39	0.913	mg/L	08.14.13 16:56		1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	1.91	1.39	0.913	mg/L	08.14.13 16:56		1
Total TPH	PHC635	4.35		0.913	mg/L	08.14.13 16:56		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	118	70 - 135	%		
o-Terphenyl	133	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920801

Date Prep: 08.16.13 09.00

Prep seq: 642627

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	0.0659	0.00100	0.000500	mg/L	08.16.13 12:27		1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	08.16.13 12:27	U	1
Ethylbenzene	100-41-4	0.0572	0.00100	0.000700	mg/L	08.16.13 12:27		1
m,p-Xylenes	179601-23-1	0.0179	0.00200	0.00140	mg/L	08.16.13 12:27		1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	08.16.13 12:27	U	1
Total Xylenes	1330-20-7	0.0179		0.000700	mg/L	08.16.13 12:27		
Total BTEX		0.141		0.000500	mg/L	08.16.13 12:27		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	94	80 - 120	%		
4-Bromofluorobenzene	91	80 - 120	%		



Certificate of Analytical Results 468306



PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: 642405-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 642405-1-BLK

Date Collected:

Date Received:

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920654

Date Prep: 08.13.13 09.45

Subcontractor: SUB: E871002

Prep seq: 642405

Parameter	CAS Number	Result	ML	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.988	mg/L	08.14.13 17:24	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.988	mg/L	08.14.13 17:24	U	1
Total TPH	PHC635	ND		0.988	mg/L	08.14.13 17:24	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	101	70 - 135	%		
o-Terphenyl	113	70 - 135	%		

Sample Id: 642409-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 642409-1-BLK

Date Collected:

Date Received:

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: PKH

% Moist:

Tech: PKH

Seq Number: 920656

Date Prep: 08.13.13 11.15

Subcontractor: SUB: E871002

Prep seq: 642409

Parameter	CAS Number	Result	ML	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.988	mg/L	08.14.13 13:58	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.988	mg/L	08.14.13 13:58	U	1
Total TPH	PHC635	ND		0.988	mg/L	08.14.13 13:58	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	114	70 - 135	%		
o-Terphenyl	137	70 - 135	%		**



Certificate of Analytical Results 468306



PLAINS ALL AMERICAN EH&S, Midland, TX

SRS# 2001-11005 Livingston Ridge

Sample Id: 642580-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 642580-1-BLK

Date Collected:

Date Received:

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920715

Date Prep: 08.15.13 09.00

Prep seq: 642580

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	08.15.13 10:37	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	08.15.13 10:37	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	08.15.13 10:37	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	08.15.13 10:37	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	08.15.13 10:37	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	101	80 - 120	%		
4-Bromofluorobenzene	81	80 - 120	%		

Sample Id: 642627-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 642627-1-BLK

Date Collected:

Date Received:

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: KEB

% Moist:

Tech: KEB

Seq Number: 920801

Date Prep: 08.15.13 16.45

Prep seq: 642627

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	08.15.13 18:39	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	08.15.13 18:39	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	08.15.13 18:39	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	08.15.13 18:39	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	08.15.13 18:39	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	101	80 - 120	%		
4-Bromofluorobenzene	81	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 **SQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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(770) 449-8800	(770) 449-5477
(602) 437-0330	

Form 2 - Surrogate Recoveries

Project Name: SRS# 2001-11005 Livingston Ridge

Work Orders : 468306,

Project ID: A4137007

Lab Batch #: 920715

Sample: 642580-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/15/13 09:48		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0347	0.0300	116	80-120
4-Bromofluorobenzene		0.0255	0.0300	85	80-120

Lab Batch #: 920715

Sample: 642580-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/15/13 10:04		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0348	0.0300	116	80-120
4-Bromofluorobenzene		0.0264	0.0300	88	80-120

Lab Batch #: 920715

Sample: 642580-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/15/13 10:37		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0304	0.0300	101	80-120
4-Bromofluorobenzene		0.0243	0.0300	81	80-120

Lab Batch #: 920715

Sample: 468194-003 S / MS

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/15/13 16:54		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0356	0.0300	119	80-120
4-Bromofluorobenzene		0.0255	0.0300	85	80-120

Lab Batch #: 920801

Sample: 642627-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/15/13 17:50		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		0.0259	0.0300	86	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: SRS# 2001-11005 Livingston Ridge

Work Orders : 468306,

Project ID: A4137007

Lab Batch #: 920801

Sample: 642627-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/15/13 18:06		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		0.0265	0.0300	88	80-120

Lab Batch #: 920801

Sample: 642627-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/15/13 18:39		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0302	0.0300	101	80-120
4-Bromofluorobenzene		0.0244	0.0300	81	80-120

Lab Batch #: 920801

Sample: 468306-008 S / MS

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/15/13 21:35		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0351	0.0300	117	80-120
4-Bromofluorobenzene		0.0259	0.0300	86	80-120

Lab Batch #: 920801

Sample: 468306-008 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/15/13 21:51		SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0352	0.0300	117	80-120
4-Bromofluorobenzene		0.0264	0.0300	88	80-120

Lab Batch #: 920654

Sample: 642405-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/14/13 17:24		SURROGATE RECOVERY STUDY			
TPH by SW 8015B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		10.1	10.0	101	70-135
o-Terphenyl		5.63	5.00	113	70-135

* 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: SRS# 2001-11005 Livingston Ridge

Work Orders : 468306,

Project ID: A4137007

Lab Batch #: 920654

Sample: 642405-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/14/13 18:00		SURROGATE RECOVERY STUDY			
TPH by SW 8015B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					Flags
1-Chlorooctane		10.6	10.0	106	70-135
o-Terphenyl		5.88	5.00	118	70-135

Lab Batch #: 920654

Sample: 642405-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/14/13 18:25		SURROGATE RECOVERY STUDY			
TPH by SW 8015B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					Flags
1-Chlorooctane		10.5	10.0	105	70-135
o-Terphenyl		5.45	5.00	109	70-135

Lab Batch #: 920656

Sample: 642409-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/14/13 13:58		SURROGATE RECOVERY STUDY			
TPH by SW 8015B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					Flags
1-Chlorooctane		11.4	10.0	114	70-135
o-Terphenyl		6.85	5.00	137	70-135 **

Lab Batch #: 920656

Sample: 642409-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/14/13 14:23		SURROGATE RECOVERY STUDY			
TPH by SW 8015B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					Flags
1-Chlorooctane		11.2	10.0	112	70-135
o-Terphenyl		6.33	5.00	127	70-135

Lab Batch #: 920656

Sample: 642409-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/14/13 14:48		SURROGATE RECOVERY STUDY			
TPH by SW 8015B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					Flags
1-Chlorooctane		10.4	10.0	104	70-135
o-Terphenyl		6.08	5.00	122	70-135

* 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.

Project Name: SRS# 2001-11005 Livingston Ridge

Work Order #: 468306

Analyst: KEB

Date Prepared: 08/15/2013

Project ID: A4137007

Date Analyzed: 08/15/2013

Lab Batch ID: 920715

Sample: 642580-1-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	<0.000500	0.100	0.102	102	0.100	0.103	103	1	70-125	25	
Toluene	<0.00100	0.100	0.0938	94	0.100	0.0950	95	1	70-125	25	
Ethylbenzene	<0.000700	0.100	0.0910	91	0.100	0.0924	92	2	71-129	25	
m,p-Xylenes	<0.00140	0.200	0.180	90	0.200	0.183	92	2	70-131	25	
o-Xylene	<0.000700	0.100	0.0898	90	0.100	0.0916	92	2	71-133	25	

Analyst: KEB

Date Prepared: 08/15/2013

Date Analyzed: 08/15/2013

Lab Batch ID: 920801

Sample: 642627-1-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	<0.000500	0.100	0.105	105	0.100	0.113	113	7	70-125	25	
Toluene	<0.00100	0.100	0.0965	97	0.100	0.104	104	7	70-125	25	
Ethylbenzene	<0.000700	0.100	0.0952	95	0.100	0.102	102	7	71-129	25	
m,p-Xylenes	<0.00140	0.200	0.189	95	0.200	0.202	101	7	70-131	25	
o-Xylene	<0.000700	0.100	0.0939	94	0.100	0.102	102	8	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

Project Name: SRS# 2001-11005 Livingston Ridge

Work Order #: 468306

Analyst: PKH

Date Prepared: 08/13/2013

Project ID: A4137007

Date Analyzed: 08/14/2013

Lab Batch ID: 920654

Sample: 642405-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW 8015B	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											
C6-C10 Gasoline Range Hydrocarbons	<0.988	100	77.5	78	100	75.6	76	2	70-135	25	
C10-C28 Diesel Range Hydrocarbons	<0.988	100	85.3	85	100	87.1	87	2	70-135	25	

Analyst: PKH

Date Prepared: 08/13/2013

Date Analyzed: 08/14/2013

Lab Batch ID: 920656

Sample: 642409-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW 8015B	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											
C6-C10 Gasoline Range Hydrocarbons	<0.988	100	70.2	70	100	71.7	72	2	70-135	25	
C10-C28 Diesel Range Hydrocarbons	<0.988	100	92.6	93	100	87.6	88	6	70-135	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 Recoveries



Project Name: SRS# 2001-11005 Livingston Ridge

Work Order #: 468306

Lab Batch #: 920715

Date Analyzed: 08/15/2013

QC- Sample ID: 468194-003 S

Reporting Units: mg/L

Date Prepared: 08/15/2013

Batch #: 1

Project ID: A4137007

Analyst: KEB

Matrix: Water

MATRIX / MATRIX SPIKE RECOVERY STUDY						
BTEX by EPA 8021B	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Benzene	<0.000500	0.100	0.117	117	70-125	
Toluene	<0.00100	0.100	0.104	104	70-125	
Ethylbenzene	<0.000700	0.100	0.100	100	71-129	
m,p-Xylenes	<0.00140	0.200	0.198	99	70-131	
o-Xylene	<0.000700	0.100	0.0990	99	71-133	

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

Relative Percent Difference [E] = $200 \times (C-A)/(C+B)$

All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Form 3 - MS / MSD Recoveries

Project Name: SRS# 2001-11005 Livingston Ridge



Work Order # : 468306

Project ID: A4137007

Lab Batch ID: 920801

QC- Sample ID: 468306-008 S

Batch #: 1 Matrix: Water

Date Analyzed: 08/15/2013

Date Prepared: 08/15/2013

Analyst: KEB

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	<0.000500	0.100	0.113	113	0.100	0.115	115	2	70-125	25	
Toluene	<0.00100	0.100	0.104	104	0.100	0.106	106	2	70-125	25	
Ethylbenzene	<0.000700	0.100	0.101	101	0.100	0.103	103	2	71-129	25	
m,p-Xylenes	<0.00140	0.200	0.199	100	0.200	0.203	102	2	70-131	25	
o-Xylene	<0.000700	0.100	0.0996	100	0.100	0.102	102	2	71-133	25	

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

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

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

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

Terracon

Consulting Engineers & Scientists

Office Location MIDLAND, TXLaboratory: XELCO LABSAddress: 12600 W I-20EODESSA, TX 79763Contact: ALEX MOLEYPhone: 432 563 1800

PO/SO #:

Project Manager J. DALE MOLEY

Sampler's Name

Sampler's Signature

KIMBLE THRASHProj. No. 4413-7008Project Name SPS # 2001-11005
LIVINGSTON CLIXENo. Type of Containers
16 VOAs

Matrix	Date	Time	C o m p	G r a d	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	AG 1L	250 ml	P/O
W	8/8/13	1640			MM-8			✓			
		1702			MM-1			✓			
		1745			MM-5			✓			
		1823			MM-4			✓			

Lab Sample ID (Lab Use Only)

438006-021-022-023-024ANALYSIS
REQUESTEDBTEXTX 1005SW80158Lab use only
Due Date:Temp. of coolers
when received (C°):

1	2	3	4	5

Page 2 of 2

Turn around time ☒ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush

Relinquished by (Signature) [Signature] Date: 8/9/13 Time: 1607 Received by (Signature) [Signature] Date: 8/9/13 Time: 1607

Relinquished by (Signature) Date: Time: Received by (Signature) Date: Time:

Relinquished by (Signature) Date: Time: Received by (Signature) Date: Time:

Relinquished by (Signature) Date: Time: Received by (Signature) Date: Time:

Matrix: WW - Wastewater W - Water S - Soil SD - Solid L - Liquid A - Air Bag C - Charcoal tube SL - sludge O - Oil
Container: VOA - 40 ml Vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

Houston Office
11555 Clay Road, Suite 100
Houston, Texas 77063
(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
24 Smith Rd. # 261
Midland, Texas 79705
(432) 684-9600 Fax (432) 684-9608

NOTES:
E-MAIL RESULTS TO:
JDMOLEY@TERRACON.COM



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: PLAINS ALL AMERICAN EH&S

Date/ Time Received: 08/09/2013 04:07:00 PM

Work Order #: 468306

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Sample instructions complete on Chain of Custody?	Yes
#9 Any missing/extra samples?	No
#10 Chain of Custody signed when relinquished/ received?	Yes
#11 Chain of Custody agrees with sample label(s)?	Yes
#12 Container label(s) legible and intact?	Yes
#13 Sample matrix/ properties agree with Chain of Custody?	Yes
#14 Samples in proper container/ bottle?	Yes
#15 Samples properly preserved?	Yes
#16 Sample container(s) intact?	Yes
#17 Sufficient sample amount for indicated test(s)?	Yes
#18 All samples received within hold time?	Yes
#19 Subcontract of sample(s)?	Yes
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	Yes
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	Yes
#22 >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: Kelsey Brooks
Kelsey Brooks

Date: 08/14/2013

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks

Date: 08/14/2013

Analytical Report 474072

for

PLAINS ALL AMERICAN EH&S

Project Manager: Dale Moxley

Livingston Ridge

SRS# 2001-11005

21-NOV-13

Collected By: Client



12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-13-15-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD (L10-135)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Lakeland: Florida (E84098)

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

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

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

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

Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)



21-NOV-13

Project Manager: **Dale Moxley**
PLAINS ALL AMERICAN EH&S
1301 S. COUNTY ROAD 1150
Midland, TX 79706

Reference: XENCO Report No(s): **474072**
Livingston Ridge
Project Address: NM

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) 474072. 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. 474072 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 - Odessa - San Antonio - Tampa - Lakeland - Atlanta - Phoenix - Oklahoma - Latin America

PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-2	W	11-13-13 08:25		474072-001
MW-9	W	11-13-13 09:11		474072-002
MW-6	W	11-13-13 09:50		474072-003
MW-1	W	11-13-13 10:27		474072-004
MW-14	W	11-13-13 11:13		474072-005
MW-15	W	11-13-13 11:48		474072-006
MW-11	W	11-13-13 12:36		474072-007
MW-12	W	11-13-13 13:14		474072-008
MW-13	W	11-13-13 13:50		474072-009
MW-8	W	11-13-13 14:33		474072-010
MW-7	W	11-13-13 15:11		474072-011
MW-10	W	11-13-13 15:48		474072-012
MW-4	W	11-13-13 16:25		474072-013
MW-5	W	11-13-13 17:03		474072-014



CASE NARRATIVE



Client Name: *PLAINS ALL AMERICAN EH&S*

Project Name: *Livingston Ridge*

Project ID: SRS# 2001-11005
Work Order Number(s): 474072

Report Date: 21-NOV-13
Date Received: 11/14/2013

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

474072



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id: MW-2

Matrix: Water

Sample Depth:

Lab Sample Id: 474072-001

Date Collected: 11.13.13 08.25

Date Received: 11.14.13 17.12

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 927929

Date Prep: 11.18.13 17.00

Prep seq: 647125

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.740	mg/L	11.19.13 01:15	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.954	mg/L	11.19.13 01:15	U	1
Total TPH	PHC635	ND		0.740	mg/L	11.19.13 01:15	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	84	70 - 135	%		
o-Terphenyl	80	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 928106

Date Prep: 11.18.13 10.00

Prep seq: 647228

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	11.19.13 12:21	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	11.19.13 12:21	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	11.19.13 12:21	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	11.19.13 12:21	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	11.19.13 12:21	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	11.19.13 12:21	U	
Total BTEX		ND		0.000500	mg/L	11.19.13 12:21	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	88	80 - 120	%		
4-Bromofluorobenzene	96	80 - 120	%		



Certificate of Analytical Results

474072



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id: **MW-9**

Matrix: Water

Sample Depth:

Lab Sample Id: 474072-002

Date Collected: 11.13.13 09.11

Date Received: 11.14.13 17.12

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 927929

Date Prep: 11.18.13 17.00

Prep seq: 647125

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.740	mg/L	11.19.13 02:23	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.954	mg/L	11.19.13 02:23	U	1
Total TPH	PHC635	ND		0.740	mg/L	11.19.13 02:23	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	104	70 - 135	%		
o-Terphenyl	102	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 928106

Date Prep: 11.18.13 10.00

Prep seq: 647228

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	11.19.13 12:37	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	11.19.13 12:37	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	11.19.13 12:37	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	11.19.13 12:37	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	11.19.13 12:37	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	11.19.13 12:37	U	
Total BTEX		ND		0.000500	mg/L	11.19.13 12:37	U	

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



Certificate of Analytical Results

474072



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id: **MW-6**

Matrix: Water

Sample Depth:

Lab Sample Id: 474072-003

Date Collected: 11.13.13 09.50

Date Received: 11.14.13 17.12

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 927929

Date Prep: 11.18.13 17.00

Prep seq: 647125

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.740	mg/L	11.19.13 02:45	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.954	mg/L	11.19.13 02:45	U	1
Total TPH	PHC635	ND		0.740	mg/L	11.19.13 02:45	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	97	70 - 135	%		
o-Terphenyl	96	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 928106

Date Prep: 11.18.13 10.00

Prep seq: 647228

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	11.19.13 12:53	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	11.19.13 12:53	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	11.19.13 12:53	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	11.19.13 12:53	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	11.19.13 12:53	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	11.19.13 12:53	U	
Total BTEX		ND		0.000500	mg/L	11.19.13 12:53	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	86	80 - 120	%		
4-Bromofluorobenzene	94	80 - 120	%		



Certificate of Analytical Results

474072



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id: MW-1

Matrix: Water

Sample Depth:

Lab Sample Id: 474072-004

Date Collected: 11.13.13 10.27

Date Received: 11.14.13 17.12

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 927929

Date Prep: 11.18.13 17.00

Prep seq: 647125

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	1.48	1.50	0.740	mg/L	11.19.13 03:07	J	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	1.49	1.50	0.954	mg/L	11.19.13 03:07	J	1
Total TPH	PHC635	2.97		0.740	mg/L	11.19.13 03:07		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	93	70 - 135	%		
o-Terphenyl	91	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 928106

Date Prep: 11.18.13 10.00

Prep seq: 647228

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	0.0553	0.00100	0.000500	mg/L	11.19.13 13:09		1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	11.19.13 13:09	U	1
Ethylbenzene	100-41-4	0.0105	0.00100	0.000700	mg/L	11.19.13 13:09		1
m,p-Xylenes	179601-23-1	0.00203	0.00200	0.00140	mg/L	11.19.13 13:09		1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	11.19.13 13:09	U	1
Total Xylenes	1330-20-7	0.00203		0.000700	mg/L	11.19.13 13:09		
Total BTEX		0.0678		0.000500	mg/L	11.19.13 13:09		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	87	80 - 120	%		
4-Bromofluorobenzene	102	80 - 120	%		



Certificate of Analytical Results

474072



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id: MW-14

Matrix: Water

Sample Depth:

Lab Sample Id: 474072-005

Date Collected: 11.13.13 11.13

Date Received: 11.14.13 17.12

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 927929

Date Prep: 11.18.13 17.00

Prep seq: 647125

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	0.957	1.50	0.740	mg/L	11.19.13 03:30	J	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.954	mg/L	11.19.13 03:30	U	1
Total TPH	PHC635	0.957		0.740	mg/L	11.19.13 03:30	J	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	87	70 - 135	%		
o-Terphenyl	86	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 928106

Date Prep: 11.18.13 10.00

Prep seq: 647228

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	0.0220	0.00100	0.000500	mg/L	11.19.13 17:08		1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	11.19.13 17:08	U	1
Ethylbenzene	100-41-4	0.00934	0.00100	0.000700	mg/L	11.19.13 17:08		1
m,p-Xylenes	179601-23-1	0.00372	0.00200	0.00140	mg/L	11.19.13 17:08		1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	11.19.13 17:08	U	1
Total Xylenes	1330-20-7	0.00372		0.000700	mg/L	11.19.13 17:08		
Total BTEX		0.0351		0.000500	mg/L	11.19.13 17:08		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	89	80 - 120	%		
4-Bromofluorobenzene	99	80 - 120	%		



Certificate of Analytical Results

474072



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id: MW-15

Matrix: Water

Sample Depth:

Lab Sample Id: 474072-006

Date Collected: 11.13.13 11.48

Date Received: 11.14.13 17.12

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 927929

Date Prep: 11.18.13 17.00

Prep seq: 647125

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	0.881	1.50	0.740	mg/L	11.19.13 03:52	J	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.954	mg/L	11.19.13 03:52	U	1
Total TPH	PHC635	0.881		0.740	mg/L	11.19.13 03:52	J	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	87	70 - 135	%		
o-Terphenyl	84	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 928106

Date Prep: 11.18.13 10.00

Prep seq: 647228

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	0.0132	0.00100	0.000500	mg/L	11.19.13 17:24		1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	11.19.13 17:24	U	1
Ethylbenzene	100-41-4	0.00740	0.00100	0.000700	mg/L	11.19.13 17:24		1
m,p-Xylenes	179601-23-1	0.00275	0.00200	0.00140	mg/L	11.19.13 17:24		1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	11.19.13 17:24	U	1
Total Xylenes	1330-20-7	0.00275		0.000700	mg/L	11.19.13 17:24		
Total BTEX		0.0234		0.000500	mg/L	11.19.13 17:24		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	88	80 - 120	%		
4-Bromofluorobenzene	95	80 - 120	%		



Certificate of Analytical Results

474072



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id: MW-11

Matrix: Water

Sample Depth:

Lab Sample Id: 474072-007

Date Collected: 11.13.13 12.36

Date Received: 11.14.13 17.12

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 927929

Date Prep: 11.18.13 17.00

Prep seq: 647125

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.740	mg/L	11.19.13 04:15	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.954	mg/L	11.19.13 04:15	U	1
Total TPH	PHC635	ND		0.740	mg/L	11.19.13 04:15	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	89	70 - 135	%		
o-Terphenyl	88	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 928106

Date Prep: 11.18.13 10.00

Prep seq: 647228

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	11.19.13 17:40	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	11.19.13 17:40	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	11.19.13 17:40	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	11.19.13 17:40	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	11.19.13 17:40	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	11.19.13 17:40	U	
Total BTEX		ND		0.000500	mg/L	11.19.13 17:40	U	

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



Certificate of Analytical Results

474072



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id: MW-12

Matrix: Water

Sample Depth:

Lab Sample Id: 474072-008

Date Collected: 11.13.13 13.14

Date Received: 11.14.13 17.12

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 927929

Date Prep: 11.18.13 17.00

Prep seq: 647125

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.740	mg/L	11.19.13 04:37	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.954	mg/L	11.19.13 04:37	U	1
Total TPH	PHC635	ND		0.740	mg/L	11.19.13 04:37	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	85	70 - 135	%		
o-Terphenyl	79	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 928106

Date Prep: 11.18.13 10.00

Prep seq: 647228

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	11.19.13 17:56	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	11.19.13 17:56	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	11.19.13 17:56	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	11.19.13 17:56	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	11.19.13 17:56	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	11.19.13 17:56	U	
Total BTEX		ND		0.000500	mg/L	11.19.13 17:56	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	86	80 - 120	%		
4-Bromofluorobenzene	103	80 - 120	%		



Certificate of Analytical Results

474072



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id: MW-13

Matrix: Water

Sample Depth:

Lab Sample Id: 474072-009

Date Collected: 11.13.13 13.50

Date Received: 11.14.13 17.12

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 927929

Date Prep: 11.18.13 17.00

Prep seq: 647125

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.740	mg/L	11.19.13 05:44	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.954	mg/L	11.19.13 05:44	U	1
Total TPH	PHC635	ND		0.740	mg/L	11.19.13 05:44	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	84	70 - 135	%		
o-Terphenyl	81	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 928106

Date Prep: 11.18.13 10.00

Prep seq: 647228

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	11.19.13 19:16	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	11.19.13 19:16	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	11.19.13 19:16	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	11.19.13 19:16	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	11.19.13 19:16	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	11.19.13 19:16	U	
Total BTEX		ND		0.000500	mg/L	11.19.13 19:16	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	82	80 - 120	%		
4-Bromofluorobenzene	104	80 - 120	%		



Certificate of Analytical Results

474072



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id: **MW-8**

Matrix: Water

Sample Depth:

Lab Sample Id: 474072-010

Date Collected: 11.13.13 14.33

Date Received: 11.14.13 17.12

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 927929

Date Prep: 11.18.13 17.00

Prep seq: 647125

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.740	mg/L	11.19.13 06:07	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.954	mg/L	11.19.13 06:07	U	1
Total TPH	PHC635	ND		0.740	mg/L	11.19.13 06:07	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	85	70 - 135	%		
o-Terphenyl	83	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 928106

Date Prep: 11.18.13 10.00

Prep seq: 647228

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	11.19.13 19:32	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	11.19.13 19:32	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	11.19.13 19:32	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	11.19.13 19:32	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	11.19.13 19:32	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	11.19.13 19:32	U	
Total BTEX		ND		0.000500	mg/L	11.19.13 19:32	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	88	80 - 120	%		
4-Bromofluorobenzene	99	80 - 120	%		



Certificate of Analytical Results

474072



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id: **MW-7** Matrix: **Water** Sample Depth:
Lab Sample Id: 474072-011 Date Collected: 11.13.13 15.11 Date Received: 11.14.13 17.12
Analytical Method: TPH by SW 8015B Prep Method: 1005
Analyst: **ARM** % Moist: Tech: **ARM**
Seq Number: 927929 Date Prep: 11.18.13 17.00
Prep seq: 647125

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.740	mg/L	11.19.13 06:29	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.954	mg/L	11.19.13 06:29	U	1
Total TPH	PHC635	ND		0.740	mg/L	11.19.13 06:29	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	92	70 - 135	%		
o-Terphenyl	89	70 - 135	%		

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: **ARM** % Moist: Tech: **ARM**
Seq Number: 928106 Date Prep: 11.18.13 10.00
Prep seq: 647228

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	11.19.13 19:48	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	11.19.13 19:48	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	11.19.13 19:48	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	11.19.13 19:48	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	11.19.13 19:48	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	11.19.13 19:48	U	
Total BTEX		ND		0.000500	mg/L	11.19.13 19:48	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	87	80 - 120	%		
4-Bromofluorobenzene	98	80 - 120	%		



Certificate of Analytical Results

474072



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id: **MW-10**

Matrix: Water

Sample Depth:

Lab Sample Id: 474072-012

Date Collected: 11.13.13 15.48

Date Received: 11.14.13 17.12

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 927929

Date Prep: 11.18.13 17.00

Prep seq: 647125

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.740	mg/L	11.19.13 06:52	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.954	mg/L	11.19.13 06:52	U	1
Total TPH	PHC635	ND		0.740	mg/L	11.19.13 06:52	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	89	70 - 135	%		
o-Terphenyl	85	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 928106

Date Prep: 11.18.13 10.00

Prep seq: 647228

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	11.19.13 20:04	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	11.19.13 20:04	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	11.19.13 20:04	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	11.19.13 20:04	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	11.19.13 20:04	U	1
Total Xylenes	1330-20-7	ND		0.000700	mg/L	11.19.13 20:04	U	
Total BTEX		ND		0.000500	mg/L	11.19.13 20:04	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	85	80 - 120	%		
4-Bromofluorobenzene	97	80 - 120	%		

Certificate of Analytical Results

474072

PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id: **MW-4**

Matrix: Water

Sample Depth:

Lab Sample Id: 474072-013

Date Collected: 11.13.13 16.25

Date Received: 11.14.13 17.12

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 927929

Date Prep: 11.18.13 17.00

Prep seq: 647125

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	0.840	1.50	0.740	mg/L	11.19.13 07:14	J	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.954	mg/L	11.19.13 07:14	U	1
Total TPH	PHC635	0.840		0.740	mg/L	11.19.13 07:14	J	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	94	70 - 135	%		
o-Terphenyl	92	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 928106

Date Prep: 11.18.13 10.00

Prep seq: 647228

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	0.0106	0.00100	0.000500	mg/L	11.19.13 20:19		1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	11.19.13 20:19	U	1
Ethylbenzene	100-41-4	0.00503	0.00100	0.000700	mg/L	11.19.13 20:19		1
m,p-Xylenes	179601-23-1	0.00178	0.00200	0.00140	mg/L	11.19.13 20:19	J	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	11.19.13 20:19	U	1
Total Xylenes	1330-20-7	0.00178		0.000700	mg/L	11.19.13 20:19		
Total BTEX		0.0174		0.000500	mg/L	11.19.13 20:19		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	83	80 - 120	%		
4-Bromofluorobenzene	99	80 - 120	%		



Certificate of Analytical Results

474072



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id: MW-5

Matrix: Water

Sample Depth:

Lab Sample Id: 474072-014

Date Collected: 11.13.13 17.03

Date Received: 11.14.13 17.12

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 927929

Date Prep: 11.18.13 17.00

Prep seq: 647125

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	1.77	1.50	0.740	mg/L	11.19.13 07:37		1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	2.39	1.50	0.954	mg/L	11.19.13 07:37		1
Total TPH	PHC635	4.16		0.740	mg/L	11.19.13 07:37		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	95	70 - 135	%		
o-Terphenyl	93	70 - 135	%		

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 928106

Date Prep: 11.18.13 10.00

Prep seq: 647228

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	0.0380	0.00100	0.000500	mg/L	11.19.13 20:35		1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	11.19.13 20:35	U	1
Ethylbenzene	100-41-4	0.113	0.00100	0.000700	mg/L	11.19.13 20:35		1
m,p-Xylenes	179601-23-1	0.00835	0.00200	0.00140	mg/L	11.19.13 20:35		1
o-Xylene	95-47-6	0.00553	0.00100	0.000700	mg/L	11.19.13 20:35		1
Total Xylenes	1330-20-7	0.0139		0.000700	mg/L	11.19.13 20:35		
Total BTEX		0.165		0.000500	mg/L	11.19.13 20:35		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	83	80 - 120	%		
4-Bromofluorobenzene	98	80 - 120	%		



Certificate of Analytical Results

474072



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id: 647125-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 647125-1-BLK

Date Collected:

Date Received:

Analytical Method: TPH by SW 8015B

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 927929

Date Prep: 11.18.13 17.00

Prep seq: 647125

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
C6-C10 Gasoline Range Hydrocarbons	C6C10GRO	ND	1.50	0.740	mg/L	11.19.13 00:07	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	ND	1.50	0.954	mg/L	11.19.13 00:07	U	1
Total TPH	PHC635	ND		0.740	mg/L	11.19.13 00:07	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	92	70 - 135	%		
o-Terphenyl	91	70 - 135	%		

Sample Id: 647228-1-BLK

Matrix: Water

Sample Depth:

Lab Sample Id: 647228-1-BLK

Date Collected:

Date Received:

Analytical Method: BTEX by EPA 8021B

Prep Method: 5030B

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 928106

Date Prep: 11.18.13 10.00

Prep seq: 647228

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	ND	0.00100	0.000500	mg/L	11.19.13 12:05	U	1
Toluene	108-88-3	ND	0.00200	0.00100	mg/L	11.19.13 12:05	U	1
Ethylbenzene	100-41-4	ND	0.00100	0.000700	mg/L	11.19.13 12:05	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	0.00140	mg/L	11.19.13 12:05	U	1
o-Xylene	95-47-6	ND	0.00100	0.000700	mg/L	11.19.13 12:05	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	86	80 - 120	%		
4-Bromofluorobenzene	92	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 **SQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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 2505 North Falkenburg Rd, Tampa, FL 33619
 12600 West I-20 East, Odessa, TX 79765
 6017 Financial Drive, Norcross, GA 30071
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(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(432) 563-1800	(432) 563-1713
(770) 449-8800	(770) 449-5477
(602) 437-0330	

Form 2 - Surrogate Recoveries

Project Name: Livingston Ridge

Work Orders : 474072,

Project ID: SRS# 2001-11005

Lab Batch #: 928106

Sample: 647228-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 11/19/13 10:45	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0282	0.0300	94	80-120
4-Bromofluorobenzene		0.0308	0.0300	103	80-120

Lab Batch #: 928106

Sample: 647228-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 11/19/13 11:01	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0287	0.0300	96	80-120
4-Bromofluorobenzene		0.0319	0.0300	106	80-120

Lab Batch #: 928106

Sample: 474072-001 S / MS

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 11/19/13 11:17	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0286	0.0300	95	80-120
4-Bromofluorobenzene		0.0314	0.0300	105	80-120

Lab Batch #: 928106

Sample: 474072-001 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 11/19/13 11:33	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0285	0.0300	95	80-120
4-Bromofluorobenzene		0.0305	0.0300	102	80-120

Lab Batch #: 928106

Sample: 647228-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 11/19/13 12:05	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0258	0.0300	86	80-120
4-Bromofluorobenzene		0.0275	0.0300	92	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 Ridge

Work Orders : 474072,

Project ID: SRS# 2001-11005

Lab Batch #: 927929

Sample: 647125-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 11/18/13 23:21	SURROGATE RECOVERY STUDY			
TPH by SW 8015B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		9.55	10.0	96	70-135
o-Terphenyl		5.39	5.00	108	70-135

Lab Batch #: 927929

Sample: 647125-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 11/18/13 23:44	SURROGATE RECOVERY STUDY			
TPH by SW 8015B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		9.88	10.0	99	70-135
o-Terphenyl		5.78	5.00	116	70-135

Lab Batch #: 927929

Sample: 647125-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 11/19/13 00:07	SURROGATE RECOVERY STUDY			
TPH by SW 8015B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		9.23	10.0	92	70-135
o-Terphenyl		4.55	5.00	91	70-135

Lab Batch #: 927929

Sample: 474072-001 S / MS

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 11/19/13 01:37	SURROGATE RECOVERY STUDY			
TPH by SW 8015B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		9.19	10.0	92	70-135
o-Terphenyl		5.43	5.00	109	70-135

Lab Batch #: 927929

Sample: 474072-001 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 11/19/13 02:00	SURROGATE RECOVERY STUDY			
TPH by SW 8015B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		8.94	10.0	89	70-135
o-Terphenyl		5.07	5.00	101	70-135

* 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 Ridge

Work Order #: 474072

Project ID: SRS# 2001-11005

Analyst: ARM

Date Prepared: 11/18/2013

Date Analyzed: 11/19/2013

Lab Batch ID: 928106

Sample: 647228-1-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	<0.000500	0.100	0.0886	89	0.100	0.0964	96	8	70-125	25	
Toluene	<0.00100	0.100	0.0906	91	0.100	0.0992	99	9	70-125	25	
Ethylbenzene	<0.000700	0.100	0.0971	97	0.100	0.106	106	9	71-129	25	
m,p-Xylenes	<0.00140	0.200	0.198	99	0.200	0.217	109	9	70-131	25	
o-Xylene	<0.000700	0.100	0.0993	99	0.100	0.109	109	9	71-133	25	

Analyst: ARM

Date Prepared: 11/18/2013

Date Analyzed: 11/18/2013

Lab Batch ID: 927929

Sample: 647125-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW 8015B	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											
C6-C10 Gasoline Range Hydrocarbons	<0.740	100	99.0	99	100	103	103	4	70-135	25	
C10-C28 Diesel Range Hydrocarbons	<0.954	100	97.5	98	100	104	104	6	70-135	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 Ridge

Work Order #: 474072

Project ID: SRS# 2001-11005

Lab Batch ID: 928106

QC- Sample ID: 474072-001 S

Batch #: 1 Matrix: Water

Date Analyzed: 11/19/2013

Date Prepared: 11/18/2013

Analyst: ARM

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	<0.000500	0.100	0.0967	97	0.100	0.0943	94	3	70-125	25	
Toluene	<0.00100	0.100	0.0994	99	0.100	0.0968	97	3	70-125	25	
Ethylbenzene	<0.000700	0.100	0.107	107	0.100	0.104	104	3	71-129	25	
m,p-Xylenes	<0.00140	0.200	0.218	109	0.200	0.212	106	3	70-131	25	
o-Xylene	<0.000700	0.100	0.109	109	0.100	0.106	106	3	71-133	25	

Lab Batch ID: 927929

QC- Sample ID: 474072-001 S

Batch #: 1 Matrix: Water

Date Analyzed: 11/19/2013

Date Prepared: 11/18/2013

Analyst: ARM

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by SW 8015B 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
C6-C10 Gasoline Range Hydrocarbons	<0.740	100	96.6	97	100	95.8	96	1	70-135	25	
C10-C28 Diesel Range Hydrocarbons	<0.954	100	97.9	98	100	95.0	95	3	70-135	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.

Office Location MLAHP, IX

[illegible]



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: PLAINS ALL AMERICAN EH&S

Date/ Time Received: 11/14/2013 05:12:47 PM

Work Order #: 474072

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Sample instructions complete on Chain of Custody?	Yes
#9 Any missing/extra samples?	No
#10 Chain of Custody signed when relinquished/ received?	Yes
#11 Chain of Custody agrees with sample label(s)?	Yes
#12 Container label(s) legible and intact?	Yes
#13 Sample matrix/ properties agree with Chain of Custody?	Yes
#14 Samples in proper container/ bottle?	Yes
#15 Samples properly preserved?	Yes
#16 Sample container(s) intact?	Yes
#17 Sufficient sample amount for indicated test(s)?	Yes
#18 All samples received within hold time?	Yes
#19 Subcontract of sample(s)?	No
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	Yes
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	Yes
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	Yes

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

Analyst:	PH Device/Lot#:
----------	-----------------

Checklist completed by:

Julian Martinez

Date: 11/14/2013

Checklist reviewed by:

Julian Martinez

Date: 11/14/2013

Analytical Report 470645

for

PLAINS ALL AMERICAN EH&S

Project Manager: Dale Moxley

Livingston Ridge

A4137008

24-SEP-13

Collected By: Client



12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-13-14-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD (L10-135)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Lakeland: Florida (E84098)

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

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

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

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

Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

24-SEP-13

Project Manager: **Dale Moxley**
PLAINS ALL AMERICAN EH&S
1301 S. COUNTY ROAD 1150
Midland, TX 79706

Reference: XENCO Report No(s): **470645**
Livingston Ridge
Project Address: TX

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) 470645. 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. 470645 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

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Sample Cross Reference 470645



PLAINS ALL AMERICAN EH&S, Midland, TX

Livingston Ridge

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-1	W	09-19-13 11:20		470645-001
MW-2	W	09-19-13 10:20		470645-002
MW-5	W	09-19-13 13:10		470645-003
MW-6	W	09-19-13 10:55		470645-004
MW-7	W	09-19-13 12:05		470645-005
MW-8	W	09-19-13 11:45		470645-006
MW-9	W	09-19-13 10:40		470645-007
MW-10	W	09-19-13 12:30		470645-008
MW-13	W	09-19-13 12:50		470645-009



CASE NARRATIVE



Client Name: PLAINS ALL AMERICAN EH&S

Project Name: Livingston Ridge

Project ID: A4137008

Work Order Number(s): 470645

Report Date: 24-SEP-13

Date Received: 09/19/2013

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-923322 PAHs by GCMS SIM
SIM

Batch 923322, Nitrobenzene-d5 recovered above QC limits . Matrix interferences is suspected; data confirmed by re-analysis

Samples affected are: 470645-003.

Certificate of Analysis Summary 470645

PLAINS ALL AMERICAN EH&S, Midland, TX



Project Id: A4137008

Contact: Dale Moxley

Project Name: Livingston Ridge

Date Received in Lab: Thu Sep-19-13 04:05 pm

Report Date: 24-SEP-13

Project Location: TX

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i> <i>Field Id:</i> <i>Depth:</i> <i>Matrix:</i> <i>Sampled:</i>	470645-001 MW-1 WATER Sep-19-13 11:20	470645-002 MW-2 WATER Sep-19-13 10:20	470645-003 MW-5 WATER Sep-19-13 13:10	470645-004 MW-6 WATER Sep-19-13 10:55	470645-005 MW-7 WATER Sep-19-13 12:05	470645-006 MW-8 WATER Sep-19-13 11:45
PAHs by GCMS SIM SUB: E871002	<i>Extracted:</i> <i>Analyzed:</i> <i>Units/RL:</i>	Sep-21-13 16:09 Sep-23-13 15:40 mg/L RL	Sep-21-13 16:12 Sep-23-13 13:03 mg/L RL	Sep-21-13 16:15 Sep-23-13 15:57 mg/L RL	Sep-21-13 16:18 Sep-23-13 13:31 mg/L RL	Sep-21-13 16:21 Sep-23-13 13:45 mg/L RL	Sep-21-13 16:24 Sep-23-13 14:00 mg/L RL
Acenaphthene		0.000128 0.0000500	ND 0.0000513	0.000280 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500
Acenaphthylene		0.000162 0.0000500	ND 0.0000513	0.000397 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500
Anthracene		ND 0.0000500	ND 0.0000513	ND 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500
Benzo(a)anthracene		ND 0.0000500	ND 0.0000513	0.000377 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500
Benzo(a)pyrene		ND 0.0000500	ND 0.0000513	ND 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500
Benzo(b)fluoranthene		ND 0.0000500	ND 0.0000513	ND 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500
Benzo(g,h,i)perylene		ND 0.0000500	ND 0.0000513	ND 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500
Benzo(k)fluoranthene		ND 0.0000500	ND 0.0000513	ND 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500
Chrysene		ND 0.0000500	ND 0.0000513	ND 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500
Dibenz(a,h)anthracene		ND 0.0000500	ND 0.0000513	ND 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500
Dibenzofuran		0.00176 0.0000500	0.000207 0.0000513	0.00431 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500
Fluoranthene		ND 0.0000500	ND 0.0000513	ND 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500
Fluorene		0.000736 0.0000500	0.000115 0.0000513	0.00213 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500
Indeno(1,2,3-c,d)Pyrene		ND 0.0000500	ND 0.0000513	ND 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500
Naphthalene		0.00592 0.000500	0.000560 0.000513	0.0405 0.00256	ND 0.000508	ND 0.000500	ND 0.000500
Phenanthrene		0.000649 0.0000500	0.000174 0.0000513	0.00374 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500
Pyrene		ND 0.0000500	ND 0.0000513	ND 0.000256	ND 0.0000508	ND 0.0000500	ND 0.0000500

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

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Kelsey Brooks
Project Manager

Certificate of Analysis Summary 470645

PLAINS ALL AMERICAN EH&S, Midland, TX



Project Id: A4137008

Contact: Dale Moxley

Project Name: Livingston Ridge

Date Received in Lab: Thu Sep-19-13 04:05 pm

Report Date: 24-SEP-13

Project Location: TX

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	470645-007	470645-008	470645-009			
	<i>Field Id:</i>	MW-9	MW-10	MW-13			
	<i>Depth:</i>						
	<i>Matrix:</i>	WATER	WATER	WATER			
	<i>Sampled:</i>	Sep-19-13 10:40	Sep-19-13 12:30	Sep-19-13 12:50			
PAHs by GCMS SIM SUB: E871002	<i>Extracted:</i>	Sep-21-13 16:27	Sep-21-13 16:30	Sep-21-13 16:33			
	<i>Analyzed:</i>	Sep-23-13 14:14	Sep-23-13 14:39	Sep-23-13 14:53			
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL			
Acenaphthene		0.0000520 0.0000513	ND 0.0000508	ND 0.0000508			
Acenaphthylene		ND 0.0000513	ND 0.0000508	ND 0.0000508			
Anthracene		ND 0.0000513	ND 0.0000508	ND 0.0000508			
Benzo(a)anthracene		ND 0.0000513	ND 0.0000508	ND 0.0000508			
Benzo(a)pyrene		ND 0.0000513	ND 0.0000508	ND 0.0000508			
Benzo(b)fluoranthene		ND 0.0000513	ND 0.0000508	ND 0.0000508			
Benzo(g,h,i)perylene		ND 0.0000513	ND 0.0000508	ND 0.0000508			
Benzo(k)fluoranthene		ND 0.0000513	ND 0.0000508	ND 0.0000508			
Chrysene		ND 0.0000513	ND 0.0000508	ND 0.0000508			
Dibenz(a,h)anthracene		ND 0.0000513	ND 0.0000508	ND 0.0000508			
Dibenzofuran		ND 0.0000513	0.0000600 0.0000508	0.000433 0.0000508			
Fluoranthene		ND 0.0000513	ND 0.0000508	ND 0.0000508			
Fluorene		ND 0.0000513	ND 0.0000508	ND 0.0000508			
Indeno(1,2,3-c,d)Pyrene		ND 0.0000513	ND 0.0000508	ND 0.0000508			
Naphthalene		ND 0.000513	ND 0.000508	ND 0.000508			
Phenanthrene		ND 0.0000513	0.0000852 0.0000508	ND 0.0000508			
Pyrene		ND 0.0000513	ND 0.0000508	ND 0.0000508			

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

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Kelsey Brooks
Project Manager

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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

Certified and approved by numerous States and Agencies.

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 5332 Blackberry Drive, San Antonio TX 78238
 2505 North Falkenburg Rd, Tampa, FL 33619
 12600 West I-20 East, Odessa, TX 79765
 6017 Financial Drive, Norcross, GA 30071
 3725 E. Atlanta Ave, Phoenix, AZ 85040

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(432) 563-1800	(432) 563-1713
(770) 449-8800	(770) 449-5477
(602) 437-0330	

Form 2 - Surrogate Recoveries

Project Name: Livingston Ridge

Work Orders : 470645,

Project ID: A4137008

Lab Batch #: 923322

Sample: 470645-002 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 09/23/13 13:03

SURROGATE RECOVERY STUDY

PAHs by GCMS SIM Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Nitrobenzene-d5	0.574	1.00	57	35-114	
2-Fluorobiphenyl	0.772	1.00	77	43-116	
Terphenyl-D14	0.708	1.00	71	33-141	

Lab Batch #: 923322

Sample: 470645-004 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 09/23/13 13:31

SURROGATE RECOVERY STUDY

PAHs by GCMS SIM Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Nitrobenzene-d5	0.498	1.00	50	35-114	
2-Fluorobiphenyl	0.564	1.00	56	43-116	
Terphenyl-D14	0.656	1.00	66	33-141	

Lab Batch #: 923322

Sample: 470645-005 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 09/23/13 13:45

SURROGATE RECOVERY STUDY

PAHs by GCMS SIM Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Nitrobenzene-d5	0.622	1.00	62	35-114	
2-Fluorobiphenyl	0.703	1.00	70	43-116	
Terphenyl-D14	0.776	1.00	78	33-141	

Lab Batch #: 923322

Sample: 470645-006 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 09/23/13 14:00

SURROGATE RECOVERY STUDY

PAHs by GCMS SIM Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Nitrobenzene-d5	0.495	1.00	50	35-114	
2-Fluorobiphenyl	0.549	1.00	55	43-116	
Terphenyl-D14	0.675	1.00	68	33-141	

* 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 Ridge

Work Orders : 470645,

Project ID: A4137008

Lab Batch #: 923322

Sample: 470645-007 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 09/23/13 14:14

SURROGATE RECOVERY STUDY

PAHs by GCMS SIM Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Nitrobenzene-d5	0.503	1.00	50	35-114	
2-Fluorobiphenyl	0.569	1.00	57	43-116	
Terphenyl-D14	0.767	1.00	77	33-141	

Lab Batch #: 923322

Sample: 470645-008 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 09/23/13 14:39

SURROGATE RECOVERY STUDY

PAHs by GCMS SIM Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Nitrobenzene-d5	0.577	1.00	58	35-114	
2-Fluorobiphenyl	0.636	1.00	64	43-116	
Terphenyl-D14	0.730	1.00	73	33-141	

Lab Batch #: 923322

Sample: 470645-009 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 09/23/13 14:53

SURROGATE RECOVERY STUDY

PAHs by GCMS SIM Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Nitrobenzene-d5	0.508	1.00	51	35-114	
2-Fluorobiphenyl	0.578	1.00	58	43-116	
Terphenyl-D14	0.710	1.00	71	33-141	

Lab Batch #: 923322

Sample: 470645-001 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 09/23/13 15:40

SURROGATE RECOVERY STUDY

PAHs by GCMS SIM Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Nitrobenzene-d5	0.922	1.00	92	35-114	
2-Fluorobiphenyl	0.797	1.00	80	43-116	
Terphenyl-D14	0.774	1.00	77	33-141	

* 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 Ridge

Work Orders : 470645,

Project ID: A4137008

Lab Batch #: 923322

Sample: 470645-003 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 09/23/13 15:57

SURROGATE RECOVERY STUDY

PAHs by GCMS SIM Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Nitrobenzene-d5	0.772	0.200	386	35-114	**
2-Fluorobiphenyl	0.176	0.200	88	43-116	
Terphenyl-D14	0.162	0.200	81	33-141	

Lab Batch #: 923322

Sample: 644138-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 09/23/13 12:01

SURROGATE RECOVERY STUDY

PAHs by GCMS SIM Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Nitrobenzene-d5	0.660	1.00	66	35-114	
2-Fluorobiphenyl	0.804	1.00	80	43-116	
Terphenyl-D14	0.831	1.00	83	33-141	

Lab Batch #: 923322

Sample: 644138-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 09/23/13 12:15

SURROGATE RECOVERY STUDY

PAHs by GCMS SIM Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Nitrobenzene-d5	0.573	1.00	57	35-114	
2-Fluorobiphenyl	0.778	1.00	78	43-116	
Terphenyl-D14	0.804	1.00	80	33-141	

Lab Batch #: 923322

Sample: 644138-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 09/23/13 12:29

SURROGATE RECOVERY STUDY

PAHs by GCMS SIM Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Nitrobenzene-d5	0.555	1.00	56	35-114	
2-Fluorobiphenyl	0.717	1.00	72	43-116	
Terphenyl-D14	0.781	1.00	78	33-141	

* 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.

Project Name: Livingston Ridge

Work Order #: 470645

Analyst: CYE

Date Prepared: 09/21/2013

Project ID: A4137008

Date Analyzed: 09/23/2013

Lab Batch ID: 923322

Sample: 644138-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

PAHs by GCMS SIM	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											
Acenaphthene	<0.0000500	0.00100	0.000817	82	0.00100	0.000757	76	8	57-90	25	
Acenaphthylene	<0.0000500	0.00100	0.000681	68	0.00100	0.000646	65	5	47-95	25	
Anthracene	<0.0000500	0.00100	0.000871	87	0.00100	0.000845	85	3	56-90	25	
Benzo(a)anthracene	<0.0000500	0.00100	0.000761	76	0.00100	0.000739	74	3	51-100	25	
Benzo(a)pyrene	<0.0000500	0.00100	0.000719	72	0.00100	0.000706	71	2	49-97	25	
Benzo(b)fluoranthene	<0.0000500	0.00100	0.000702	70	0.00100	0.000684	68	3	41-114	25	
Benzo(g,h,i)perylene	<0.0000500	0.00100	0.000745	75	0.00100	0.000713	71	4	51-105	25	
Benzo(k)fluoranthene	<0.0000500	0.00100	0.000749	75	0.00100	0.000722	72	4	54-103	25	
Chrysene	<0.0000500	0.00100	0.000853	85	0.00100	0.000827	83	3	60-101	25	
Dibenz(a,h)anthracene	<0.0000500	0.00100	0.000736	74	0.00100	0.000726	73	1	50-109	25	
Dibenzofuran	<0.0000500	0.00100	0.000814	81	0.00100	0.000770	77	6	55-91	25	
Fluoranthene	<0.0000500	0.00100	0.000747	75	0.00100	0.000725	73	3	58-93	25	
Fluorene	<0.0000500	0.00100	0.000833	83	0.00100	0.000778	78	7	58-93	25	
Indeno(1,2,3-c,d)Pyrene	<0.0000500	0.00100	0.000754	75	0.00100	0.000740	74	2	52-108	25	
Naphthalene	<0.0000500	0.00100	0.000838	84	0.00100	0.000806	81	4	51-100	25	
Phenanthrene	<0.0000500	0.00100	0.000781	78	0.00100	0.000752	75	4	43-97	25	
Pyrene	<0.0000500	0.00100	0.000886	89	0.00100	0.000867	87	2	51-95	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

Terracon

Consulting Engineers & Scientists

Office Location MIDLAND, TX

Project Manager J. Dale Moxley

Sampler's Name

KIMBLE THRAST

Sampler's Signature

Proj. No.

44137008

Project Name

WINSTON RIGGE

No./Type of Containers

9 16 KMB

Matrix Date Time

W 9-19-13 1120

C
m
p

G
f
a
b

Identifying Marks of Samples)

MW-1

Start
Depth

End
Depth

VOA

AG
1L

250
ml

P/O

PAH₅

Lab Sample ID (Lab Use Only)

470645

Laboratory: XENCO LABS

Address: 1260 WITROE

CHASSA, TX 79763

Contact: ALEX MONTGOMERY

Phone: 432 563 1800

PO/ISO #:

ANALYSIS
REQUESTED

Lab use only

Due Date:

0.5

Temp. of coolers
when received (C°):

1 2 3 4 5

Page 1 of 1

Turn around time	☒ Normal	☐ 25% Rush	☐ 50% Rush	☐ 100% Rush
Relinquished by (Signature)	<u>[Signature]</u>	Date: <u>9/19/13</u> Time: <u>1605</u>	Received by: (Signature)	Date: <u>9-19-13</u> Time: <u>1605</u>
Relinquished by (Signature)		Date: _____ Time: _____	Received by: (Signature)	Date: _____ Time: _____
Relinquished by (Signature)		Date: _____ Time: _____	Received by: (Signature)	Date: _____ Time: _____
Relinquished by (Signature)		Date: _____ Time: _____	Received by: (Signature)	Date: _____ Time: _____

NOTES:
E-MAIL RESULTS TO:
JDMOXLEY@TERRACON.COM

Matrix Container	WW - Wastewater VOA - 40 ml vial	W - Water A/G - Amber / Or Glass 1 Liter	S - Soil SD - Solid	L - Liquid 250 ml - Glass wide mouth	A - Air Bag	C - Charcoal tube P/O - Plastic or other	SL - sludge	O - Oil
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 24 Smith Rd., # 261 Midland, Texas 79705 (432) 684-9600 Fax (432) 684-9608				



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: PLAINS ALL AMERICAN EH&S

Date/ Time Received: 09/19/2013 04:05:00 PM

Work Order #: 470645

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	.5
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	Yes
#6 *Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Sample instructions complete on Chain of Custody?	Yes
#9 Any missing/extra samples?	No
#10 Chain of Custody signed when relinquished/ received?	Yes
#11 Chain of Custody agrees with sample label(s)?	Yes
#12 Container label(s) legible and intact?	Yes
#13 Sample matrix/ properties agree with Chain of Custody?	Yes
#14 Samples in proper container/ bottle?	Yes
#15 Samples properly preserved?	Yes
#16 Sample container(s) intact?	Yes
#17 Sufficient sample amount for indicated test(s)?	Yes
#18 All samples received within hold time?	Yes
#19 Subcontract of sample(s)?	Yes
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	N/A
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	N/A
#22 >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:

Candace James

Candace James

Date: 09/19/2013

Checklist reviewed by:

Date: 09/19/2013

APPENDIX D

MDPE Reports



AMARILLO
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Amarillo, Texas 79107
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Fax 806.467.0622

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408 West Texas Ave.
Artesia, New Mexico 88210
Phone 575.746.8768
Fax 575.748.8905

HOBBS
318 East Taylor Street
Hobbs, New Mexico 88241
Phone 505.393.4261
Fax 505.393.4658

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**MOBILE DUAL PHASE EXTRACTION REPORT
LIVINGSTON RIDGE TO HUGH-P.SIMS PIPELINE RELEASE
LEA COUNTY, NEW MEXICO
SRS # 2001-1005
NMOCD# 1R-0398**

PREPARED FOR:

**PLAINS MARKETING, L.P.
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PREPARED BY:

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JUNE 20, 2013



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I. MDPE SUMMARY REPORT AND WASTE DISPOSITION

A. MDPE Results

The following report summarizes data collected during the 12-hour High Vacuum Multi-Phase Extraction (MDPE) event conducted on April 9, 2013 at the Livingston Ridge to Hugh-P.Sims Pipeline release site, located in Lea County, New Mexico. The objective of the MDPE treatment was to remove both vapor and liquid phase separated hydrocarbons (PSH) from onsite groundwater wells. Talon/LPE utilized an MDPE unit which consisted of an SVE extraction pump capable of generating vacuum up to 25" hg. Off gas vapors extracted from the extraction wells were destroyed using a propane-fired 1000-SCFM thermal oxidizer capable of processing 172.96 lbs/hr of gasoline.

A total of 12 hours (0.5 days) of PSH recovery was performed on TMW1 for 12 hours.

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

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

Based on a combination of field vapor screening and collected laboratory samples, a combined estimated total of **10.79 equivalent gallons of hydrocarbons (Total)** were removed during the event. The combined volume of hydrocarbons were comprised of approximately **3 gallons of PSH (liquid phase)** and approximately **7.79 gallons as off-gas vapor**. The calculations used to estimate the off-gas vapor mass recovered reflect the mass of total hydrocarbons recovered and does not necessarily equate to an equal mass of the product released. The mass recovery calculations may be affected by variations in the type of product released, age of release, activity of aerobic and/or anaerobic processes, and site specific geochemical factors.

The cumulative air flow measurements for the MDPE event were calculated using a combination of field data measurements and Preso® B+ manufacturer provided formulas. **Air flow rates extracted from the recovery wells averaged 54.95 SCFM** during the event.

A portion of the extracted air flow rates measured is attributable to compressed air, which was "injected" into the extraction wells. This "injected" air is introduced into the extraction wells for the purpose of enhancing liquid recovery rates.

B. Air Quality

Two influent air samples were collected during the event. These samples were submitted for laboratory testing in order to compare the predicted vapor concentrations (based on field-screening or calculated based on fuel consumption) to the actual vapor concentrations. The maximum concentration in air influent was recorded as 30,800 ppmv for Hydrocarbon Composition. Laboratory analytical results can be found in Attachment 2.

C. Waste Management and Disposition

A cumulative total of 682 gallons of fluid were generated during this event. The fluids were temporarily transferred to an on-site storage tank prior to being transported to an authorized disposal facility. A copy of the waste ticket can be found in Attachment 4.

II. SYSTEM OPERATION DATA AND MASS RECOVERY CALCULATIONS

Formulae:

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

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

$$\text{Recovery (lbs)} = (\text{lbs/hr}) \times (\text{hrs})$$

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

$$\frac{8.34 \text{ lbs}}{\text{gallon water}} \times 0.66 \text{ average specific gravity of light crude (estimated)} = \frac{5.5 \text{ lbs light crude}}{\text{gallon}}$$

Table 1
System Operation Data and Mass Recovery Calculations

Time	Period (hours)	Influent Temp. (°F)	Vacuum (in. hg)	Vacuum (in. h2O)	Differential pressure (in. h2O)	Flow (SCFM)	FID Readings (ppm)	Lab Result (ppmv)	Assigned Lab Result (ppmv)	Correction Factor (CF)	Adjusted Lab Result (ppmv)	Adjusted Lab Result (mg/L)	Recovery (lbs/hr)	Recovery in Period (lbs)	Total Recovery (lbs)
11:15	0.5	80	22.5	305.20	10.2	55.19	12300	-	30800.00	0.25	7577	8.78	1.81	0.91	0.91
11:45	0.5	80	22.5	305.20	10	54.64	50000	30800.00	30800.00	1.00	30800	35.69	7.29	3.65	4.55
12:45	1	82	22.5	305.20	10.5	55.89	50000	-	30800.00	1.00	30800	35.56	7.43	7.43	11.98
13:45	1	82	22	299.40	10.1	56.62	50000	-	30800.00	1.00	30800	35.56	7.53	7.53	19.51
14:45	1	83	22.5	305.20	10.6	56.10	50000	-	30800.00	1.00	30800	35.50	7.44	7.44	26.95
15:45	1	79	23	313.01	11.3	56.16	50000	-	30800.00	1.00	30800	35.76	7.51	7.51	34.46
16:45	1	78	19	258.57	5	46.92	38726	-	30800.00	0.77	23855	27.75	4.87	4.87	39.33
17:45	1	78	19	258.57	5.1	47.39	50000	-	12520.00	1.00	12520	14.57	2.58	2.58	41.91
18:45	1	76	19	258.57	7.3	56.80	24556	-	12520.00	0.49	6149	7.18	1.52	1.52	43.43
19:45	1	72	19	258.57	7	55.83	21341	-	12520.00	0.43	5344	6.29	1.31	1.31	44.75
20:45	1	66	19	258.57	7.5	58.12	32294	-	12520.00	0.65	8086	9.63	2.09	2.09	46.84
21:45	1	62	18	244.96	6.8	56.03	50000	12520.00	12520.00	1.00	12520	15.02	3.26	3.26	50.09
22:45	1	62	18	244.96	6.5	56.73	50000	-	12520.00	1.00	12520	15.02	3.18	3.18	53.28
Averages:		75.38	20.46	278.46	8.30	54.95	40709.00						Total	53.28	

PSH Mass Recovered in Vapor Phase = 7.79 gallons

FID maximum Concentration = 50,000 PPM

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

Measured Conc.	Molecular Wt.	Pressure	Gas Constant	Temp.	Temp.	Conc.
(ppmv)	(Grams)	(atm)	(atm.liter/K.mole)	(F)	(K)	(C_mg/l)
7577	28.5118	1	0.0821	80	299.666667	8.78068925

Inputs are the green values.

Calculated values are yellow.

Constants are purple values.

Output are the blue values.

Liquid-phase Hydrocarbon Recovery

$\square \cdot r^2 \cdot h$ = volume

Total Hydrocarbon Recovery

PSH Mass Recovered in Vapor Phase = 53.28 lbs

PSH Mass Recovered in Liquid Phase = 7.79 gallons

PSH Mass Recovered in Liquid Phase = 20.52 lbs

PSH Mass Recovered in Liquid Phase = 3.00 gallons

TOTAL = 73.80 lbs
10.79 gallons

Gallons removed determined at time of pick up

PSH Volume in Gallons = 3

PSH Mass in Pounds = 20.52

% Vol. Hydrocarbon to ppmv - Influent 1

Compound	Molecular Weight (g/mol)	% Vol	=	ppmv
Methane (CH4)	16.04	2.05		20500.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0.002		26.00
Iso-Butane (C4H10)	58.12	0.005		58.00
N-Butane (C4H10)	58.12	0.001		10.00
Iso-Pentane (C5H12)	72.15	0.033		330.00
N-Pentane (C5H12)	72.15	0.034		340.00
Hexane+ (C6H14)	97.40	0.955		9550.00
Total				30800.00

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

Molecular Weight Calculations

component	Molecular Weight (g/mol)	mol%
Nitrogen (N2)	28.016	91.8480
Methane (CH4)	16.0425	3.8410
Carbon Dioxide (CO2)	44.011	4.0120
Ethane (C2H6)	30.069	0.0000
Propane (C3H8)	44.0956	0.0050
Iso-Butane (C4H10)	58.1222	0.0140
N-Butane (C4H10)	58.1222	0.0020
Iso-Pentane (C5H12)	72.1488	0.0910
N-Pentane (C5H12)	72.1488	0.0940
Hexane+	97.3966	0.2920
Total		100

Calculated MW 28.5118

% Vol. Hydrocarbon to ppmv - Influent 2

Compound	Molecular Weight (g/mol)	% Vol	=	ppmv
Methane (CH4)	16.04	0.451		4510
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0.003		30.00
Iso-Butane (C4H10)	58.12	0.016		160.00
N-Butane (C4H10)	58.12	0.084		840.00
Iso-Pentane (C5H12)	72.15	0.152		1520.00
N-Pentane (C5H12)	72.15	0.164		1640.00
Hexane+ (C6H14)	97.40	0.833		8330.00
Total				12520.00

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

Molecular Weight Calculations

component	Molecular Weight (g/mol)	mol%
Nitrogen (N2)	28.016	96.5320
Methane (CH4)	16.0425	0.8020
Carbon Dioxide (CO2)	44.011	2.2350
Ethane (C2H6)	30.069	0.0000
Propane (C3H8)	44.0956	0.0020
Iso-Butane (C4H10)	58.1222	0.0080
N-Butane (C4H10)	58.1222	0.0410
Iso-Pentane (C5H12)	72.1488	0.0600
N-Pentane (C5H12)	72.1488	0.0650
Hexane+	97.3966	0.2550
Total		100

Calculated MW 28.5246

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

ppmv = % Vol x 10,000

ATTACHMENT 1

MDPE Field Logs

Start Date: 4/9/2013

MDPE FIELD DATA

TIME		SAMPLE TAKEN	Well Flow				Well Data						
			Inflent temp. (°f)	Diff. Pressure (INH2O) 2" Preso	Vac (In.Hg)	PID Composite (PPM)	Propane Tank (%-size) 500 Gal.	EXHAUST TEMP F	COMMENTS:				
									TMW1	VAC (INH2O)	VAC (INH2O)	VAC (INH2O)	VAC (INH2O)
11:15			80	10.2	22.5	12300	59	1409		62.3			
11:45	*		80	10	22.5	>50000	56	1410		64.7			
12:45			82	10.5	22.5	>50000	54	1411		64.1			
13:45			82	10.1	22	>50000	52	1411		63.2			
14:45			83	10.6	22.5	>50000	50	1410		64.7			
15:45			79	11.3	23	>50000	49	1409		40.3			
16:45			78	5	19	38726	47	1416		48.1			
17:45			78	5.1	19	>50000	45	1411		47.4			
18:45			76	7.3	19	24556	43	1408		52.8			
19:45			72	7	19	21341	41	1405		53.4			
20:45			66	7.5	19	32294	39	1412		54.2			
21:45	*		62	6.8	18	>50000	37	1405		56.4			
22:45			62	6.5	18	>50000	35	1409		56.8			

Soil Vacuum Influence

Observation Well	MW5
Extraction Well (EW)	TMW1
Time:	In. H2O
11:45	0
21:45	0.05

ATTACHMENT 2
Laboratory Analytical Results



HOUSTON LABORATORIES
8820 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis

Number: 1030-2013040312-001A

Simon I. Walshe, CAPM
Talon/LPE
921 N. Bivins St.
Amarillo Texas 79107

April 15, 2013

Sample ID:
Station Name : Influent #1
Station Number :
Station Location : Eunice, NM.
Sample Point:

Sampled By:
Sample Of: Gas Spot
Sample Date: 04/09/2013 11:45
Sample Conditions: N.G. Pres. , N.G. Temp.
PO / Ref. No:

ANALYTICAL DATA

Components	Mol %	Wt %	GPM at 14.650 psia	Method	Lab Tech.	Date Analyzed
GPA-2261 M DK 4/15/2013 3:18:44 AM						
Nitrogen	91.848	90.289				
Carbon Dioxide	4.012	6.196				
Methane	3.641	2.050				
Propane	0.006	0.009	0.002			
Iso Butane	0.014	0.029	0.005			
n-Butane	0.002	0.004	0.001			
Iso Pentane	0.091	0.230	0.033			
n-Pentane	0.094	0.238	0.034			
Hexanes Plus	0.292	0.955	0.127			
	100.000	100.000	0.202			
	C2 +	C3 +	iC5 +			
GPM TOTAL :	0.202	0.202	0.194			
Relative Density	Real Gas			0.9840		
Calculated Molecular Weight				28.50		
Compressibility Factor				0.9995		
GPA 2172-09 Calculation :						
Calculated Gross BTU per ft ³ @14.650 psia & 60°F						
Real Gas:	Dry BTU:		60			
	Water Sat. Gas_Base BTU:		59			
Comments : H2O Mol% - 1.75_Wt% - 1.113						

Hydrocarbon Laboratory Manager

Quality Assurance:

The above analyses are performed in accordance with ASTM, UOP or GPA guidelines for quality assurance, unless otherwise stated



HOUSTON LABORATORIES
8820 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis

Number: 1030-2013040312-002A

Simon I. Walshe, CAPM
Talon/LPE
921 N. Bivins St.
Amarillo Texas 79107

April 15, 2013

Sample ID:
Station Name : Influent #2
Station Number :
Station Location : Eunice, NM.
Sample Point:

Sampled By:
Sample Of: Gas Spot
Sample Date: 04/09/2013 21:45
Sample Conditions: N.G. Pres. , N.G. Temp.
PO / Ref. No:

ANALYTICAL DATA

Components	Mol %	Wt %	GPM at 14.650 psia	Method	Lab Tech.	Date Analyzed
				GPA-2261 M	DK	4/15/2013 3:34:49 AM
Nitrogen	96.532	94.847				
Carbon Dioxide	2.235	3.450				
Methane	0.802	0.451				
Propane	0.002	0.003	0.001			
Iso Butane	0.008	0.016	0.003			
n-Butane	0.041	0.084	0.013			
Iso Pentane	0.060	0.152	0.022			
n-Pentane	0.065	0.164	0.023			
Hexanes Plus	0.255	0.833	0.111			
	100.000	100.000	0.173			
	C2 +	C3 +	iC5 +			
GPM TOTAL :	0.173	0.173	0.156			
Relative Density	Real Gas			0.9844		
Calculated Molecular Weight				28.51		
Compressibility Factor				0.9996		
GPA 2172-09 Calculation :						
Calculated Gross BTU per ft ³ @14.650 psia & 60°F						
Real Gas: Dry BTU:			28			
Water Sat. Gas_Base BTU:			27			
Comments : H2O Mol% - 1.75_Wt% - 1.113						

Hydrocarbon Laboratory Manager

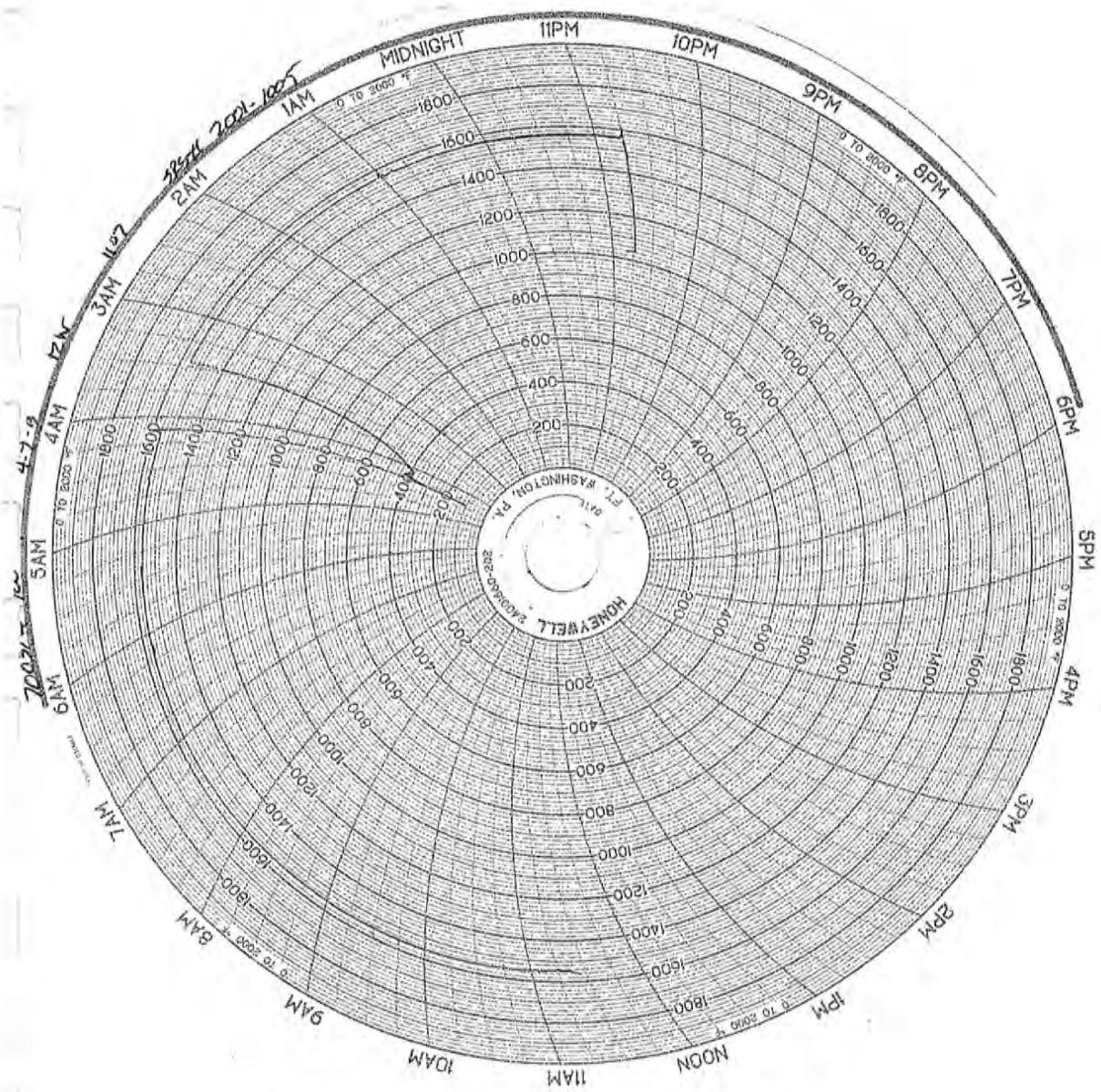
Quality Assurance: The above analyses are performed in accordance with ASTM, UOP or GPA guidelines for quality assurance, unless otherwise stated

SPL, Inc.

713.660.0901

ATTACHMENT 3

Oxidizer Charts



ATTACHMENT 4

Waste Ticket

GANDY CORPORATION
KILL TRUCKS - VACUUM TRUCKS - WINCH TRUCKS
TANK CLEANING - ROUSTABOUTING
PRG #14225

491533

TIME OUT	A.M.	P.M.	TIME IN	A.M.	P.M.	TIME	RATE	AMOUNT
Diesel								
Crude Oil								
Brine Water								
Salt Water								
			Bbls. Hauled					
Driver, Operator or Pusher								
Helper								
Helper								
Helper								
Other Charges								

Description of Work:		
Authorized by:		Sub Total
		Sales Tax
		TOTAL

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APPENDIX E

CD of 2013 Annual Groundwater Monitoring Report