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APPROVED

This RP is closed on the condition of the submittal of a new C-141 for the historical contamination found during remedial activities.

# Remediation Summary and Closure Report

**New McKee Junction Sump**
**Plains SRS No. 2015-175**
**NMOCD Ref. No. 1RP-3841**
**Lea County, New Mexico**
**Unit Letter "K", Section 29, Township 20 South, Range 38 East**
**Latitude 32.54213° / Longitude -103.17194°**

June 13, 2016
Terracon Project No. AR157452

*Distribution:*

*Copy 1: Plains – Midland, TX*
*Copy 2: New Mexico Oil Conservation Division – Hobbs*
*Copy 3: Bureau of Land Management - Carlsbad*

**Prepared for:**
Plains Pipeline, L.P.
Midland, Texas

**Prepared by:**
Terracon Consultants, Inc.
Lubbock, Texas

June 13, 2016

Terracon

Plains Pipeline, L.P.
505 N. Big Spring, Suite 600
Midland, Texas 79701

Attn: Ms. Camille Bryant
P: (432) 221-7922
E: cjbryant@paalp.com

Re: Remediation Summary and Closure Report
New McKee Junction Sump
Plains SRS No. 2015-175
NMOCD Ref. No. 1RP-3841
Lea County, New Mexico
Latitude 32.54213° / Longitude -103.17194°
Terracon Project No. AR157452

Dear Ms. Bryant:

Terracon is pleased to submit two copies of the *Remediation Summary and Closure Report* for the above-referenced site.

We appreciate the opportunity to provide environmental consulting services at the New McKee Junction Sump Site for Plains Pipeline, L.P. Please contact the undersigned at (806) 300-0140 if you have questions regarding the information provided in the report.

Sincerely,
**Terracon Consultants, Inc.**

Joel Lowry
Project Geologist
Lubbock

Erin Loyd, PG
Senior Associate
Office Manager – Lubbock

STATE OF TEXAS
ERIN LOYD
SOIL SCIENCE
11540
LICENSED
PROFESSIONAL GEOSCIENTIST
6/13/16

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# REMEDIATION SUMMARY AND CLOSURE REPORT

**New McKee Junction Sump**
**Plains SRS No. 2015-175**
**NMOCD Ref. No. 1RP-3841**
**Terracon Project No. AR157452**

**June 8, 2016**

## 1.0 INTRODUCTION & BACKGROUND INFORMATION

Terracon Consultants Inc. (Terracon), on behalf of Plains Pipeline (Plains), has prepared this *Remediation Summary and Closure Report* for the release site known as New McKee Junction Sump (hereafter referred to as the "site"). The site is located at 32.54213° North Latitude and 103.17194° West Longitude in Unit Letter "K", Section 29, Township 20 South, Range 38 East, in Lea County, New Mexico. The affected property is owned by the United Stated Department of the Interior and administered by the Bureau of Land Management (BLM). A "Site Location Map" is provided as Figure 1 in Appendix A.

On August 28, 2015, Plains discovered a release had occurred at the New McKee Junction facility. The release was attributed to the failure of a check valve causing an on-site sump to overfill. The "Release Notification and Correction Action Form" (NMOCD Form C-141) indicated that approximately 40 barrels (bbls) of crude oil were released, with approximately 35 bbls being recovered. The release affected an area measuring approximately 1,800 square feet (sq. ft.) within the facility boundaries before flowing west affecting area measuring approximately 6,000 sq. ft. adjacent to the facility. Between September 2, 2015 and January 25, 2016, Terracon personnel oversaw excavation of affected soil and conducted confirmation soil sampling activities at the site. Photographs of the site are provided in Appendix D.

Pursuant to the New Mexico Administrative Code (NMAC) 19.15.29, Plains personnel notified the New Mexico Oil Conservation Division (NMOCD) of the occurrence of the release due to the estimated volume of the release being greater than 5 barrels. A copy of the NMOCD Form C-141 is provided in Appendix E.

### 1.1 Site Description

| | |
|---|---|
| **Site Name** | New McKee Junction Sump |
| **GPS** | Lat.: 32.54213°, Long: -103.17194° |
| **Legal Description** | U/L "K", Section 29, Township 20 South, Range 38 East |
| **County** | Lea County |
| **General Description** | The release site consists of a pipeline junction station complete with numerous above and below ground pipelines; valve settings and sumps. |

A "Site Location Map" and "Site Diagram" are included as Figures 1 and 2, respectively, in Appendix A.

## 1.2 Scope of Services

The Scope of Services for Terracon as requested by Plains Pipeline included:

- Oversight of the remediation of impacted soil;
- Collection of confirmation soil samples; and
- Submittal of a Remediation Summary and Closure Report detailing field activities, analytical results, site maps and photographs.

## 1.3 Regulatory Framework

Crude oil facilities in New Mexico are generally regulated by the NMOCD. Contamination of soil due to a surface release of petroleum hydrocarbons is addressed in the NMOCD guidance document titled *Guidelines for Remediation of Leaks, Spills and Releases,* dated August 13, 1993.

The guidance document provides direction for initial response actions, site assessment, sampling procedures and provides a total ranking score based on the depth to groundwater, distance to private and domestic water sources, and the distance to the nearest surface water body as follows:

| Ranking Score Criteria | | |
|---|---|---|
| **General Site Characteristics** | | **Score** |
| Depth to Ground Water | < 50 feet | **20** |
| | 50 – 99 feet | **10** |
| | > 100 feet | **0** |
| Well Head Protection Area, <1,000 feet from water source, or <200 feet from private domestic water source | Yes | **20** |
| | No | **0** |
| Distance to Surface Water Body | < 200 feet | **20** |
| | 200 – 1,000 feet | **10** |
| | > 1,000 feet | **0** |

The total ranking score is the sum of the four individual ranking criteria and the basis for determining the recommended remediation action levels at the site.

| Recommended Remediation Action Levels | | | |
|---|---|---|---|
| **Contaminant of Concern** | **Total Ranking Score** | | |
| | **>19** | **10-19** | **0-9** |
| Benzene | 10 mg/kg | 10 mg/kg | 10 mg/kg |
| BTEX | 50 mg/kg | 50 mg/kg | 50 mg/kg |
| TPH | 100 mg/kg | 1,000 mg/kg | 5,000 mg/kg |

The NMAC does not specify a recommended remediation action level for chloride in soil. Recommended remediation action levels for chloride are set by the NMOCD on a site-specific basis.

## 1.4 NMOCD Site Ranking

Based on Terracon's evaluation of the site ranking criteria, the Site has a total ranking score of 20 points, based on the following:

- Review of the New Mexico Water Rights Reporting System (NMWRRS) database indicates depth to groundwater information is unavailable for Section 29, Township 20 South, Range 38 East. Review of a depth to groundwater gradient map suggests groundwater should be encountered at approximately 60 ft. bgs. Analytical results from soil samples collected at the release site indicate historical soil impacts extend to 15.5 to 16 ft. bgs in the area represented by delineation trench DT-1, which is within 50 ft. of groundwater.
- Review of the NMWRRS database indicates there are no registered water wells within 1,000 feet of the Site.
- Review of available United States Geological Survey (USGS) topographical maps indicates that there are no surface water bodies within 1,000 feet of the Site.

| Total Ranking Score for Site | | | |
|---|---|---|---|
| **Ranking Score Criteria** | | | **Score** |
| Depth to Ground Water | < 50 feet | 20 | **20** |
| | 50 – 99 feet | 10 | |
| | > 100 feet | 0 | |
| Well Head Protection Area,<br><1,000 feet from water source, or;<br><200 feet from private domestic water source | Yes | 20 | **0** |
| | No | 0 | |
| Distance to Surface Water Body | < 200 feet | 20 | **0** |
| | 200 – 1,000 feet | 10 | |
| | > 1,000 feet | 0 | |
| **Total Ranking Score** | | | **20** |

Recommended remediation action levels for a site with a total ranking score of 20 points are as follows:

- Benzene – 10 milligrams per kilogram (mg/kg)
- Benzene, toluene, ethylbenzene and xylene (BTEX) – 50 mg/kg
- Total petroleum hydrocarbons (TPH) – 100 mg/kg

# 2.0 LIMITATIONS

## 2.1 Standard of Care

Terracon's services were 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.

## 2.2 Additional Scope Limitations

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

## 2.3 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.

# 3.0 SUMMARY OF FIELD ACTIVITIES

## 3.1 Site Investigation

Following notification of a crude oil release that occurred on August 28, 2015 at the New McKee Junction facility, Terracon visited the site with a Plains representative. The release was attributed to the failure of a check valve causing an on-site sump to overfill. It is estimated that approximately 40 bbls of crude oil were released, with approximately 35 bbls being recovered. The release affected an area measuring approximately 1,800 sq. ft. within the facility boundaries before flowing west affecting area measuring approximately 6,000 sq. ft. adjacent to the facility. During initial response activities, Plains personnel responded to the reported incident, secured the release site, recovered free-standing fluid and repaired the affected check valve. A "Site Diagram" is provided as Figure 2 in Appendix A.

## 3.2 Remediation Summary and Soil Sampling Activities

**September 2, 2015**
Remediation activities commenced at the release site. Affected soil within the release margins was excavated and stockpile on-site, atop a polyurethane liner, pending final disposition. One soil sample, RP (1') was collected from adjacent to the release point and submitted to the laboratory for analysis of chloride concentrations, which were determined to be 7.99 mg/kg. Impacted soil within the affected pasture to the west of the station was excavated until laboratory analytical results from confirmation soil samples indicated total petroleum hydrocarbon (TPH) and benzene, toluene, ethylbenzene, and total xylene (BTEX) concentrations were less than NMOCD Regulatory Remediation Action Levels established for the site.

During the excavation of impacted soil within the facility boundaries, historical soil impacts were discovered beneath and adjacent to facility piping. Impacted soil was excavated to the maximum extent practicable, given the proximity to active pipelines and the congested nature of the facility.

Excavated soils associated with remedial assessment activities for the duration of the project were profiled and transported to J & L Landfarm Inc. (Permit No. NM1-023).

**September 4, 2015**
Terracon collected six confirmation soil samples (NE PA NSW, NE PA ESW, NE PA WSW, NW PA NSW, NW PA ESW and NW PA WSW) from the sidewalls of the excavated area in the

northwestern portion of the release site and submitted them to the laboratory for analysis of BTEX and TPH.

Laboratory analytical results indicated BTEX and TPH concentrations were less than the applicable laboratory sample detection limits (SDLs) in each of the submitted soil samples with the exception of soil sample NE PA NSW, which exhibited a TPH concentration of 58.5 mg/kg. BTEX and TPH concentrations were below NMOCD Recommended Remediation Action Levels in each of the submitted soil samples.

The locations of the confirmation soil samples are illustrated on Figures 2 and 3 of Appendix A. A summary of confirmation soil sample analytical results is provided in Table 1 of Appendix B. The executed chain-of-custody forms, laboratory data sheets, and analytical summary table are provided in Appendix C.

**October 2, 2015**
Terracon collected two confirmation soil samples (NE PA Floor and NW PA Floor) from the floor of the excavated area in the northwestern portion of the release site and submitted them to the laboratory for analysis of BTEX and TPH. BTEX concentrations were not detected above applicable laboratory SDLs, and TPH concentrations were 303 mg/kg. The excavation was advanced the area represented by soil sample NE PA Floor.

**October 12, 2015**
Terracon collected seven confirmation soil samples (SSW #1, SSW #2, WSW #2, NSW #3, Center Floor @ 7', SE Floor @ 7' and NE PA Floor @8') from the floor sidewalls of the excavated area in the western portion of the release site and submitted them to the laboratory for analysis of BTEX and TPH. Laboratory analytical results indicated BTEX concentrations were less than the applicable laboratory SDL in each of the submitted soil samples. Analytical results indicated TPH concentrations were less than the applicable laboratory SDL in each of the submitted soil samples with the exception of soil sample NE PA Floor @ 8', which exhibited a TPH concentration of 137 mg/kg. The excavation was advanced in the area represented by soil sample NE PA Floor @ 8'.

In addition, two soil samples (Telephone Pole In-Situ and Cathodic In-Situ) were collected from affected soil adjacent to an on-site telephone pole and cathodic well. Collected soil samples were submitted to the laboratory for analysis of BTEX and TPH concentrations. Laboratory analytical results indicated soil sample Telephone Pole (In-Situ) exhibited a benzene concentration of 0.112 mg/kg, total BTEX concentration of 32.4 mg/kg and a TPH concentration of 13,600 mg/kg. Soil sample Cathodic (In-Situ) exhibited a benzene concentration of 3.29 mg/kg, total BTEX concentration of 171 mg/kg and a TPH concentration of 20,800 mg/kg.

**October 16, 2015**
Terracon collected confirmation soil sample NE PA @ 9' from the floor of the excavation in the area represented by soil sample NE PA Floor @ 8' and submitted it to the laboratory for analysis of TPH concentrations, which were determined to be less than the laboratory SDL.

Upon collecting the necessary confirmation soil samples, Plain's requested NMOCD and BLM permission to backfill the remediated area within the affected pasture with locally-purchased material, and temporarily backfill a portion of the excavated area within the facility boundaries to facilitate the installation of a new pipeline at the facility.

**October 26, 2015**
Plains and BLM representatives met on-site to discuss the presence of historical soil impacts discovered during remediation activities and backfilling the excavated areas within the affected pasture and facility boundaries to facilitate the installation of the new pipeline at the facility. During the meeting, it was determined that the excavated areas could be backfilled, and that upon installing the new pipeline at the facility, additional delineation activities would be conducted to further investigate historical soil impacts discovered during remediation of the subject release. In addition, the BLM requested that an additional soil sample be collected from the floor of the excavation in an effort to determine whether a recent rainfall event resulted in hydrocarbon impacts.

**October 27, 2015**
Upon receiving NMOCD and BLM approval, environmental personnel began backfilling the excavated area within the affected pasture with locally purchased material. In addition, excavated areas within the facility boundaries were backfilled with locally purchased caliche and compacted to meet the needs of the pipeline installation.

**October 28, 2015**
As per the BLM, one additional soil sample (10/28 NE PA @ 9') was collected from the floor of the excavated area characterized by the northeast pooling area and submitted to the laboratory for analysis of TPH concentrations in an effort to determine whether a recent rainfall event resulted in hydrocarbon impacts. Laboratory analytical results indicate the TPH concentration in soil sample 10/28 NE PA @ 9' was less than the laboratory SDL.

**December 10, 2015**
Upon backfilling the excavated areas to facilitate the installation of the new pipeline, impacted soils represented by soil samples Telephone Pole In-Situ and Cathodic In-Situ was excavated. Excavated material was placed in the existing soil stockpile.

In addition, delineation activities were conducted at the release site in an effort to further evaluate historical soil impacts discovered beneath and adjacent to facility piping during remediation activities. Delineation trench DT-1 was advanced proximate to the inferred center of

the area characterized by historical soil impacts. During the advancement of the delineation trench, soil samples were collected from within the 10.5 to 11 ft., 12.5 to 13 ft., 15.5 to 16 ft. and 17.5 to 18 ft. bgs intervals and submitted to the laboratory for analysis of TPH and BTEX. Laboratory analytical results indicated TPH concentrations ranged from less than the laboratory SDL for the soil sample collected from the 17.5 to 18 ft. interval to 4,800 mg/kg for the soil sample collected from the 12.5 to 13 ft. interval. Analytical results indicated benzene concentrations ranged from less than the laboratory SDL for the soil samples collected from the 15.5 to 16 ft. and 17.5 to 18 ft. intervals to 0.562 mg/kg for the soil sample collected at the 10.5 to 11 ft. interval. Total BTEX concentrations ranged from less than the laboratory SDL for the soil sample collected at the 17.5 to 18 ft. intervals to 46.3 mg/kg for the soil sample collected from the 12.5 to 13 ft. interval. Based on laboratory analytical results from the collected soil samples, it was determined that soil was not affected above NMOCD Regulatory Remediation Action Levels for TPH, benzene or total BTEX beyond 17.5 to 18 ft. bgs.

**January 13, 2016**
NMOCD and Plains representatives met to discuss historical soil impacts encountered beneath active piping and valve settings at the site and the results of delineation activities. During the meeting, it was determined additional horizontal delineation activities would be conducted in and an additional Form C-141 be submitted documenting the presence of historical soil impacts and the results of delineation activities.

**January 21, 2016**
Excavation activities resumed within the facility boundaries. A hydroexcavator and hand-shovels were used to excavate affected soil beneath and adjacent to pipelines within the facility. Impacted soil was excavated to the maximum extent practicable, given the proximity to active pipelines and the congested nature of the facility.

**January 25, 2016**
Terracon collected four confirmation soil samples (Facility NSW, Facility SSW, Facility ESW and Facility Floor) from the excavated area characterized by the August 28, 2015, release and submitted them to the laboratory for analysis of TPH and BTEX. Laboratory analytical results indicate TPH and BTEX concentrations were less than the appropriate laboratory SDL in each of the submitted soil samples with the exception of soil sample Facility Floor, which exhibited a TPH concentration of 38.5 mg/kg. TPH and BTEX concentration were less than NMOCD Regulatory Remediation Action Levels in each of the submitted soil samples.

In addition, one test trench (South TT) and two (2) hand-augered soil bores (North SB and East SB) were advanced outside the facility in an effort to determine the horizontal extent of historical soil impacts discovered during remediation activities. During the advancement of the test trench and soil bores, soil samples were collected from the 4.5 to 5 ft. and 9.5 to 10 ft. intervals and submitted to the laboratory for analysis of TPH and BTEX. Laboratory analytical results indicate TPH and BTEX concentrations were less than the appropriate laboratory SDL in each of the

submitted soil samples with the exception of soil sample North SB (9.5-10') which exhibited a TPH concentration of 86.2 mg/kg. TPH and BTEX concentration were less than NMOCD Regulatory Remediation Action Levels in each of the submitted soil samples.

**May 5, 2016**
Upon receiving NMOCD and BLM permission, the remaining excavated area in the southern portion of the release site was backfilled with locally purchased material. Prior to backfilling, the final dimensions of the excavated area within the affected pasture were approximately 100 ft. in length, 30 to 70 ft. in width and 6 to 9 ft. in depth. The final dimensions of the excavated area within the facility boundaries were approximately 95 ft. in length, 5 to 60 ft. in width and 2 to 13 ft. in depth.

Between October 7, 2015, and May 5, 2016, approximately 2,080 cubic yards of impacted soil was transported to J & L Landfarm Inc. (Permit No. NM1-023).

### 3.3 Laboratory Analytical Methods

Confirmation soil samples collected at the site were placed in laboratory-prepared containers, labeled and placed on ice in the field. The samples were relinquished with chain-of-custody forms to Xenco Laboratories, of Midland, Texas, for analysis of BTEX, TPH and/or chloride using the following methods:

- BTEX concentrations in accordance with EPA Method SW-846 8021b
- TPH concentrations in accordance with EPA Method SW-846 8015M
- Chloride concentrations in accordance with EPA Method 300.

## 4.0 RECOMMENDATIONS

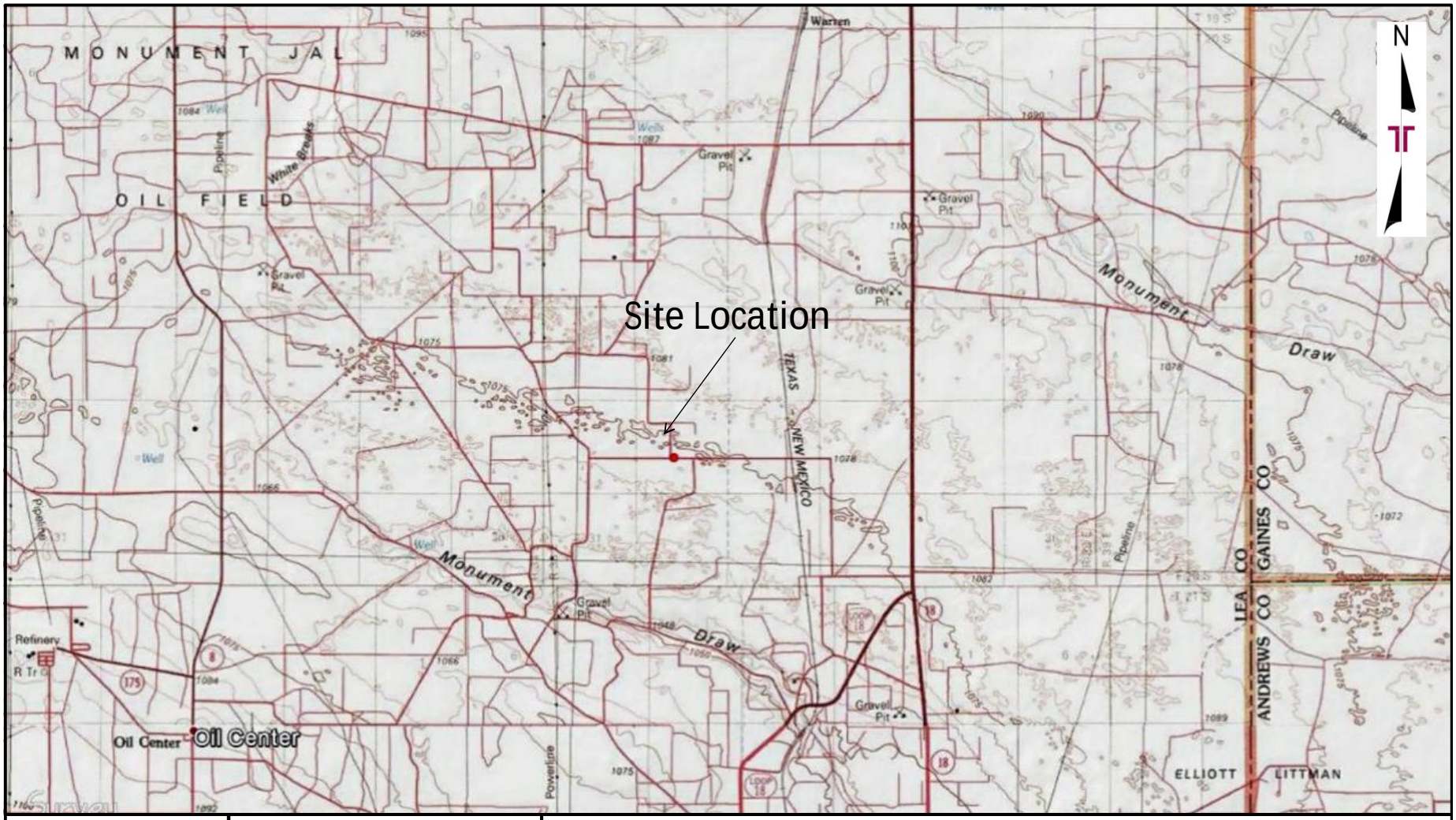
Remediation activities at the New McKee Junction Sump release site were conducted in accordance with the NMOCD and BLM. Based on field activities and review of laboratory analytical results from confirmation soil samples collected from the site, additional remediation and/or investigation activities are not warranted at the site at this time. Soil exhibiting TPH concentrations above NMOCD Recommended Remediation Action Levels in the area characterized by historical soil impacts and delineation trench DT-1 may be remediated upon time of abandonment (TOA) under a separate C-141 as per the NMOCD.

Terracon respectfully submits this *Remediation Summary and Closure Report* to Plains Pipeline, L.P., as documentation of the site remediation activities at the New McKee Junction Sump site. Remediation activities conducted at the New McKee Junction Sump site met the objectives set forth by the NMOCD and BLM. Based on the completion of field activities and sample analysis

to date, Terracon recommends no further action be taken in regards to the documented release at the site at this time.

# APPENDIX A

**Figure 1 – Site Location Map**
**Figure 2 – Site Diagram - Pasture**
**Figure 3 – Site Diagram - Facility**

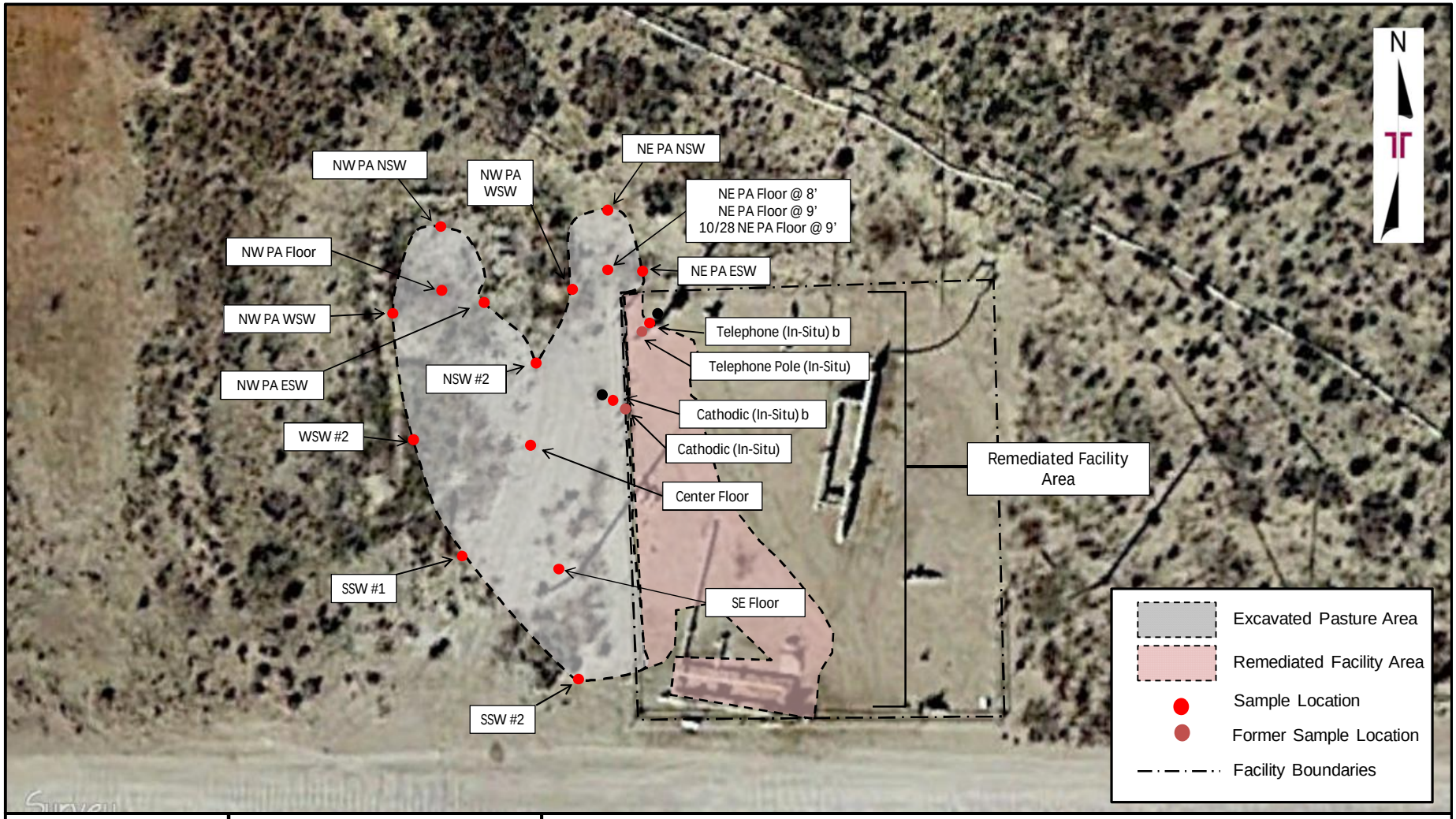



| | |
|---|---|
| Project No. | AR157452 |
| Scale: | 1" = ~7,000' |
| Source: | Google Earth |
| Date: | 2016 |

Terracon
Consulting Engineers & Scientists
5827 50th St. Suite 1 Lubbock, Texas 79424
PH. (806) 300-0104 FAX. (806) 797 0947

Figure 1 – Site Location Map

New McKee Junction Sump
32.54213° , -103.17194°
Lea County, New Mexico

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|---|---|
| Project No. | AR157452 |
| Scale: | 1" = ~40' |
| Source: | Google Earth |
| Date: | 2015 |


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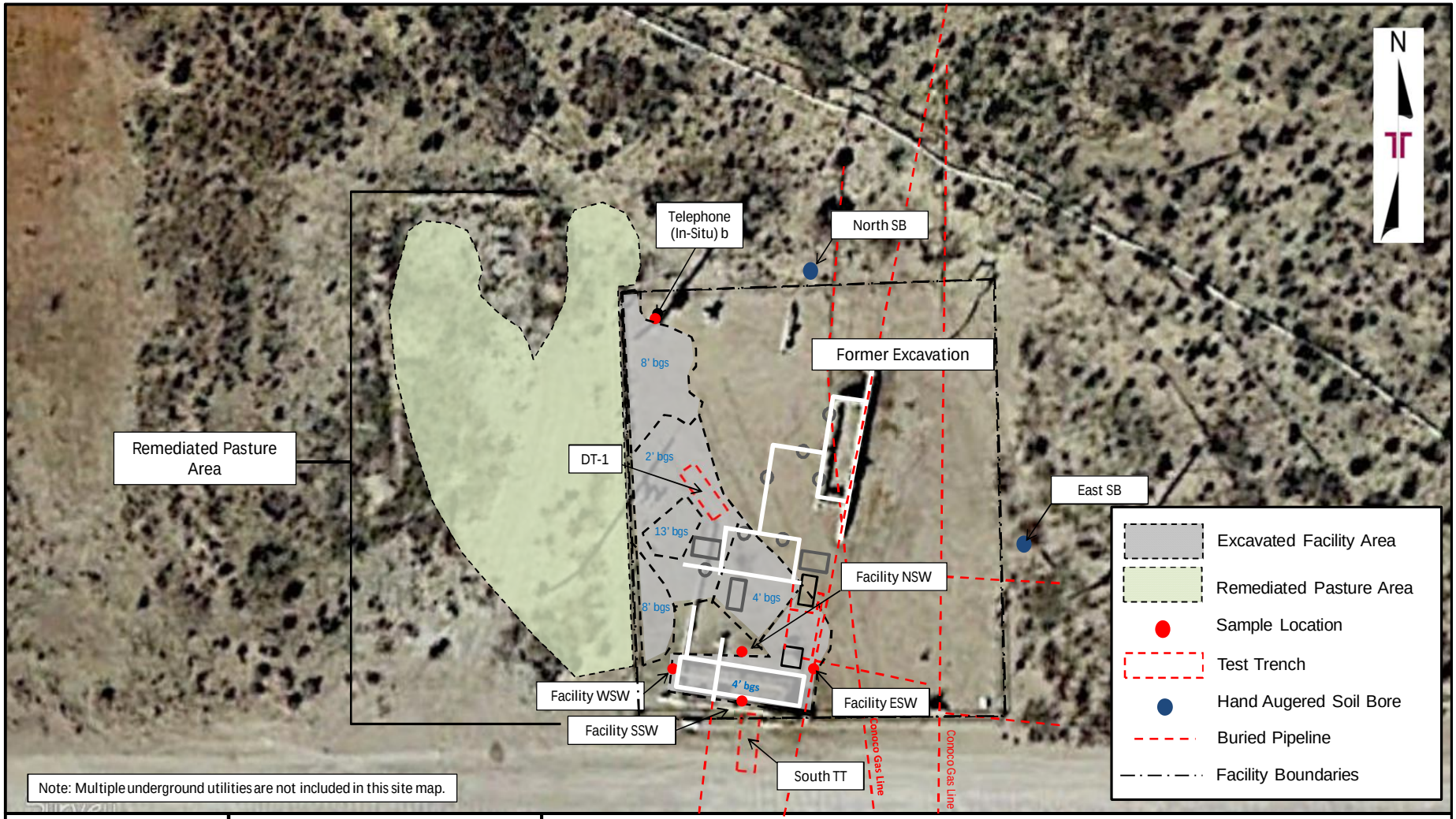
## Figure 2 – Site and Sample Location Map - Pasture

New McKee Jct. Sump
32.54213 ° N, -103.17194 ° W
Lea County, New Mexico




| | |
|---|---|
| Project No. | AR157452 |
| Scale: | 1" = ~40' |
| Source: | Google Earth |
| Date: | 2015 |

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Figure 3 – Site and Sample Location Map - Facility

New McKee Jct. Historical
32.54213 ° N, -103.17194 ° W
Lea County, New Mexico

# APPENDIX B

## Table 1 – Confirmation Soil Sample Analytical Results

**TABLE 1**
**Confirmation Soil Sample Analytical Results - TPH[1], BTEX[2] and Chloride[3]**
**New McKee Junction Sump**
Plains All American Pipeline, L.P.
Latitude: 32.54213°, Longitude: -103.17194°
Terracon Project No. AR157468

| Sample ID | Depth | Date | Sample Type | Soil Status | TPH | | | | Benzene (mg/kg) | Toluene (mg/kg) | Ethyl-benzene (mg/kg) | Total Xylenes (mg/kg) | Total BTEX (mg/kg) | Chloride (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $C_6$-$C_{12}$ (mg/kg) | $C_{12}$-$C_{28}$ (mg/kg) | $C_{28}$-$C_{35}$ (mg/kg) | $C_6$-$C_{35}$ (mg/kg) | | | | | | |
| RP | 1' | 9/2/2015 | Grab | In-Situ | - | - | - | - | - | - | - | - | - | 7.99 |
| | | | | | | | | | | | | | | |
| NE PA NSW | 6' | 9/4/2015 | Grab | In-Situ | <15.0 | 58.5 | <15.0 | 58.5 | <0.00498 | <0.00996 | <0.00498 | <0.00996 | <0.00996 | - |
| NE PA ESW | 6' | 9/4/2015 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.000998 | <0.00200 | <0.000998 | <0.00200 | <0.00200 | - |
| NE PA WSW | 6' | 9/4/2015 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.00100 | <0.00200 | <0.00100 | <0.00200 | <0.00200 | - |
| NW PA NSW | 5' | 9/4/2015 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.000992 | <0.00198 | <0.000992 | <0.00198 | <0.00198 | - |
| NW PA ESW | 5' | 9/4/2015 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.00100 | <0.00200 | <0.00100 | <0.00200 | <0.00200 | - |
| NW PA WSW | 5' | 9/4/2015 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.000996 | <0.00199 | <0.000996 | <0.00199 | <0.00199 | - |
| | | | | | | | | | | | | | | |
| NE PA Floor | 7' | 10/2/2015 | Grab | Excavated | <15.0 | 303 | <15.0 | **303** | <0.000994 | <0.00199 | <0.000994 | <0.00199 | <0.00199 | - |
| NW PA Floor | 6' | 10/2/2015 | Grab | In-Situ | <14.9 | <14.9 | <14.9 | <14.9 | <0.000994 | <0.00199 | <0.000994 | <0.00199 | <0.00199 | - |
| | | | | | | | | | | | | | | |
| SSW #1 | 5' | 10/12/2015 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.000994 | <0.00199 | <0.000994 | <0.00199 | <0.00199 | - |
| SSW #2 | 5' | 10/12/2015 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.00166 | <0.00332 | <0.00166 | <0.00332 | <0.00332 | - |
| WSW #2 | 5' | 10/12/2015 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.000998 | <0.00200 | <0.000998 | <0.00200 | <0.00200 | - |
| NSW #3 | 5' | 10/12/2015 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.000990 | <0.00198 | <0.000990 | <0.00198 | <0.00198 | - |
| Center Floor | 7' | 10/12/2015 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.00198 | <0.00397 | <0.00198 | <0.00397 | <0.00397 | - |
| SE Floor | 7' | 10/12/2015 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.000992 | <0.00198 | <0.000992 | <0.00198 | <0.00198 | - |
| NE PA Floor | 8' | 10/12/2015 | Grab | Excavated | <15.0 | 137 | <15.0 | **137** | <0.00164 | <0.00328 | <0.00164 | <0.00328 | <0.00328 | - |
| | | | | | | | | | | | | | | |
| Telephone Pole (In-Situ) | 5' | 10/12/2015 | Grab | Excavated | 981 | 12,400 | 180 | **13,600** | 0.112 | 4.66 | 7.08 | 20.5 | 32.4 | - |
| Cathodic (In-Situ) | 5' | 10/12/2015 | Grab | Excavated | 3,540 | 17,100 | 194 | **20,800** | 3.29 | 39.5 | 35.2 | 92.6 | **171** | - |
| | | | | | | | | | | | | | | |
| NE PA @ 9' | 9' | 10/16/2015 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.000996 | <0.00199 | <0.000996 | <0.00199 | <0.00199 | |
| | | | | | | | | | | | | | | |
| 10/28 NE PA @ 9' | 9' | 10/28/2015 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | - | - | - | - | - | - | - |
| | | | | | | | | | | | | | | |
| DT-1 | 10.5-11' | 12/10/2015 | Grab | In-Situ | 1,040 | 2,530 | <15.0 | **3,570** | 0.562 | 1.4 | 12.6 | 17.3 | 31.9 | - |
| DT-1 | 12.5-13' | 12/10/2015 | Grab | In-Situ | 1,380 | 3,420 | <14.9 | **4,800** | 0.284 | 0.723 | 19 | 26.3 | 46.3 | - |
| DT-1 | 15.5-16' | 12/10/2015 | Grab | In-Situ | <15.0 | 135 | <15.0 | **135** | <0.00167 | <0.00333 | 0.00405 | 0.0111 | 0.0152 | - |
| DT-1 | 17.5-18' | 12/10/2015 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.00101 | <0.00202 | <0.00101 | <0.00202 | <0.00202 | - |
| | | | | | | | | | | | | | | |
| Telephone (In-Situ) b | 7' | 12/10/2015 | Grab | In-Situ | 19.8 | 20.8 | <15.0 | 40.6 | <0.000994 | 0.0109 | 0.0442 | 0.381 | 0.162 | - |
| Cathodic (In-Situ) b | 7' | 12/10/2015 | Grab | In-Situ | <15.0 | 41.2 | <15.0 | 41.2 | <0.000998 | 0.00200 | 0.000998 | 0.0259 | 0.0259 | - |
| | | | | | | | | | | | | | | |
| Facility NSW | 2' | 1/25/2016 | Grab | In-Situ | <14.9 | <14.9 | <14.9 | <14.9 | <0.000994 | <0.00199 | <0.000994 | <0.000994 | <0.000994 | - |
| Facility SSW | 2' | 1/25/2016 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.00101 | <0.00202 | <0.00101 | <0.00101 | <0.00101 | - |
| Facility ESW | 2' | 1/25/2016 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.000994 | <0.00199 | <0.000994 | <0.000994 | <0.000994 | - |
| Facility Floor | 4-4.5' | 1/25/2016 | Grab | In-Situ | <14.9 | 38.5 | <14.9 | 38.5 | <0.00100 | <0.00201 | <0.00100 | <0.00100 | <0.00100 | - |
| | | | | | | | | | | | | | | |
| South TT | 4.5-5' | 1/25/2016 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.00101 | <0.00202 | <0.00101 | <0.00101 | <0.00101 | - |
| South TT | 9.5-10' | 1/25/2016 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.00100 | <0.00200 | <0.00100 | <0.00100 | <0.00100 | - |
| North SB | 4.5-5' | 1/25/2016 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.00100 | 0.00392 | <0.00100 | 0.00392 | 0.00784 | - |
| North SB | 9.5-10' | 1/25/2016 | Grab | In-Situ | <15.0 | 86.2 | <15.0 | 86.2 | <0.00100 | <0.00309 | <0.00100 | <0.00100 | <0.00309 | - |
| East SB | 4.5-5' | 1/25/2016 | Grab | In-Situ | <15.0 | <15.0 | <15.0 | <15.0 | <0.000998 | <0.00200 | <0.000998 | <0.000998 | <0.000998 | - |
| East SB | 9.5-10' | 1/25/2016 | Grab | In-Situ | <14.9 | <14.9 | <14.9 | <14.9 | <0.000998 | <0.00200 | <0.000998 | <0.000998 | <0.000998 | - |
| **New Mexico Oil Conservation Division Regulatory Remediation Action Levels** | | | | | | | | **100** | **10** | **N/A** | **N/A** | **N/A** | **50** | **250*** |

1. TPH = Total petroleum hydrocarbons analyzed by EPA Method SW-846 8015M.
2. BTEX = BTEX analyzed by EPA Method SW-846 8021b.
3. Chlorides = Chlorides analyzed by EPA Method E 300.
- = Soil sample not analyzed for that constituent.
< = Constituent not detected above the indicated laboratory reporting limit (RL).
N/A = Not Applicable
* = Remediation Action Levels for chloride are not currently specified in the New Mexico Administrative Code and are set by the NMOCD on a site-specific basis.
**Bold denotes concentrations that exceeds NMOCD Regulatory Remediation Action Levels**

# APPENDIX C

## Laboratory Analytical Reports

# Analytical Report 514841

## for

## PLAINS ALL AMERICAN EH&S

**Project Manager: Joel Lowry**

**New McKee Jct. Sump**

**AR157452**

**08-SEP-15**

Collected By: Client

**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-15-19), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD ( L10-135)
Texas (T104704477), Louisiana (04176), USDA (P330-07-00105)

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)

08-SEP-15

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

Reference: XENCO Report No(s): **514841**
**New McKee Jct. Sump**
Project Address:

**Joel Lowry**:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 514841. 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. 514841 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Kelsey Brooks**
Project Manager

# Sample Cross Reference 514841

## PLAINS ALL AMERICAN EH&S, Midland, TX

New McKee Jct. Sump

| Sample Id | Matrix | Date Collected | Sample Depth | Lab Sample Id |
|---|---|---|---|---|
| RP @ 1' | S | 09-02-15 12:15 | 0 - 1 ft | 514841-001 |

**Sample receipt non conformances and comments:**

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

None

# Certificate of Analysis Summary 514841

## PLAINS ALL AMERICAN EH&S, Midland, TX

### Project Name: New McKee Jct. Sump

**Project Id:** AR157452
**Contact:** Joel Lowry
**Project Location:**

**Date Received in Lab:** Thu Sep-03-15 05:10 pm
**Report Date:** 08-SEP-15
**Project Manager:** Kelsey Brooks

| *Analysis Requested* | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 514841-001 | | | | | |
| | ***Field Id:*** | RP @ 1' | | | | | |
| | ***Depth:*** | 0-1 ft | | | | | |
| | ***Matrix:*** | SOIL | | | | | |
| | ***Sampled:*** | Sep-02-15 12:15 | | | | | |
| **Inorganic Anions by EPA 300/300.1** | ***Extracted:*** | Sep-05-15 10:00 | | | | | |
| | ***Analyzed:*** | Sep-05-15 18:56 | | | | | |
| | ***Units/RL:*** | mg/kg RL | | | | | |
| Chloride | | 7.99 2.00 | | | | | |





Kelsey Brooks
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

# BS / BSD Recoveries

## Project Name: New McKee Jct. Sump

**Work Order #:** 514841 **Project ID:** AR157452

**Analyst:** JUM **Date Prepared:** 09/05/2015 **Date Analyzed:** 09/05/2015

**Lab Batch ID:** 976292 **Sample:** 697723-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| Inorganic Anions by EPA 300/300.1<br>Analytes | Blank Sample Result [A] | Spike Added [B] | Blank Spike Result [C] | Blank Spike %R [D] | Spike Added [E] | Blank Spike Duplicate Result [F] | Blk. Spk Dup. %R [G] | RPD % | Control Limits %R | Control Limits %RPD | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | <2.00 | 50.0 | 51.3 | 103 | 50.0 | 50.9 | 102 | 1 | 90-110 | 20 | |

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

# Form 3 - MS Recoveries

## Project Name: New McKee Jct. Sump

**Work Order #:** 514841

**Lab Batch #:** 976292 **Project ID:** AR157452

**Date Analyzed:** 09/05/2015 **Date Prepared:** 09/05/2015 **Analyst:** JUM

**QC- Sample ID:** 514720-019 S **Batch #:** 1 **Matrix:** Soil

**Reporting Units:** mg/kg

| Inorganic Anions by EPA 300 | MATRIX / MATRIX SPIKE RECOVERY STUDY | | | | | |
|---|---|---|---|---|---|---|
| Analytes | Parent Sample Result [A] | Spike Added [B] | Spiked Sample Result [C] | %R [D] | Control Limits %R | Flag |
| Chloride | 31.9 | 50.0 | 78.5 | 93 | 80-120 | |

**Lab Batch #:** 976292

**Date Analyzed:** 09/05/2015 **Date Prepared:** 09/05/2015 **Analyst:** JUM

**QC- Sample ID:** 514922-001 S **Batch #:** 1 **Matrix:** Soil

**Reporting Units:** mg/kg

| Inorganic Anions by EPA 300 | MATRIX / MATRIX SPIKE RECOVERY STUDY | | | | | |
|---|---|---|---|---|---|---|
| Analytes | Parent Sample Result [A] | Spike Added [B] | Spiked Sample Result [C] | %R [D] | Control Limits %R | Flag |
| Chloride | 1080 | 2500 | 3800 | 109 | 80-120 | |

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

BRL - Below Reporting Limit

# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In

**Client:** PLAINS ALL AMERICAN EH&S

**Date/ Time Received:** 09/03/2015 05:10:00 PM

**Work Order #:** 514841

**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? | **N/A** |
| #5 Custody Seals intact on sample bottles? | **N/A** |
| #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)? | **N/A** |
| #21 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **N/A** |
| #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:** Caroline Dugan Date: 09/03/2015

**Checklist reviewed by:** Kelsey Brooks Date: 09/04/2015

# CHAIN OF CUSTODY RECORD

**Terracon**

Office Location: Lubbock

Project Manager: Joel Lowry

Sampler's Name: Joel Lowry

Laboratory: Xenco Laboratories
Address: 1211 W. Florida Ave.
Midland, TX 79701
432-563-1800

Phone:

Contact: Joel Lowry

PO/SO #: Plains

Sampler's Signature: Joel Lowry

Project Number: AR 157452

Project Name: New McKee Jct. Sump

| Matrix | Date | Time | Comp | Grab | Identifying Marks of Sample(s) | Start Depth | End Depth | No. Type of Containers: 4 oz Glass | | | | ANALYSIS REQUESTED: Cl E 300 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 9/2/2015 | 12:15 | | X | RP @ 1' | 0 | 1' | 1 | | | | X | X | | | | | | |

LAB USE ONLY
DUE DATE:

TEMP OF COOLER WHEN RECEIVED (°C): 6°

Page 1 of 1

514841
Lab Sample ID

TURNAROUND TIME: 4 Day ☑ Normal ☐ 48-Hour Rush ☐ 24-Hour Rush

TRRP Laboratory Review Checklist ☐ Yes ☐ No

| Relinquished by (Signature) | Date: | Time: | Received by (Signature) | Date: | Time: |
|---|---|---|---|---|---|
| Joel Lowry | 9-3-15 | 5:10 | Julian Martinez | 9-3-15 | 17:10 |
| 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:

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

Matrix: WW-Wastewater W - Water S - Soil L - Liquid A - Air Bag C - Charcoal tube SL - Sludge

Container: VOA - 40 ml vial A/B - Amber Glass 1L 250 ml = Glass wide mouth P/O - Plastic or other _____

# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In

**Client:** PLAINS ALL AMERICAN EH&S

**Date/ Time Received:** 09/03/2015 05:10:00 PM

**Work Order #:** 514841

**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? | **N/A** |
| #5 Custody Seals intact on sample bottles? | **N/A** |
| #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)? | **N/A** |
| #21 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **N/A** |
| #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:** Caroline Dugan Date: 09/03/2015

**Checklist reviewed by:** Kelsey Brooks Date: 09/04/2015

# Analytical Report 514960

## for

## PLAINS ALL AMERICAN EH&S

**Project Manager: Joel Lowry**

**New McKee Jct. Sump**

**AR157452**

**16-SEP-15**

Collected By: Client

**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-15-19), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD ( L10-135)
Texas (T104704477), Louisiana (04176), USDA (P330-07-00105)

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)

16-SEP-15

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

Reference: XENCO Report No(s): **514960**
**New McKee Jct. Sump**
Project Address:

**Joel Lowry**:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 514960. 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. 514960 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,

**Julian Martinez**
Project Manager

# Sample Cross Reference 514960

## PLAINS ALL AMERICAN EH&S, Midland, TX

New McKee Jct. Sump

| Sample Id | Matrix | Date Collected | Sample Depth | Lab Sample Id |
|---|---|---|---|---|
| NE PA NSW @ 6' | S | 09-04-15 09:05 | 0 | 514960-001 |
| NE PA ESW @ 6' | S | 09-04-15 09:20 | 0 | 514960-002 |
| NE PA WSW @ 6' | S | 09-04-15 09:35 | 0 | 514960-003 |
| NW PA NSW @ 5' | S | 09-04-15 09:45 | 0 | 514960-005 |
| NW PA ESW @ 5' | S | 09-04-15 10:05 | 0 | 514960-006 |
| NW PA WSW @ 5' | S | 09-04-15 09:55 | 0 | 514960-007 |
| NE PA FLOOR @ 8' | S | 09-04-15 09:40 | 8 - 8.5 | Not Analyzed |
| NW PA FLOOR @ 7' | S | 09-04-15 09:40 | 7 - 7.5 | Not Analyzed |

# CASE NARRATIVE

***Client Name: PLAINS ALL AMERICAN EH&S***

***Project Name: New McKee Jct. Sump***

Project ID: *AR157452*
Work Order Number(s): *514960*

Report Date: *16-SEP-15*
Date Received: *09/05/2015*

**Sample receipt non conformances and comments:**

NE PA FLOOR @ 8' AND NW PA FLOOR @ 7' SAMPLES ON HOLD

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

None

**Analytical non conformances and comments:**

Batch: LBA-976706 TPH by SW8015 Mod
Surrogate 1-Chlorooctane recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.
Samples affected are: 514960-007,514960-003.

# Hits Summary 514960

## PLAINS ALL AMERICAN EH&S, Midland, TX

New McKee Jct. Sump

Sample Id : **NE PA NSW @ 6'**
Lab Sample Id : 514960-001
Sample Depth : 0

Matrix : Soil
Date Collected : 09.04.15 09.05
Date Received : 09.05.15 16.39

% Moisture :
Basis : Wet Weight

Analytical Method : TPH by SW8015 Mod
Seq Number 976706

Prep Method: TX1005P
Date Prep: 09.10.15 20.00

| Parameter | Cas Number | Result | Units | Analysis Date | Flag | Dil |
|---|---|---|---|---|---|---|
| C12-C28 Diesel Range Hydrocarbons | PHCG1028 | 58.5 | mg/kg | 09.11.15 02.32 | | 1 |
| Total TPH | PHC635 | 58.5 | mg/kg | 09.11.15 02.32 | | 1 |

# Certificate of Analysis Summary 514960

## PLAINS ALL AMERICAN EH&S, Midland, TX

### Project Name: New McKee Jct. Sump

**Project Id:** AR157452
**Contact:** Joel Lowry
**Project Location:**

**Date Received in Lab:** Sat Sep-05-15 04:39 pm
**Report Date:** 16-SEP-15
**Project Manager:** Kelsey Brooks

| *Analysis Requested* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 514960-001 | | 514960-002 | | 514960-003 | | 514960-005 | | 514960-006 | | 514960-007 | |
| | ***Field Id:*** | NE PA NSW @ 6' | | NE PA ESW @ 6' | | NE PA WSW @ 6' | | NW PA NSW @ 5' | | NW PA ESW @ 5' | | NW PA WSW @ 5' | |
| | ***Depth:*** | 0- | | 0- | | 0- | | 0- | | 0- | | 0- | |
| | ***Matrix:*** | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | |
| | ***Sampled:*** | Sep-04-15 09:05 | | Sep-04-15 09:20 | | Sep-04-15 09:35 | | Sep-04-15 09:45 | | Sep-04-15 10:05 | | Sep-04-15 09:55 | |
| **BTEX by EPA 8021** | ***Extracted:*** | Sep-15-15 09:00 | | Sep-11-15 09:00 | | Sep-14-15 11:00 | | Sep-11-15 09:00 | | Sep-11-15 09:00 | | Sep-11-15 09:00 | |
| | ***Analyzed:*** | Sep-15-15 11:20 | | Sep-11-15 18:08 | | Sep-14-15 19:14 | | Sep-11-15 14:17 | | Sep-11-15 14:34 | | Sep-11-15 14:52 | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL |
| Benzene | | ND | 0.00498 | ND | 0.000998 | ND | 0.00100 | ND | 0.000992 | ND | 0.00100 | ND | 0.000996 |
| Toluene | | ND | 0.00996 | ND | 0.00200 | ND | 0.00200 | ND | 0.00198 | ND | 0.00200 | ND | 0.00199 |
| Ethylbenzene | | ND | 0.00498 | ND | 0.000998 | ND | 0.00100 | ND | 0.000992 | ND | 0.00100 | ND | 0.000996 |
| m_p-Xylenes | | ND | 0.00996 | ND | 0.00200 | ND | 0.00200 | ND | 0.00198 | ND | 0.00200 | ND | 0.00199 |
| o-Xylene | | ND | 0.00498 | ND | 0.000998 | ND | 0.00100 | ND | 0.000992 | ND | 0.00100 | ND | 0.000996 |
| Xylenes, Total | | ND | 0.00498 | ND | 0.000998 | ND | 0.00100 | ND | 0.000992 | ND | 0.00100 | ND | 0.000996 |
| Total BTEX | | ND | 0.00498 | ND | 0.000998 | ND | 0.00100 | ND | 0.000992 | ND | 0.00100 | ND | 0.000996 |
| **TPH by SW8015 Mod** | ***Extracted:*** | Sep-10-15 20:00 | | Sep-10-15 20:00 | | Sep-10-15 20:00 | | Sep-10-15 20:00 | | Sep-10-15 20:00 | | Sep-10-15 20:00 | |
| | ***Analyzed:*** | Sep-11-15 02:32 | | Sep-11-15 02:57 | | Sep-11-15 03:21 | | Sep-11-15 03:44 | | Sep-11-15 04:08 | | Sep-11-15 04:32 | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL |
| C6-C12 Gasoline Range Hydrocarbons | | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 |
| C12-C28 Diesel Range Hydrocarbons | | 58.5 | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 |
| C28-C35 Oil Range Hydrocarbons | | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 |
| Total TPH | | 58.5 | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 |





Julian Martinez
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

# Form 2 - Surrogate Recoveries

**Project Name:** New McKee Jct. Sump

**Work Orders :** 514960, 514960 **Project ID:** AR157452

**Lab Batch #:** 976706 **Sample:** 514960-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/11/15 02:32

**SURROGATE RECOVERY STUDY**

| TPH by SW8015 Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 132 | 99.9 | 132 | 70-135 | |
| o-Terphenyl | 59.2 | 50.0 | 118 | 70-135 | |

**Lab Batch #:** 976706 **Sample:** 514960-002 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/11/15 02:57

**SURROGATE RECOVERY STUDY**

| TPH by SW8015 Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 118 | 99.9 | 118 | 70-135 | |
| o-Terphenyl | 53.5 | 50.0 | 107 | 70-135 | |

**Lab Batch #:** 976706 **Sample:** 514960-003 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/11/15 03:21

**SURROGATE RECOVERY STUDY**

| TPH by SW8015 Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 140 | 99.7 | 140 | 70-135 | ** |
| o-Terphenyl | 63.2 | 49.9 | 127 | 70-135 | |

**Lab Batch #:** 976706 **Sample:** 514960-005 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/11/15 03:44

**SURROGATE RECOVERY STUDY**

| TPH by SW8015 Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 123 | 99.8 | 123 | 70-135 | |
| o-Terphenyl | 55.4 | 49.9 | 111 | 70-135 | |

**Lab Batch #:** 976706 **Sample:** 514960-006 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/11/15 04:08

**SURROGATE RECOVERY STUDY**

| TPH by SW8015 Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 116 | 99.9 | 116 | 70-135 | |
| o-Terphenyl | 52.8 | 50.0 | 106 | 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:** New McKee Jct. Sump

**Work Orders :** 514960, 514960 **Project ID:** AR157452

**Lab Batch #:** 976706 **Sample:** 514960-007 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/11/15 04:32

**SURROGATE RECOVERY STUDY**

| TPH by SW8015 Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 136 | 99.7 | 136 | 70-135 | ** |
| o-Terphenyl | 61.6 | 49.9 | 123 | 70-135 | |

**Lab Batch #:** 976900 **Sample:** 514960-005 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/11/15 14:17

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0271 | 0.0300 | 90 | 80-120 | |
| 4-Bromofluorobenzene | 0.0292 | 0.0300 | 97 | 80-120 | |

**Lab Batch #:** 976900 **Sample:** 514960-006 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/11/15 14:34

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0260 | 0.0300 | 87 | 80-120 | |
| 4-Bromofluorobenzene | 0.0296 | 0.0300 | 99 | 80-120 | |

**Lab Batch #:** 976900 **Sample:** 514960-007 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/11/15 14:52

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0276 | 0.0300 | 92 | 80-120 | |
| 4-Bromofluorobenzene | 0.0339 | 0.0300 | 113 | 80-120 | |

**Lab Batch #:** 976900 **Sample:** 514960-002 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/11/15 18:08

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0248 | 0.0300 | 83 | 80-120 | |
| 4-Bromofluorobenzene | 0.0274 | 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:** New McKee Jct. Sump

**Work Orders :** 514960, 514960 **Project ID:** AR157452

**Lab Batch #:** 976825 **Sample:** 514960-003 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/14/15 19:14

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0244 | 0.0300 | 81 | 80-120 | |
| 4-Bromofluorobenzene | 0.0257 | 0.0300 | 86 | 80-120 | |

**Lab Batch #:** 976825 **Sample:** 514960-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/15/15 11:20

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0272 | 0.0300 | 91 | 80-120 | |
| 4-Bromofluorobenzene | 0.0258 | 0.0300 | 86 | 80-120 | |

**Lab Batch #:** 976706 **Sample:** 698002-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 09/11/15 00:33

**SURROGATE RECOVERY STUDY**

| TPH by SW8015 Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 118 | 100 | 118 | 70-135 | |
| o-Terphenyl | 52.6 | 50.0 | 105 | 70-135 | |

**Lab Batch #:** 976900 **Sample:** 698080-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 09/11/15 10:42

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0278 | 0.0300 | 93 | 80-120 | |
| 4-Bromofluorobenzene | 0.0302 | 0.0300 | 101 | 80-120 | |

**Lab Batch #:** 976825 **Sample:** 698087-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 09/14/15 14:11

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0272 | 0.0300 | 91 | 80-120 | |
| 4-Bromofluorobenzene | 0.0297 | 0.0300 | 99 | 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:** New McKee Jct. Sump

**Work Orders :** 514960, 514960 **Project ID:** AR157452

**Lab Batch #:** 976706 **Sample:** 698002-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 09/11/15 00:57

**SURROGATE RECOVERY STUDY**

**TPH by SW8015 Mod**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 128 | 100 | 128 | 70-135 | |
| o-Terphenyl | 48.7 | 50.0 | 97 | 70-135 | |

**Lab Batch #:** 976900 **Sample:** 698080-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 09/11/15 09:52

**SURROGATE RECOVERY STUDY**

**BTEX by EPA 8021**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0329 | 0.0300 | 110 | 80-120 | |
| 4-Bromofluorobenzene | 0.0354 | 0.0300 | 118 | 80-120 | |

**Lab Batch #:** 976825 **Sample:** 698087-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 09/14/15 13:19

**SURROGATE RECOVERY STUDY**

**BTEX by EPA 8021**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0287 | 0.0300 | 96 | 80-120 | |
| 4-Bromofluorobenzene | 0.0319 | 0.0300 | 106 | 80-120 | |

**Lab Batch #:** 976706 **Sample:** 698002-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 09/11/15 01:21

**SURROGATE RECOVERY STUDY**

**TPH by SW8015 Mod**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 123 | 100 | 123 | 70-135 | |
| o-Terphenyl | 49.5 | 50.0 | 99 | 70-135 | |

**Lab Batch #:** 976900 **Sample:** 698080-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 09/11/15 10:09

**SURROGATE RECOVERY STUDY**

**BTEX by EPA 8021**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0312 | 0.0300 | 104 | 80-120 | |
| 4-Bromofluorobenzene | 0.0322 | 0.0300 | 107 | 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:** New McKee Jct. Sump

**Work Orders :** 514960, 514960 **Project ID:** AR157452

**Lab Batch #:** 976825 **Sample:** 698087-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 09/14/15 13:36

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>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 | 0.0326 | 0.0300 | 109 | 80-120 | |

**Lab Batch #:** 976900 **Sample:** 515169-003 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/11/15 16:26

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0302 | 0.0300 | 101 | 80-120 | |
| 4-Bromofluorobenzene | 0.0322 | 0.0300 | 107 | 80-120 | |

**Lab Batch #:** 976706 **Sample:** 514960-001 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/12/15 00:18

**SURROGATE RECOVERY STUDY**

| TPH by SW8015 Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 122 | 99.7 | 122 | 70-135 | |
| o-Terphenyl | 46.7 | 49.9 | 94 | 70-135 | |

**Lab Batch #:** 976825 **Sample:** 514960-001 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/15/15 11:37

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0317 | 0.0300 | 106 | 80-120 | |
| 4-Bromofluorobenzene | 0.0339 | 0.0300 | 113 | 80-120 | |

**Lab Batch #:** 976900 **Sample:** 515169-003 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/11/15 16:43

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0300 | 0.0300 | 100 | 80-120 | |
| 4-Bromofluorobenzene | 0.0327 | 0.0300 | 109 | 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:** New McKee Jct. Sump

**Work Orders :** 514960, 514960 **Project ID:** AR157452

**Lab Batch #:** 976706 **Sample:** 514960-001 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 09/12/15 00:42

**SURROGATE RECOVERY STUDY**

| TPH by SW8015 Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 127 | 99.6 | 128 | 70-135 | |
| o-Terphenyl | 50.0 | 49.8 | 100 | 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: New McKee Jct. Sump

**Work Order #:** 514960, 514960 **Project ID:** AR157452

**Analyst:** SYG **Date Prepared:** 09/11/2015 **Date Analyzed:** 09/11/2015

**Lab Batch ID:** 976900 **Sample:** 698080-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021<br>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 | <0.000998 | 0.0998 | 0.0810 | 81 | 0.0998 | 0.0873 | 87 | 7 | 70-130 | 35 | |
| Toluene | <0.00200 | 0.0998 | 0.0800 | 80 | 0.0998 | 0.0886 | 89 | 10 | 70-130 | 35 | |
| Ethylbenzene | <0.000998 | 0.0998 | 0.0827 | 83 | 0.0998 | 0.0918 | 92 | 10 | 71-129 | 35 | |
| m_p-Xylenes | <0.00200 | 0.200 | 0.169 | 85 | 0.200 | 0.187 | 94 | 10 | 70-135 | 35 | |
| o-Xylene | <0.000998 | 0.0998 | 0.0812 | 81 | 0.0998 | 0.0899 | 90 | 10 | 71-133 | 35 | |

**Analyst:** SYG **Date Prepared:** 09/14/2015 **Date Analyzed:** 09/14/2015

**Lab Batch ID:** 976825 **Sample:** 698087-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021<br>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 | 0.0780 | 78 | 0.100 | 0.0811 | 81 | 4 | 70-130 | 35 | |
| Toluene | <0.00200 | 0.100 | 0.0804 | 80 | 0.100 | 0.0802 | 80 | 0 | 70-130 | 35 | |
| Ethylbenzene | <0.00100 | 0.100 | 0.0860 | 86 | 0.100 | 0.0821 | 82 | 5 | 71-129 | 35 | |
| m_p-Xylenes | <0.00200 | 0.200 | 0.175 | 88 | 0.200 | 0.168 | 84 | 4 | 70-135 | 35 | |
| o-Xylene | <0.00100 | 0.100 | 0.0842 | 84 | 0.100 | 0.0808 | 81 | 4 | 71-133 | 35 | |

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

# BS / BSD Recoveries

## Project Name: New McKee Jct. Sump

**Work Order #:** 514960, 514960 **Project ID:** AR157452

**Analyst:** PJB **Date Prepared:** 09/10/2015 **Date Analyzed:** 09/11/2015

**Lab Batch ID:** 976706 **Sample:** 698002-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| TPH by SW8015 Mod<br>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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C6-C12 Gasoline Range Hydrocarbons | <15.0 | 1000 | 993 | 99 | 1000 | 987 | 99 | 1 | 70-135 | 35 | |
| C12-C28 Diesel Range Hydrocarbons | <15.0 | 1000 | 932 | 93 | 1000 | 879 | 88 | 6 | 70-135 | 35 | |

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: New McKee Jct. Sump

**Work Order #:** 514960

**Lab Batch #:** 976825 **Project ID:** AR157452

**Date Analyzed:** 09/15/2015 **Date Prepared:** 09/15/2015 **Analyst:** SYG

**QC- Sample ID:** 514960-001 S **Batch #:** 1 **Matrix:** Soil

**Reporting Units:** mg/kg

| BTEX by EPA 8021B<br>Analytes | MATRIX / MATRIX SPIKE RECOVERY STUDY<br>Parent Sample Result [A] | Spike Added [B] | Spiked Sample Result [C] | %R [D] | Control Limits %R | Flag |
|---|---|---|---|---|---|---|
| Benzene | <0.000996 | 0.0996 | 0.0797 | 80 | 70-130 | |
| Toluene | <0.00199 | 0.0996 | 0.0805 | 81 | 70-130 | |
| Ethylbenzene | <0.000996 | 0.0996 | 0.0880 | 88 | 71-129 | |
| m_p-Xylenes | <0.00199 | 0.199 | 0.167 | 84 | 70-135 | |
| o-Xylene | <0.000996 | 0.0996 | 0.0888 | 89 | 71-133 | |

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(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: New McKee Jct. Sump

**Work Order # :** 514960 **Project ID:** AR157452

**Lab Batch ID:** 976900 **QC- Sample ID:** 515169-003 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 09/11/2015 **Date Prepared:** 09/11/2015 **Analyst:** SYG

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021<br>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 | <0.000996 | 0.0996 | 0.0829 | 83 | 0.0996 | 0.0805 | 81 | 3 | 70-130 | 35 | |
| Toluene | <0.00199 | 0.0996 | 0.0840 | 84 | 0.0996 | 0.0815 | 82 | 3 | 70-130 | 35 | |
| Ethylbenzene | <0.000996 | 0.0996 | 0.0802 | 81 | 0.0996 | 0.0804 | 81 | 0 | 71-129 | 35 | |
| m_p-Xylenes | <0.00199 | 0.199 | 0.167 | 84 | 0.199 | 0.165 | 83 | 1 | 70-135 | 35 | |
| o-Xylene | <0.000996 | 0.0996 | 0.0805 | 81 | 0.0996 | 0.0797 | 80 | 1 | 71-133 | 35 | |

**Lab Batch ID:** 976706 **QC- Sample ID:** 514960-001 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 09/12/2015 **Date Prepared:** 09/10/2015 **Analyst:** PJB

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

| TPH by SW8015 Mod<br>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-C12 Gasoline Range Hydrocarbons | <15.0 | 997 | 942 | 94 | 996 | 1010 | 101 | 7 | 70-135 | 35 | |
| C12-C28 Diesel Range Hydrocarbons | 58.5 | 997 | 843 | 79 | 996 | 892 | 84 | 6 | 70-135 | 35 | |

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

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

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

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

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

# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In

**Client:** PLAINS ALL AMERICAN EH&S

**Date/ Time Received:** 09/05/2015 04:39:00 PM

**Work Order #:** 514960

**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? | **N/A** |
| #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)? | **No** |
| #20 VOC samples have zero headspace (less than 1/4 inch bubble)? | **N/A** |
| #21 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **N/A** |
| #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:** Caroline Dugan Date: 09/08/2015

**Checklist reviewed by:** Kelsey Brooks Date: 09/09/2015

# Terracon

## CHAIN OF CUSTODY RECORD

Office Location: Lubbock

Project Manager: Joel Lowry

Sampler's Name: Joel Lowry

Laboratory: Xenco Laboratories
Address: 1211 W. Florida Ave.
Midland, TX 79701
432-563-1800

Phone:
Contact: Joel Lowry
PO/SO #: Plains - SRS Pending
Sampler's Signature: Joel Lowry

Project Number: AR157452

Project Name: New McKee Jct. Sump (SRS # Pending)

ANALYSIS REQUESTED

LAB USE ONLY
DUE DATE:

TEMP OF COOLER WHEN RECEIVED (°C): 5.0

Page 1 of 1

| Matrix | Date | Time | Comp | Grab | Identifying Marks of Sample(s) | Start Depth | End Depth | No. Type of Containers: 4 oz Glass | TPH (8015M) | BTEX (8021) | Hold | Lab Sample ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 9/4/2015 | 905 | | X | NE PA NSW @ 6' | - | - | 1 | X | X | | 514960 |
| S | 9/4/2015 | 920 | | X | NE PA ESW @ 6' | - | - | 1 | X | X | | |
| S | 9/4/2015 | 935 | | X | NE PA WSW @ 6' | - | - | 1 | X | X | | |
| S | 9/4/2015 | 940 | | X | NE PA Floor @ 8' | 8 | 8.5 | 1 | X | X | X | |
| S | 9/4/2015 | 945 | | X | NW PA NSW @ 5' | - | - | 1 | X | X | | |
| S | 9/4/2015 | 1005 | | X | NW PA ESW @ 5' | - | - | 1 | X | X | | |
| S | 9/4/2015 | 955 | | X | NW PA WSW @ 5' | - | - | 1 | X | X | | |
| S | 9/4/2015 | 940 | | X | NW PA Floor @ 7' | 7 | 7.5 | 1 | X | X | X | |
| | | | | | | - | - | | | | | |
| | | | | | | | | | | | | |

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

TRRP Laboratory Review Checklist ☐ Yes ☐ No

| | Relinquished by (Signature) | Date | Time | Received by (Signature) | Date | Time |
|---|---|---|---|---|---|---|
| 1 | Joel Lowry | 9/5/15 | 4:39 | Paul | 09/05/15 | 16:39 |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |

NOTES:
Please Email Results to
erin.loyd@terracon.com
joel.lowry@terracon.com

Camille Bryant

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

# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In

**Client:** PLAINS ALL AMERICAN EH&S

**Date/ Time Received:** 09/05/2015 04:39:00 PM

**Work Order #:** 514960

**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? | **N/A** |
| #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)? | **No** |
| #20 VOC samples have zero headspace (less than 1/4 inch bubble)? | **N/A** |
| #21 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **N/A** |
| #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:** Caroline Dugan Date: 09/08/2015

**Checklist reviewed by:** Kelsey Brooks Date: 09/09/2015

# Analytical Report 517088

## for

## PLAINS ALL AMERICAN EH&S

**Project Manager: Joel Lowry**

**New McKee Jct. Sump**

**12-OCT-15**

Collected By: Client



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-15-19), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD ( L10-135)
Texas (T104704477), Louisiana (04176), USDA (P330-07-00105)

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)

12-OCT-15

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

Reference: XENCO Report No(s): **517088**
**New McKee Jct. Sump**
Project Address:

**Joel Lowry**:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 517088. 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. 517088 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Kelsey Brooks**
Project Manager

# Sample Cross Reference 517088

## PLAINS ALL AMERICAN EH&S, Midland, TX

New McKee Jct. Sump

| Sample Id | Matrix | Date Collected | Sample Depth | Lab Sample Id |
|---|---|---|---|---|
| NE PA Floor | S | 10-02-15 12:15 | - 7 ft | 517088-001 |
| NW PA Floor | S | 10-02-15 12:30 | - 6 ft | 517088-002 |

**Sample receipt non conformances and comments:**

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

None

# Certificate of Analysis Summary 517088

## PLAINS ALL AMERICAN EH&S, Midland, TX

### Project Name: New McKee Jct. Sump

**Project Id:**
**Contact:** Joel Lowry
**Project Location:**

**Date Received in Lab:** Wed Oct-07-15 05:20 pm
**Report Date:** 12-OCT-15
**Project Manager:** Kelsey Brooks

| *Analysis Requested* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 517088-001 | | 517088-002 | | | | |
| | ***Field Id:*** | NE PA Floor | | NW PA Floor | | | | |
| | ***Depth:*** | 7 ft | | 6 ft | | | | |
| | ***Matrix:*** | SOIL | | SOIL | | | | |
| | ***Sampled:*** | Oct-02-15 12:15 | | Oct-02-15 12:30 | | | | |
| **BTEX by EPA 8021B** | ***Extracted:*** | Oct-09-15 10:30 | | Oct-09-15 10:30 | | | | |
| | ***Analyzed:*** | Oct-09-15 12:51 | | Oct-09-15 13:08 | | | | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | | | |
| Benzene | | ND | 0.000994 | ND | 0.000994 | | | |
| Toluene | | ND | 0.00199 | ND | 0.00199 | | | |
| Ethylbenzene | | ND | 0.000994 | ND | 0.000994 | | | |
| m_p-Xylenes | | ND | 0.00199 | ND | 0.00199 | | | |
| o-Xylene | | ND | 0.000994 | ND | 0.000994 | | | |
| Total Xylenes | | ND | 0.000994 | ND | 0.000994 | | | |
| Total BTEX | | ND | 0.000994 | ND | 0.000994 | | | |
| **TPH By SW8015B Mod** | ***Extracted:*** | Oct-09-15 12:00 | | Oct-09-15 12:00 | | | | |
| | ***Analyzed:*** | Oct-09-15 15:10 | | Oct-09-15 15:59 | | | | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | | | |
| C6-C10 Gasoline Range Hydrocarbons | | ND | 15.0 | ND | 14.9 | | | |
| C10-C28 Diesel Range Hydrocarbons | | 303 | 15.0 | ND | 14.9 | | | |
| C28-C35 Oil Range Hydrocarbons | | ND | 15.0 | ND | 14.9 | | | |
| Total TPH | | 303 | 15.0 | ND | 14.9 | | | |



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

Version: 1.%

Kelsey Brooks
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




| | Phone | Fax |
|---|---|---|
| 4143 Greenbriar Dr, Stafford, TX 77477 | (281) 240-4200 | (281) 240-4280 |
| 9701 Harry Hines Blvd , Dallas, TX 75220 | (214) 902 0300 | (214) 351-9139 |
| 5332 Blackberry Drive, San Antonio TX 78238 | (210) 509-3334 | (210) 509-3335 |
| 2505 North Falkenburg Rd, Tampa, FL 33619 | (813) 620-2000 | (813) 620-2033 |
| 12600 West I-20 East, Odessa, TX 79765 | (432) 563-1800 | (432) 563-1713 |
| 6017 Financial Drive, Norcross, GA 30071 | (770) 449-8800 | (770) 449-5477 |
| 3725 E. Atlanta Ave, Phoenix, AZ 85040 | (602) 437-0330 | |

# Form 2 - Surrogate Recoveries

**Project Name:** New McKee Jct. Sump

**Work Orders :** 517088,

**Project ID:**

**Lab Batch #:** 978757 **Sample:** 517088-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/09/15 12:51

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0281 | 0.0300 | 94 | 80-120 | |
| 4-Bromofluorobenzene | 0.0321 | 0.0300 | 107 | 80-120 | |

**Lab Batch #:** 978757 **Sample:** 517088-002 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/09/15 13:08

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>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 | 0.0316 | 0.0300 | 105 | 80-120 | |

**Lab Batch #:** 978756 **Sample:** 517088-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/09/15 15:10

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 88.7 | 99.7 | 89 | 70-135 | |
| o-Terphenyl | 45.5 | 49.9 | 91 | 70-135 | |

**Lab Batch #:** 978756 **Sample:** 517088-002 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/09/15 15:59

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 112 | 99.6 | 112 | 70-135 | |
| o-Terphenyl | 57.1 | 49.8 | 115 | 70-135 | |

**Lab Batch #:** 978757 **Sample:** 699267-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/09/15 12:18

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0288 | 0.0300 | 96 | 80-120 | |
| 4-Bromofluorobenzene | 0.0318 | 0.0300 | 106 | 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:** New McKee Jct. Sump

**Work Orders :** 517088,

**Project ID:**

**Lab Batch #:** 978756 **Sample:** 699266-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/09/15 13:58

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 86.4 | 100 | 86 | 70-135 | |
| o-Terphenyl | 44.1 | 50.0 | 88 | 70-135 | |

**Lab Batch #:** 978757 **Sample:** 699267-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/09/15 10:45

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0257 | 0.0300 | 86 | 80-120 | |
| 4-Bromofluorobenzene | 0.0306 | 0.0300 | 102 | 80-120 | |

**Lab Batch #:** 978756 **Sample:** 699266-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/09/15 14:22

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 104 | 100 | 104 | 70-135 | |
| o-Terphenyl | 47.3 | 50.0 | 95 | 70-135 | |

**Lab Batch #:** 978757 **Sample:** 699267-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/09/15 11:02

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0242 | 0.0300 | 81 | 80-120 | |
| 4-Bromofluorobenzene | 0.0254 | 0.0300 | 85 | 80-120 | |

**Lab Batch #:** 978756 **Sample:** 699266-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/09/15 14:47

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 99.1 | 100 | 99 | 70-135 | |
| o-Terphenyl | 43.7 | 50.0 | 87 | 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: New McKee Jct. Sump

**Work Order #:** 517088 **Project ID:**

**Analyst:** SYG **Date Prepared:** 10/09/2015 **Date Analyzed:** 10/09/2015

**Lab Batch ID:** 978757 **Sample:** 699267-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>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 | 0.0813 | 81 | 0.0998 | 0.0806 | 81 | 1 | 70-130 | 35 | |
| Toluene | <0.00201 | 0.100 | 0.0923 | 92 | 0.0998 | 0.0854 | 86 | 8 | 70-130 | 35 | |
| Ethylbenzene | <0.00100 | 0.100 | 0.119 | 119 | 0.0998 | 0.110 | 110 | 8 | 71-129 | 35 | |
| m_p-Xylenes | <0.00201 | 0.201 | 0.239 | 119 | 0.200 | 0.219 | 110 | 9 | 70-135 | 35 | |
| o-Xylene | <0.00100 | 0.100 | 0.120 | 120 | 0.0998 | 0.110 | 110 | 9 | 71-133 | 35 | |

**Analyst:** PJB **Date Prepared:** 10/09/2015 **Date Analyzed:** 10/09/2015

**Lab Batch ID:** 978756 **Sample:** 699266-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C6-C10 Gasoline Range Hydrocarbons | <15.0 | 1000 | 1080 | 108 | 1000 | 966 | 97 | 11 | 70-135 | 35 | |
| C10-C28 Diesel Range Hydrocarbons | <15.0 | 1000 | 862 | 86 | 1000 | 840 | 84 | 3 | 70-135 | 35 | |

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

# CHAIN OF CUSTODY RECORD

**Terracon**

Laboratory: Xenco Laboratories
Address: 1211 W. Florida Ave, Midland, TX 79701
432-563-1800

Office Location: Lubbock
Phone:
Project Manager: Joel Lowry
Contact: Joel Lowry
Sampler's Name: Joel Lowry
PO/SO #: Plains
Sampler's Signature: Joel Lowry

Project Number: NE
Project Name: New McKee Jct. Sump

ANALYSIS REQUESTED: 8015 M; 8021B

LAB USE ONLY
DUE DATE:
TEMP OF COOLER WHEN RECEIVED (°C): 4.0°C



| Matrix | Date | Time | Comp | Grab | Identifying Marks of Sample(s) | Start Depth | End Depth | No. Type of Containers: 4 oz Glass | | | | Lab Sample ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 10/2/2015 | 12:15 | | X | NE PA Floor | 7 | | 1 | | | | 517088 |
| S | 10/2/2015 | 12:30 | | X | NW PA Floor | 6 | | 1 | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |

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

TRRP Laboratory Review Checklist ☐ Yes ☐ No

| Relinquished by (Signature) | Date: | Time: | Received by (Signature) | Date: | Time: |
|---|---|---|---|---|---|
| Joel Lowry | 10/7/15 | 8:44 | K. Walter | 10.7.15 | 8:44 |
| K. Walter | 10.7.15 | 17:20 | Julian M | 10-7-15 | 17:20 |
| | | | | | |
| | | | | | |

NOTES: Please Email Results to
erin.loyd@terracon.com
joel.lowry@terracon.com

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

# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In

**Client:** PLAINS ALL AMERICAN EH&S

**Date/ Time Received:** 10/07/2015 05:20:00 PM

**Work Order #:** 517088

**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)? | 4 |
| #2 *Shipping container in good condition? | **Yes** |
| #3 *Samples received on ice? | **Yes** |
| #4 *Custody Seals intact on shipping container/ cooler? | **N/A** |
| #5 Custody Seals intact on sample bottles? | **N/A** |
| #6 *Custody Seals Signed and dated? | **N/A** |
| #7 *Chain of Custody present? | **Yes** |
| #8 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? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **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:** Kelsey Brooks Date: 10/08/2015

**Checklist reviewed by:** Kelsey Brooks Date: 10/08/2015

# Analytical Report 517342

## for

## PLAINS ALL AMERICAN EH&S

**Project Manager: Joel Lowry**

**New McKee Historical**

**14-OCT-15**

Collected By: Client



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-15-19), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD ( L10-135)
Texas (T104704477), Louisiana (04176), USDA (P330-07-00105)

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)

14-OCT-15

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

Reference: XENCO Report No(s): **517342**
**New McKee Historical**
Project Address: --

**Joel Lowry**:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 517342. 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. 517342 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Kelsey Brooks**
Project Manager

# Sample Cross Reference 517342

## PLAINS ALL AMERICAN EH&S, Midland, TX

New McKee Historical

| Sample Id | Matrix | Date Collected | Sample Depth | Lab Sample Id |
|---|---|---|---|---|
| SSW #1 | S | 10-12-15 15:00 | 5 ft | 517342-001 |
| SSW #2 | S | 10-12-15 15:05 | 5 ft | 517342-002 |
| WSW #2 | S | 10-12-15 15:10 | 5 ft | 517342-003 |
| NSW #3 | S | 10-12-15 15:15 | 5 ft | 517342-004 |
| Center Floor | S | 10-12-15 15:20 | 7 ft | 517342-005 |
| SE Floor | S | 10-12-15 15:25 | 7 - 7.5 ft | 517342-006 |
| NE PA Floor | S | 10-12-15 15:30 | 8 - 8.5 ft | 517342-007 |

**Sample receipt non conformances and comments:**

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

None

# Certificate of Analysis Summary 517342

## PLAINS ALL AMERICAN EH&S, Midland, TX

### Project Name: New McKee Historical

**Project Id:**
**Contact:** Joel Lowry
**Project Location:** --

**Date Received in Lab:** Tue Oct-13-15 11:58 am
**Report Date:** 14-OCT-15
**Project Manager:** Kelsey Brooks

| *Analysis Requested* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 517342-001 | | 517342-002 | | 517342-003 | | 517342-004 | | 517342-005 | | 517342-006 | |
| | ***Field Id:*** | SSW #1 | | SSW #2 | | WSW #2 | | NSW #3 | | Center Floor | | SE Floor | |
| | ***Depth:*** | 5- ft | | 5- ft | | 5- ft | | 5- ft | | 7- ft | | 7-7.5 ft | |
| | ***Matrix:*** | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | |
| | ***Sampled:*** | Oct-12-15 15:00 | | Oct-12-15 15:05 | | Oct-12-15 15:10 | | Oct-12-15 15:15 | | Oct-12-15 15:20 | | Oct-12-15 15:25 | |
| **BTEX by EPA 8021B** | ***Extracted:*** | Oct-13-15 18:00 | | Oct-13-15 18:00 | | Oct-13-15 18:00 | | Oct-13-15 18:00 | | Oct-13-15 18:00 | | Oct-13-15 18:00 | |
| | ***Analyzed:*** | Oct-14-15 10:55 | | Oct-14-15 11:59 | | Oct-13-15 21:10 | | Oct-13-15 21:26 | | Oct-14-15 15:07 | | Oct-13-15 21:59 | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL |
| Benzene | | ND | 0.000994 | ND | 0.00166 | ND | 0.000998 | ND | 0.000990 | ND | 0.00198 | ND | 0.000992 |
| Toluene | | ND | 0.00199 | ND | 0.00332 | ND | 0.00200 | ND | 0.00198 | ND | 0.00397 | ND | 0.00198 |
| Ethylbenzene | | ND | 0.000994 | ND | 0.00166 | ND | 0.000998 | ND | 0.000990 | ND | 0.00198 | ND | 0.000992 |
| m_p-Xylenes | | ND | 0.00199 | ND | 0.00332 | ND | 0.00200 | ND | 0.00198 | ND | 0.00397 | ND | 0.00198 |
| o-Xylene | | ND | 0.000994 | ND | 0.00166 | ND | 0.000998 | ND | 0.000990 | ND | 0.00198 | ND | 0.000992 |
| Xylenes, Total | | ND | 0.000994 | ND | 0.00166 | ND | 0.000998 | ND | 0.000990 | ND | 0.00198 | ND | 0.000992 |
| Total BTEX | | ND | 0.000994 | ND | 0.00166 | ND | 0.000998 | ND | 0.000990 | ND | 0.00198 | ND | 0.000992 |
| **TPH By SW8015B Mod** | ***Extracted:*** | Oct-13-15 18:00 | | Oct-13-15 18:00 | | Oct-13-15 18:00 | | Oct-13-15 18:00 | | Oct-13-15 18:00 | | Oct-13-15 18:00 | |
| | ***Analyzed:*** | Oct-14-15 13:35 | | Oct-14-15 11:33 | | Oct-13-15 20:14 | | Oct-14-15 11:58 | | Oct-13-15 21:02 | | Oct-14-15 09:51 | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL |
| C6-C10 Gasoline Range Hydrocarbons | | ND | 15.0 | ND | 14.9 | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 |
| C10-C28 Diesel Range Hydrocarbons | | ND | 15.0 | ND | 14.9 | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 |
| C28-C35 Oil Range Hydrocarbons | | ND | 15.0 | ND | 14.9 | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 |
| Total TPH | | ND | 15.0 | ND | 14.9 | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 |





Kelsey Brooks
Project Manager

# Certificate of Analysis Summary 517342

## PLAINS ALL AMERICAN EH&S, Midland, TX

### Project Name: New McKee Historical

**Project Id:**
**Contact:** Joel Lowry
**Project Location:** --

**Date Received in Lab:** Tue Oct-13-15 11:58 am
**Report Date:** 14-OCT-15
**Project Manager:** Kelsey Brooks

| *Analysis Requested* | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 517342-007 | | | | | |
| | ***Field Id:*** | NE PA Floor | | | | | |
| | ***Depth:*** | 8-8.5 ft | | | | | |
| | ***Matrix:*** | SOIL | | | | | |
| | ***Sampled:*** | Oct-12-15 15:30 | | | | | |
| **BTEX by EPA 8021B** | ***Extracted:*** | Oct-13-15 18:00 | | | | | |
| | ***Analyzed:*** | Oct-14-15 13:44 | | | | | |
| | ***Units/RL:*** | mg/kg | RL | | | | |
| Benzene | | ND | 0.00164 | | | | |
| Toluene | | ND | 0.00328 | | | | |
| Ethylbenzene | | ND | 0.00164 | | | | |
| m_p-Xylenes | | ND | 0.00328 | | | | |
| o-Xylene | | ND | 0.00164 | | | | |
| Xylenes, Total | | ND | 0.00164 | | | | |
| Total BTEX | | ND | 0.00164 | | | | |
| **TPH By SW8015B Mod** | ***Extracted:*** | Oct-13-15 18:00 | | | | | |
| | ***Analyzed:*** | Oct-14-15 12:22 | | | | | |
| | ***Units/RL:*** | mg/kg | RL | | | | |
| C6-C10 Gasoline Range Hydrocarbons | | ND | 15.0 | | | | |
| C10-C28 Diesel Range Hydrocarbons | | 137 | 15.0 | | | | |
| C28-C35 Oil Range Hydrocarbons | | ND | 15.0 | | | | |
| Total TPH | | 137 | 15.0 | | | | |





Kelsey Brooks
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

# Form 2 - Surrogate Recoveries

**Project Name:** New McKee Historical

**Work Orders :** 517342,

**Project ID:**

**Lab Batch #:** 979030 **Sample:** 517342-003 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/13/15 20:14

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 97.3 | 100 | 97 | 70-135 | |
| o-Terphenyl | 49.1 | 50.0 | 98 | 70-135 | |

**Lab Batch #:** 979030 **Sample:** 517342-005 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/13/15 21:02

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 76.5 | 99.7 | 77 | 70-135 | |
| o-Terphenyl | 37.9 | 49.9 | 76 | 70-135 | |

**Lab Batch #:** 979047 **Sample:** 517342-003 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/13/15 21:10

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0281 | 0.0300 | 94 | 80-120 | |
| 4-Bromofluorobenzene | 0.0257 | 0.0300 | 86 | 80-120 | |

**Lab Batch #:** 979047 **Sample:** 517342-004 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/13/15 21:26

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0273 | 0.0300 | 91 | 80-120 | |
| 4-Bromofluorobenzene | 0.0241 | 0.0300 | 80 | 80-120 | |

**Lab Batch #:** 979047 **Sample:** 517342-006 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/13/15 21:59

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>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 | 0.0241 | 0.0300 | 80 | 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:** New McKee Historical

**Work Orders :** 517342,

**Project ID:**

**Lab Batch #:** 979030 **Sample:** 517342-006 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/14/15 09:51

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 112 | 99.9 | 112 | 70-135 | |
| o-Terphenyl | 56.7 | 50.0 | 113 | 70-135 | |

**Lab Batch #:** 979047 **Sample:** 517342-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/14/15 10:55

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0269 | 0.0300 | 90 | 80-120 | |
| 4-Bromofluorobenzene | 0.0244 | 0.0300 | 81 | 80-120 | |

**Lab Batch #:** 979030 **Sample:** 517342-002 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/14/15 11:33

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 115 | 99.6 | 115 | 70-135 | |
| o-Terphenyl | 59.0 | 49.8 | 118 | 70-135 | |

**Lab Batch #:** 979030 **Sample:** 517342-004 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/14/15 11:58

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 116 | 99.9 | 116 | 70-135 | |
| o-Terphenyl | 58.7 | 50.0 | 117 | 70-135 | |

**Lab Batch #:** 979047 **Sample:** 517342-002 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/14/15 11:59

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>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 | 0.0305 | 0.0300 | 102 | 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:** New McKee Historical

**Work Orders :** 517342,

**Project ID:**

**Lab Batch #:** 979030 **Sample:** 517342-007 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/14/15 12:22

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 130 | 99.9 | 130 | 70-135 | |
| o-Terphenyl | 64.6 | 50.0 | 129 | 70-135 | |

**Lab Batch #:** 979030 **Sample:** 517342-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/14/15 13:35

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 119 | 99.9 | 119 | 70-135 | |
| o-Terphenyl | 61.6 | 50.0 | 123 | 70-135 | |

**Lab Batch #:** 979047 **Sample:** 517342-007 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/14/15 13:44

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0264 | 0.0300 | 88 | 80-120 | |
| 4-Bromofluorobenzene | 0.0306 | 0.0300 | 102 | 80-120 | |

**Lab Batch #:** 979047 **Sample:** 517342-005 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/14/15 15:07

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0291 | 0.0300 | 97 | 80-120 | |
| 4-Bromofluorobenzene | 0.0321 | 0.0300 | 107 | 80-120 | |

**Lab Batch #:** 979030 **Sample:** 699420-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/13/15 18:18

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 119 | 100 | 119 | 70-135 | |
| o-Terphenyl | 59.3 | 50.0 | 119 | 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:** New McKee Historical

**Work Orders :** 517342,

**Project ID:**

**Lab Batch #:** 979047 **Sample:** 699437-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/13/15 20:21

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0271 | 0.0300 | 90 | 80-120 | |
| 4-Bromofluorobenzene | 0.0240 | 0.0300 | 80 | 80-120 | |

**Lab Batch #:** 979030 **Sample:** 699420-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/13/15 18:41

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 117 | 100 | 117 | 70-135 | |
| o-Terphenyl | 51.3 | 50.0 | 103 | 70-135 | |

**Lab Batch #:** 979047 **Sample:** 699437-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/13/15 19:32

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0266 | 0.0300 | 89 | 80-120 | |
| 4-Bromofluorobenzene | 0.0243 | 0.0300 | 81 | 80-120 | |

**Lab Batch #:** 979030 **Sample:** 699420-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/13/15 19:04

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 132 | 100 | 132 | 70-135 | |
| o-Terphenyl | 59.4 | 50.0 | 119 | 70-135 | |

**Lab Batch #:** 979047 **Sample:** 699437-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/13/15 19:48

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0241 | 0.0300 | 80 | 80-120 | |
| 4-Bromofluorobenzene | 0.0252 | 0.0300 | 84 | 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:** New McKee Historical

**Work Orders :** 517342,

**Project ID:**

**Lab Batch #:** 979030 **Sample:** 517342-006 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/13/15 21:50

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 120 | 100 | 120 | 70-135 | |
| o-Terphenyl | 53.1 | 50.0 | 106 | 70-135 | |

**Lab Batch #:** 979047 **Sample:** 517342-001 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/14/15 14:01

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0268 | 0.0300 | 89 | 80-120 | |
| 4-Bromofluorobenzene | 0.0266 | 0.0300 | 89 | 80-120 | |

**Lab Batch #:** 979030 **Sample:** 517342-006 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/13/15 22:13

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 111 | 99.8 | 111 | 70-135 | |
| o-Terphenyl | 50.2 | 49.9 | 101 | 70-135 | |

**Lab Batch #:** 979047 **Sample:** 517342-001 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/14/15 14:17

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0275 | 0.0300 | 92 | 80-120 | |
| 4-Bromofluorobenzene | 0.0298 | 0.0300 | 99 | 80-120 | |

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

# BS / BSD Recoveries

## Project Name: New McKee Historical

**Work Order #:** 517342 **Project ID:**

**Analyst:** SYG **Date Prepared:** 10/13/2015 **Date Analyzed:** 10/13/2015

**Lab Batch ID:** 979047 **Sample:** 699437-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>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 | <0.00101 | 0.101 | 0.0831 | 82 | 0.0994 | 0.0809 | 81 | 3 | 70-130 | 35 | |
| Toluene | <0.00201 | 0.101 | 0.0809 | 80 | 0.0994 | 0.0802 | 81 | 1 | 70-130 | 35 | |
| Ethylbenzene | <0.00101 | 0.101 | 0.105 | 104 | 0.0994 | 0.116 | 117 | 10 | 71-129 | 35 | |
| m_p-Xylenes | <0.00201 | 0.201 | 0.212 | 105 | 0.199 | 0.237 | 119 | 11 | 70-135 | 35 | |
| o-Xylene | <0.00101 | 0.101 | 0.100 | 99 | 0.0994 | 0.108 | 109 | 8 | 71-133 | 35 | |

**Analyst:** PJB **Date Prepared:** 10/13/2015 **Date Analyzed:** 10/13/2015

**Lab Batch ID:** 979030 **Sample:** 699420-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C6-C10 Gasoline Range Hydrocarbons | <15.0 | 1000 | 993 | 99 | 1000 | 1090 | 109 | 9 | 70-135 | 35 | |
| C10-C28 Diesel Range Hydrocarbons | <15.0 | 1000 | 839 | 84 | 1000 | 887 | 89 | 6 | 70-135 | 35 | |

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: New McKee Historical

**Work Order # :** 517342 **Project ID:**

**Lab Batch ID:** 979047 **QC- Sample ID:** 517342-001 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 10/14/2015 **Date Prepared:** 10/13/2015 **Analyst:** SYG

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>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 | <0.00101 | 0.101 | 0.0811 | 80 | 0.101 | 0.0807 | 80 | 0 | 70-130 | 35 | |
| Toluene | <0.00202 | 0.101 | 0.0807 | 80 | 0.101 | 0.0820 | 81 | 2 | 70-130 | 35 | |
| Ethylbenzene | <0.00101 | 0.101 | 0.0850 | 84 | 0.101 | 0.0877 | 87 | 3 | 71-129 | 35 | |
| m_p-Xylenes | <0.00202 | 0.202 | 0.171 | 85 | 0.201 | 0.175 | 87 | 2 | 70-135 | 35 | |
| o-Xylene | <0.00101 | 0.101 | 0.0826 | 82 | 0.101 | 0.0861 | 85 | 4 | 71-133 | 35 | |

**Lab Batch ID:** 979030 **QC- Sample ID:** 517342-006 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 10/13/2015 **Date Prepared:** 10/13/2015 **Analyst:** PJB

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>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 | <15.0 | 1000 | 910 | 91 | 998 | 864 | 87 | 5 | 70-135 | 35 | |
| C10-C28 Diesel Range Hydrocarbons | <15.0 | 1000 | 815 | 82 | 998 | 766 | 77 | 6 | 70-135 | 35 | |

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

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

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

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

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

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

**Client:** PLAINS ALL AMERICAN EH&S

**Date/ Time Received:** 10/13/2015 11:58:00 AM

**Work Order #:** 517342

**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? | **N/A** |
| #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? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **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:** Kelsey Brooks Date: 10/13/2015

**Checklist reviewed by:** Kelsey Brooks Date: 10/13/2015

# CHAIN OF CUSTODY RECORD 517342-0

**Terracon**

Office Location: Lubbock

Project Manager: Joel Lowry

Sampler's Name: Joel Lowry

Project Number: Pending

Project Name: New Mexico Historical (New Mexico Hist)

Laboratory: Xenco Laboratories
Address: 1211 W. Florida Ave, Midland, TX 79701
432-563-1800
Phone:
Contact: Joel Lowry
PO/SO #: SLO New Mexico Historical

Sampler's Signature: Joel Lowry

| Matrix | Date | Time | Comp | Grab | Identifying Marks of Sample(s) | Start Depth | End Depth | No. Type of Containers: 4 oz Glass | | | | ANALYSIS REQUESTED: TPH 8015M | BTEX 8021 | | | | | | Lab Sample ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 10/12/15 | 3:00 | | X | SSW#1 | 5' | | 1 | | | | X | X | | | | | | |
| | | 3:05 | | | SSW#2 | 5 | | 1 | | | | X | X | | | | | | |
| | | 3:10 | | | WSW#2 | 5 | | 1 | | | | X | X | | | | | | |
| | | 3:15 | | | NSW#3 | 5 | | 1 | | | | X | X | | | | | | |
| | | 3:20 | | | Center Floor | 7 | | 1 | | | | X | X | | | | | | |
| | | 3:25 | | | SE Floor | 7 | 9.5 | 1 | | | | X | X | | | | | | |
| | | 3:30 | | | NE PA Floor | 8 | 8' | 1 | | | | X | X | | | | | | |

LAB USE ONLY
DUE DATE:
TEMP OF COOLER WHEN RECEIVED (°C): 5°

Page 1 of 1

☐ ☒ ☐ ☐ ☒ Rush

| Relinquished by (Signature) | Date | Time | Received by (Signature) | Date | Time |
|---|---|---|---|---|---|
| Joel Lowry | 10.13.15 | 11:58 | | 10/13/15 | 1158 |
| 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:

Please Email Results to
erin.lovd@terracon.com
joel.lowry@terracon.com

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

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

**Client:** PLAINS ALL AMERICAN EH&S

**Date/ Time Received:** 10/13/2015 11:58:00 AM

**Work Order #:** 517342

**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? | **N/A** |
| #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? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **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:** Kelsey Brooks Date: 10/13/2015

**Checklist reviewed by:** Kelsey Brooks Date: 10/13/2015

# Analytical Report 517344

## for

## PLAINS ALL AMERICAN EH&S

**Project Manager: Joel Lowry**

**New McKee Historical**

**20-OCT-15**

Collected By: Client



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-15-19), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD ( L10-135)
Texas (T104704477), Louisiana (04176), USDA (P330-07-00105)

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)

20-OCT-15

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

Reference: XENCO Report No(s): **517344**
**New McKee Historical**
Project Address:

**Joel Lowry**:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 517344. 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. 517344 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Kelsey Brooks**
Project Manager

# Sample Cross Reference 517344

## PLAINS ALL AMERICAN EH&S, Midland, TX

New McKee Historical

| Sample Id | Matrix | Date Collected | Sample Depth | Lab Sample Id |
|---|---|---|---|---|
| Telephone Pole In-Situ | S | 10-12-15 15:30 | 5 ft | 517344-001 |
| Cathodic In-Situ | S | 10-12-15 15:40 | 5 ft | 517344-002 |

**Sample receipt non conformances and comments:**

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

None

# Certificate of Analysis Summary 517344

## PLAINS ALL AMERICAN EH&S, Midland, TX

### Project Name: New McKee Historical

**Project Id:**
**Contact:** Joel Lowry
**Project Location:**

**Date Received in Lab:** Tue Oct-13-15 11:58 am
**Report Date:** 20-OCT-15
**Project Manager:** Kelsey Brooks

| *Analysis Requested* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 517344-001 | | 517344-002 | | | | | |
| | ***Field Id:*** | Telephone Pole In-Situ | | Cathodic In-Situ | | | | | |
| | ***Depth:*** | 5- ft | | 5- ft | | | | | |
| | ***Matrix:*** | SOIL | | SOIL | | | | | |
| | ***Sampled:*** | Oct-12-15 15:30 | | Oct-12-15 15:40 | | | | | |
| **BTEX by EPA 8021B** | ***Extracted:*** | Oct-15-15 10:00 | | Oct-15-15 10:00 | | | | | |
| | ***Analyzed:*** | Oct-16-15 15:35 | | Oct-16-15 17:57 | | | | | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | | | | |
| Benzene | | 0.112 | 0.0202 | 3.29 | 0.0998 | | | | |
| Toluene | | 4.66 | 0.0403 | 39.5 | 0.200 | | | | |
| Ethylbenzene | | 7.08 | 0.0202 | 35.2 | 0.0998 | | | | |
| m_p-Xylenes | | 14.3 | 0.0403 | 65.6 | 0.200 | | | | |
| o-Xylene | | 6.23 | 0.0202 | 27.0 | 0.0998 | | | | |
| Xylenes, Total | | 20.5 | 0.0202 | 92.6 | 0.0998 | | | | |
| Total BTEX | | 32.4 | 0.0202 | 171 | 0.0998 | | | | |
| **TPH By SW8015B Mod** | ***Extracted:*** | Oct-16-15 18:30 | | Oct-16-15 18:30 | | | | | |
| | ***Analyzed:*** | Oct-18-15 18:41 | | Oct-18-15 18:19 | | | | | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | | | | |
| C6-C10 Gasoline Range Hydrocarbons | | 981 | 150 | 3540 | 150 | | | | |
| C10-C28 Diesel Range Hydrocarbons | | 12400 | 150 | 17100 | 150 | | | | |
| C28-C35 Oil Range Hydrocarbons | | 180 | 150 | 194 | 150 | | | | |
| Total TPH | | 13600 | 150 | 20800 | 150 | | | | |





Kelsey Brooks
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

# Form 2 - Surrogate Recoveries

**Project Name:** New McKee Historical

**Work Orders :** 517344,

**Project ID:**

**Lab Batch #:** 979154 **Sample:** 517344-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/16/15 15:35

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0291 | 0.0300 | 97 | 80-120 | |
| 4-Bromofluorobenzene | 0.0273 | 0.0300 | 91 | 80-120 | |

**Lab Batch #:** 979154 **Sample:** 517344-002 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/16/15 17:57

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0260 | 0.0300 | 87 | 80-120 | |
| 4-Bromofluorobenzene | 0.0310 | 0.0300 | 103 | 80-120 | |

**Lab Batch #:** 979371 **Sample:** 517344-002 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/18/15 18:19

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 118 | 100 | 118 | 70-135 | |
| o-Terphenyl | 63.3 | 50.0 | 127 | 70-135 | |

**Lab Batch #:** 979371 **Sample:** 517344-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/18/15 18:41

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 124 | 100 | 124 | 70-135 | |
| o-Terphenyl | 55.8 | 50.0 | 112 | 70-135 | |

**Lab Batch #:** 979154 **Sample:** 699509-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/15/15 11:18

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0300 | 0.0300 | 100 | 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:** New McKee Historical

**Work Orders :** 517344,

**Project ID:**

**Lab Batch #:** 979371 **Sample:** 699640-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/17/15 05:27

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 107 | 100 | 107 | 70-135 | |
| o-Terphenyl | 51.4 | 50.0 | 103 | 70-135 | |

**Lab Batch #:** 979154 **Sample:** 699509-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/15/15 10:12

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0259 | 0.0300 | 86 | 80-120 | |
| 4-Bromofluorobenzene | 0.0242 | 0.0300 | 81 | 80-120 | |

**Lab Batch #:** 979371 **Sample:** 699640-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/17/15 05:51

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 114 | 100 | 114 | 70-135 | |
| o-Terphenyl | 52.6 | 50.0 | 105 | 70-135 | |

**Lab Batch #:** 979154 **Sample:** 699509-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/15/15 10:46

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0249 | 0.0300 | 83 | 80-120 | |
| 4-Bromofluorobenzene | 0.0245 | 0.0300 | 82 | 80-120 | |

**Lab Batch #:** 979371 **Sample:** 699640-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/17/15 06:14

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 123 | 100 | 123 | 70-135 | |
| o-Terphenyl | 52.8 | 50.0 | 106 | 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:** New McKee Historical

**Work Orders :** 517344,

**Project ID:**

**Lab Batch #:** 979154 **Sample:** 517421-001 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/15/15 14:18

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0264 | 0.0300 | 88 | 80-120 | |
| 4-Bromofluorobenzene | 0.0301 | 0.0300 | 100 | 80-120 | |

**Lab Batch #:** 979371 **Sample:** 517289-001 S / MS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/17/15 08:42

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 129 | 99.8 | 129 | 70-135 | |
| o-Terphenyl | 55.5 | 49.9 | 111 | 70-135 | |

**Lab Batch #:** 979154 **Sample:** 517421-001 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/15/15 14:34

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0269 | 0.0300 | 90 | 80-120 | |
| 4-Bromofluorobenzene | 0.0312 | 0.0300 | 104 | 80-120 | |

**Lab Batch #:** 979371 **Sample:** 517289-001 SD / MSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/17/15 09:08

**SURROGATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 118 | 99.9 | 118 | 70-135 | |
| o-Terphenyl | 49.4 | 50.0 | 99 | 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: New McKee Historical

**Work Order #:** 517344 **Project ID:**

**Analyst:** SYG **Date Prepared:** 10/15/2015 **Date Analyzed:** 10/15/2015

**Lab Batch ID:** 979154 **Sample:** 699509-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>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 | <0.00101 | 0.101 | 0.0811 | 80 | 0.101 | 0.0810 | 80 | 0 | 70-130 | 35 | |
| Toluene | <0.00202 | 0.101 | 0.0904 | 90 | 0.101 | 0.0951 | 94 | 5 | 70-130 | 35 | |
| Ethylbenzene | <0.00101 | 0.101 | 0.111 | 110 | 0.101 | 0.116 | 115 | 4 | 71-129 | 35 | |
| m_p-Xylenes | <0.00202 | 0.202 | 0.224 | 111 | 0.202 | 0.231 | 114 | 3 | 70-135 | 35 | |
| o-Xylene | <0.00101 | 0.101 | 0.110 | 109 | 0.101 | 0.115 | 114 | 4 | 71-133 | 35 | |

**Analyst:** PJB **Date Prepared:** 10/16/2015 **Date Analyzed:** 10/17/2015

**Lab Batch ID:** 979371 **Sample:** 699640-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C6-C10 Gasoline Range Hydrocarbons | <15.0 | 1000 | 854 | 85 | 1000 | 917 | 92 | 7 | 70-135 | 35 | |
| C10-C28 Diesel Range Hydrocarbons | <15.0 | 1000 | 1000 | 100 | 1000 | 1080 | 108 | 8 | 70-135 | 35 | |

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: New McKee Historical

**Work Order # :** 517344 **Project ID:**

**Lab Batch ID:** 979154 **QC- Sample ID:** 517421-001 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 10/15/2015 **Date Prepared:** 10/15/2015 **Analyst:** SYG

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>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 | <0.000994 | 0.0994 | 0.0365 | 37 | 0.0994 | 0.0799 | 80 | 75 | 70-130 | 35 | XF |
| Toluene | <0.00199 | 0.0994 | 0.0389 | 39 | 0.0994 | 0.0803 | 81 | 69 | 70-130 | 35 | XF |
| Ethylbenzene | <0.000994 | 0.0994 | 0.0442 | 44 | 0.0994 | 0.0894 | 90 | 68 | 71-129 | 35 | XF |
| m_p-Xylenes | <0.00199 | 0.199 | 0.0964 | 48 | 0.199 | 0.184 | 92 | 62 | 70-135 | 35 | XF |
| o-Xylene | <0.000994 | 0.0994 | 0.0547 | 55 | 0.0994 | 0.0922 | 93 | 51 | 71-133 | 35 | XF |

**Lab Batch ID:** 979371 **QC- Sample ID:** 517289-001 S **Batch #:** 1 **Matrix:** Solid

**Date Analyzed:** 10/17/2015 **Date Prepared:** 10/16/2015 **Analyst:** PJB

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

| TPH By SW8015B Mod<br>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 | <15.0 | 998 | 1000 | 100 | 999 | 846 | 85 | 17 | 70-135 | 35 | |
| C10-C28 Diesel Range Hydrocarbons | <15.0 | 998 | 1170 | 117 | 999 | 1010 | 101 | 15 | 70-135 | 35 | |

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.

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

**Client:** PLAINS ALL AMERICAN EH&S

**Date/ Time Received:** 10/13/2015 11:58:00 AM

**Work Order #:** 517344

**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? | **N/A** |
| #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? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **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:** Kelsey Brooks Date: 10/13/2015

**Checklist reviewed by:** Kelsey Brooks Date: 10/13/2015

# CHAIN OF CUSTODY RECORD

**Terracon**

Office Location: Lubbock
Project Manager: Joel Lowry
Sampler's Name: Joel Lowry
Sampler's Signature: Joel Lowry

Laboratory: Xenco Laboratories
Address: 1211 W. Florida Ave. Midland, TX 79701 432-563-1800
Phone:
Contact: Joel Lowry
PO/SO #: SLO New Mexico Hist.

Project Number:
Project Name: New Mexico Historical (SLO New Mexico Hist.)

ANALYSIS REQUESTED: BTEX 8021 | TPH 8015 | Hold Any Analysis

LAB USE ONLY
DUE DATE:
TEMP OF COOLER WHEN RECEIVED (°C): 5°



| Matrix | Date | Time | Comp | Grab | Identifying Marks of Sample(s) | Start Depth | End Depth | No. Type of Containers: 4 oz Glass | | | | Lab Sample ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 10/12/15 | 7:30 | | X | Telephone Pole Ln-Site | 5' | | 1 | | | | 517344 |
| S | " | 9:40 | | X | Cathodic Ln-Site | 5' | | 1 | | | | |

| Relinquished by (Signature) | Date: | Time: | Received by (Signature) | Date: | Time: |
|---|---|---|---|---|---|
| Joel Lowry | 10/13/15 | 1158 | | 10/13/15 | 1158 |
| 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: Please Email Results to erin.loyd@terracon.com joel.lowry@terracon.com

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

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

**Client:** PLAINS ALL AMERICAN EH&S

**Date/ Time Received:** 10/13/2015 11:58:00 AM

**Work Order #:** 517344

**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? | **N/A** |
| #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? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **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:** Kelsey Brooks Date: 10/13/2015

**Checklist reviewed by:** Kelsey Brooks Date: 10/13/2015

# Analytical Report 517661

## for

## PLAINS ALL AMERICAN EH&S

**Project Manager: Joel Lowry**

**SRS New McKee Jct. Historical**

**New McKee Jct. Sump Historical**

**23-OCT-15**

Collected By: Client



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-15-19), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD ( L10-135)
Texas (T104704477), Louisiana (04176), USDA (P330-07-00105)

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)

23-OCT-15

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

Reference: XENCO Report No(s): **517661**
**SRS New McKee Jct. Historical**
Project Address:

**Joel Lowry**:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 517661. 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. 517661 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Kelsey Brooks**
Project Manager

# Sample Cross Reference 517661

## PLAINS ALL AMERICAN EH&S, Midland, TX

SRS New McKee Jct. Historical

| Sample Id | Matrix | Date Collected | Sample Depth | Lab Sample Id |
|---|---|---|---|---|
| NE P.A. @ 9' | S | 10-16-15 09:30 | | 517661-001 |

**Sample receipt non conformances and comments:**

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

None

# Certificate of Analysis Summary 517661

## PLAINS ALL AMERICAN EH&S, Midland, TX

## Project Name: SRS New McKee Jct. Historical

**Project Id:** New McKee Jct. Sump Historical
**Contact:** Joel Lowry
**Project Location:**

**Date Received in Lab:** Sat Oct-17-15 01:00 pm
**Report Date:** 23-OCT-15
**Project Manager:** Kelsey Brooks

| *Analysis Requested* | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 517661-001 | | | | | |
| | ***Field Id:*** | NE P.A. @ 9' | | | | | |
| | ***Depth:*** | | | | | | |
| | ***Matrix:*** | SOIL | | | | | |
| | ***Sampled:*** | Oct-16-15 09:30 | | | | | |
| **BTEX by EPA 8021** | ***Extracted:*** | Oct-20-15 17:00 | | | | | |
| | ***Analyzed:*** | Oct-21-15 15:53 | | | | | |
| | ***Units/RL:*** | mg/kg RL | | | | | |
| Benzene | | ND 0.000996 | | | | | |
| Toluene | | ND 0.00199 | | | | | |
| Ethylbenzene | | ND 0.000996 | | | | | |
| m_p-Xylenes | | ND 0.00199 | | | | | |
| o-Xylene | | ND 0.000996 | | | | | |
| Xylenes, Total | | ND 0.000996 | | | | | |
| Total BTEX | | ND 0.000996 | | | | | |
| **TPH by SW 8015B** | ***Extracted:*** | Oct-20-15 14:00 | | | | | |
| | ***Analyzed:*** | Oct-20-15 14:08 | | | | | |
| | ***Units/RL:*** | mg/kg RL | | | | | |
| C6-C10 Gasoline Range Hydrocarbons | | ND 15.0 | | | | | |
| C10-C28 Diesel Range Organics | | ND 15.0 | | | | | |
| Total TPH | | ND 15.0 | | | | | |





Kelsey Brooks
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

# Form 2 - Surrogate Recoveries

**Project Name:** SRS New McKee Jct. Historical

**Work Orders :** 517661,

**Project ID:** New McKee Jct. Sump Historical

**Lab Batch #:** 979753 **Sample:** 517661-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/20/15 14:08

**SURROGATE RECOVERY STUDY**

**TPH by SW 8015B**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 104 | 99.8 | 104 | 70-135 | |
| o-Terphenyl | 47.9 | 49.9 | 96 | 70-135 | |

**Lab Batch #:** 979557 **Sample:** 517661-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/21/15 15:53

**SURROGATE RECOVERY STUDY**

**BTEX by EPA 8021**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0292 | 0.0300 | 97 | 80-120 | |
| 4-Bromofluorobenzene | 0.0300 | 0.0300 | 100 | 80-120 | |

**Lab Batch #:** 979753 **Sample:** 699894-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/20/15 15:26

**SURROGATE RECOVERY STUDY**

**TPH by SW 8015B**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 88.1 | 100 | 88 | 70-135 | |
| o-Terphenyl | 40.0 | 50.0 | 80 | 70-135 | |

**Lab Batch #:** 979557 **Sample:** 699778-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/21/15 10:58

**SURROGATE RECOVERY STUDY**

**BTEX by EPA 8021**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0297 | 0.0300 | 99 | 80-120 | |
| 4-Bromofluorobenzene | 0.0328 | 0.0300 | 109 | 80-120 | |

**Lab Batch #:** 979753 **Sample:** 699894-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/20/15 15:52

**SURROGATE RECOVERY STUDY**

**TPH by SW 8015B**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 120 | 100 | 120 | 70-135 | |
| o-Terphenyl | 63.9 | 50.0 | 128 | 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 New McKee Jct. Historical

**Work Orders :** 517661,

**Project ID:** New McKee Jct. Sump Historical

**Lab Batch #:** 979557 **Sample:** 699778-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/21/15 10:09

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0358 | 0.0300 | 119 | 80-120 | |
| 4-Bromofluorobenzene | 0.0349 | 0.0300 | 116 | 80-120 | |

**Lab Batch #:** 979753 **Sample:** 699894-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/20/15 16:16

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 129 | 100 | 129 | 70-135 | |
| o-Terphenyl | 54.5 | 50.0 | 109 | 70-135 | |

**Lab Batch #:** 979557 **Sample:** 699778-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 10/21/15 10:25

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0353 | 0.0300 | 118 | 80-120 | |
| 4-Bromofluorobenzene | 0.0337 | 0.0300 | 112 | 80-120 | |

**Lab Batch #:** 979557 **Sample:** 517765-003 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/21/15 17:08

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0308 | 0.0300 | 103 | 80-120 | |
| 4-Bromofluorobenzene | 0.0312 | 0.0300 | 104 | 80-120 | |

**Lab Batch #:** 979557 **Sample:** 517765-003 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 10/21/15 17:24

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0249 | 0.0300 | 83 | 80-120 | |
| 4-Bromofluorobenzene | 0.0256 | 0.0300 | 85 | 80-120 | |

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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

# BS / BSD Recoveries

## Project Name: SRS New McKee Jct. Historical

**Work Order #:** 517661 **Project ID:** New McKee Jct. Sump Historical

**Analyst:** SYG **Date Prepared:** 10/20/2015 **Date Analyzed:** 10/21/2015

**Lab Batch ID:** 979557 **Sample:** 699778-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021<br>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 | 0.0959 | 96 | 0.101 | 0.0931 | 92 | 3 | 70-130 | 35 | |
| Toluene | <0.00201 | 0.100 | 0.100 | 100 | 0.101 | 0.0943 | 93 | 6 | 70-130 | 35 | |
| Ethylbenzene | <0.00100 | 0.100 | 0.105 | 105 | 0.101 | 0.0949 | 94 | 10 | 71-129 | 35 | |
| m_p-Xylenes | <0.00201 | 0.201 | 0.211 | 105 | 0.202 | 0.192 | 95 | 9 | 70-135 | 35 | |
| o-Xylene | <0.00100 | 0.100 | 0.104 | 104 | 0.101 | 0.0961 | 95 | 8 | 71-133 | 35 | |

**Analyst:** PJB **Date Prepared:** 10/20/2015 **Date Analyzed:** 10/20/2015

**Lab Batch ID:** 979753 **Sample:** 699894-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| TPH by SW 8015B<br>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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C6-C10 Gasoline Range Hydrocarbons | <15.0 | 1000 | 1030 | 103 | 1000 | 1170 | 117 | 13 | 70-135 | 35 | |
| C10-C28 Diesel Range Organics | <15.0 | 1000 | 1130 | 113 | 1000 | 1270 | 127 | 12 | 70-135 | 35 | |

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: SRS New McKee Jct. Historical

**Work Order # :** 517661 **Project ID:** New McKee Jct. Sump Historical

**Lab Batch ID:** 979557 **QC- Sample ID:** 517765-003 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 10/21/2015 **Date Prepared:** 10/20/2015 **Analyst:** SYG

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021<br>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 | <0.000998 | 0.0998 | 0.0893 | 89 | 0.0990 | 0.105 | 106 | 16 | 70-130 | 35 | |
| Toluene | <0.00200 | 0.0998 | 0.0868 | 87 | 0.0990 | 0.108 | 109 | 22 | 70-130 | 35 | |
| Ethylbenzene | <0.000998 | 0.0998 | 0.0866 | 87 | 0.0990 | 0.118 | 119 | 31 | 71-129 | 35 | |
| m_p-Xylenes | <0.00200 | 0.200 | 0.177 | 89 | 0.198 | 0.234 | 118 | 28 | 70-135 | 35 | |
| o-Xylene | <0.000998 | 0.0998 | 0.0857 | 86 | 0.0990 | 0.116 | 117 | 30 | 71-133 | 35 | |

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.

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

**Client:** PLAINS ALL AMERICAN EH&S

**Date/ Time Received:** 10/17/2015 01:00:00 PM

**Work Order #:** 517661

**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)? | 4 |
| #2 *Shipping container in good condition? | **Yes** |
| #3 *Samples received on ice? | **No** |
| #4 *Custody Seals intact on shipping container/ cooler? | **N/A** |
| #5 Custody Seals intact on sample bottles? | **N/A** |
| #6 *Custody Seals Signed and dated? | **N/A** |
| #7 *Chain of Custody present? | **Yes** |
| #8 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? | **N/A** |
| #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)? | **N/A** |
| #21 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **N/A** |
| #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 Date: 10/19/2015

**Checklist reviewed by:** Kelsey Brooks Date: 10/19/2015

# CHAIN OF CUSTODY RECORD

XENCO Laboratories — Environmental Asbestos Radiochemistry

Houston: 4143 Greenbriar Dr. Stafford, TX 77477 (281)240-4200 Odessa: 12600 West I-20 East Odessa, TX 79765 (432)563-1800 ;roool-c

Page 1 of 1

LAB W.O#: 517661

Field billable Hrs :

| | | | |
|---|---|---|---|
| Company: | Terracon | Phone: (432)466-4450 | |
| Address: | 3100 Plains Hwy. | Fax: | |
| City: | Lubbock | State: TX | Zip: |
| PM/Attn: | Joel Lowry | Email: | |
| Project ID: | New McKee Jct. Sump Historical<br>SRS New McKee Jct. Historical | PO#: PAA-C. Bryant | |
| Invoice To: | Camille Bryant Plains All American | Quote #: | |
| Sampler Name: | Matt Taylor | Circle One Event: Daily Weekly Monthly Quartely Semi-Annual Annual N/A | |

TAT Work Days = D Need results by:_____ Time: _____

Std (5-7D) 5Hrs 1D 2D 3D 4D 5D 7D 10D 14D Other_____

## ANALYSES REQUESTED

| Sample # | Sample ID | Collect Date | Collect Time | Matrix Code ^ | Field Filtered | Integrity OK (Y/N) | Total # of containers | Cont Type * VC | Pres Type** | Example Volatiles by 8260 | TPH | | | | | | | | | Hold Sample (CALL___) Run PAH on Highest TPH___ Only |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | GC | | | | | | | | | |
| | | | | | | | | | | | I | | | | | | | | | |
| | | | | | | | | | | | TPH | | | | | | | | | |
| | | | | | | | | # Cont | Lab Only: | | | | | | | | | | | |
| 1 | NE P.A. @ 9' | 10/16/2015 | 0930 | S | | | | | | | X | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | |

## * Container Type Codes

VA Vial Amber, VC Vial Clear, VP Vial Pre-preserved, GA Glass Amber, GC Glass Clear, PA Plastic Amber, PC Plastic Clear, ES Encore Sampler, TS TerraCore Sampler, AC Air Canister, TB Tedlar Bag, ZB Zip Lock Bag, PC Plastic Clear

Other_____

Size(s): 2oz, 4oz, 8oz, 16oz, 32oz, 1Gal 40ml, 125 ml, 250 ml, 500 ml, 1L, Other_____

## ** Preservative Type Codes

A. None, B. $HNO_3$, C. $H_2SO_4$, D. NaOH, E. HCL, F. MeOH, G. $Na_2S_2O_3$, H. $NaHSO_4$, I. Ice, J. MCAA, K. ZnAc&NaOH, L Asbc Acid&NaOH, O._____

## ^ Matrix Type Codes

GW Ground Water, WW Waste Water, DW Drinking Water, SW Surface Water, OW Ocean/Sea Water, PL Product-Liquid, PS Product-Solid, SL Sludge, Other_____, S Soil/Sediment/Solid, W Wipe, A Air, O Oil, T Tissue, U Urine, B Blood

## REMARKS

****RUSH****

| Reg. Program / Clean-up Std | STATE for Certs & Regs | QA/QC Level & Certification | EDDs | COC & Labels | Coolers Temp °C | Lab Use Only | YES | NO | N/A |
|---|---|---|---|---|---|---|---|---|---|
| CTLs TRRP DW NPDES LPST DryCln Other: | FL TX GA NC SC NJ PA OK LA AL NM Other: | 1 2 3 4 CLP AFCEE QAPP NELAC DoD-ELAP Other: | ADaPT SEDD ERPIMS XLS Other: | Match Incomplete Absent Unclear | 1.2°C 2.4°C 3 | Non-Conformances found? | | | |
| | | | | | | Samples intact upon arrival? | | | |
| | | | | | | Received on Wet Ice? | | | |
| | | | | | | Labeled with proper preservatives? | | | |
| | | | | | | Received within holding time? | | | |
| | | | | | | Custody seals intact? | | | |
| | | | | | | VOCs rec'd w/o headspace? | | | |
| | | | | | | Proper containers used? | | | |
| | | | | | | pH verified-acceptable, excl VOCs? | | | |
| | | | | | | Received on time to meet HTs? | | | |

| | Relinquished by | Affiliation | Date | Time | Received by | Affiliation | Date | Time |
|---|---|---|---|---|---|---|---|---|
| 1 | Matt Taylor | Basin | 10/16/15 | 1310 | [signature] | Basin | 10/16/15 | 1:36 |
| 2 | [signature] | Basin | 10/16/15 | | Misty Lenons | MalServices | 10/16/15 | 1:56 |
| 3 | | | | | [signature] | Xenco | 10-17-15 | 13:00 |
| 4 | | | | | | | | |

C.O.C. Serial #

B&A Laboratories: Hobbs 575-392-7550 Dallas 214-902-0300 Houston 281-242-4200 Odessa 432-563-1800 San Antonio 210-509-3334 Phoenix 602-437-0330

FTS Service Centers: Atlanta 770-449-8800 Lakeland 863-646-8526 Tampa 803-543-8099 Philadelphia 610-955-5649 South Carolina 803-543-8099

 *Revision Date: Nov 12, 2009*

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

**Client:** PLAINS ALL AMERICAN EH&S

**Date/ Time Received:** 10/17/2015 01:00:00 PM

**Work Order #:** 517661

**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)? | 4 |
| #2 *Shipping container in good condition? | **Yes** |
| #3 *Samples received on ice? | **No** |
| #4 *Custody Seals intact on shipping container/ cooler? | **N/A** |
| #5 Custody Seals intact on sample bottles? | **N/A** |
| #6 *Custody Seals Signed and dated? | **N/A** |
| #7 *Chain of Custody present? | **Yes** |
| #8 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? | **N/A** |
| #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)? | **N/A** |
| #21 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **N/A** |
| #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 Date: 10/19/2015

**Checklist reviewed by:** Kelsey Brooks Date: 10/19/2015

# Analytical Report 518800

## for

## PLAINS ALL AMERICAN EH&S

**Project Manager: Joel Lowry**

**New McKee Jct. Historical**

**AR157452**

**06-NOV-15**

Collected By: Client



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-15-19), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD ( L10-135)
Texas (T104704477), Louisiana (04176), USDA (P330-07-00105)

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-NOV-15

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

Reference: XENCO Report No(s): **518800**
**New McKee Jct. Historical**
Project Address:

**Joel Lowry**:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 518800. 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. 518800 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Kelsey Brooks**
Project Manager

# Sample Cross Reference 518800

## PLAINS ALL AMERICAN EH&S, Midland, TX

New McKee Jct. Historical

| Sample Id | Matrix | Date Collected | Sample Depth | Lab Sample Id |
|---|---|---|---|---|
| 10/28 NE PA @ 9' | S | 10-28-15 10:20 | - 9 ft | 518800-001 |

**Sample receipt non conformances and comments:**

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

None

# Certificate of Analysis Summary 518800

## PLAINS ALL AMERICAN EH&S, Midland, TX

### Project Name: New McKee Jct. Historical

**Project Id:** AR157452
**Contact:** Joel Lowry
**Project Location:**

**Date Received in Lab:** Fri Oct-30-15 01:57 pm
**Report Date:** 06-NOV-15
**Project Manager:** Kelsey Brooks

| *Analysis Requested* | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 518800-001 | | | | | |
| | ***Field Id:*** | 10/28 NE PA @ 9' | | | | | |
| | ***Depth:*** | 9 ft | | | | | |
| | ***Matrix:*** | SOIL | | | | | |
| | ***Sampled:*** | Oct-28-15 10:20 | | | | | |
| **TPH by SW 8015B** | ***Extracted:*** | Nov-05-15 13:00 | | | | | |
| | ***Analyzed:*** | Nov-06-15 04:59 | | | | | |
| | ***Units/RL:*** | mg/kg | RL | | | | |
| C6-C10 Gasoline Range Hydrocarbons | | ND | 15.0 | | | | |
| C10-C28 Diesel Range Organics | | ND | 15.0 | | | | |
| Total TPH | | ND | 15.0 | | | | |





Kelsey Brooks
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

# Form 2 - Surrogate Recoveries

**Project Name:** New McKee Jct. Historical

**Work Orders :** 518800,

**Project ID:** AR157452

**Lab Batch #:** 980771 **Sample:** 518800-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 11/06/15 04:59

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 120 | 100 | 120 | 70-135 | |
| o-Terphenyl | 54.9 | 50.0 | 110 | 70-135 | |

**Lab Batch #:** 980771 **Sample:** 700524-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 11/05/15 13:57

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 98.0 | 100 | 98 | 70-135 | |
| o-Terphenyl | 44.4 | 50.0 | 89 | 70-135 | |

**Lab Batch #:** 980771 **Sample:** 700524-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 11/05/15 15:03

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 108 | 100 | 108 | 70-135 | |
| o-Terphenyl | 40.8 | 50.0 | 82 | 70-135 | |

**Lab Batch #:** 980771 **Sample:** 700524-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 11/05/15 18:48

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 121 | 100 | 121 | 70-135 | |
| o-Terphenyl | 46.7 | 50.0 | 93 | 70-135 | |

**Lab Batch #:** 980771 **Sample:** 518684-006 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 11/06/15 03:52

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 124 | 100 | 124 | 70-135 | |
| o-Terphenyl | 49.8 | 50.0 | 100 | 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:** New McKee Jct. Historical

**Work Orders :** 518800,  **Project ID:** AR157452

**Lab Batch #:** 980771  **Sample:** 518684-006 SD / MSD  **Batch:** 1  **Matrix:** Soil

**Units:** mg/kg  **Date Analyzed:** 11/06/15 04:25

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 127 | 99.7 | 127 | 70-135 | |
| o-Terphenyl | 50.9 | 49.9 | 102 | 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: New McKee Jct. Historical

**Work Order #:** 518800 **Project ID:** AR157452

**Analyst:** PJB **Date Prepared:** 11/05/2015 **Date Analyzed:** 11/05/2015

**Lab Batch ID:** 980771 **Sample:** 700524-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| TPH by SW 8015B<br>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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C6-C10 Gasoline Range Hydrocarbons | <15.0 | 1000 | 967 | 97 | 1000 | 1100 | 110 | 13 | 70-135 | 35 | |
| C10-C28 Diesel Range Organics | <15.0 | 1000 | 1120 | 112 | 1000 | 1270 | 127 | 13 | 70-135 | 35 | |

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: New McKee Jct. Historical

**Work Order # :** 518800 **Project ID:** AR157452

**Lab Batch ID:** 980771 **QC- Sample ID:** 518684-006 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 11/06/2015 **Date Prepared:** 11/05/2015 **Analyst:** PJB

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

| TPH by SW 8015B<br>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 | <15.0 | 1000 | 1010 | 101 | 997 | 1090 | 109 | 8 | 70-135 | 35 | |
| C10-C28 Diesel Range Organics | <15.0 | 1000 | 1150 | 115 | 997 | 1220 | 122 | 6 | 70-135 | 35 | |

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

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

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

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

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

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

**Client:** PLAINS ALL AMERICAN EH&S

**Date/ Time Received:** 10/30/2015 01:57:00 PM

**Work Order #:** 518800

**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)? | 4 |
| #2 *Shipping container in good condition? | **Yes** |
| #3 *Samples received on ice? | **Yes** |
| #4 *Custody Seals intact on shipping container/ cooler? | **N/A** |
| #5 Custody Seals intact on sample bottles? | **N/A** |
| #6 *Custody Seals Signed and dated? | **N/A** |
| #7 *Chain of Custody present? | **Yes** |
| #8 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)? | **N/A** |
| #21 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **N/A** |
| #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:** Carley Owens — Date: 11/04/2015

Carley Owens

**Checklist reviewed by:** Kelsey Brooks — Date: 11/05/2015

Kelsey Brooks

# CHAIN OF CUSTODY RECORD

**Terracon**

Office Location: Lubbock
Project Manager: Joel Lowry
Sampler's Name: Joel Lowry

Laboratory: Xenco Laboratories
Address: 1211 W. Florida Ave. Midland, TX 79701 432-563-1800
Phone:
Contact: Joel Lowry
PO/SO #: Plains SRS (New McKee Jct. Historical)
Sampler's Signature: Joel Lowry

Project Number: AR157452
Project Name: New McKee Jct. Historical

ANALYSIS REQUESTED: TPH 8015 m Ext

LAB USE ONLY
DUE DATE:
TEMP OF COOLER WHEN RECEIVED (°C)



| Matrix | Date | Time | Comp | Grab | Identifying Marks of Sample(s) | Start Depth | End Depth | No. Type of Containers: 4 oz Glass | TPH 8015 m Ext | Lab Sample ID |
|---|---|---|---|---|---|---|---|---|---|---|
| | 10/28/2015 | 10:20 | | x | 10/28 NE PA @ 9' | 9' | | | x | 518800 |

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

TRRP Laboratory Review Checklist ☐ Yes ☐ No

| Relinquished by (Signature) | Date: | Time: | Received by (Signature) | Date: | Time: |
|---|---|---|---|---|---|
| Joel Lowry | 10/28/15 | 16:26 | | 10/30 | 1357 |
| | | | | | |
| | | | | | |
| | | | | | |

NOTES: Please Email Results to erin.loyd@terracon.com joel.lowry@terracon.com

PIORESITX-LOWRY

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

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

**Client:** PLAINS ALL AMERICAN EH&S

**Date/ Time Received:** 10/30/2015 01:57:00 PM

**Work Order #:** 518800

**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)? | 4 |
| #2 *Shipping container in good condition? | **Yes** |
| #3 *Samples received on ice? | **Yes** |
| #4 *Custody Seals intact on shipping container/ cooler? | **N/A** |
| #5 Custody Seals intact on sample bottles? | **N/A** |
| #6 *Custody Seals Signed and dated? | **N/A** |
| #7 *Chain of Custody present? | **Yes** |
| #8 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)? | **N/A** |
| #21 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **N/A** |
| #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:** Carley Owens — Date: 11/04/2015

**Checklist reviewed by:** Kelsey Brooks — Date: 11/05/2015

# Analytical Report 521085

## for

## PLAINS ALL AMERICAN EH&S

**Project Manager: Joel Lowry**

**New McKee Jct. Historical**

**AR157452**

**18-DEC-15**

Collected By: Client

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

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-15-19), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD ( L10-135)
Texas (T104704477), Louisiana (04176), USDA (P330-07-00105)

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)

18-DEC-15

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

Reference: XENCO Report No(s): **521085**
**New McKee Jct. Historical**
Project Address:

**Joel Lowry**:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 521085. 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. 521085 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Kelsey Brooks**
Project Manager

# Sample Cross Reference 521085

## PLAINS ALL AMERICAN EH&S, Midland, TX

New McKee Jct. Historical

| Sample Id | Matrix | Date Collected | Sample Depth | Lab Sample Id |
|---|---|---|---|---|
| DT-1 (10.5-11') | S | 12-10-15 10:45 | 10.5 - 11 ft | 521085-001 |
| DT-1 (12.5-13') | S | 12-10-15 10:50 | 12.5 - 13 ft | 521085-002 |
| DT-1 (15.5-16') | S | 12-10-15 10:55 | 15.5 - 16 ft | 521085-003 |
| DT-1 (17.5-18') | S | 12-10-15 11:05 | 17.5 - 18 ft | 521085-004 |
| Telephone (In-situ) B | S | 12-10-15 10:00 | - 7 ft | 521085-005 |
| Catholic (In-situ) B | S | 12-10-15 10:15 | - 7 ft | 521085-006 |

**Sample receipt non conformances and comments:**

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

None

# Certificate of Analysis Summary 521085

## PLAINS ALL AMERICAN EH&S, Midland, TX

### Project Name: New McKee Jct. Historical

**Project Id:** AR157452
**Contact:** Joel Lowry
**Project Location:**

**Date Received in Lab:** Fri Dec-11-15 12:20 pm
**Report Date:** 18-DEC-15
**Project Manager:** Kelsey Brooks

| *Analysis Requested* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 521085-001 | | 521085-002 | | 521085-003 | | 521085-004 | | 521085-005 | | 521085-006 | |
| | ***Field Id:*** | DT-1 (10.5-11') | | DT-1 (12.5-13') | | DT-1 (15.5-16') | | DT-1 (17.5-18') | | Telephone (In-situ) B | | Catholic (In-situ) B | |
| | ***Depth:*** | 10.5-11 ft | | 12.5-13 ft | | 15.5-16 ft | | 17.5-18 ft | | 7 ft | | 7 ft | |
| | ***Matrix:*** | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | |
| | ***Sampled:*** | Dec-10-15 10:45 | | Dec-10-15 10:50 | | Dec-10-15 10:55 | | Dec-10-15 11:05 | | Dec-10-15 10:00 | | Dec-10-15 10:15 | |
| **BTEX by EPA 8021** | ***Extracted:*** | Dec-17-15 10:00 | | Dec-17-15 10:00 | | Dec-17-15 10:00 | | Dec-16-15 12:00 | | Dec-17-15 10:00 | | Dec-17-15 10:00 | |
| | ***Analyzed:*** | Dec-17-15 13:05 | | Dec-17-15 14:44 | | Dec-17-15 14:29 | | Dec-16-15 22:48 | | Dec-17-15 12:14 | | Dec-17-15 11:57 | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL |
| Benzene | | 0.562 | 0.0497 | 0.284 | 0.0499 | ND | 0.00167 | ND | 0.00101 | ND | 0.000994 | ND | 0.000998 |
| Toluene | | 1.40 | 0.0994 | 0.723 | 0.0998 | ND | 0.00333 | ND | 0.00202 | 0.0109 | 0.00199 | ND | 0.00200 |
| Ethylbenzene | | 12.6 | 0.0497 | 19.0 | 0.0499 | 0.00405 | 0.00167 | ND | 0.00101 | 0.0442 | 0.000994 | ND | 0.000998 |
| m_p-Xylenes | | 14.9 | 0.0994 | 22.0 | 0.0998 | 0.00928 | 0.00333 | ND | 0.00202 | 0.219 | 0.00199 | 0.0153 | 0.00200 |
| o-Xylene | | 2.41 | 0.0497 | 4.25 | 0.0499 | 0.00182 | 0.00167 | ND | 0.00101 | 0.162 | 0.000994 | 0.0106 | 0.000998 |
| Xylenes, Total | | 17.3 | 0.0497 | 26.3 | 0.0499 | 0.0111 | 0.00167 | ND | 0.00101 | 0.381 | 0.000994 | 0.0259 | 0.000998 |
| Total BTEX | | 31.9 | 0.0497 | 46.3 | 0.0499 | 0.0152 | 0.00167 | ND | 0.00101 | 0.436 | 0.000994 | 0.0259 | 0.000998 |
| **TPH by SW 8015B** | ***Extracted:*** | Dec-15-15 11:00 | | Dec-15-15 11:00 | | Dec-15-15 11:00 | | Dec-15-15 11:00 | | Dec-15-15 11:00 | | Dec-15-15 11:00 | |
| | ***Analyzed:*** | Dec-15-15 22:52 | | Dec-15-15 23:19 | | Dec-15-15 17:36 | | Dec-15-15 18:00 | | Dec-15-15 23:46 | | Dec-15-15 18:50 | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL |
| C6-C10 Gasoline Range Hydrocarbons | | 1040 | 15.0 | 1380 | 14.9 | ND | 15.0 | ND | 15.0 | 19.8 | 15.0 | ND | 15.0 |
| C10-C28 Diesel Range Organics | | 2530 | 15.0 | 3420 | 14.9 | 135 | 15.0 | ND | 15.0 | 20.8 | 15.0 | 41.2 | 15.0 |
| C28-C35 Oil Range Hydrocarbons | | ND | 15.0 | ND | 14.9 | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 15.0 |
| Total TPH | | 3570 | 15.0 | 4800 | 14.9 | 135 | 15.0 | ND | 15.0 | 40.6 | 15.0 | 41.2 | 15.0 |





Kelsey Brooks
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

# Form 2 - Surrogate Recoveries

**Project Name:** New McKee Jct. Historical

**Work Orders :** 521085,

**Project ID:** AR157452

**Lab Batch #:** 983674 **Sample:** 521085-003 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/15/15 17:36

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 103 | 99.7 | 103 | 70-135 | |
| o-Terphenyl | 40.3 | 49.9 | 81 | 70-135 | |

**Lab Batch #:** 983674 **Sample:** 521085-004 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/15/15 18:00

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 112 | 99.9 | 112 | 70-135 | |
| o-Terphenyl | 44.8 | 50.0 | 90 | 70-135 | |

**Lab Batch #:** 983674 **Sample:** 521085-006 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/15/15 18:50

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 103 | 99.9 | 103 | 70-135 | |
| o-Terphenyl | 40.4 | 50.0 | 81 | 70-135 | |

**Lab Batch #:** 983674 **Sample:** 521085-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/15/15 22:52

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 126 | 99.9 | 126 | 70-135 | |
| o-Terphenyl | 53.8 | 50.0 | 108 | 70-135 | |

**Lab Batch #:** 983674 **Sample:** 521085-002 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/15/15 23:19

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 130 | 99.6 | 131 | 70-135 | |
| o-Terphenyl | 56.8 | 49.8 | 114 | 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:** New McKee Jct. Historical

**Work Orders :** 521085,

**Project ID:** AR157452

**Lab Batch #:** 983674 **Sample:** 521085-005 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/15/15 23:46

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 116 | 99.7 | 116 | 70-135 | |
| o-Terphenyl | 47.1 | 49.9 | 94 | 70-135 | |

**Lab Batch #:** 983710 **Sample:** 521085-004 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/16/15 22:48

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0277 | 0.0300 | 92 | 80-120 | |
| 4-Bromofluorobenzene | 0.0241 | 0.0300 | 80 | 80-120 | |

**Lab Batch #:** 983775 **Sample:** 521085-006 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/17/15 11:57

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0300 | 0.0300 | 100 | 80-120 | |
| 4-Bromofluorobenzene | 0.0284 | 0.0300 | 95 | 80-120 | |

**Lab Batch #:** 983775 **Sample:** 521085-005 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/17/15 12:14

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0322 | 0.0300 | 107 | 80-120 | |
| 4-Bromofluorobenzene | 0.0322 | 0.0300 | 107 | 80-120 | |

**Lab Batch #:** 983775 **Sample:** 521085-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/17/15 13:05

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0358 | 0.0300 | 119 | 80-120 | |
| 4-Bromofluorobenzene | 0.0246 | 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:** New McKee Jct. Historical

**Work Orders :** 521085,

**Project ID:** AR157452

**Lab Batch #:** 983775 **Sample:** 521085-003 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/17/15 14:29

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0340 | 0.0300 | 113 | 80-120 | |
| 4-Bromofluorobenzene | 0.0319 | 0.0300 | 106 | 80-120 | |

**Lab Batch #:** 983775 **Sample:** 521085-002 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/17/15 14:44

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0312 | 0.0300 | 104 | 80-120 | |
| 4-Bromofluorobenzene | 0.0320 | 0.0300 | 107 | 80-120 | |

**Lab Batch #:** 983674 **Sample:** 702266-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 12/15/15 11:29

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 106 | 100 | 106 | 70-135 | |
| o-Terphenyl | 47.6 | 50.0 | 95 | 70-135 | |

**Lab Batch #:** 983710 **Sample:** 702284-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 12/16/15 10:17

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0352 | 0.0300 | 117 | 80-120 | |
| 4-Bromofluorobenzene | 0.0281 | 0.0300 | 94 | 80-120 | |

**Lab Batch #:** 983775 **Sample:** 702320-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 12/17/15 11:41

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0357 | 0.0300 | 119 | 80-120 | |
| 4-Bromofluorobenzene | 0.0328 | 0.0300 | 109 | 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:** New McKee Jct. Historical

**Work Orders :** 521085,

**Project ID:** AR157452

**Lab Batch #:** 983674 **Sample:** 702266-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 12/15/15 11:55

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 116 | 100 | 116 | 70-135 | |
| o-Terphenyl | 53.5 | 50.0 | 107 | 70-135 | |

**Lab Batch #:** 983710 **Sample:** 702284-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 12/16/15 09:26

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0305 | 0.0300 | 102 | 80-120 | |
| 4-Bromofluorobenzene | 0.0277 | 0.0300 | 92 | 80-120 | |

**Lab Batch #:** 983775 **Sample:** 702320-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 12/17/15 08:02

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0353 | 0.0300 | 118 | 80-120 | |
| 4-Bromofluorobenzene | 0.0314 | 0.0300 | 105 | 80-120 | |

**Lab Batch #:** 983674 **Sample:** 702266-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 12/15/15 12:21

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 119 | 100 | 119 | 70-135 | |
| o-Terphenyl | 55.9 | 50.0 | 112 | 70-135 | |

**Lab Batch #:** 983710 **Sample:** 702284-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 12/16/15 09:43

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0335 | 0.0300 | 112 | 80-120 | |
| 4-Bromofluorobenzene | 0.0261 | 0.0300 | 87 | 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:** New McKee Jct. Historical

**Work Orders :** 521085,

**Project ID:** AR157452

**Lab Batch #:** 983775 **Sample:** 702320-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 12/17/15 08:19

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0355 | 0.0300 | 118 | 80-120 | |
| 4-Bromofluorobenzene | 0.0305 | 0.0300 | 102 | 80-120 | |

**Lab Batch #:** 983674 **Sample:** 521085-006 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/15/15 19:15

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 102 | 99.6 | 102 | 70-135 | |
| o-Terphenyl | 42.4 | 49.8 | 85 | 70-135 | |

**Lab Batch #:** 983710 **Sample:** 521332-013 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/16/15 20:18

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0345 | 0.0300 | 115 | 80-120 | |
| 4-Bromofluorobenzene | 0.0315 | 0.0300 | 105 | 80-120 | |

**Lab Batch #:** 983775 **Sample:** 521085-003 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/17/15 13:21

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0341 | 0.0300 | 114 | 80-120 | |
| 4-Bromofluorobenzene | 0.0336 | 0.0300 | 112 | 80-120 | |

**Lab Batch #:** 983674 **Sample:** 521085-006 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/15/15 19:40

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 125 | 99.9 | 125 | 70-135 | |
| o-Terphenyl | 50.3 | 50.0 | 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.

# Form 2 - Surrogate Recoveries

**Project Name:** New McKee Jct. Historical

**Work Orders :** 521085,

**Project ID:** AR157452

**Lab Batch #:** 983710 **Sample:** 521332-013 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/16/15 20:35

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0356 | 0.0300 | 119 | 80-120 | |
| 4-Bromofluorobenzene | 0.0322 | 0.0300 | 107 | 80-120 | |

**Lab Batch #:** 983775 **Sample:** 521085-003 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 12/17/15 13:38

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0349 | 0.0300 | 116 | 80-120 | |
| 4-Bromofluorobenzene | 0.0342 | 0.0300 | 114 | 80-120 | |

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

# BS / BSD Recoveries

## Project Name: New McKee Jct. Historical

**Work Order #:** 521085 **Project ID:** AR157452

**Analyst:** SYG **Date Prepared:** 12/16/2015 **Date Analyzed:** 12/16/2015

**Lab Batch ID:** 983710 **Sample:** 702284-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021<br>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 | 0.0837 | 84 | 0.100 | 0.0857 | 86 | 2 | 70-130 | 35 | |
| Toluene | <0.00200 | 0.100 | 0.0856 | 86 | 0.100 | 0.0841 | 84 | 2 | 70-130 | 35 | |
| Ethylbenzene | <0.00100 | 0.100 | 0.0900 | 90 | 0.100 | 0.0872 | 87 | 3 | 71-129 | 35 | |
| m_p-Xylenes | <0.00200 | 0.200 | 0.185 | 93 | 0.200 | 0.179 | 90 | 3 | 70-135 | 35 | |
| o-Xylene | <0.00100 | 0.100 | 0.0878 | 88 | 0.100 | 0.0846 | 85 | 4 | 71-133 | 35 | |

**Analyst:** SYG **Date Prepared:** 12/17/2015 **Date Analyzed:** 12/17/2015

**Lab Batch ID:** 983775 **Sample:** 702320-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021<br>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 | 0.0854 | 85 | 0.100 | 0.0844 | 84 | 1 | 70-130 | 35 | |
| Toluene | <0.00200 | 0.100 | 0.0832 | 83 | 0.100 | 0.0805 | 81 | 3 | 70-130 | 35 | |
| Ethylbenzene | <0.00100 | 0.100 | 0.0862 | 86 | 0.100 | 0.0849 | 85 | 2 | 71-129 | 35 | |
| m_p-Xylenes | <0.00200 | 0.200 | 0.178 | 89 | 0.200 | 0.175 | 88 | 2 | 70-135 | 35 | |
| o-Xylene | <0.00100 | 0.100 | 0.0863 | 86 | 0.100 | 0.0848 | 85 | 2 | 71-133 | 35 | |

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

# BS / BSD Recoveries

## Project Name: New McKee Jct. Historical

**Work Order #:** 521085 **Project ID:** AR157452

**Analyst:** PJB **Date Prepared:** 12/15/2015 **Date Analyzed:** 12/15/2015

**Lab Batch ID:** 983674 **Sample:** 702266-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| TPH by SW 8015B<br>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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C6-C10 Gasoline Range Hydrocarbons | <15.0 | 1000 | 700 | 70 | 1000 | 726 | 73 | 4 | 70-135 | 35 | |
| C10-C28 Diesel Range Organics | <15.0 | 1000 | 783 | 78 | 1000 | 850 | 85 | 8 | 70-135 | 35 | |

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: New McKee Jct. Historical

**Work Order # :** 521085 **Project ID:** AR157452

**Lab Batch ID:** 983710 **QC- Sample ID:** 521332-013 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 12/16/2015 **Date Prepared:** 12/16/2015 **Analyst:** SYG

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021<br>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 | <0.000992 | 0.0992 | 0.0808 | 81 | 0.0994 | 0.0807 | 81 | 0 | 70-130 | 35 | |
| Toluene | <0.00198 | 0.0992 | 0.0800 | 81 | 0.0994 | 0.0800 | 80 | 0 | 70-130 | 35 | |
| Ethylbenzene | <0.000992 | 0.0992 | 0.0826 | 83 | 0.0994 | 0.0824 | 83 | 0 | 71-129 | 35 | |
| m_p-Xylenes | <0.00198 | 0.198 | 0.173 | 87 | 0.199 | 0.172 | 86 | 1 | 70-135 | 35 | |
| o-Xylene | <0.000992 | 0.0992 | 0.0824 | 83 | 0.0994 | 0.0816 | 82 | 1 | 71-133 | 35 | |

**Lab Batch ID:** 983775 **QC- Sample ID:** 521085-003 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 12/17/2015 **Date Prepared:** 12/17/2015 **Analyst:** SYG

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021<br>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 | <0.00101 | 0.101 | 0.0927 | 92 | 0.100 | 0.0905 | 91 | 2 | 70-130 | 35 | |
| Toluene | <0.00202 | 0.101 | 0.0891 | 88 | 0.100 | 0.0870 | 87 | 2 | 70-130 | 35 | |
| Ethylbenzene | 0.00405 | 0.101 | 0.0921 | 87 | 0.100 | 0.0866 | 83 | 6 | 71-129 | 35 | |
| m_p-Xylenes | 0.00928 | 0.202 | 0.189 | 89 | 0.200 | 0.181 | 86 | 4 | 70-135 | 35 | |
| o-Xylene | 0.00182 | 0.101 | 0.0867 | 84 | 0.100 | 0.0850 | 83 | 2 | 71-133 | 35 | |

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

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

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

# Form 3 - MS / MSD Recoveries

## Project Name: New McKee Jct. Historical

**Work Order # :** 521085 **Project ID:** AR157452

**Lab Batch ID:** 983674 **QC- Sample ID:** 521085-006 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 12/15/2015 **Date Prepared:** 12/15/2015 **Analyst:** PJB

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

| TPH by SW 8015B<br>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 | <14.9 | 996 | 700 | 70 | 999 | 711 | 71 | 2 | 70-135 | 35 | |
| C10-C28 Diesel Range Organics | 41.2 | 996 | 806 | 77 | 999 | 948 | 91 | 16 | 70-135 | 35 | |

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

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

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

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

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

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

**Client:** PLAINS ALL AMERICAN EH&S

**Date/ Time Received:** 12/11/2015 12:20:00 PM

**Work Order #:** 521085

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

**Temperature Measuring device used : r8**

| Sample Receipt Checklist | Comments |
|---|---|
| #1 *Temperature of cooler(s)? | 3.9 |
| #2 *Shipping container in good condition? | **Yes** |
| #3 *Samples received on ice? | **Yes** |
| #4 *Custody Seals intact on shipping container/ cooler? | **N/A** |
| #5 Custody Seals intact on sample bottles? | **N/A** |
| #6 *Custody Seals Signed and dated? | **N/A** |
| #7 *Chain of Custody present? | **Yes** |
| #8 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)? | **N/A** |
| #21 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **N/A** |
| #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#: OC679789

**Checklist completed by:** Carley Owens Date: 12/11/2015

Carley Owens

**Checklist reviewed by:** Kelsey Brooks Date: 12/14/2015

Kelsey Brooks

# CHAIN OF CUSTODY

Page 1 Of 1

XENCO LABORATORIES

*Setting the Standard since 1990*

Stafford,Texas (281-240-4200) | Odessa, Texas (432-563-1800) | Lakeland, Florida (863-646-8526)

Dallas, Texas (214-902-0300) | Norcross, Georgia (770-449-8800) | Tampa, Florida (813-620-2000)

Service Center - San Antonio, Texas (210-509-3334) | www.xenco.com

Xenco Quote # | Xenco Job # 521085

**Client / Reporting Information**

Company Name / Branch: Terracon Consultants

Company Address: 5827 50th St.

Email: joel.lowry@terracon.com | Phone No:

Project Contact: Joel Lowry

Samplers's Name: Joel Lowry

**Project Information**

Project Name/Number: New Mellee Jct Historical

Project Location:

Invoice To: Plains Pipeline

PO Number: New Mellee Jct Historical

**Analytical Information**

BTEX 8021

TPH 8015 mod Ext C35

**Matrix Codes**

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

WW= Waste Water

| No. | Field ID / Point of Collection | Collection: Sample Depth | Collection: Date | Collection: Time | Matrix | # of bottles | Number of preserved bottles: HCl | NaOH/Zn Acetate | HNO3 | H2SO4 | NaOH | NaHSO4 | MEOH | NONE | BTEX 8021 | TPH 8015 mod Ext C35 | Field Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | DT-1 (10.5-11') | 11 | 12/10 | 10:45 | S | 1 | | | | | | | | | X | X | |
| 2 | DT-1 (12.5-13') | 13 | 12/10 | 10:50 | S | 1 | | | | | | | | | X | X | |
| 3 | DT-1 (15.5-16') | 16 | 12/10 | 10:55 | S | 1 | | | | | | | | | X | X | |
| 4 | DT-1 (17.5-18') | 18 | 12/10 | 11:05 | S | 1 | | | | | | | | | X | X | |
| 5 | Telephone (Zn-situ) B | 7 | 12/10 | 10:00 | S | 1 | | | | | | | | | X | X | |
| 6 | Cathodic (Zn-situ) B | 7 | 12/10 | 10:15 | S | 1 | | | | | | | | | X | X | |
| 7 | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |

**Turnaround Time ( Business days)**

- [ ] Same Day TAT
- [X] 5 Day TAT
- [ ] Next Day EMERGENCY
- [ ] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [ ] Contract TAT
- [ ] 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 3:00 pm

**Data Deliverable Information**

- [ ] Level II Std QC
- [ ] Level III Std QC+ Forms
- [ ] Level 3 (CLP Forms)
- [ ] TRRP Checklist
- [ ] Level IV (Full Data Pkg /raw data)
- [ ] TRRP Level IV
- [ ] UST / RG -411

**Notes:**

FED-EX / UPS: Tracking #

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

| | Relinquished by Sampler: | Date Time: | Received By: | Relinquished By: | Date Time: | Received By: |
|---|---|---|---|---|---|---|
| 1 | Joel Lowry | | | 2 | 12/11 12:20 | 2 |
| 3 | Relinquished by: | Date Time: | Received By: | Relinquished By: | Date Time: | Received By: |
| | | | 3 | 4 | | 4 |
| 5 | Relinquished by: | Date Time: | Received By: | Custody Seal # | Preserved where applicable | On Ice: X |
| | | | 5 | | | Cooler Temp. 3.9°C Thermo. Corr. Factor 0°C |

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

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

**Client:** PLAINS ALL AMERICAN EH&S

**Date/ Time Received:** 12/11/2015 12:20:00 PM

**Work Order #:** 521085

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

**Temperature Measuring device used : r8**

| Sample Receipt Checklist | Comments |
|---|---|
| #1 *Temperature of cooler(s)? | 3.9 |
| #2 *Shipping container in good condition? | **Yes** |
| #3 *Samples received on ice? | **Yes** |
| #4 *Custody Seals intact on shipping container/ cooler? | **N/A** |
| #5 Custody Seals intact on sample bottles? | **N/A** |
| #6 *Custody Seals Signed and dated? | **N/A** |
| #7 *Chain of Custody present? | **Yes** |
| #8 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)? | **N/A** |
| #21 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **N/A** |
| #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#: OC679789

**Checklist completed by:** Carley Owens Date: 12/11/2015

Carley Owens

**Checklist reviewed by:** Kelsey Brooks Date: 12/14/2015

Kelsey Brooks

# Analytical Report 523632

## for

## Terracon Consulting-Lubbock

**Project Manager: Joel Lowry**

**New McKee Junction Historical**

**AR157468**

**08-FEB-16**

Collected By: Client

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

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-15-19), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)
Xenco-San Antonio: Texas (T104704534-15-1)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD ( L10-135)
Texas (T104704477), Louisiana (04176), USDA (P330-07-00105)

Xenco-Lakeland: Florida (E84098)

08-FEB-16

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

Reference: XENCO Report No(s): **523632**
**New McKee Junction Historical**
Project Address: NM

**Joel Lowry**:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 523632. 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. 523632 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Kelsey Brooks**
Project Manager

# Sample Cross Reference 523632

## Terracon Consulting-Lubbock, Lubbock, TX

New McKee Junction Historical

| Sample Id | Matrix | Date Collected | Sample Depth | Lab Sample Id |
|---|---|---|---|---|
| Facility NSW | S | 01-25-16 00:00 | 2 - 2 ft | 523632-001 |
| Facility SSW | S | 01-25-16 00:00 | 2 - 2 ft | 523632-002 |
| Facility ESW | S | 01-25-16 00:00 | 2 - 2 ft | 523632-003 |
| Facility Floor | S | 01-25-16 00:00 | 4 - 4.5 ft | 523632-004 |
| South TT | S | 01-25-16 00:00 | 4.5 - 5 ft | 523632-005 |
| South TT | S | 01-25-16 00:00 | 9.5 - 10 ft | 523632-006 |
| North SB | S | 01-25-16 00:00 | 4.5 - 5 ft | 523632-007 |
| North SB | S | 01-25-16 00:00 | 9.5 - 10 ft | 523632-008 |
| East SB | S | 01-25-16 00:00 | 4.5 - 5 ft | 523632-009 |
| East SB | S | 01-25-16 00:00 | 9.5 - 10 ft | 523632-010 |

**Sample receipt non conformances and comments:**

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

None

**Analytical non conformances and comments:**

Batch: LBA-986701 BTEX by EPA 8021B

Lab Sample ID 523632-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Ethylbenzene, Toluene, m,p-Xylenes , o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 523632-001, -002, -003, -004, -005, -006, -007, -008, -009, -010.

The Laboratory Control Sample for Toluene, m,p-Xylenes , Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

# Certificate of Analysis Summary 523632

## Terracon Consulting-Lubbock, Lubbock, TX

## Project Name: New McKee Junction Historical

**Project Id:** AR157468
**Contact:** Joel Lowry
**Project Location:** NM

**Date Received in Lab:** Tue Jan-26-16 11:35 am
**Report Date:** 08-FEB-16
**Project Manager:** Kelsey Brooks

| *Analysis Requested* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 523632-001 | | 523632-002 | | 523632-003 | | 523632-004 | | 523632-005 | | 523632-006 | |
| | ***Field Id:*** | Facility NSW | | Facility SSW | | Facility ESW | | Facility Floor | | South TT | | South TT | |
| | ***Depth:*** | 2-2 ft | | 2-2 ft | | 2-2 ft | | 4-4.5 ft | | 4.5-5 ft | | 9.5-10 ft | |
| | ***Matrix:*** | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | |
| | ***Sampled:*** | Jan-25-16 00:00 | | Jan-25-16 00:00 | | Jan-25-16 00:00 | | Jan-25-16 00:00 | | Jan-25-16 00:00 | | Jan-25-16 00:00 | |
| **BTEX by EPA 8021B** | ***Extracted:*** | Jan-28-16 10:00 | | Jan-28-16 10:00 | | Jan-28-16 10:00 | | Jan-28-16 10:00 | | Jan-28-16 10:00 | | Jan-28-16 10:00 | |
| | ***Analyzed:*** | Jan-28-16 19:18 | | Jan-28-16 19:35 | | Jan-28-16 19:51 | | Jan-28-16 20:08 | | Jan-29-16 09:24 | | Jan-28-16 20:42 | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL |
| Benzene | | ND | 0.000994 | ND | 0.00101 | ND | 0.000994 | ND | 0.00100 | ND | 0.00101 | ND | 0.00100 |
| Toluene | | ND | 0.00199 | ND | 0.00202 | ND | 0.00199 | ND | 0.00201 | ND | 0.00202 | ND | 0.00200 |
| Ethylbenzene | | ND | 0.000994 | ND | 0.00101 | ND | 0.000994 | ND | 0.00100 | ND | 0.00101 | ND | 0.00100 |
| m,p-Xylenes | | ND | 0.00199 | ND | 0.00202 | ND | 0.00199 | ND | 0.00201 | ND | 0.00202 | ND | 0.00200 |
| o-Xylene | | ND | 0.000994 | ND | 0.00101 | ND | 0.000994 | ND | 0.00100 | ND | 0.00101 | ND | 0.00100 |
| Total Xylenes | | ND | 0.000994 | ND | 0.00101 | ND | 0.000994 | ND | 0.00100 | ND | 0.00101 | ND | 0.00100 |
| Total BTEX | | ND | 0.000994 | ND | 0.00101 | ND | 0.000994 | ND | 0.00100 | ND | 0.00101 | ND | 0.00100 |
| **TPH by SW 8015B** | ***Extracted:*** | Jan-28-16 14:30 | | Jan-28-16 14:30 | | Jan-28-16 14:30 | | Jan-28-16 14:30 | | Jan-28-16 14:30 | | Jan-28-16 14:30 | |
| | ***Analyzed:*** | Jan-28-16 22:13 | | Jan-28-16 22:41 | | Jan-28-16 23:10 | | Jan-28-16 23:39 | | Jan-29-16 00:08 | | Jan-29-16 01:06 | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL |
| C6-C10 Gasoline Range Hydrocarbons | | ND | 14.9 | ND | 15.0 | ND | 15.0 | ND | 14.9 | ND | 15.0 | ND | 15.0 |
| C10-C28 Diesel Range Hydrocarbons | | ND | 14.9 | ND | 15.0 | ND | 15.0 | 38.5 | 14.9 | ND | 15.0 | ND | 15.0 |
| C28-C35 Oil Range Hydrocarbons | | ND | 14.9 | ND | 15.0 | ND | 15.0 | ND | 14.9 | ND | 15.0 | ND | 15.0 |
| Total TPH | | ND | 14.9 | ND | 15.0 | ND | 15.0 | 38.5 | 14.9 | ND | 15.0 | ND | 15.0 |





Kelsey Brooks
Project Manager

# Certificate of Analysis Summary 523632

## Terracon Consulting-Lubbock, Lubbock, TX

## Project Name: New McKee Junction Historical

**Project Id:** AR157468
**Contact:** Joel Lowry
**Project Location:** NM

**Date Received in Lab:** Tue Jan-26-16 11:35 am
**Report Date:** 08-FEB-16
**Project Manager:** Kelsey Brooks

| *Analysis Requested* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 523632-007 | | 523632-008 | | 523632-009 | | 523632-010 | | | | | |
| | ***Field Id:*** | North SB | | North SB | | East SB | | East SB | | | | | |
| | ***Depth:*** | 4.5-5 ft | | 9.5-10 ft | | 4.5-5 ft | | 9.5-10 ft | | | | | |
| | ***Matrix:*** | SOIL | | SOIL | | SOIL | | SOIL | | | | | |
| | ***Sampled:*** | Jan-25-16 00:00 | | Jan-25-16 00:00 | | Jan-25-16 00:00 | | Jan-25-16 00:00 | | | | | |
| **BTEX by EPA 8021B** | ***Extracted:*** | Jan-28-16 10:00 | | Jan-28-16 10:00 | | Jan-28-16 10:00 | | Jan-28-16 10:00 | | | | | |
| | ***Analyzed:*** | Jan-29-16 07:36 | | Jan-29-16 09:41 | | Jan-29-16 08:52 | | Jan-29-16 09:09 | | | | | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | | | | |
| Benzene | | ND | 0.00100 | ND | 0.00100 | ND | 0.000998 | ND | 0.000998 | | | | |
| Toluene | | 0.00392 | 0.00201 | 0.00309 | 0.00200 | ND | 0.00200 | ND | 0.00200 | | | | |
| Ethylbenzene | | ND | 0.00100 | ND | 0.00100 | ND | 0.000998 | ND | 0.000998 | | | | |
| m,p-Xylenes | | 0.00238 | 0.00201 | ND | 0.00200 | ND | 0.00200 | ND | 0.00200 | | | | |
| o-Xylene | | 0.00154 | 0.00100 | ND | 0.00100 | ND | 0.000998 | ND | 0.000998 | | | | |
| Total Xylenes | | 0.00392 | 0.00100 | ND | 0.00100 | ND | 0.000998 | ND | 0.000998 | | | | |
| Total BTEX | | 0.00784 | 0.00100 | 0.00309 | 0.00100 | ND | 0.000998 | ND | 0.000998 | | | | |
| **TPH by SW 8015B** | ***Extracted:*** | Jan-28-16 14:30 | | Feb-07-16 17:00 | | Jan-28-16 14:30 | | Jan-28-16 14:30 | | | | | |
| | ***Analyzed:*** | Jan-29-16 01:35 | | Feb-08-16 14:11 | | Jan-29-16 02:33 | | Jan-29-16 03:02 | | | | | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | | | | |
| C6-C10 Gasoline Range Hydrocarbons | | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 14.9 | | | | |
| C10-C28 Diesel Range Hydrocarbons | | ND | 15.0 | 86.2 | 15.0 | ND | 15.0 | ND | 14.9 | | | | |
| C28-C35 Oil Range Hydrocarbons | | ND | 15.0 | ND | 15.0 | ND | 15.0 | ND | 14.9 | | | | |
| Total TPH | | ND | 15.0 | 86.2 | 15.0 | ND | 15.0 | ND | 14.9 | | | | |





Kelsey Brooks
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



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

# Form 2 - Surrogate Recoveries

**Project Name:** New McKee Junction Historical

**Work Orders :** 523632, 523632 **Project ID:** AR157468

**Lab Batch #:** 986701 **Sample:** 523632-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/28/16 19:18

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0340 | 0.0300 | 113 | 80-120 | |
| 4-Bromofluorobenzene | 0.0271 | 0.0300 | 90 | 80-120 | |

**Lab Batch #:** 986701 **Sample:** 523632-002 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/28/16 19:35

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0354 | 0.0300 | 118 | 80-120 | |
| 4-Bromofluorobenzene | 0.0294 | 0.0300 | 98 | 80-120 | |

**Lab Batch #:** 986701 **Sample:** 523632-003 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/28/16 19:51

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0352 | 0.0300 | 117 | 80-120 | |
| 4-Bromofluorobenzene | 0.0296 | 0.0300 | 99 | 80-120 | |

**Lab Batch #:** 986701 **Sample:** 523632-004 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/28/16 20:08

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0354 | 0.0300 | 118 | 80-120 | |
| 4-Bromofluorobenzene | 0.0315 | 0.0300 | 105 | 80-120 | |

**Lab Batch #:** 986701 **Sample:** 523632-006 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/28/16 20:42

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0353 | 0.0300 | 118 | 80-120 | |
| 4-Bromofluorobenzene | 0.0302 | 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:** New McKee Junction Historical

**Work Orders :** 523632, 523632 **Project ID:** AR157468

**Lab Batch #:** 986683 **Sample:** 523632-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/28/16 22:13

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 122 | 99.6 | 122 | 70-135 | |
| o-Terphenyl | 52.0 | 49.8 | 104 | 70-135 | |

**Lab Batch #:** 986683 **Sample:** 523632-002 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/28/16 22:41

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 113 | 99.8 | 113 | 70-135 | |
| o-Terphenyl | 47.6 | 49.9 | 95 | 70-135 | |

**Lab Batch #:** 986683 **Sample:** 523632-003 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/28/16 23:10

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 104 | 99.9 | 104 | 70-135 | |
| o-Terphenyl | 42.9 | 50.0 | 86 | 70-135 | |

**Lab Batch #:** 986683 **Sample:** 523632-004 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/28/16 23:39

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 117 | 99.6 | 117 | 70-135 | |
| o-Terphenyl | 49.7 | 49.8 | 100 | 70-135 | |

**Lab Batch #:** 986683 **Sample:** 523632-005 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/29/16 00:08

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 103 | 99.7 | 103 | 70-135 | |
| o-Terphenyl | 44.0 | 49.9 | 88 | 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:** New McKee Junction Historical

**Work Orders :** 523632, 523632 **Project ID:** AR157468

**Lab Batch #:** 986683 **Sample:** 523632-006 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/29/16 01:06

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 106 | 99.9 | 106 | 70-135 | |
| o-Terphenyl | 43.5 | 50.0 | 87 | 70-135 | |

**Lab Batch #:** 986683 **Sample:** 523632-007 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/29/16 01:35

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 114 | 99.8 | 114 | 70-135 | |
| o-Terphenyl | 47.3 | 49.9 | 95 | 70-135 | |

**Lab Batch #:** 986683 **Sample:** 523632-009 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/29/16 02:33

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 101 | 99.9 | 101 | 70-135 | |
| o-Terphenyl | 40.7 | 50.0 | 81 | 70-135 | |

**Lab Batch #:** 986683 **Sample:** 523632-010 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/29/16 03:02

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 100 | 99.6 | 100 | 70-135 | |
| o-Terphenyl | 42.5 | 49.8 | 85 | 70-135 | |

**Lab Batch #:** 986701 **Sample:** 523632-007 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/29/16 07:36

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0358 | 0.0300 | 119 | 80-120 | |
| 4-Bromofluorobenzene | 0.0305 | 0.0300 | 102 | 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:** New McKee Junction Historical

**Work Orders :** 523632, 523632 **Project ID:** AR157468

**Lab Batch #:** 986701 **Sample:** 523632-009 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/29/16 08:52

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0354 | 0.0300 | 118 | 80-120 | |
| 4-Bromofluorobenzene | 0.0291 | 0.0300 | 97 | 80-120 | |

**Lab Batch #:** 986701 **Sample:** 523632-010 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/29/16 09:09

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0360 | 0.0300 | 120 | 80-120 | |
| 4-Bromofluorobenzene | 0.0290 | 0.0300 | 97 | 80-120 | |

**Lab Batch #:** 986701 **Sample:** 523632-005 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/29/16 09:24

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0355 | 0.0300 | 118 | 80-120 | |
| 4-Bromofluorobenzene | 0.0272 | 0.0300 | 91 | 80-120 | |

**Lab Batch #:** 986701 **Sample:** 523632-008 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/29/16 09:41

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0348 | 0.0300 | 116 | 80-120 | |
| 4-Bromofluorobenzene | 0.0241 | 0.0300 | 80 | 80-120 | |

**Lab Batch #:** 987413 **Sample:** 523632-008 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 02/08/16 14:11

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 114 | 99.8 | 114 | 70-135 | |
| o-Terphenyl | 57.9 | 49.9 | 116 | 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:** New McKee Junction Historical

**Work Orders :** 523632, 523632 **Project ID:** AR157468

**Lab Batch #:** 986701 **Sample:** 704095-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 01/28/16 08:45

**SURROGATE RECOVERY STUDY**

**BTEX by EPA 8021B**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0339 | 0.0300 | 113 | 80-120 | |
| 4-Bromofluorobenzene | 0.0303 | 0.0300 | 101 | 80-120 | |

**Lab Batch #:** 986683 **Sample:** 704096-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 01/28/16 20:50

**SURROGATE RECOVERY STUDY**

**TPH by SW 8015B**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 111 | 100 | 111 | 70-135 | |
| o-Terphenyl | 45.7 | 50.0 | 91 | 70-135 | |

**Lab Batch #:** 987413 **Sample:** 704560-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 02/07/16 22:46

**SURROGATE RECOVERY STUDY**

**TPH by SW 8015B**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 121 | 100 | 121 | 70-135 | |
| o-Terphenyl | 61.2 | 50.0 | 122 | 70-135 | |

**Lab Batch #:** 986701 **Sample:** 704095-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 01/28/16 07:56

**SURROGATE RECOVERY STUDY**

**BTEX by EPA 8021B**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0303 | 0.0300 | 101 | 80-120 | |
| 4-Bromofluorobenzene | 0.0298 | 0.0300 | 99 | 80-120 | |

**Lab Batch #:** 986683 **Sample:** 704096-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 01/28/16 21:17

**SURROGATE RECOVERY STUDY**

**TPH by SW 8015B**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 119 | 100 | 119 | 70-135 | |
| o-Terphenyl | 42.5 | 50.0 | 85 | 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:** New McKee Junction Historical

**Work Orders :** 523632, 523632 **Project ID:** AR157468

**Lab Batch #:** 987413 **Sample:** 704560-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 02/07/16 23:10

**SURROGATE RECOVERY STUDY**

**TPH by SW 8015B**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 127 | 100 | 127 | 70-135 | |
| o-Terphenyl | 62.8 | 50.0 | 126 | 70-135 | |

**Lab Batch #:** 986701 **Sample:** 704095-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 01/28/16 08:13

**SURROGATE RECOVERY STUDY**

**BTEX by EPA 8021B**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0356 | 0.0300 | 119 | 80-120 | |
| 4-Bromofluorobenzene | 0.0293 | 0.0300 | 98 | 80-120 | |

**Lab Batch #:** 986683 **Sample:** 704096-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 01/28/16 21:45

**SURROGATE RECOVERY STUDY**

**TPH by SW 8015B**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 128 | 100 | 128 | 70-135 | |
| o-Terphenyl | 46.4 | 50.0 | 93 | 70-135 | |

**Lab Batch #:** 987413 **Sample:** 704560-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 02/07/16 23:34

**SURROGATE RECOVERY STUDY**

**TPH by SW 8015B**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 128 | 100 | 128 | 70-135 | |
| o-Terphenyl | 61.8 | 50.0 | 124 | 70-135 | |

**Lab Batch #:** 986683 **Sample:** 523632-010 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/29/16 03:31

**SURROGATE RECOVERY STUDY**

**TPH by SW 8015B**

| Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 73.4 | 99.6 | 74 | 70-135 | |
| o-Terphenyl | 51.4 | 49.8 | 103 | 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:** New McKee Junction Historical

**Work Orders :** 523632, 523632 **Project ID:** AR157468

**Lab Batch #:** 986701 **Sample:** 523632-001 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/29/16 09:58

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0340 | 0.0300 | 113 | 80-120 | |
| 4-Bromofluorobenzene | 0.0291 | 0.0300 | 97 | 80-120 | |

**Lab Batch #:** 987413 **Sample:** 524056-001 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 02/08/16 00:22

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 128 | 100 | 128 | 70-135 | |
| o-Terphenyl | 57.3 | 50.0 | 115 | 70-135 | |

**Lab Batch #:** 986683 **Sample:** 523632-010 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/29/16 04:00

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 123 | 99.6 | 123 | 70-135 | |
| o-Terphenyl | 46.7 | 49.8 | 94 | 70-135 | |

**Lab Batch #:** 986701 **Sample:** 523632-001 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 01/29/16 10:15

**SURROGATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0347 | 0.0300 | 116 | 80-120 | |
| 4-Bromofluorobenzene | 0.0302 | 0.0300 | 101 | 80-120 | |

**Lab Batch #:** 987413 **Sample:** 524056-001 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 02/08/16 00:47

**SURROGATE RECOVERY STUDY**

| TPH by SW 8015B<br>Analytes | Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 123 | 99.8 | 123 | 70-135 | |
| o-Terphenyl | 62.5 | 49.9 | 125 | 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: New McKee Junction Historical

**Work Order #:** 523632, 523632 **Project ID:** AR157468

**Analyst:** SYG **Date Prepared:** 01/28/2016 **Date Analyzed:** 01/28/2016

**Lab Batch ID:** 986701 **Sample:** 704095-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>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 | 0.0913 | 91 | 0.100 | 0.0935 | 94 | 2 | 70-130 | 35 | |
| Toluene | <0.00200 | 0.100 | 0.0958 | 96 | 0.100 | 0.0950 | 95 | 1 | 70-130 | 35 | |
| Ethylbenzene | <0.00100 | 0.100 | 0.103 | 103 | 0.100 | 0.103 | 103 | 0 | 71-129 | 35 | |
| m,p-Xylenes | <0.00200 | 0.200 | 0.213 | 107 | 0.200 | 0.212 | 106 | 0 | 70-135 | 35 | |
| o-Xylene | <0.00100 | 0.100 | 0.101 | 101 | 0.100 | 0.102 | 102 | 1 | 71-133 | 35 | |

**Analyst:** PJB **Date Prepared:** 01/28/2016 **Date Analyzed:** 01/28/2016

**Lab Batch ID:** 986683 **Sample:** 704096-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| TPH by SW 8015B<br>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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C6-C10 Gasoline Range Hydrocarbons | <15.0 | 1000 | 846 | 85 | 1000 | 877 | 88 | 4 | 70-135 | 35 | |
| C10-C28 Diesel Range Hydrocarbons | <15.0 | 1000 | 1030 | 103 | 1000 | 1080 | 108 | 5 | 70-135 | 35 | |

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

# BS / BSD Recoveries

## Project Name: New McKee Junction Historical

**Work Order #:** 523632, 523632 **Project ID:** AR157468

**Analyst:** ARM **Date Prepared:** 02/07/2016 **Date Analyzed:** 02/07/2016

**Lab Batch ID:** 987413 **Sample:** 704560-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

**BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY**

| TPH by SW 8015B<br>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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C6-C10 Gasoline Range Hydrocarbons | <15.0 | 1000 | 1180 | 118 | 1000 | 982 | 98 | 18 | 70-135 | 35 | |
| C10-C28 Diesel Range Hydrocarbons | <15.0 | 1000 | 1040 | 104 | 1000 | 1120 | 112 | 7 | 70-135 | 35 | |

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: New McKee Junction Historical

**Work Order # :** 523632 **Project ID:** AR157468

**Lab Batch ID:** 986701 **QC- Sample ID:** 523632-001 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 01/29/2016 **Date Prepared:** 01/28/2016 **Analyst:** SYG

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

| BTEX by EPA 8021B<br>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 | <0.000992 | 0.0992 | 0.0695 | 70 | 0.100 | 0.0764 | 76 | 9 | 70-130 | 35 | |
| Toluene | <0.00198 | 0.0992 | 0.0200 | 20 | 0.100 | 0.0201 | 20 | 0 | 70-130 | 35 | X |
| Ethylbenzene | <0.000992 | 0.0992 | 0.00854 | 9 | 0.100 | 0.00965 | 10 | 12 | 71-129 | 35 | X |
| m,p-Xylenes | <0.00198 | 0.198 | 0.0788 | 40 | 0.200 | 0.0809 | 40 | 3 | 70-135 | 35 | X |
| o-Xylene | <0.000992 | 0.0992 | 0.0640 | 65 | 0.100 | 0.0637 | 64 | 0 | 71-133 | 35 | X |

**Lab Batch ID:** 986683 **QC- Sample ID:** 523632-010 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 01/29/2016 **Date Prepared:** 01/28/2016 **Analyst:** PJB

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

| TPH by SW 8015B<br>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 | <14.9 | 996 | 991 | 99 | 996 | 818 | 82 | 19 | 70-135 | 35 | |
| C10-C28 Diesel Range Hydrocarbons | <14.9 | 996 | 1270 | 128 | 996 | 1180 | 118 | 7 | 70-135 | 35 | |

**Lab Batch ID:** 987413 **QC- Sample ID:** 524056-001 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 02/08/2016 **Date Prepared:** 02/07/2016 **Analyst:** ARM

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

| TPH by SW 8015B<br>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 | <15.0 | 1000 | 983 | 98 | 998 | 1050 | 105 | 7 | 70-135 | 35 | |
| C10-C28 Diesel Range Hydrocarbons | <15.0 | 1000 | 1210 | 121 | 998 | 1210 | 121 | 0 | 70-135 | 35 | |

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.

# CHAIN OF CUSTODY RECORD

Terracon

Office Location: Lubbock

Project Manager: Joel Lowry

Sampler's Name: Joel Lowry

Laboratory: Xenco Laboratories
Address: 1211 W. Florida Ave.
Midland, TX 79701
432-563-1800

Phone:
Contact: Joel Lowry
PO/SO #: New McKee Jct Historical

Sampler's Signature

ANALYSIS REQUESTED

LAB USE ONLY
DUE DATE:

TEMP OF COOLER WHEN RECEIVED (°C): 2.6

Page 1 of 1

Project Number: ar157468

Project Name: New McKee Junction Historical

| Matrix | Date | Time | Comp | Grab | Identifying Marks of Sample(s) | Start Depth | End Depth | No. Type of Containers: 4 oz Glass | | | | 8021 | 8015 | | | | | | Lab Sample ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1/25/2016 | | | x | Facility NSW | 2 | 2 | 1 | | | | x | x | | | | | | 523632-001 |
| | 1/25/2016 | | | x | Facility SSW | 2 | 2 | 1 | | | | x | x | | | | | | -002 |
| | 1/25/2016 | | | x | Facility ESW | 2 | 2 | 1 | | | | x | x | | | | | | -003 |
| | 1/25/2016 | | | x | Facility Floor | 4 | 4.5 | 1 | | | | x | x | | | | | | -004 |
| | 1/25/2016 | | | x | South TT | 4.5 | 5 | 1 | | | | x | x | | | | | | -005 |
| | 1/25/2016 | | | x | South TT | 9.5 | 10 | 1 | | | | x | x | | | | | | -006 |
| | 1/25/2016 | | | x | North SB | 4.5 | 5 | 1 | | | | x | x | | | | | | -007 |
| | 1/25/2016 | | | x | North SB | 9.5 | 10 | 1 | | | | x | x | | | | | | -008 |
| | 1/25/2016 | | | x | East SB | 4.5 | 5 | 1 | | | | x | x | | | | | | -009 |
| | 1/25/2016 | | | x | East SB | 9.5 | 10 | 1 | | | | x | x | | | | | | -010 |

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

TRRP Laboratory Review Checklist ☐ Yes ☐ No

| Relinquished by (Signature) | Date: | Time: | Received by (Signature) | Date: | Time: |
|---|---|---|---|---|---|
| | 1-26-16 | 0500 | | 1-26-16 | 0500 |
| | 1-26-16 | 1135 | Julian Martinez | 1-26-16 | 11:35 |
| | | | | | |
| | | | | | |

NOTES: Please Email Results to
erin.loyd@terracon.com
joel.lowry@terracon.com

Matrix: WW-Wastewater; W - Water; S - Soil; L - Liquid; A - Air Bag; C - Charcoal tube; SL - Sludge

Container: VOA - 40 ml vial; A/G - Amber Glass 1L; 250 ml = Glass wide mouth; P/O - Plastic or other _____

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

**Client:** Terracon Consulting-Lubbock

**Date/ Time Received:** 01/26/2016 11:35:00 AM

**Work Order #:** 523632

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

**Temperature Measuring device used : r8**

| Sample Receipt Checklist | Comments |
|---|---|
| #1 *Temperature of cooler(s)? | 2.6 |
| #2 *Shipping container in good condition? | **Yes** |
| #3 *Samples received on ice? | **Yes** |
| #4 *Custody Seals intact on shipping container/ cooler? | **N/A** |
| #5 Custody Seals intact on sample bottles? | **N/A** |
| #6 *Custody Seals Signed and dated? | **N/A** |
| #7 *Chain of Custody present? | **Yes** |
| #8 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)? | **N/A** |
| #21 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts. | **N/A** |
| #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:** Carley Owens Date: 01/26/2016

Carley Owens

**Checklist reviewed by:** Kelsey Brooks Date: 01/27/2016

Kelsey Brooks

# APPENDIX D

## Photographs

## Photographic Log

**PHOTO 1:** View of surface staining from the initial release, facing northwest.

**PHOTO 2:** View of surface staining from the initial release, facing north.

**PHOTO 3:** View of excavation activities within the affected pasture, facing east.

**PHOTO 4:** View of hydroexcavation activities under facility piping, facing east.

**PHOTO 5:** View of the excavated area within the affected pasture, facing east.

**PHOTO 6:** View of portion of the excavated area within the facility before installation of new piping, facing southeast.

**PHOTO 7:** View of backfilling activities within the affected pasture, facing south.

**PHOTO 8:** View of excavation of affected soil adjacent to cathodic protection system, facing west.

**PHOTO 9:** View of the advancement of DT-1, facing northwest.


**PHOTO 10:** View of delineation activities, facing southwest.

**PHOTO 11:** View of portion of excavated area, facing northwest.

**PHOTO 12:** View of newly installed piping and valve settings, facing south.

**PHOTO 13:** View of portion of the excavated area within the facility, facing east.

**PHOTO 14:** View of portion of the excavated area within the facility, facing west.

**PHOTO 15:** View of the affected facility after remediation activities, facing north.

**PHOTO 16:** View of the affected pasture after remediation activities, facing northwest.

# APPENDIX E

## Release Notification and Corrective Action (NMOCD Form C-141)

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

# Release Notification and Corrective Action

## OPERATOR

☒ Initial Report ☐ Final Report

| | | | |
|---|---|---|---|
| Name of Company | Plains Pipeline LP | Contact | Camille Bryant |
| Address | 2530 State Hwy. 214, Denver City, TX 79323 | Telephone No. | (575) 441-1099 |
| Facility Name | New McKee Jct. Sump | Facility Type | Sump |

| Surface Owner | Mineral Owner | Lease No. |
|---|---|---|
| BLM | | |

## LOCATION OF RELEASE

| Unit Letter | Section | Township | Range | Feet from the | North/South Line | Feet from the | East/West Line | County |
|---|---|---|---|---|---|---|---|---|
| K | 29 | 20S | 38E | | | | | Lea |

Latitude N 32.54213° Longitude W 103.17194°

## NATURE OF RELEASE

| | | |
|---|---|---|
| Type of Release: Crude Oil | Volume of Release: 40 bbls | Volume Recovered: 35 bbls |
| Source of Release: Sump | Date and Hour of Occurrence: 8/28/2015 @ 09:00 | Date and Hour of Discovery: 8/28/2015 @ 09:25 |
| Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required | If YES, To Whom? Verbal notification to Kellie Jones | |
| By Whom? Camille Bryant | Date and Hour: 8/28/2015 @ 15:04 | |
| Was a Watercourse Reached? ☐ Yes ☒ No | If YES, Volume Impacting the Watercourse. | |

If a Watercourse was Impacted, Describe Fully.*

**RECEIVED**
**By OCD District 1 at 3:56 pm, Sep 02, 2015**

Describe Cause of Problem and Remedial Action Taken.* Check valve failed causing the sump to overfill resulting in a release of crude oil.

Describe Area Affected and Cleanup Action Taken. The released crude oil impacted an area measuring approximately 30' x 60' inside the facility the released fluids then flowed west impacting an area measuring approximately 60' x 100'. The impacted area will be remediated as per applicable NMOCD guidelines.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Camille Bryant

Printed Name: Camille Bryant

Title: Remediation Coordinator

E-mail Address: cjbryant@paalp.com

Date: 9/1/2015 Phone: (575) 441-1099

## OIL CONSERVATION DIVISION

Approved by District Supervisor: James Bruce

Approval Date: 09/02/2015 Expiration Date: 11/02/2015

Conditions of Approval:

Discrete site samples required. Delineate and ~~remediate per NMOCD guidelines.~~
Geotagged photos of remediation required.
Ensure BLM concurrence/approval.

Attached ☐
1RP 3841
pJXK1524557231
nJXK1524557021

* Attach Additional Sheets If Necessary