AP-52

Plains
CS Cayler

Annual Report
2013

PLAINS
ALL AMERICAN

March 18, 2014

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

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

Dear Mr. Griswold:

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

8-inch Moore to Jal #1	AP-91 (1R-0380)	Section 16, T17S, R37E, Lea County
8-inch Moore to Jal #2	AP-92 (1R-0381)	Section 16, T17S, R37E, Lea County
C.S. Cayler	AP-052	Section 06, T17S, R37E, Lea County
Hobbs Junction Mainline	AP-054	Section 26, T18S, R37E, Lea County
Kimbrough Sweet 8-inch	AP-0029	Section 03, T18S, R37E, Lea County
Lovington Deep 6-inch	AP-037	Section 06, T17S, R36E, Lea County

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

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

Sincerely,

Camille Bryant
Remediation Coordinator
Plains All American

CC: Geoff Leking, NMOCD, Hobbs, NM

Enclosures

AMARILLO
921 North Bivins
Amarillo, Texas 79107
Phone 806.467.0607
Fax 806.467.0622

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

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

MIDLAND
2901 State Highway 349
Midland, Texas 79706
Phone 432.522.2133
Fax 432.522.2180

OKLAHOMA CITY
7700 North Hudson Ave
Suite 10
Oklahoma City, Oklahoma 73116
Phone 405.486.7030
Fax 806.467.0622

SAN ANTONIO
13111 Lookout Way
San Antonio, Texas 78233
Phone 210.265.8025
Fax 210.568.2191

2013 ANNUAL GROUNDWATER MONITORING REPORT

C.S. CAYLER
LEA COUNTY, NEW MEXICO
SRS #2002 - 10250
NMOCD REF. # AP-052

PLAINS PIPELINE, L.P.
333 CLAY STREET, SUITE 1600
HOUSTON, TEXAS

TALON/LPE PROJECT NO. 700376.049.01

Prepared by:

Brad Ivy
Project Manager

Reviewed by:

Paul Santos
Senior Engineer

PAUL A. SANTOS
NEW MEXICO
17808
LICENSED PROFESSIONAL ENGINEER

TALON/LPE
2901 S. State Highway 349
Midland, Texas 79706

March, 2014

Distribution List

Name	Title	Company or Agency	Mailing Address	e-mail
Jim Griswold	Environmental Engineer	NMOCD	1220 South St. Francis Drive Santa Fe, NM 87505	jim.griswold@state.nm.us
Geoffrey Leking	Environmental Engineer	NMOCD	1625 French Dr. Hobbs, NM 88231	geoffreyr.leking@state.nm.us
Camille Bryant	Remediation Coordinator	Plains Pipeline	2530 Highway 214 Denver City, TX 79323	cjbryant@paalp.com
Jeff Dann	Senior Environmental Specialist	Plains Pipeline	P. O. Box 4648 Houston, TX 77210-4648	jpdann@paalp.com
File		Talon/LPE	318 East Taylor Street Hobbs, New Mexico 88240	bivy@talonlpe.com

NMOCD - New Mexico Oil Conservation Division

TABLE OF CONTENTS

APPENDICES

1 INTRODUCTION AND OBJECTIVES

1.1 Objectives and Site Background

The C.S. Cayler (site) is located approximately seven (7) miles southeast of Lovington, Lea County, New Mexico, on property owned by Robert C. Rice. There are no residences, groundwater supply wells, or surface water bodies within a 1,000-foot radius of the site. The initial release occurred from an EOTT Energy (EOTT) steel pipeline on September 19, 2002. Subsequently, EOTT changed its name to Link Energy in October 2003, and Plains Marketing, L.P. (Plains) purchased the assets of Link Energy on April 1, 2004. Initial reports estimated that 70 barrels (bbls) of crude oil were released. During site reconnaissance, it was observed that the ground surface beyond the current spill area had apparently been impacted by a prior spill or spills; however, the source(s) and date(s) of the spill are unknown. Based on available information, no crude oil was initially recovered at the release site.

The site is situated in a physiogeographic area that is on the extreme south-western portion of the Southern High Plains as it grades into the Edwards Plateau to the south and southeast and the Chihuahuan Desert of the Trans-Pecos Region to the southwest.

The topography proximal to the site is typical of the Southern High Plains, essentially flat with shallow depressions, or playa lakes, dotting the landscape. The prominent surface features on the Southern High Plains are the approximately 19,250 ephemeral playa lakes; however the density of the playa lakes diminishes toward the southern extent of the Southern High Plains. During periods of rainfall, the playas accumulate sheet runoff from watershed areas ranging in size from less than one square mile to several square miles. Only a small portion of drainage from rainfall occurs by streams. Playa lakes that collect storm water runoff can act as a recharge mechanism for groundwater.

The average elevation of the site area is approximately 3,810-feet above mean sea level with a slight slope to the southeast. The regional slope of the land surface in the Southern High Plains is approximately 100 feet per mile in a southeasterly direction.

On February 5, 2007, Talon/LPE (Talon) was retained by Plains to assume remediation activities at the site. Remediation activities at the site were previously conducted by Environmental Plus, Inc. (EPI).

1.2 Site Geology

The surface deposits in Lea County are composed of Blackwater Draw (Illinoian) sediments, Ogallala sediments and undivided Quaternary alluvium, which is also termed ‘cover sands’. The soil in the upper two (2) feet at the site composed of gravelly loam that consists of 43% sand, 18% clay and 40% silt and also contains abundant eroded gravel to cobble size caliche fragments. Below the top soil is predominately unconsolidated sand to weakly cemented sandstone which has undergone calcification of varying extent.

Below the Blackwater Draw Formation is the Ogallala Formation of Miocene to Pliocene age. The Ogallala Formation was deposited from sediments eroded from the Southern Rockies and

consists mostly of eolian sediments, silty to very fine sand or loess. During the middle to late Miocene, the Ogallala was deposited by fluvial mechanism as paleovalley fill composed of gravelly to sandy braided stream deposits that trended west to east across the Southern High Plains. During the late Miocene the west to east drainage was diverted (captured) by the Pecos River. Subsequently, the Pecos River basin has experienced deflation, which facilitated eolian deposition on the Southern High Plains during the Pliocene Epoch.

1.3 Previous Environmental Investigations

A total of 32 groundwater monitor wells (18 original monitor wells and 14 replacement wells that have gone dry) have been installed in the vicinity of the release (see Figure 1). With New Mexico Oil Conservation Division (NMOCD) approval and landowner concurrence, groundwater monitor well MW-1 was installed in October 2002 and was subsequently plugged in September 2008 due to the well being dry. Groundwater monitor wells MW-2, MW-3, MW-4, and MW-5 were installed from May to June 2004, and MW-6, MW-7, MW-8, MW-9, and MW-10 were installed in October 2004. Groundwater monitor wells MW-11, MW-12, MW-13, MW-14, MW-15, MW-16, and MW-17 were installed in February 2006, and MW-18 was installed in March 2008. Replacement monitor well MW-1A was installed in September 2008.

During 2011, four (4) replacement monitor wells were drilled at the site (MW-2A, MW-7A, MW-8A, and MW-12A). Groundwater levels at the site have declined an average of 13.5 feet since groundwater measurements were first obtained in 2002. Monitor wells MW-7 had not detected groundwater since the gauging event on 9/21/10 and monitor well MW-8 had not detected groundwater since the gauging event on 6/10/09; therefore, monitor wells MW-7 and MW-8 were plugged and replacement monitor wells MW-7A and MW-8A were installed on April 19 and 20, 2011.

Monitor well MW-2 measured a total depth (TD) of 88 feet below top of casing (btoc) and contained approximately five (5) ft of PSH and groundwater was not detected during the gauging event on 3/23/11. Monitor well MW-12 measured a TD of 90 feet btoc and the gauging event on 3/25/11 indicated approximately five (5) feet of PSH and groundwater at TD. Since the wells did not contain enough fluid column to accommodate pumps, replacement monitor wells MW-2A and MW-12A were drilled on April 28, 2011. Monitor wells MW-2 and MW-12 were not plugged.

During 2012, four (4) replacement monitor wells were drilled at the site (MW-9A, MW-10A, MW-13A, and MW-14A) due to dropping groundwater levels. The previously existing wells (MW-9, MW-10, MW-13, and MW-14) were plugged.

During 2013, five (5) replacement monitor wells were drilled at the site (MW-3A, MW-4A, MW-6A, MW-11A, and MW-18A) due to dropping groundwater levels. The previously existing wells (MW-3, MW-4, MW-6, MW-11, and MW-18) were plugged.

Phase-separated hydrocarbon (PSH) recovery operations have been performed at the site since September 2002. A summary of the historical groundwater and PSH gauging is provided in Table 1. Approximately 1,181 bbls of crude oil have been recovered to date (01/01/14) from the site.

1.4 Regulatory Framework

Groundwater analytical data collected from this site was evaluated to the New Mexico Water Quality Control Commission (NMWQCC) groundwater standards outlined in the table below.

New Mexico Water Quality Control Commission (NMWQCC) Groundwater Standards	
Compound	**mg/L**
Benzene	0.010
Toluene	0.750
Ethylbenzene	0.750
Total Xylenes	0.620
PAH (Naphthalene)	0.030
PAH (Benzo[a]-pyrene)	0.007

2 SITE ACTIVITIES

The sections that follow summarize groundwater monitoring and PSH recovery activities conducted at the subject site during the year 2013. The primary function of groundwater monitoring activities is to collect depth to fluid measurements and to collect groundwater samples from monitor wells for laboratory analysis. The objective of groundwater monitoring is to evaluate the status of the dissolved-phase and PSH plumes in order to verify the effectiveness of the remediation system as to inhibiting plume migration, reducing the volume of PSH impacting the groundwater and determining if modifications to the remediation system would improve its performance and efficiency.

A synopsis of analytical results for the four (4) groundwater monitoring events is located in Table 2 in Appendix B, and annotated in map form on Figures 3a through 3d in Appendix A. Laboratory analytical data reports and chain of custody documentation are included in Appendix C.

2.1 Groundwater Monitoring Activities

A total of four (4) groundwater monitoring events were conducted at the site during the year 2013. The events occurred on March 20, June 11, September 29, and December 31, 2013.

2.2 Groundwater Gauging, Purging, and Sampling Procedures

During each groundwater monitoring event, all accessible monitor wells were measured with an oil/water interface probe to determine static water levels and to determine the thickness of PSH accumulation, if present. The data collected from the measurements was used to construct groundwater gradient maps and PSH thickness maps. The gauging results collected during the four (4) events are incorporated in Table 1, Appendix B – Summary of Historical Fluid Level Measurements.

Subsequent to gauging, all monitor wells that were not impacted with PSH were purged using a down-hole pump equipped with vinyl tubing. The pump and tubing were decontaminated with Alconox® detergent and rinsed with distilled water after each use. Recovered purge water and water used in the decontamination process was deposited to the onsite recovery tank, and subsequently sent to the SWD. Approximately 500 gallons of purged groundwater and water used for pump decontamination was generated during the monitoring events of 2013.

Groundwater samples were collected from all monitor wells not impacted with PSH using dedicated disposable polyethylene bailers. The groundwater samples were contained in laboratory supplied sample vials infused with the appropriate preservative required for the requested analysis. The groundwater samples were maintained on ice, in the custody of Talon personnel, until they were delivered to TraceAnalysis, Inc. or Xenco Laboratories in Midland, Texas for testing. The groundwater samples collected during the all four events were quantified for benzene, toluene, ethylbenzene, and xylene (BTEX) by EPA Method SW-846 8021B. In addition, during the September 2013 event groundwater samples were collected from monitor wells MW-8A, MW-9A, MW-10A, MW-13A, and MW-14A for quantification of poly-nuclear

aromatic hydrocarbon (PAH).

2.3 Phase Separated Hydrocarbon Recovery

A total of approximately 1,181 bbls of PSH have been recovered at the subject site to date by both hand bailing and from the PSH recovery system since PSH recovery was initiated. PSH recovery methods have been employed at the site since 2002, initially by hand bailing followed in March of 2003 with a portable gasoline powered eductor recovery system.

In November 2007, an automated skimmer recovery system was installed at the site. At that time, the system utilized six (6) skimmers with bladder pumps in monitor wells MW-2, MW-3, MW-4, MW-5, MW-7, and MW-12 to recover PSH and to inhibit migration of the PSH plume. The skimmer assembly consists of bladder pumps combined with 24" traveling float specific gravity skimmer attachments. In July of 2009, a pneumatic total fluids pump was added to monitor well MW-1A and in January of 2010 two pneumatic total fluids pumps were added to monitor wells MW-2 and MW-3. Currently, there are (5) total fluids pumps in operation in monitor wells MW-1A, MW-2, MW-2A, MW-5, and MW-7 and one skimmer package in monitor well MW-12.

The skimmer system and total fluids pumps are powered by a single-phase 230 volt, 7.5 HP two stage reciprocating air compressor. Fluid, recovered by the pumps, was initially retained in 2,500 gallon and 1,225 gallon poly tanks and those tanks were replaced with a 350 barrel frac tank in February of 2011. The frac tank is equipped with a high level shut off switch to prevent overflow and the tank is located within a secondary containment compound that is outfitted with a poly-liner. Recovered groundwater is transported to Rocky Smith State 'E' #23 disposal facility by a four (4) inch HDPE pipeline using a five (5) horsepower transfer pump. The pump is operated automatically from tank level switches. PSH is periodically removed with a vacuum truck and is re-introduced to the Plains' pipeline system at the Plains operated Lea Station.

During 2013 the quarterly PSH and groundwater recovery totals are as follows:

- 1st Quarter – 17.5 bbls crude oil and 2,113 bbls of groundwater
- 2nd Quarter – 24.22 bbls crude oil and 5,675 bbls of groundwater
- 3rd Quarter – 28.2 bbls crude oil and 4,409 bbls of groundwater
- 4th Quarter – 7.1 bbls of crude oil and 2,417 bbls of groundwater

3 GROUNDWATER MONITORING RESULTS

The results of the laboratory analyses are summarized in Table 2 – Summary of Groundwater Analytical Data in Appendix B. Laboratory analytical data reports and chain of custody documentation are provided in Appendix C.

3.1 Groundwater Monitoring Results

The following sections summarize the results from the four groundwater monitoring events at the C. S. Cayler site.

3.1.1 Physical Characteristics of the First Water-Bearing Zone

The primary groundwater resource under the Southern High Plains, including the site, is referred to as the Ogallala Aquifer of Miocene to Pliocene age or also known as the High Plains Aquifer. The Southern portion of the Ogallala aquifer underlies an area of about 29,000 square miles (mi^2) in western Texas and eastern New Mexico, encompassing all or part of 31 counties in Texas and 6 counties in New Mexico.

The Ogallala Aquifer has experienced acute depletion from extensive irrigation and urban demand, which have exceeded the average annual recharge rate. Recharge of the Ogallala Aquifer on the Southern High Plains occurs predominately from rainfall runoff that accumulates in ephemeral streams and playa lakes as well as direct recharge in areas that contain permeable soils such as sand hills. Recharge rates vary depending on mechanism, but averages from 0 to 1.6 inches per year.

The Ogallala Aquifer is generally unconfined and the poteniometric surface generally mirrors the land surface elevation with the regional flow direction from the northwest to the southeast. The mean regional gradient is 15 feet per mile and the typical groundwater velocity averages seven (7) inches per day. The regional hydraulic conductivity averages 17 gallons per day per square-foot and specific yield averages 16%. The depth to groundwater at the site has historically ranged from 80 to 85 feet below ground surface (bgs) and the groundwater flow direction is to the southeast at an average of five (5) feet per mile. The saturated thickness of the Ogallala formation on the High Plains ranges from 25 feet to 175 feet. The variable thickness is due to the irregularly eroded Triassic surface that underlies it.

The composition of Ogallala groundwater is defined as mixed-cation-HCO_3, therefore, Ogallala groundwater is considered hard. Problems with scale have occurred with residential and commercial water systems that use Ogallala groundwater and often treatment strategies are employed to reduce the effects of scale. The typical total dissolved solids of Ogallala groundwater in the Hobbs-Lovington area is generally less than 1,000 mg/L (ppm) in areas not impacted by oil-field brines. The pH of Ogallala water averages 7.3.

3.1.2 Groundwater Gradient and Flow Direction

The depth to fluid measurements was collected during each of the four (4) groundwater monitoring events. The results of the fluid level measurements are summarized in Table 1,

Appendix B - Summary of Historical Fluid Level Measurements.

The collected data was used to construct potentiometric surface maps in order to interpret the groundwater gradient and flow direction. The maps, designated Figures 2a through 2d, are presented in Appendix A.

The potentiometric surface maps constructed for each of the four (4) groundwater monitoring events indicates that the groundwater flow direction is to southeast at an average gradient of 0.0017 feet/foot or approximately nine (9) feet per mile. Groundwater levels at the subject site have exhibited a steady decline of an average of 0.53 feet for the year 2013 that appears to be associated with a regional trend of declining groundwater levels for the Ogallala Aquifer.

3.1.3 Phase Separated Hydrocarbon (PSH)

An oil/water interface probe was used to determine the thicknesses of PSH during the four (4) groundwater monitoring events. Generally, PSH thicknesses have fluctuated from quarter to quarter during the year 2013 and have exhibited both declines and increases in thickness which may have to do with the amount of time the pumps were shutdown prior to gauging.

In addition to potentiometric surface maps, isopleth maps were prepared depicting the measured PSH thicknesses and PSH plume geometry. PSH plume delineation and thickness maps are presented in Appendix A as Figures 3a through 3d. Currently, the PSH plume is delineated by the current monitor well geometry.

- During the March 2013 event, PSH was observed in monitor wells MW-1A, MW-2, MW-2A, MW-3, MW-4, MW-5, and MW-12. PSH thickness ranged from 0.53 feet to 4.14 feet.
- During the June 2013 event, PSH was observed in monitor wells MW-1A, MW-2, MW-2A, MW-4, MW-5, and MW-7A. The pumps were stuck in MW-3 and MW-12 and could not be measured. PSH thickness ranged from 1.60 feet to 3.78 feet.
- During the September 2013 event, PSH was observed in monitor wells MW-1A, MW-2, MW-2A, MW-4, MW-5, and MW-7A. The pumps were stuck in MW-3 and MW-12 and could not be measured. PSH thickness ranged from 0.81 feet to 3.27 feet.
- During the December 2013 event, PSH was observed in monitor wells MW-1A, MW-2, MW-5, MW-7A, and MW-12. The pump was stuck in monitor well MW-2A and it could not be gauged. PSH thickness ranged from 0.29 to 3.36 feet.

3.1.4 Groundwater Analytical Results

During the March, event, groundwater samples were collected from eight (8) monitor wells, MW-8A, MW-9A, MW-10A, MW-12A, MW-13A, MW-14A, MW-15 and MW-17. Groundwater samples were not collected from eight (8) monitor wells, MW-1A, MW-2, MW-2A, MW-3, MW-4, MW-5, MW-7A, and MW-12, due to the presence of PSH, and from an additional four (4) monitor wells, MW-6 and MW-11, MW-16, and MW-18, due to dry conditions.

Laboratory analytical results of the groundwater samples exhibited the following findings:

- Benzene concentrations ranged from <0.00100 mg/L to 13.6 mg/L. Benzene concentrations exceeded the NMWQCC groundwater standard of 0.010 mg/L in groundwater samples collected from monitor wells MW-8A, MW-10A, and MW-12A.
- Toluene concentrations ranged from <0.00100 mg/L to 2.97 mg/L. Toluene concentrations exceeded the NMWQCC groundwater standard of 0.750 mg/L in groundwater samples collected from monitor well MW-12A.
- Ethylbenzene concentrations ranged from <0.00100 mg/L to 0.720 mg/L. Ethylbenzene concentrations did not exceed the NMWQCC groundwater standard of 0.750 mg/L in the groundwater samples collected.
- Xylene concentrations ranged from <0.00100 mg/L to 1.48 mg/L. Xylene concentrations exceeded the NMWQCC groundwater standard of 0.620 mg/L in groundwater samples collected from monitor well MW-12A.

During the June event, groundwater samples were collected from eight (8) monitor wells, MW-8A, MW-9A, MW-10A, MW-12A, MW-13A, MW-14A, MW-15 and MW-17. Groundwater samples were not collected from eight (8) monitor wells, MW-1A, MW-2, MW-2A, MW-3, MW-4, MW-5, MW-7A, and MW-12, due to the presence of PSH. Groundwater samples were not collected from four (4) monitor wells, MW-6, MW-11, MW-16, and MW-18, because they were dry.

Laboratory analytical results of the groundwater samples exhibited the following findings:

- Benzene concentrations ranged from <0.00100 mg/L to 10.4 mg/L. Benzene concentrations exceeded the NMWQCC groundwater standard of 0.010 mg/L in groundwater samples collected from monitor wells MW-8A, MW-10A, and MW-12A.
- Toluene concentrations ranged from <0.00100 mg/L to 0.0621 mg/L. Toluene concentrations did not exceed the NMWQCC groundwater standard of 0.750 mg/L in the groundwater samples collected.
- Ethylbenzene concentrations ranged from <0.00100 mg/L to 0.308 mg/L. The ethylbenzene concentrations did not exceed the NMWQCC groundwater standard of 0.750 mg/L in the groundwater samples collected.
- Xylene concentrations ranged from <0.00100 mg/L to 0.368 mg/L. Total xylenes concentrations did not exceed the NMWQCC groundwater standard of 0.620 mg/L in the groundwater samples collected.

During the September event, groundwater samples were collected from seven (7) monitor wells, MW-8A, MW-9A, MW-10A, MW-13A, MW-14A, MW-15 and MW-17. Groundwater samples were not collected from eight (8) monitor wells, MW-1A, MW-2, MW-2A, MW-3, MW-4, MW-5, MW-7A, and MW-12, due to the presence of PSH. Groundwater samples were not collected from monitor wells MW-6, MW-11, MW-16 and MW-18 because they were dry. MW-12A was mistakenly not sampled. In addition, PAH samples were collected from monitor wells MW-8A and MW-12A for analysis.

Laboratory analytical results of the groundwater samples exhibited the following findings:

- Benzene concentrations ranged from <0.00100 mg/L to 1.56 mg/L. Benzene

concentrations exceeded the NMWQCC groundwater standard of 0.010 mg/L in groundwater samples collected from monitor well MW-8A.

- Toluene concentrations ranged from <0.00100 mg/L to 0.328 mg/L. The toluene concentrations did not exceed the NMWQCC groundwater standard of 0.750 mg/L in the groundwater samples collected.
- Ethylbenzene concentrations ranged from <0.00100 mg/L to <0.0104 mg/L. The ethylbenzene concentrations did not exceed the NMWQCC groundwater standard of 0.750 mg/L in any of the collected groundwater samples.
- Xylene concentrations ranged from <0.00100 mg/L to 0.184 mg/L. The total xylene concentrations did not exceed the NMWQCC groundwater standard of 0.620 mg/L in any collected groundwater samples.
- Total naphthalene concentrations ranged from <0.000184 mg/L to 0.0395 mg/L. The total naphthalene concentration exceeded the NMWQCC groundwater standard of 0.030 mg/L in the groundwater sample collected from monitor well MW-12A.

During the December event, groundwater samples were collected from nine (9) monitor wells, MW-8A, MW-9A, MW-10A, MW-11A, MW-12A, MW-13A, MW-14A, MW-17 and MW-18A. Groundwater samples were not collected from six (6) monitor wells, MW-1A, MW-2, MW-2A, MW-5, MW-7A, and MW-12, due to the presence of PSH. Due to dry well conditions, groundwater samples were not collected from monitor wells MW-15 and MW-16. Drilling of MW-3A, MW-4A, and MW-6A was not completed in time to include in December 2013 sapling event.

Laboratory analytical results of the groundwater samples exhibited the following findings:

- Benzene concentrations ranged from <0.00100 mg/L to 16.2 mg/L. Benzene concentrations exceeded the NMWQCC groundwater standard of 0.010 mg/L in the groundwater samples collected from monitor wells MW-8A, MW-12A, and MW-18A.
- Toluene concentrations ranged from <0.00100 mg/L to 0.230 mg/L. The toluene concentrations did not exceed the NMWQCC groundwater standard of 0.750 mg/L in the groundwater samples collected.
- Ethylbenzene concentrations ranged from <0.00100 mg/L to 0.850 mg/L. The ethylbenzene concentrations exceeded the NMWQCC groundwater standard of 0.750 mg/L the sample collected from MW-12A.
- Xylene concentrations ranged from <0.00100 mg/L to 1.20 mg/L. The total xylene concentration exceeded the NMWQCC groundwater standard of 0.620 mg/L in the groundwater sample collected from monitor well MW-12A.

4.1 Groundwater Monitoring Well Installation Activities

Due to the dropping groundwater and dry well conditions at the site, five (5) replacement groundwater monitoring wells (MW-3A, MW-4A, MW-6A, MW-11A and MW-18A) were installed in December of 2013.
Talon conducted the advancement, installation, and sampling of three (3), 4-inch diameter groundwater monitoring wells, designated as MW-3A, MW-4A, and MW-6A, and two (2), 2-

inch diameter groundwater monitor wells, designated as MW-11A The wells were advanced and installed using air rotary techniques. The wells were installed and sampled to determine the horizontal extent of hydrocarbon impact to groundwater in the vicinity of the release area. The location of each groundwater monitoring well is presented on Figures 2d and 3d. The monitoring wells were installed under the direction of a licensed State New Mexico well driller. The placement of the monitoring wells was based upon historical groundwater analytical and historical fluid level measurement data collected from all monitor wells at the site. During boring advancement, soils samples were collected on ten (10) foot intervals utilizing a grab method, and were visually and texturally classified by the supervising project geologist. All monitoring wells were constructed using flush-joint schedule 40, polyvinyl chloride (PVC) casing and factory slotted 0.010-inch screen. A sorted sand filter pack was placed around the screen from the bottom of the boring to approximately one (1) foot above the screened interval. Above the sand pack, a two (2) foot thick bentonite seal was set to prevent the migration of contaminants to the sampling zone from the surface, and the remainder of the well annulus was filled with cement. A steel protective vault was concreted in place to protect the well from damage and surface percolation. Well development was conducted prior to setting the bentonite seal, in order to settle the sand filter pack and to maximize the flow of groundwater into the well. Approximately 310 gallons of water were generated during monitoring well development activities.
The elevations of the monitoring wells are to be determined by a level survey referenced to the previously existing monitoring wells.

4.1.1 Well Boring Soil Sample Collection

Soil samples were collected at 90 feet bgs, and 110 feet bgs from the soil boring for groundwater monitoring wells MW-3A, MW-4A, MW-6A, MW-11A, and MW-18A. Soil samples were collected by Talon personnel wearing clean nitrile gloves with disposal sampling tools.
The soil samples were containerized in laboratory provided sample containers, immediately placed on ice, and transported to Xenco Laboratories in Midland, Texas for BTEX and TPH analysis.

4.1.2 Analytical Results

Analytical results indicate BTEX concentrations in soil samples collected from the soil borings for groundwater monitoring wells MW-4 through MW-6 to be below the respective RRC Soil Remediation Limits. Analytical results indicate TPH concentrations (C_6-C_{35}) in soil samples collected from the soil borings for groundwater monitoring wells MW-4 through MW-6 to be below the RRC Soil Remediation Limit for TPH of 5,000 mg/kg.
Certified copies of the laboratory analytical results and proper chain of custody documentation are presented in Appendix E. A summary of the groundwater monitoring well soil sample analytical results is presented on Table 1.

4 CONCLUSIONS AND RECOMMENDATIONS

The following section presents a summary of the four groundwater monitoring events conducted at the C. S. Cayler site and Section 4.2 provides recommendations for future corrective action.

4.1 Summary of Findings

- The groundwater flow direction is to the southeast at an average gradient of 0.0017 ft/ft or nine (9) feet per mile.
- Groundwater levels at the subject site have exhibited a steady decline averaging 0.53 feet for the year 2013 that appears to be associated with a regional trend of declining groundwater levels for the Ogallala Aquifer.
- Generally, PSH thicknesses have fluctuated from quarter to quarter during the year 2013.
- The dissolved-phase concentrations have remained relatively stable for the year 2013 and have exhibited slight fluctuations with no apparent trend. Currently, the PSH plume delineated by the current monitor well array; however the dissolved-phase plume is not delineated.
- The PSH recovery system removed 77 bbls of crude oil from the groundwater during 2013 indicating that the system is performing its function.
- Monitor wells MW-3A, MW-4A, MW-6A, MW-11A, and MW-18A were installed in December of 2013. Monitor wells MW-3, MW-4, MW-6, MW-11, and MW-18 were plugged and abandoned at that time.

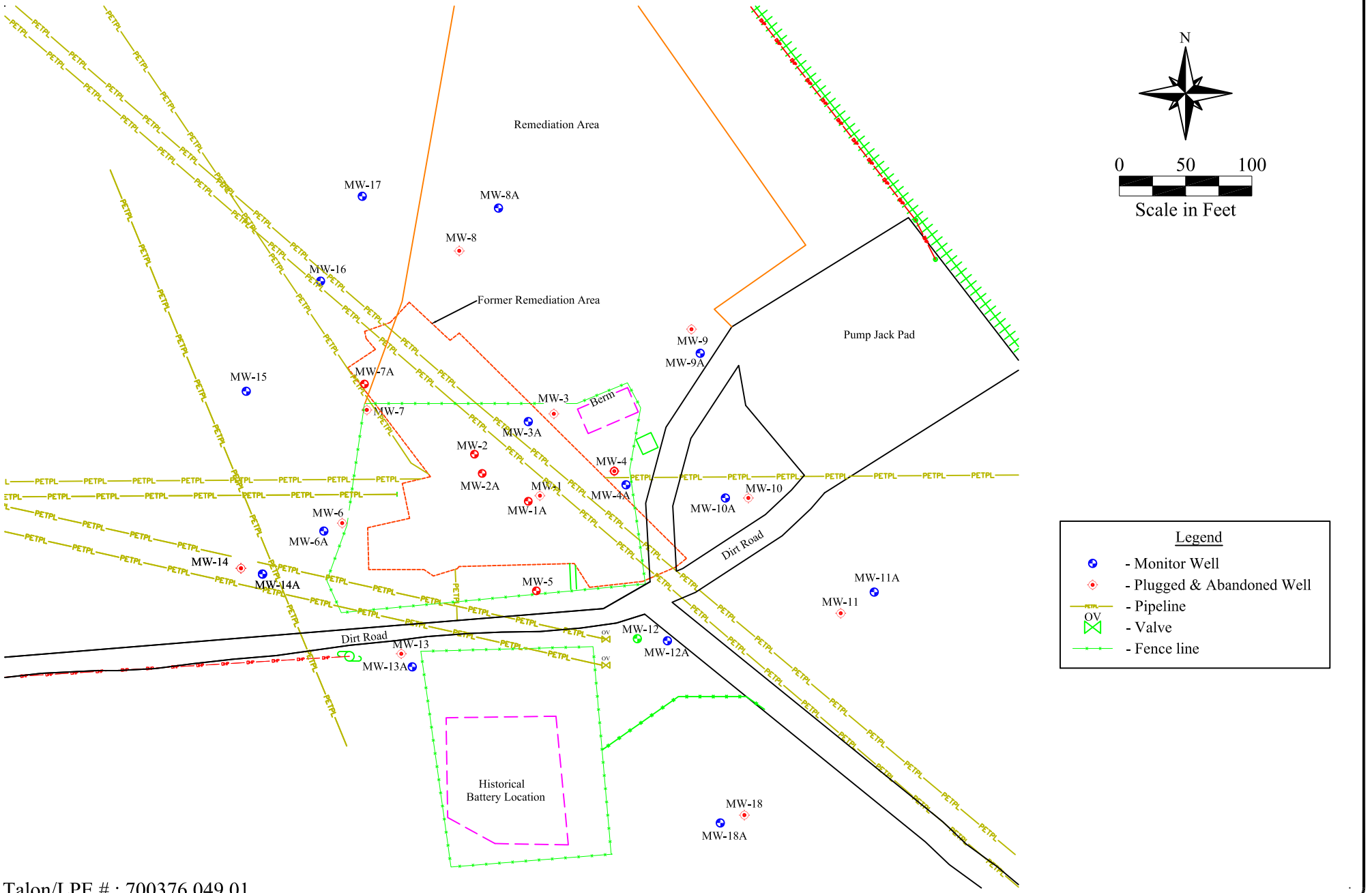
4.2 Recommendations

Based upon the results of the quarterly groundwater monitoring and PSH recovery efforts, Talon proposes the following actions:

- Continue operation and maintenance of the skimmer/bladder pump and total fluids pump recovery system. Monitor the system on a weekly basis to optimize PSH recovery efficiency.
- Add or reposition pumps as necessary to optimize PSH recovery and inhibit plume migration.
- Perform quarterly groundwater monitoring events in accordance with NMOCD directives.
- Survey top of casing elevation on all new wells.

APPENDIX A

Figures



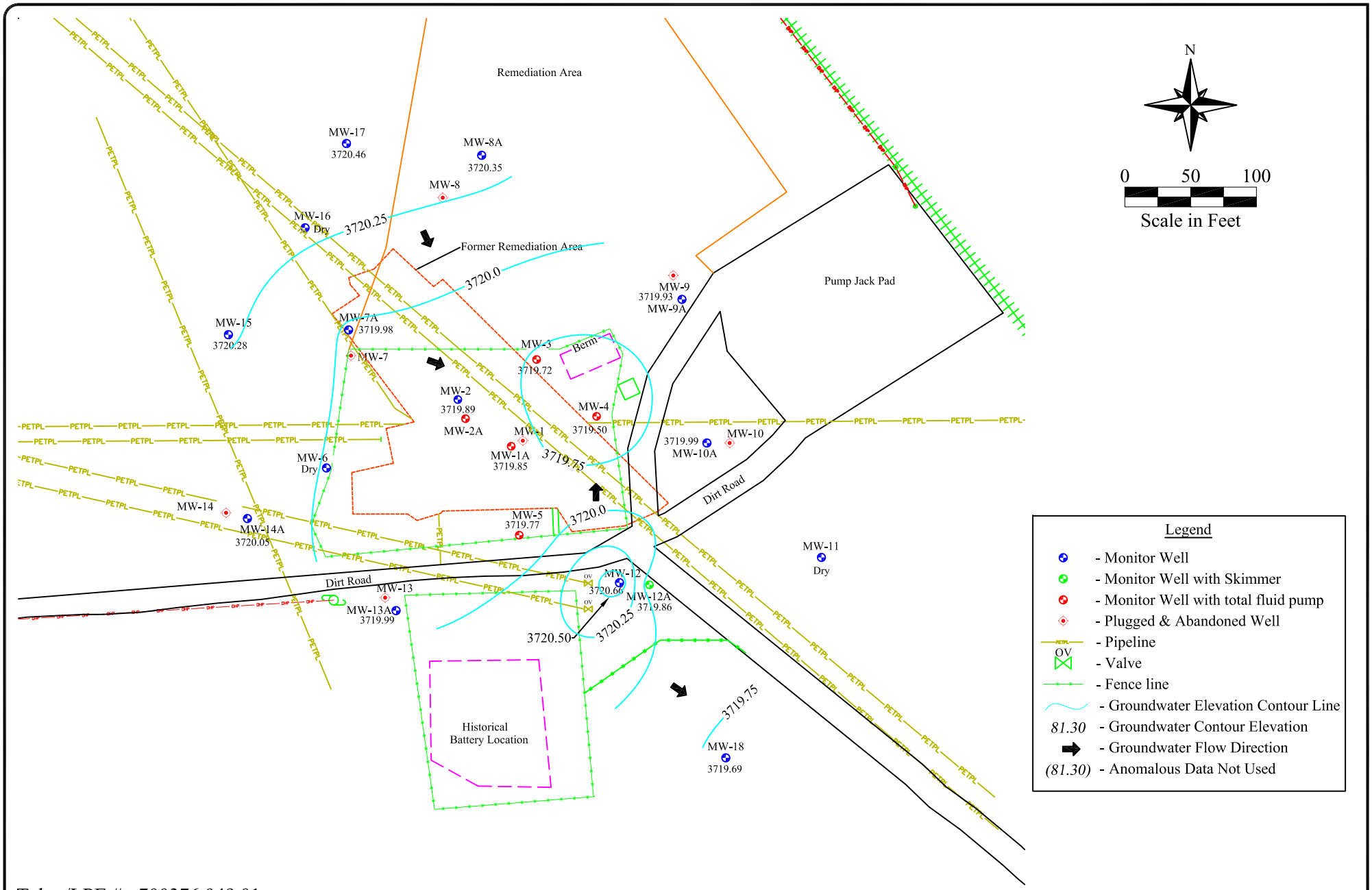
Talon/LPE # : 700376.049.01

TALON LPE

Date: 01/22/2013
Scale: 1" = 100'
Drawn By: WBS

C.S. Cayler

SRS # 2002-10250, NMOCD REF. # AP-052 (OLD 1R-0382)
Lea County, New Mexico
Figure 1 - Site Plan



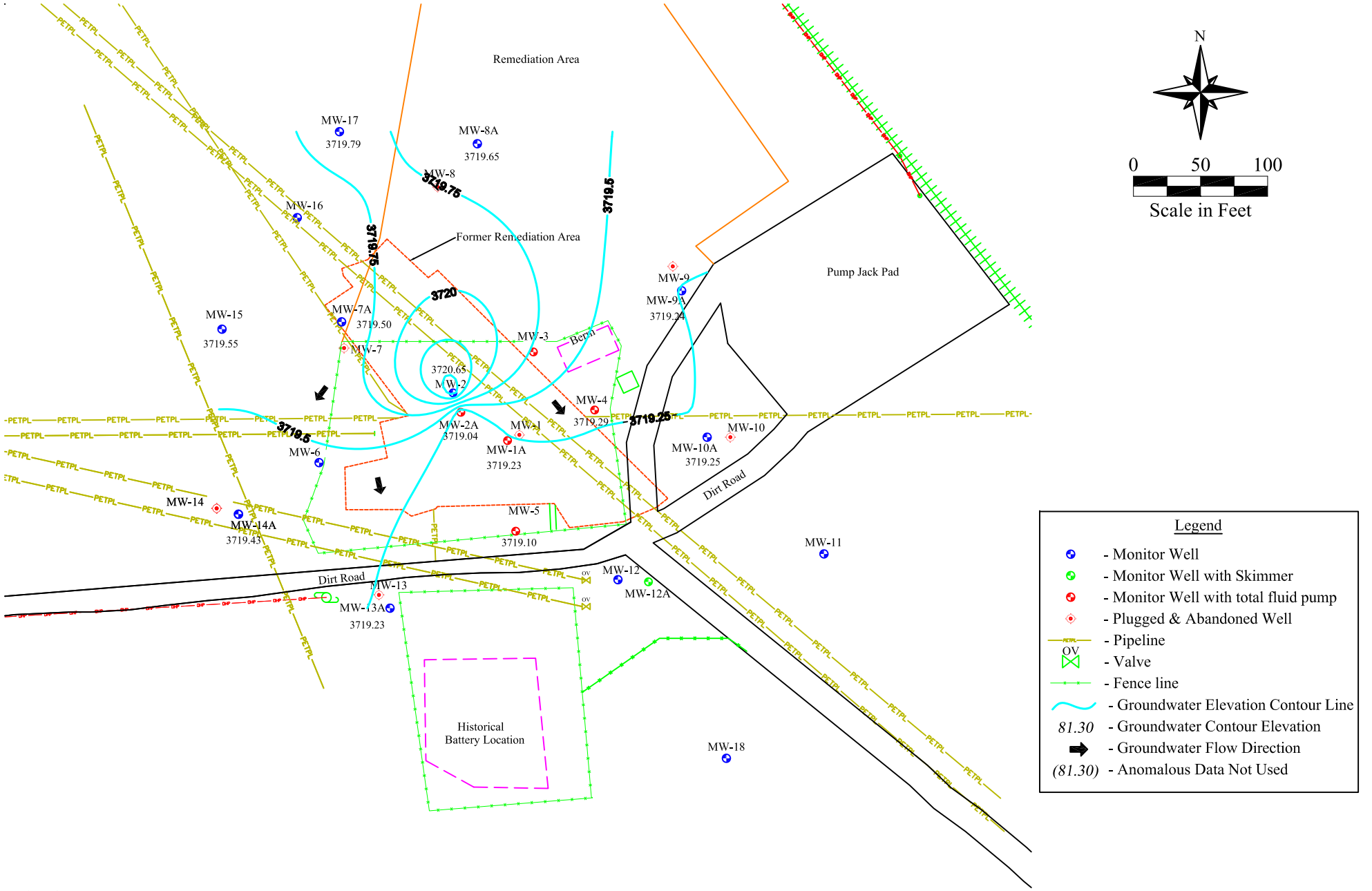
Talon/LPE # : 700376.049.01

TALON LPE

Date: 04/16/2013
Scale: 1" = 100'
Drawn By: TJS

C.S. Cayler

SRS # 2002-10250, NMOCD REF. # AP-052 (OLD 1R-0382)
Lea County, New Mexico
Figure 2a - Groundwater Gradient Map, (03/14/2013)

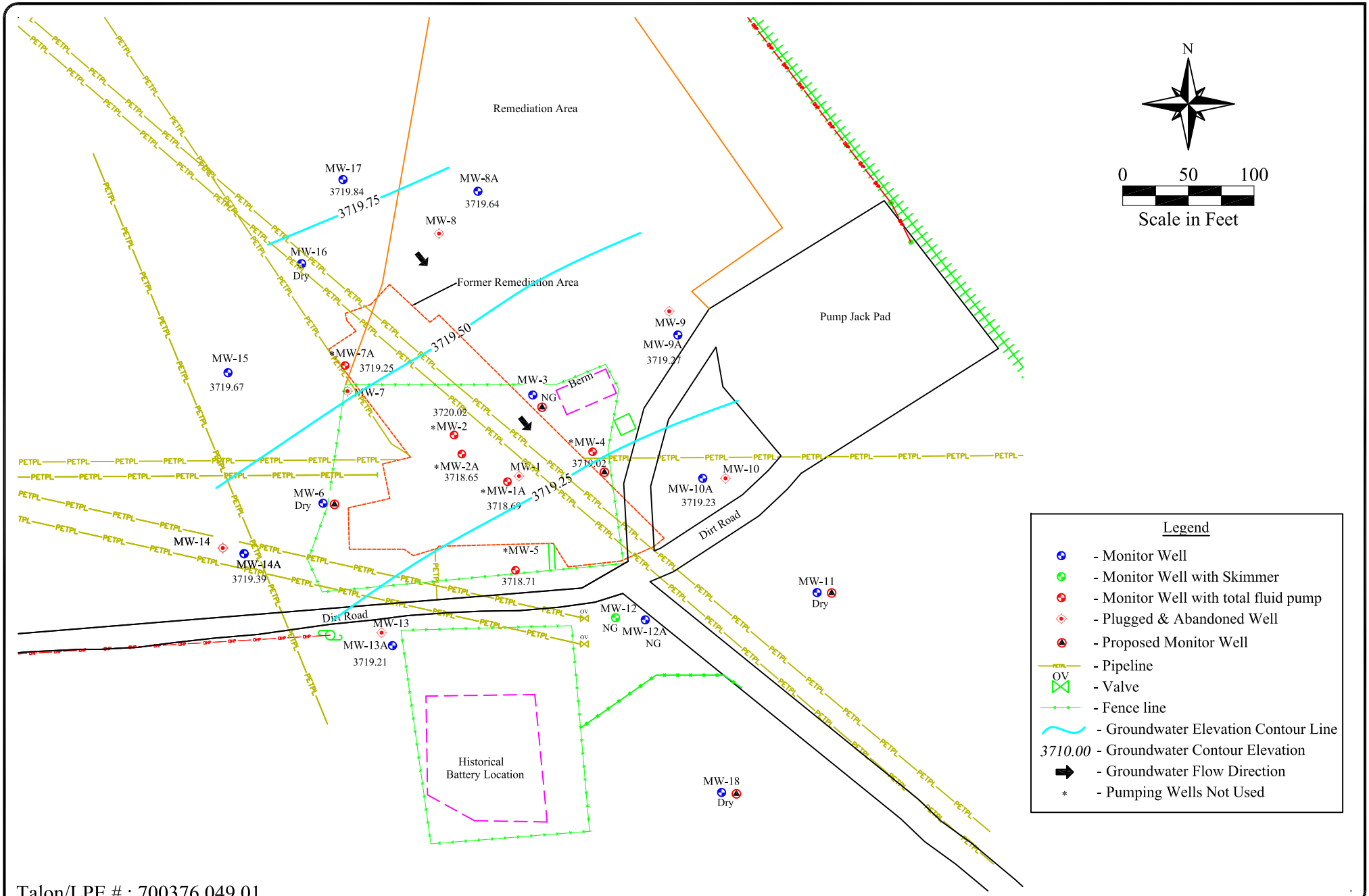


Talon/LPE # : 700376.049.01

Date:	07/02/2013
Scale:	1" = 100'
Drawn By:	BCI

C.S. Cayler

SRS # 2002-10250, NMOCD REF. # AP-052 (OLD 1R-0382)
Lea County, New Mexico
Figure 2b - Groundwater Gradient Map, (06/11/2013)



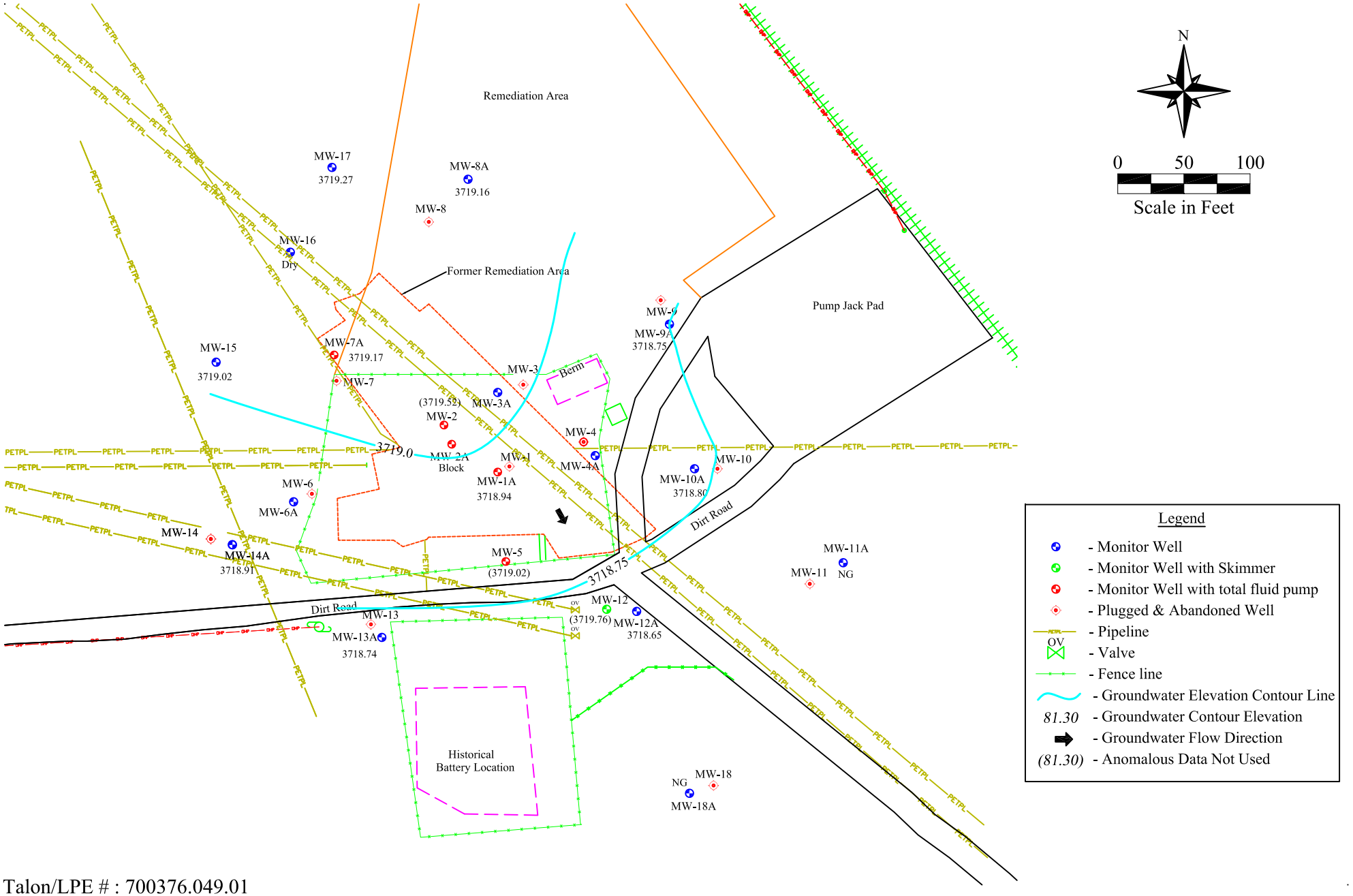
Talon/LPE # : 700376.049.01

TALON LPE

Date: 10/14/2013
Scale: 1" = 100'
Drawn By: TJS

C.S. Cayler

SRS # 2002-10250, NMOCD REF. # AP-052 (OLD 1R-0382)
Lea County, New Mexico
Figure 2c - Groundwater Gradient Map, (09/29/2013)



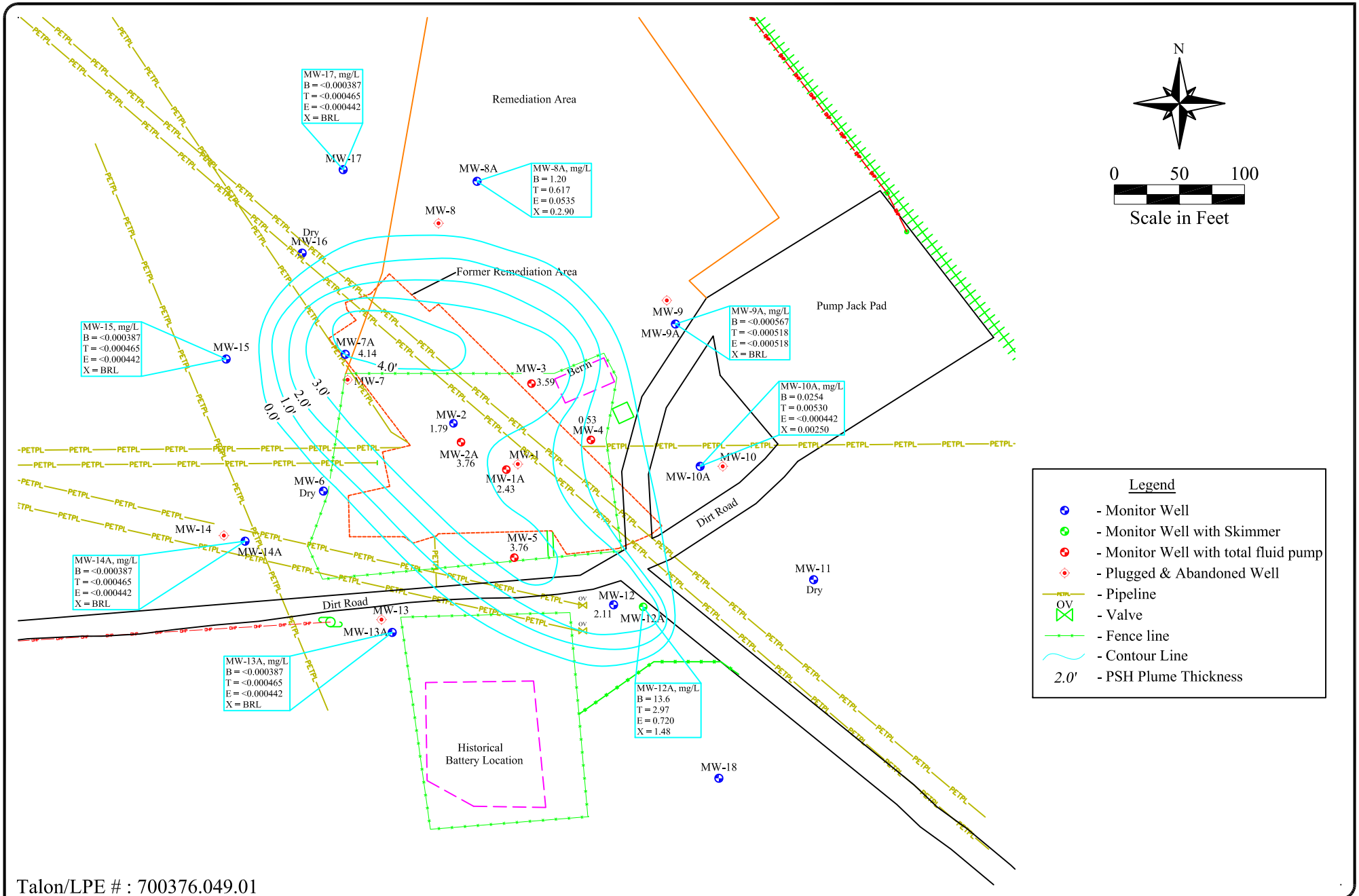
Talon/LPE # : 700376.049.01

TALON LPE

Date: 01/16/2014
Scale: 1" = 100'
Drawn By: TJS

C.S. Cayler

SRS # 2002-10250, NMOCD REF. # AP-052 (OLD 1R-0382)
Lea County, New Mexico
Figure 2d - Groundwater Gradient Map, (12/10/2013)

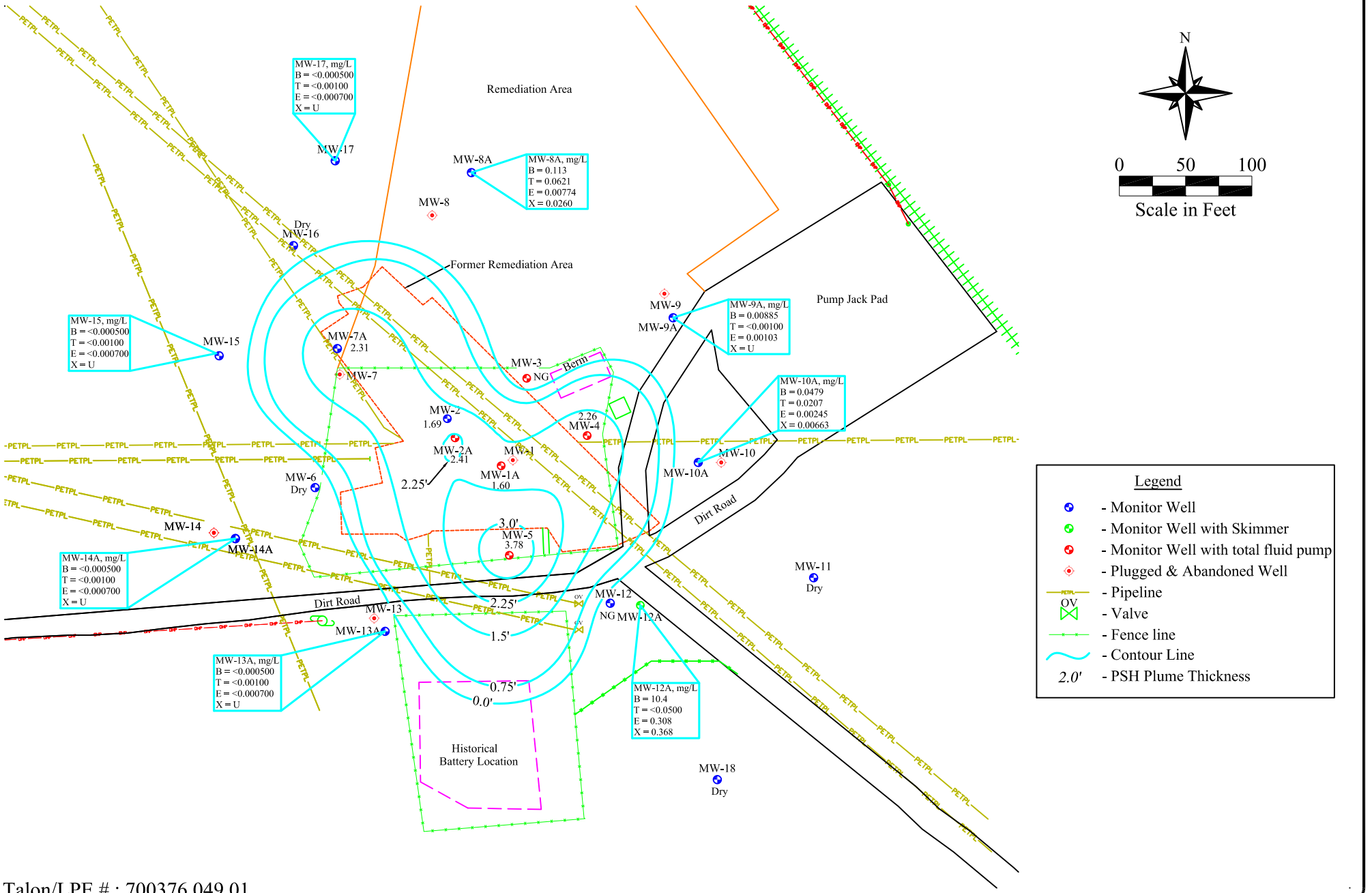


Talon/LPE # : 700376.049.01

Date:	04/16/2013
Scale:	1" = 100'
Drawn By:	TJS

C.S. Cayler

SRS # 2002-10250, NMOCD REF. # AP-052 (OLD 1R-0382)
Lea County, New Mexico
Figure 3a - PSH Thickness & Groundwater Concentration Map, (03/20/2013)



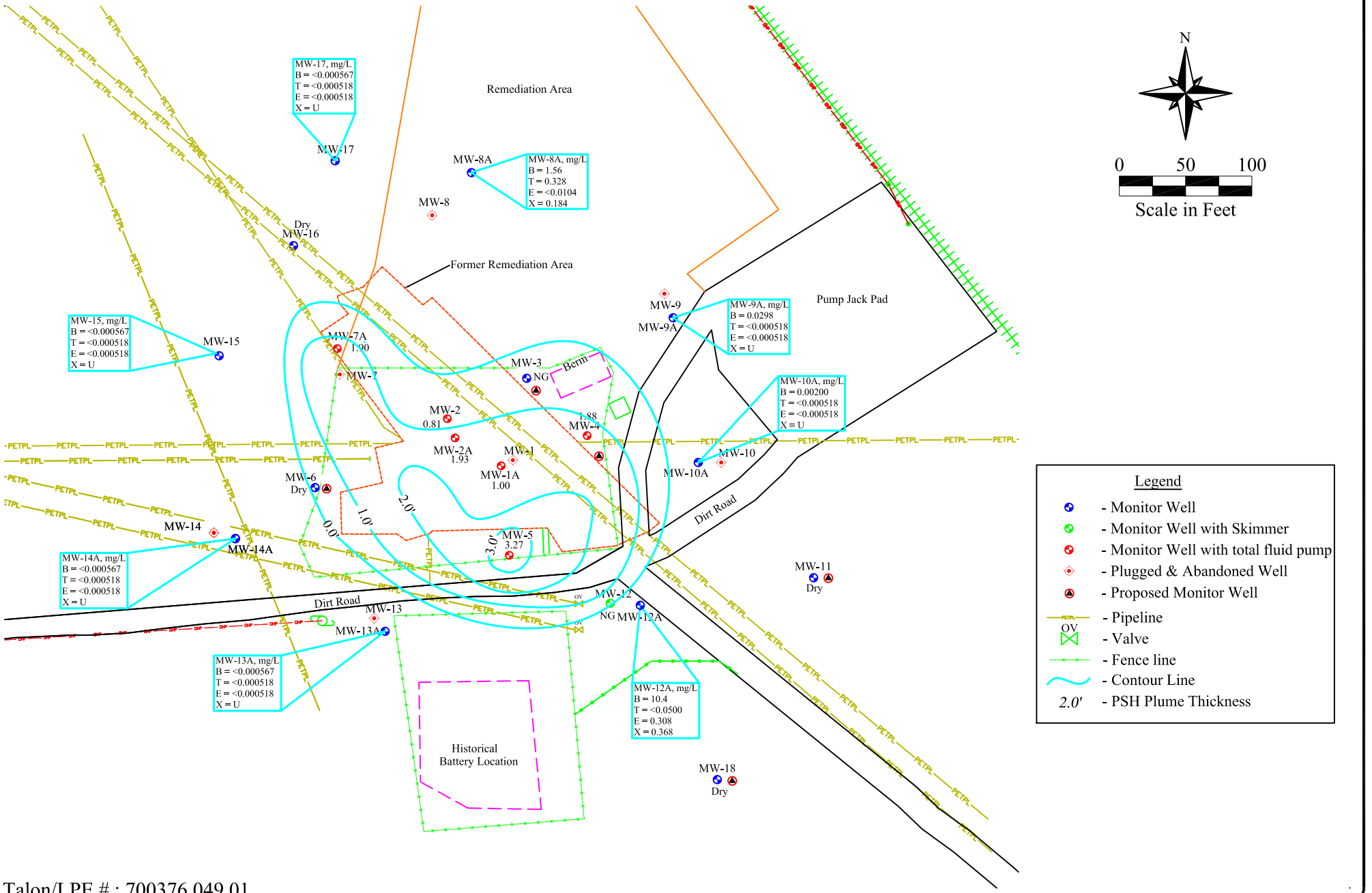
Talon/LPE # : 700376.049.01

TALON LPE

Date: 07/22/2013
Scale: 1" = 100'
Drawn By: TJS

C.S. Cayler

SRS # 2002-10250, NMOCD REF. # AP-052 (OLD 1R-0382)
Lea County, New Mexico
Figure 3b - PSH Thickness & Groundwater Concentration Map, (06/11/2013)



Talon/LPE # : 700376.049.01

TALON LPE

Date: 10/14/2013

Scale: 1" = 100'

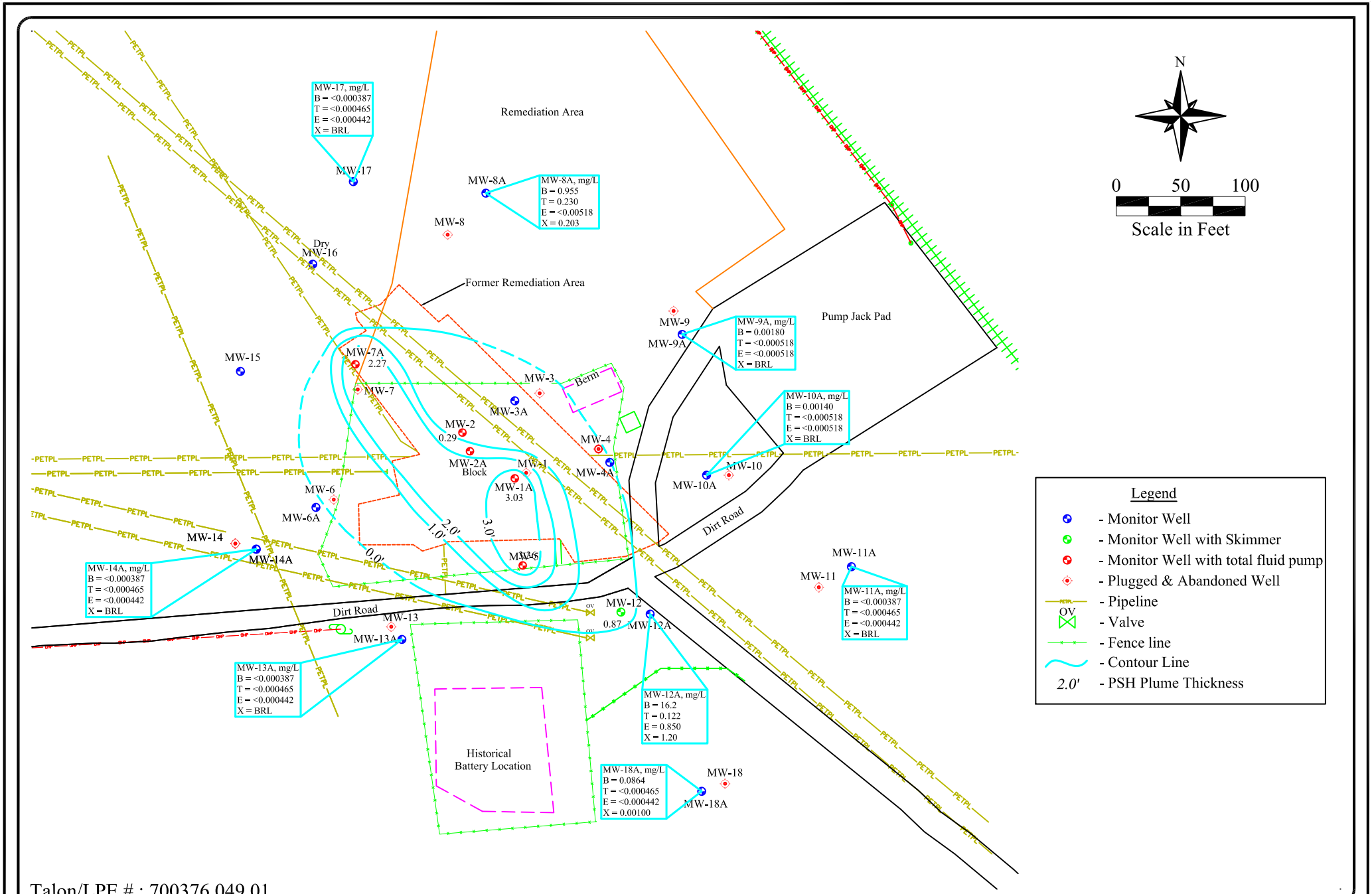
Drawn By: TJS

C.S. Cayler

SRS # 2002-10250, NMOCD REF. # AP-052 (OLD 1R-0382)

Lea County, New Mexico

Figure 3c - PSH Thickness & Groundwater Concentration Map, (09/29/2013)



Talon/LPE # : 700376.049.01

Date: 01/16/2014
Scale: 1" = 100'
Drawn By: TJS

C.S. Cayler

SRS # 2002-10250, NMOCD REF. # AP-052 (OLD 1R-0382)
Lea County, New Mexico
Figure 3d - PSH Thickness & Groundwater Concentration Map, (12/10/2013)

APPENDIX B

Tables

Summary of Historical Fluid Level Measurements
CS CAYLER
SRS#2002-10250

Well	Date	Top of Casing Elevation (ft)	Depth to Groundwater (ft)	Depth to PSH (ft)	PSH Thickness (ft)	Corrected Groundwater Elevation (ft)
MW-1A			Diameter: 4 in.	Screened Interval: ____ ft. to ____ ft.		TD: 96.2 ft.
	06/21/12	3810.14	96.20	88.65	7.55	3720.24
	09/21/12	3810.14	94.03	90.05	3.98	3719.43
	12/07/12	3810.14	94.14	89.97	4.17	3719.48
	03/14/13	3810.14	92.11	89.68	2.43	3720.06
	06/11/13	3810.14	92.11	90.51	1.60	3719.37
	09/29/13	3810.14	92.20	91.20	1.00	3718.77
	12/10/13	3810.14	93.73	90.70	3.03	3718.94
MW-2			Diameter: 4 in.	Screened Interval: ____ ft. to ____ ft.		TD: 88.1 ft.
	06/21/12	3807.38	88.13	85.64	2.49	3721.33
	09/21/12	3807.38	88.16	86.37	1.79	3720.71
	12/07/12	3807.38	NG	-	-	NG
	06/11/13	3807.38	88.00	86.31	1.69	3720.79
	09/29/13	3807.38	87.97	87.16	0.81	3720.09
	12/10/13	3807.38	88.10	87.81	0.29	3719.52
MW-2A			Diameter: 4 in.	Screened Interval: ____ ft. to ____ ft.		TD: 109 ft.
	06/21/12	3810.14	95.66	88.60	7.06	3720.38
	09/21/12	3810.14	93.05	90.10	2.95	3719.55
	12/07/12	3810.14	94.63	89.71	4.92	3719.62
	03/14/13	3810.14	93.07	89.31	3.76	3720.21
	06/11/13	3810.14	92.91	90.50	2.41	3719.24
	09/29/13	3810.14	92.94	91.01	1.93	3718.81
	12/10/13	3810.14	Block	-	-	Block
MW-3			Diameter: 4 in.	Screened Interval: ____ ft. to ____ ft.		TD: 93.5 ft.
	06/21/12	3810.36	93.53	88.79	4.74	3720.79
	09/21/12	3810.36	93.51	89.57	3.94	3720.14
	12/07/12	3810.36	93.58	89.51	4.07	3720.18
	03/14/13	3810.36	93.33	89.74	3.59	3720.03
	06/11/13	3810.36	NG		-	NG
	09/29/13	3810.36		-	-	
	12/10/13	3810.36	P&A	-	-	P&A
MW-3A			Diameter: 4 in.	Screened Interval: ____ ft. to ____ ft.		TD: 113 ft.
	01/09/14		91.16	-	-	
MW-4			Diameter: 4 in.	Screened Interval: ____ ft. to ____ ft.		TD: 93.2 ft.
	06/21/12	3810.81	92.10	90.35	1.75	3720.17
	09/21/12	3810.81	92.33	91.24	1.09	3719.39
	12/07/12	3810.81	92.57	91.06	1.51	3719.50
	03/14/13	3810.81	91.71	91.18	0.53	3719.54
	06/11/13	3810.81	93.22	90.96	2.26	3719.48
	09/29/13	3810.81	93.20	91.32	1.88	3719.18
	12/10/13	3810.81	P&A	-	-	P&A
MW-4A			Diameter: 4 in.	Screened Interval: ____ ft. to ____ ft.		TD: 105 ft.
	01/09/14		91.22	-	-	
MW-5			Diameter: 4 in.	Screened Interval: ____ ft. to ____ ft.		TD: 93.4 ft.
	06/21/12	3809.29	NG	-	-	NG
	09/21/12	3809.29	NG	-	-	NG
	12/07/12	3809.29	Dry	-	-	Dry
	03/14/13	3809.29	92.34	88.58	3.76	3720.09
	06/11/13	3809.29	93.03	89.25	3.78	3719.42
	09/29/13	3809.29	93.03	89.76	3.27	3718.99
	12/10/13	3809.29	93.08	89.72	3.36	3719.02

Summary of Historical Fluid Level Measurements
CS CAYLER
SRS#2002-10250

Well	Date	Top of Casing Elevation (ft)	Depth to Groundwater (ft)	Depth to PSH (ft)	PSH Thickness (ft)	Corrected Groundwater Elevation (ft)
MW-6			Diameter: 2 in.	Screened Interval: ____ ft. to ____ ft.		TD: 88.3 ft.
	06/21/12	3809.33	88.35	88.31	0.04	3721.01
	09/21/12	3809.33	Dry	-	-	Dry
	12/07/12	3809.33	88.41	-	-	3720.92
	03/14/13	3809.33	Dry	-	-	Dry
	06/11/13	3809.33	Dry	-	-	Dry
	09/29/13	3809.33	Dry	-	-	Dry
	12/10/13	3809.33	P&A	-	-	P&A
MW-6A			Diameter: 4 in.	Screened Interval: ____ ft. to ____ ft.		TD: 113 ft.
	01/09/14		90.72	-	-	
MW-7A			Diameter: 4 in.	Screened Interval: ____ ft. to ____ ft.		TD: 101 ft.
	06/21/12	3810.63	93.81	89.38	4.43	3720.52
	09/21/12	3810.63	95.60	89.91	5.69	3719.78
	12/07/12	3810.63	95.47	90.06	5.41	3719.68
	03/14/13	3810.63	93.76	89.62	4.14	3720.33
	06/11/13	3810.63	92.86	90.55	2.31	3719.70
	09/29/13	3810.63	92.81	90.91	1.90	3719.41
	12/10/13	3810.63	93.36	91.09	2.27	3719.17
MW-8A			Diameter: 4 in.	Screened Interval: ____ ft. to ____ ft.		TD: 103 ft.
	06/21/12	3810.73	90.16	-	-	3720.57
	09/21/12	3810.73	90.91	-	-	3719.82
	12/07/12	3810.73	91.05	-	-	3719.68
	03/14/13	3810.73	90.38	-	-	3720.35
	06/11/13	3810.73	91.08	-	-	3719.65
	09/29/13	3810.73	91.09	-	-	3719.64
	12/10/13	3810.73	91.57	-	-	3719.16
MW-9A			Diameter: 2 in.	Screened Interval: ____ ft. to ____ ft.		TD: 107 ft.
	06/21/12	3810.73	90.68	-	-	3720.05
	09/21/12	3810.73	91.45	-	-	3719.28
	12/07/12	3810.73	91.50	-	-	3719.23
	03/14/13	3810.73	90.80	-	-	3719.93
	06/11/13	3810.73	91.49	-	-	3719.24
	09/29/13	3810.73	91.46	-	-	3719.27
	12/10/13	3810.73	91.98	-	-	3718.75
MW-10A			Diameter: 2 in.	Screened Interval: ____ ft. to ____ ft.		TD: 114 ft.
	06/21/12	3810.41	90.35	-	-	3720.06
	09/21/12	3810.41	91.15	-	-	3719.26
	12/07/12	3810.41	91.10	-	-	3719.31
	03/14/13	3810.41	90.42	-	-	3719.99
	06/11/13	3810.41	91.16	-	-	3719.25
	09/29/13	3810.41	91.18	-	-	3719.23
	12/10/13	3810.41	91.61	-	-	3718.80
MW-11			Diameter: 2 in.	Screened Interval: ____ ft. to ____ ft.		TD: 89.1 ft.
	06/21/12	3809.12	89.20	-	-	3719.92
	06/21/12	3809.12	Dry	-	-	Dry
	12/07/12	3809.12	Dry	-	-	Dry
	03/14/13	3809.12	Dry	-	-	Dry
	06/11/13	3809.12	Dry	-	-	Dry
	09/29/13	3809.12	Dry	-	-	Dry
	12/10/13	3809.12	P&A	-	-	P&A
MW-11A			Diameter: 2 in.	Screened Interval: ____ ft. to ____ ft.		TD: 113 ft.
	12/10/13		90.34	-	-	

Summary of Historical Fluid Level Measurements
CS CAYLER
SRS#2002-10250

Well	Date	Top of Casing Elevation (ft)	Depth to Groundwater (ft)	Depth to PSH (ft)	PSH Thickness (ft)	Corrected Groundwater Elevation (ft)
MW-12			Diameter: 2 in.	Screened Interval: ____ ft. to ____ ft.		TD: 90.8 ft.
	06/21/12	3809.81	90.90	88.57	2.33	3720.86
	09/21/12	3809.81	90.98	89.48	1.50	3720.08
	12/07/12	3809.81	NG	-	-	NG
	03/14/13	3809.81	90.73	88.62	2.11	3720.84
	06/11/13	3809.81	NG	-	-	NG
	09/29/13	3809.81	NG	-	-	NG
	12/10/13	3809.81	90.78	89.91	0.87	3719.76
MW-12A			Diameter: 4 in.	Screened Interval: ____ ft. to ____ ft.		TD: 109 ft.
	06/21/12	3808.98	89.07	-	-	3719.91
	09/21/12	3808.98	89.92	-	-	3719.06
	12/07/12	3808.98	89.83	-	-	3719.15
	03/14/13	3808.98	89.12	-	-	3719.86
	06/11/13	3808.98	NG	-	-	NG
	12/10/13	3808.98	90.33	-	-	3718.65
MW-13			Diameter: 2 in.	Screened Interval: ____ ft. to ____ ft.		TD: 88.9 ft.
	06/20/12	3809.59	P&A	-	-	P&A
MW-13A			Diameter: 4 in.	Screened Interval: ____ ft. to ____ ft.		TD: 108 ft.
	06/21/12	3809.49	89.07	-	-	3720.42
	09/21/12	3809.49	90.15	-	-	3719.34
	12/07/12	3809.49	90.20	-	-	3719.29
	03/14/13	3809.49	89.50	-	-	3719.99
	06/11/13	3809.49	90.26	-	-	3719.23
	09/29/13	3809.49	90.28	-	-	3719.21
	12/10/13	3809.49	90.75	-	-	3718.74
MW-14			Diameter: 2 in.	Screened Interval: ____ ft. to ____ ft.		TD: 88 ft.
	06/20/12	3809.63	P&A	-	-	P&A
MW-14A			Diameter: 2 in.	Screened Interval: ____ ft. to ____ ft.		TD: 114 ft.
	06/21/12	3809.93	NG	-	-	NG
	09/21/12	3809.93	90.31	-	-	3719.62
	12/07/12	3809.93	90.43	-	-	3719.50
	03/14/13	3809.93	89.88	-	-	3720.05
	06/11/13	3809.93	90.50	-	-	3719.43
	09/29/13	3809.93	90.54	-	-	3719.39
	12/10/13	3809.93	91.02	-	-	3718.91
MW-15			Diameter: 2 in.	Screened Interval: ____ ft. to ____ ft.		TD: 92.2 ft.
	06/21/12	3810.93	90.42	-	-	3720.51
	09/21/12	3810.93	91.15	-	-	3719.78
	12/07/12	3810.93	91.28	-	-	3719.65
	03/14/13	3810.93	90.65	-	-	3720.28
	06/11/13	3810.93	91.38	-	-	3719.55
	09/29/13	3810.93	91.26	-	-	3719.67
	12/10/13	3810.93	91.91	-	-	3719.02
MW-16			Diameter: 2 in.	Screened Interval: ____ ft. to ____ ft.		TD: 91.2 ft.
	06/21/12	3812.23	91.57	-	-	3720.66
	09/21/12	3812.23	Dry	-	-	Dry
	12/07/12	3812.23	91.80	-	-	3720.43
	03/14/13	3812.23	Dry	-	-	Dry
	06/11/13	3812.23	Dry	-	-	Dry
	09/29/13	3812.23	Dry	-	-	Dry
	12/10/13	3812.23	Dry	-	-	Dry

Summary of Historical Fluid Level Measurements
CS CAYLER
SRS#2002-10250

Well	Date	Top of Casing Elevation (ft)	Depth to Groundwater (ft)	Depth to PSH (ft)	PSH Thickness (ft)	Corrected Groundwater Elevation (ft)
MW-17			Diameter: 2 in.	Screened Interval: ____ ft. to ____ ft.		TD: 91 ft.
	06/21/12	3810.57	89.83	-	-	3720.74
	09/21/12	3810.57	90.56	-	-	3720.01
	12/07/12	3810.57	90.72	-	-	3719.85
	03/14/13	3810.57	90.11	-	-	3720.46
	06/11/13	3810.57	90.78	-	-	3719.79
	09/29/13	3810.57	90.73	-	-	3719.84
	12/10/13	3810.57	91.30	-	-	3719.27
MW-18			Diameter: 2 in.	Screened Interval: ____ ft. to ____ ft.		TD: 90.1 ft.
	06/21/12	3809.28	89.94	-	-	3719.34
	09/21/12	3809.28	93.05	90.10	2.95	3718.69
	12/07/12	3809.28	Dry	-	-	Dry
	03/14/13	3809.28	89.59	-	-	3719.69
	06/11/13	3809.28	Dry	-	-	Dry
	09/29/13	3809.28	Dry	-	-	Dry
	12/10/13	3809.28	P&A	-	-	P&A
MW-18A			Diameter: 2 in.	Screened Interval: ____ ft. to ____ ft.		TD: 113 ft.
	12/10/13		90.97	-	-	

Specific Gravity: 0.835

NG - Not Gauged
NSch - Not scheduled to be gauged
Block - Well blocked/obstructed
Locate - Can not locate/find well
Dry - Well is dry
P&A - Plug and Abandon
WD - Well Destroyed

Summary of Historical Groundwater Analytical Data
CS CAYLER
SRS#2002-10250

Sample Designation	Date Sampled	Concentration (mg/L)				
		Benzene	Toluene	Ethylbenzene	Total Xylenes	BTEX
MW-8A	06/27/12	0.159	0.0985	0.00930	0.0424	-
	09/21/12	0.130	0.0737	0.00710	0.0336	0.244
	12/07/12	0.344	0.175	0.0219	0.0561	-
	03/20/13	1.20	0.617	0.0535	0.290	-
	06/11/13	0.113	0.0621	0.00774	0.0260	0.209
	09/29/13	1.56	0.328	<0.0104	0.184	-
	12/31/13	0.955	0.230	<0.00518	0.203	-
MW-9A	06/27/12	<0.000371	<0.000347	<0.000326	BRL	-
	09/21/12	0.00778	<0.00100	<0.000700	U	0.00778
	12/07/12	0.0532	<0.000347	0.00230	0.00200	-
	03/20/13	<0.000567	<0.000518	<0.000518	BRL	-
	06/11/13	0.00885	<0.00100	0.00103	U	0.00988
	09/29/13	0.0298	<0.000518	<0.000518	BRL	-
	12/31/13	0.00180	<0.000518	<0.000518	BRL	-
MW-10A	06/27/12	0.0429	0.00840	<0.000326	0.00330	-
	09/21/12	0.00219	<0.00100	<0.000700	0.00200	0.00419
	12/07/12	0.0700	0.0226	0.00360	0.00740	-
	03/20/13	0.0254	0.00530	<0.000442	0.00250	-
	06/11/13	0.0479	0.0207	0.00245	0.00663	0.0777
	09/29/13	0.00200	<0.000518	<0.000518	BRL	-
	12/31/13	0.00140	<0.000518	<0.000518	BRL	-
MW-11A	12/31/13	<0.000387	<0.000465	<0.000442	BRL	-
MW-12A	06/27/12	17.5	1.56	0.707	1.15	-
	09/21/12	13.7	1.04	0.402	0.534	15.7
	12/07/12	16.6	1.15	0.758	0.996	-
	03/20/13	13.6	2.97	0.720	1.48	-
	06/11/13	10.4	<0.0500	0.308	0.368	11.1
	12/31/13	16.2	0.122	0.850	1.20	-

Summary of Historical Groundwater Analytical Data
CS CAYLER
SRS#2002-10250

Sample Designation	Date Sampled	Concentration (mg/L)				
		Benzene	Toluene	Ethylbenzene	Total Xylenes	BTEX
MW-13A	06/27/12	0.00360	0.00160	<0.000326	BRL	-
	09/21/12	<0.000500	<0.00100	<0.000700	U	U
	12/07/12	0.00170	0.00110	<0.000326	BRL	-
	03/20/13	<0.000387	<0.000465	<0.000442	BRL	-
	06/11/13	<0.000500	<0.00100	<0.000700	U	U
	09/29/13	<0.000567	<0.000518	<0.000518	BRL	-
	12/31/13	<0.000387	<0.000465	<0.000442	BRL	-
MW-14A	06/26/12	<0.000371	<0.000347	<0.000326	BRL	-
	09/21/12	0.00351	<0.00100	<0.000700	U	0.00351
	12/07/12	0.00810	<0.000347	<0.000326	BRL	-
	03/20/13	<0.000387	<0.000465	<0.000442	BRL	-
	06/11/13	<0.000500	<0.00100	<0.000700	U	U
	09/29/13	<0.000567	<0.000518	<0.000518	BRL	-
	12/31/13	<0.000387	<0.000465	<0.000442	BRL	-
MW-15	06/26/12	<0.000371	<0.000347	<0.000326	BRL	-
	09/21/12	<0.000500	<0.00100	<0.000700	U	U
	12/07/12	<0.000371	<0.000347	<0.000326	BRL	-
	03/20/13	<0.000387	<0.000465	<0.000442	BRL	-
	06/11/13	<0.000500	<0.00100	<0.000700	U	U
	09/29/13	<0.000567	<0.000518	<0.000518	BRL	-
MW-17	06/26/12	<0.000371	<0.000347	<0.000326	BRL	-
	09/21/12	0.00112	<0.00100	<0.000700	U	0.00112
	12/07/12	<0.000371	<0.000347	<0.000326	BRL	-
	03/20/13	<0.000387	<0.000465	<0.000442	BRL	-
	06/11/13	<0.000500	<0.00100	<0.000700	U	U
	09/29/13	<0.000567	<0.000518	<0.000518	BRL	-
	12/31/13	<0.000387	<0.000465	<0.000442	BRL	-
MW-18A	12/31/13	0.0864	<0.000465	<0.000442	0.00100	-

Summary of Historical Groundwater Analytical Data - PAH Supplement
CS CAYLER
SRS#2002-10250

Sample Designation	Date Sampled	Concentration (mg/L)																		
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Dibenzofuran	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
MW-8A	01/05/12	<0.000121	<0.000185	<0.000123	<0.000102	<0.000191	<0.000139	<0.000170	<0.000180	<0.000144	<0.000186	<0.000156	<0.000108	<0.000120	<0.000123	<0.000199	<0.000140	<0.0000908	<0.000191	<0.000143
	12/07/12	<0.000102	<0.0000857	<0.000114	<0.0000939	<0.0000743	<0.0000948	<0.0000658	<0.0000763	<0.0000749	<0.0000742	<0.0000722	<0.0000799	<0.000101	<0.000116	<0.0000939	<0.0000723	<0.000114	<0.0000774	<0.0000649
	09/29/13	<0.000100	<0.0000842	<0.000112	<0.0000922	<0.0000729	<0.0000931	<0.0000646	<0.0000750	<0.0000736	<0.0000728	<0.0000709	<0.0000785	<0.0000996	<0.000114	<0.0000922	<0.0000710	<0.000112	<0.0000760	<0.0000637
MW-9A	09/29/13	<0.000107	<0.0000899	<0.000120	<0.0000985	<0.0000779	<0.0000995	<0.0000690	<0.0000801	<0.0000786	<0.0000778	<0.0000757	<0.0000838	<0.000106	<0.000122	<0.0000985	<0.0000758	<0.000119	<0.0000812	<0.0000681
MW-10A	09/29/13	<0.000107	<0.0000899	<0.000120	<0.0000985	<0.0000779	<0.0000995	<0.0000690	<0.0000801	<0.0000786	<0.0000778	<0.0000757	<0.0000838	<0.000106	<0.000122	<0.0000985	<0.0000758	<0.000119	<0.0000812	<0.0000681
MW-12A	01/05/12	0.0218	0.0237	<0.000122	<0.000101	<0.000190	<0.000138	<0.000169	<0.000179	<0.000143	<0.000185	<0.000155	<0.000107	0.00208	<0.000122	0.000651	<0.000139	0.0289	0.00115	<0.000142
	12/07/12	0.0233	0.0254	<0.000116	<0.0000948	<0.0000750	<0.0000957	<0.0000664	<0.0000771	<0.0000756	<0.0000749	<0.0000729	<0.0000807	0.00210	<0.000118	<0.0000948	<0.0000730	0.0395	0.00118	<0.0000655
MW-13A	09/29/13	<0.000100	<0.0000842	<0.000112	<0.0000922	<0.0000729	<0.0000931	<0.0000646	<0.0000750	<0.0000736	<0.0000728	<0.0000709	<0.0000785	<0.0000996	<0.000114	<0.0000922	<0.0000710	<0.000112	<0.0000760	<0.0000637
MW-14A	09/29/13	<0.000108	<0.0000908	<0.000121	<0.0000995	<0.0000787	<0.000100	<0.0000697	<0.0000809	<0.0000794	<0.0000786	<0.0000765	<0.0000847	<0.000107	<0.000123	<0.0000995	<0.0000766	<0.000120	<0.0000820	<0.0000688

Summary of Historical Soil Analytical Data
CS CAYLER
SRS#2002-10250

Sample Designation	Date Sampled	Top	Bottom	Concentration (mg/kg, unless noted)										
				Benzene	Toluene	Ethylbenzene	Total Xylenes	Xylenes, Total	BTEX	C6-C12	>C12-C28	>C28-C35	Total TPH	Percent Moisture
MW-3A	01/07/14	90	90	0.323	10.8	10.3	30.6	-	52.0	1430	3210	<10.6	4640	7.27 *
	01/07/14	110	110	0.128	7.41	9.44	29.5	-	46.4	1330	2940	<10.6	4270	7.22 *
MW-4A	12/19/13	90	90	0.00335	0.100	0.253	-	0.852	1.21	372	1590	55.1	2020	4.98 *
	12/19/13	110	110	0.00144	0.0540	0.189	-	0.602	0.846	123	488	19.0	630	8.44 *
MW-6A	01/07/14	90	90	<0.000566	<0.00113	<0.000566	0.00487	-	0.00487	<11.2	<11.2	<11.2	<11.2	12.3 *
	01/07/14	110	110	<0.000557	0.00224	0.00123	0.00479	-	0.00826	<11.0	<11.0	<11.0	<11.0	10.8 *
MW-7A	03/23/11	80	90	<0.0335	5.10	9.16	26.1	-	-	-	-	-	-	-
MW-8A	03/22/11	80	90	<0.0168	2.96	6.16	18.3	-	-	-	-	-	-	-
MW-11A	12/05/13	90	90	<0.000645	<0.00129	<0.000645	-	<0.000645	U	<12.8	<12.8	<12.8	<12.8	22.8 *
	12/05/13	110	110	<0.000621	<0.00124	<0.000621	-	<0.000621	U	<12.3	<12.3	<12.3	<12.3	19.7 *
MW-18A	12/04/13	90	90	<0.000604	<0.00121	<0.000604	-	<0.000604	U	<12.0	<12.0	<12.0	<12.0	17.6 *
	12/04/13	110	110	<0.000612	<0.00122	<0.000612	-	<0.000612	U	<12.1	<12.1	<12.1	<12.1	18.6 *

APPENDIX C

Laboratory Analytical Data Reports and Chains of Custody Documentation

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972•242•7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Brad Ivy
Talon LPE-Midland
2901 State Highway 349
Midland, TX, 79706

Report Date: March 26, 2013

Work Order: 13032203

Project Location: Cayler, NM
Project Name: C. S. Cayler
Project Number: 700376.049.01
SRS #: 2002-10250

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
324288	MW-8A	water	2013-03-20	11:15	2013-03-21
324289	MW-9A	water	2013-03-20	09:30	2013-03-21
324290	MW-10A	water	2013-03-20	11:55	2013-03-21
324291	MW-12A	water	2013-03-20	11:30	2013-03-21
324292	MW-13A	water	2013-03-20	11:45	2013-03-21
324293	MW-14A	water	2013-03-20	09:45	2013-03-21
324294	MW-15	water	2013-03-20	09:10	2013-03-21
324295	MW-17	water	2013-03-20	08:45	2013-03-21

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

Report Contents

Case Narrative

Samples for project C. S. Cayler were received by TraceAnalysis, Inc. on 2013-03-21 and assigned to work order 13032203. Samples for work order 13032203 were received intact without headspace and at a temperature of 2.6 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	84685	2013-03-22 at 10:05	99972	2013-03-22 at 10:05
BTEX	S 8021B	84710	2013-03-25 at 13:47	99998	2013-03-25 at 13:47

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 13032203 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 324288 - MW-8A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	99998	Date Analyzed:	2013-03-25	Analyzed By:	MT
Prep Batch:	84710	Sample Preparation:	2013-03-25	Prepared By:	MT

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene		1	**1.20**	mg/L	10	0.00100
Toluene		1	**0.617**	mg/L	10	0.00100
Ethylbenzene		1	**0.0535**	mg/L	10	0.00100
Xylene		1	**0.290**	mg/L	10	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.959	mg/L	10	1.00	96	80 - 120
4-Bromofluorobenzene (4-BFB)			0.900	mg/L	10	1.00	90	80 - 120

Sample: 324289 - MW-9A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	99998	Date Analyzed:	2013-03-25	Analyzed By:	MT
Prep Batch:	84710	Sample Preparation:	2013-03-25	Prepared By:	MT

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.00100	mg/L	1	0.00100
Toluene	U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	1	<0.00100	mg/L	1	0.00100
Xylene	U	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0924	mg/L	1	0.100	92	80 - 120
4-Bromofluorobenzene (4-BFB)			0.0931	mg/L	1	0.100	93	80 - 120

Sample: 324290 - MW-10A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	99972	Date Analyzed:	2013-03-22	Analyzed By:	MT
Prep Batch:	84685	Sample Preparation:	2013-03-22	Prepared By:	MT

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene		1	**0.0254**	mg/L	1	0.00100
Toluene		1	**0.00530**	mg/L	1	0.00100
Ethylbenzene		1	<0.00100	mg/L	1	0.00100
Xylene		1	**0.00250**	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0832	mg/L	1	0.100	83	69.8 - 120
4-Bromofluorobenzene (4-BFB)			0.0741	mg/L	1	0.100	74	67.3 - 120

Sample: 324291 - MW-12A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	99972	Date Analyzed:	2013-03-22	Analyzed By:	MT
Prep Batch:	84685	Sample Preparation:	2013-03-22	Prepared By:	MT

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene		1	**13.6**	mg/L	50	0.00100
Toluene		1	**2.97**	mg/L	50	0.00100
Ethylbenzene		1	**0.720**	mg/L	50	0.00100
Xylene		1	**1.48**	mg/L	50	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			4.35	mg/L	50	5.00	87	69.8 - 120
4-Bromofluorobenzene (4-BFB)			3.96	mg/L	50	5.00	79	67.3 - 120

Sample: 324292 - MW-13A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	99972	Date Analyzed:	2013-03-22	Analyzed By:	MT
Prep Batch:	84685	Sample Preparation:	2013-03-22	Prepared By:	MT

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.00100	mg/L	1	0.00100
Toluene	U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	1	<0.00100	mg/L	1	0.00100
Xylene	U	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0780	mg/L	1	0.100	78	69.8 - 120
4-Bromofluorobenzene (4-BFB)			0.0774	mg/L	1	0.100	77	67.3 - 120

Sample: 324293 - MW-14A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	99972	Date Analyzed:	2013-03-22	Analyzed By:	MT
Prep Batch:	84685	Sample Preparation:	2013-03-22	Prepared By:	MT

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.00100	mg/L	1	0.00100
Toluene	U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	1	<0.00100	mg/L	1	0.00100
Xylene	U	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0813	mg/L	1	0.100	81	69.8 - 120
4-Bromofluorobenzene (4-BFB)			0.0755	mg/L	1	0.100	76	67.3 - 120

Sample: 324294 - MW-15

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	99972	Date Analyzed:	2013-03-22	Analyzed By:	MT
Prep Batch:	84685	Sample Preparation:	2013-03-22	Prepared By:	MT

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.00100	mg/L	1	0.00100
Toluene	U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	1	<0.00100	mg/L	1	0.00100
Xylene	U	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0815	mg/L	1	0.100	82	69.8 - 120
4-Bromofluorobenzene (4-BFB)			0.0812	mg/L	1	0.100	81	67.3 - 120

Sample: 324295 - MW-17

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	99972	Date Analyzed:	2013-03-22	Analyzed By:	MT
Prep Batch:	84685	Sample Preparation:	2013-03-22	Prepared By:	MT

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.00100	mg/L	1	0.00100
Toluene	U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	1	<0.00100	mg/L	1	0.00100
Xylene	U	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0753	mg/L	1	0.100	75	69.8 - 120
4-Bromofluorobenzene (4-BFB)			0.0731	mg/L	1	0.100	73	67.3 - 120

Method Blanks

Method Blank (1) QC Batch: 99972

QC Batch: 99972 | Date Analyzed: 2013-03-22 | Analyzed By: MT
Prep Batch: 84685 | QC Preparation: 2013-03-22 | Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.000387	mg/L	0.001
Toluene		1	<0.000465	mg/L	0.001
Ethylbenzene		1	<0.000442	mg/L	0.001
Xylene		1	<0.000413	mg/L	0.001

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0879	mg/L	1	0.100	88	69.8 - 120
4-Bromofluorobenzene (4-BFB)			0.0789	mg/L	1	0.100	79	67.3 - 120

Method Blank (1) QC Batch: 99998

QC Batch: 99998 | Date Analyzed: 2013-03-25 | Analyzed By: MT
Prep Batch: 84710 | QC Preparation: 2013-03-25 | Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.000567	mg/L	0.001
Toluene		1	<0.000518	mg/L	0.001
Ethylbenzene		1	<0.000518	mg/L	0.001
Xylene		1	<0.000548	mg/L	0.001

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0908	mg/L	1	0.100	91	80 - 120
4-Bromofluorobenzene (4-BFB)			0.0901	mg/L	1	0.100	90	80 - 120

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 99972 | Date Analyzed: 2013-03-22 | Analyzed By: MT
Prep Batch: 84685 | QC Preparation: 2013-03-22 | Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	0.0847	mg/L	1	0.100	<0.000387	85	74.4 - 120
Toluene		1	0.0833	mg/L	1	0.100	<0.000465	83	75 - 120
Ethylbenzene		1	0.0839	mg/L	1	0.100	<0.000442	84	74.7 - 120
Xylene		1	0.253	mg/L	1	0.300	<0.000413	84	75.9 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	0.0812	mg/L	1	0.100	<0.000387	81	74.4 - 120	4	20
Toluene		1	0.0796	mg/L	1	0.100	<0.000465	80	75 - 120	4	20
Ethylbenzene		1	0.0803	mg/L	1	0.100	<0.000442	80	74.7 - 120	4	20
Xylene		1	0.241	mg/L	1	0.300	<0.000413	80	75.9 - 120	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0813	0.0875	mg/L	1	0.100	81	88	69.8 - 120
4-Bromofluorobenzene (4-BFB)	0.0807	0.0827	mg/L	1	0.100	81	83	67.3 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 99998 | Date Analyzed: 2013-03-25 | Analyzed By: MT
Prep Batch: 84710 | QC Preparation: 2013-03-25 | Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	0.0911	mg/L	1	0.100	<0.000567	91	80 - 120
Toluene		1	0.0964	mg/L	1	0.100	<0.000518	96	80 - 120
Ethylbenzene		1	0.0961	mg/L	1	0.100	<0.000518	96	80 - 120
Xylene		1	0.283	mg/L	1	0.300	<0.000548	94	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	0.0878	mg/L	1	0.100	<0.000567	88	80 - 120	4	20
Toluene		1	0.0934	mg/L	1	0.100	<0.000518	93	80 - 120	3	20
Ethylbenzene		1	0.0923	mg/L	1	0.100	<0.000518	92	80 - 120	4	20
Xylene		1	0.274	mg/L	1	0.300	<0.000548	91	80 - 120	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0930	0.0895	mg/L	1	0.100	93	90	80 - 120
4-Bromofluorobenzene (4-BFB)	0.0901	0.0868	mg/L	1	0.100	90	87	80 - 120

Matrix Spike (MS-1) Spiked Sample: 324294

QC Batch: 99972 | Date Analyzed: 2013-03-22 | Analyzed By: MT
Prep Batch: 84685 | QC Preparation: 2013-03-22 | Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	0.0767	mg/L	1	0.100	<0.000387	77	57.7 - 120
Toluene		1	0.0745	mg/L	1	0.100	<0.000465	74	56.9 - 120
Ethylbenzene		1	0.0746	mg/L	1	0.100	<0.000442	75	62.9 - 120
Xylene		1	0.223	mg/L	1	0.300	<0.000413	74	63.2 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	0.0879	mg/L	1	0.100	<0.000387	88	57.7 - 120	14	20
Toluene		1	0.0859	mg/L	1	0.100	<0.000465	86	56.9 - 120	14	20
Ethylbenzene		1	0.0866	mg/L	1	0.100	<0.000442	87	62.9 - 120	15	20
Xylene		1	0.260	mg/L	1	0.300	<0.000413	87	63.2 - 120	15	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0811	0.0873	mg/L	1	0.1	81	87	69.8 - 120
4-Bromofluorobenzene (4-BFB)	0.0771	0.0802	mg/L	1	0.1	77	80	67.3 - 120

Matrix Spike (MS-1) Spiked Sample: 324288

QC Batch: 99998 | Date Analyzed: 2013-03-25 | Analyzed By: MT
Prep Batch: 84710 | QC Preparation: 2013-03-25 | Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.07	mg/L	10	1.00	1.2	87	64.6 - 120
Toluene		1	1.58	mg/L	10	1.00	0.617	96	62.9 - 123
Ethylbenzene		1	0.974	mg/L	10	1.00	0.0535	92	64.2 - 123
Xylene		1	3.02	mg/L	10	3.00	0.29	91	63.1 - 121

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.98	mg/L	10	1.00	1.2	78	64.6 - 120	4	20
Toluene		1	1.51	mg/L	10	1.00	0.617	89	62.9 - 123	4	20
Ethylbenzene		1	0.934	mg/L	10	1.00	0.0535	88	64.2 - 123	4	20
Xylene		1	2.88	mg/L	10	3.00	0.29	86	63.1 - 121	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.973	0.946	mg/L	10	1	97	95	80 - 120
4-Bromofluorobenzene (4-BFB)	0.895	0.869	mg/L	10	1	90	87	80 - 120

Calibration Standards

Standard (CCV-1)

QC Batch: 99972 | Date Analyzed: 2013-03-22 | Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.0831	83	80 - 120	2013-03-22
Toluene		1	mg/L	0.100	0.0817	82	80 - 120	2013-03-22
Ethylbenzene		1	mg/L	0.100	0.0826	83	80 - 120	2013-03-22
Xylene		1	mg/L	0.300	0.248	83	80 - 120	2013-03-22

Standard (CCV-2)

QC Batch: 99972 | Date Analyzed: 2013-03-22 | Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.0826	83	80 - 120	2013-03-22
Toluene		1	mg/L	0.100	0.0808	81	80 - 120	2013-03-22
Ethylbenzene		1	mg/L	0.100	0.0810	81	80 - 120	2013-03-22
Xylene		1	mg/L	0.300	0.243	81	80 - 120	2013-03-22

Standard (CCV-3)

QC Batch: 99972 | Date Analyzed: 2013-03-22 | Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.0861	86	80 - 120	2013-03-22
Toluene		1	mg/L	0.100	0.0851	85	80 - 120	2013-03-22
Ethylbenzene		1	mg/L	0.100	0.0850	85	80 - 120	2013-03-22
Xylene		1	mg/L	0.300	0.256	85	80 - 120	2013-03-22

Standard (CCV-1)

QC Batch: 99998 | Date Analyzed: 2013-03-25 | Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.0943	94	80 - 120	2013-03-25
Toluene		1	mg/L	0.100	0.0991	99	80 - 120	2013-03-25
Ethylbenzene		1	mg/L	0.100	0.0982	98	80 - 120	2013-03-25
Xylene		1	mg/L	0.300	0.290	97	80 - 120	2013-03-25

Standard (CCV-2)

QC Batch: 99998 | Date Analyzed: 2013-03-25 | Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.0865	86	80 - 120	2013-03-25
Toluene		1	mg/L	0.100	0.0921	92	80 - 120	2013-03-25
Ethylbenzene		1	mg/L	0.100	0.0940	94	80 - 120	2013-03-25
Xylene		1	mg/L	0.300	0.270	90	80 - 120	2013-03-25

Standard (CCV-3)

QC Batch: 99998 | Date Analyzed: 2013-03-25 | Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.0894	89	80 - 120	2013-03-25
Toluene		1	mg/L	0.100	0.0957	96	80 - 120	2013-03-25
Ethylbenzene		1	mg/L	0.100	0.0952	95	80 - 120	2013-03-25
Xylene		1	mg/L	0.300	0.281	94	80 - 120	2013-03-25

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-12-8	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

LAB Order ID # 13032203

Page 1 of 1

TraceAnalysis, Inc.

email: lab@traceanalysis.com

6701 Aberdeen Avenue, Suite 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

5002 Basin Street, Suite A1
Midland, Texas 79703
Tel (432) 689-6301
Fax (432) 689-6313

200 East Sunset Rd., Suite E
El Paso, Texas 79922
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

BioAquatic Testing
2501 Mayes Rd., Ste 100
Carrollton, Texas 75006
Tel (972) 242-7750

Company Name: TDHW LPC
Phone #: 432-522-2133
Address: (Street, City, Zip) 2901 Hwy 349, Midland, TX
Fax #: 432-522-2183
Contact Person: BRAD IVY
E-mail: BIVY@TDHW.COM
Invoice to: (If different from above) PLOUS SES # 2002-10250
Project #: 700376.049.01
Project Name: CAYLEN
Project Location (including state): ANDREWS, TX
Sampler Signature:

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE		PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE		SAMPLING: DATE	TIME	MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1005 Ext(C35)	TPH 8015 GRO / DRO / TVHC	PAH 8270 / 625	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260 / 624	GC/MS Semi. Vol. 8270 / 625	PCB's 8082 / 608	Pesticides 8081 / 608	BOD, TSS, pH	Moisture Content	Cl, F, SO_4, NO_3-N, NO_2-N, PO_4-P, Alkalinity	Na, Ca, Mg, K, TDS, EC						Turn Around Time if different from standard	Hold
324288	MW-8A	3	VOA	X					X				X			3/21/13	1115		X																							
289	MW-9A	3	VOA	X					X				X				0930		X																							
290	MW-10A	3	VOA	X					X				X				1155		X																							
291	MW-12A	3	VOA	X					X				X				1130		X																							
292	MW-13A	3	VOA	X					X				X				1145		X																							
293	MW-14A	3	VOA	X					X				X				0945		X																							
294	MW-15	3	VOA	X					X				X				0910		X																							
295	MW-17	3	VOA	X					X				X				0845		X																							

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
								INST ____ °C
								OBS ____ °C
								COR ____ °C
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
								INST ____ °C
								OBS ____ °C
								COR ____ °C
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
								INST P-2 °C
								OBS 3.2 °C
								COR 2.6 °C
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
	TDHW	3/21/13	1630		TA Lubbock	3/21/13	16:30	

LAB USE ONLY
Intact Y N
Headspace Y N NA
Log-in-Review

REMARKS:

- ☐ Dry Weight Basis Required
- ☐ TRRP Report Required
- ☐ Check If Special Reporting Limits Are Needed

Carrier # Carrollton

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C.

ORIGINAL COPY

Analytical Report 464886

for

PLAINS ALL AMERICAN EH&S

Project Manager: Brad Ivy

C.S. Cayler

700376.049.01

14-JUN-13

Collected By: Client

12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-10-6-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

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

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Lakeland: Florida (E84098)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)
Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

14-JUN-13

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

Reference: XENCO Report No(s): **464886**
C.S. Cayler
Project Address: Lea County, NM

Brad Ivy:

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) 464886. 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. 464886 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 464886

PLAINS ALL AMERICAN EH&S, Midland, TX

C.S. Cayler

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-8A	W	06-11-13 12:45		464886-001
MW-9A	W	06-11-13 13:00		464886-002
MW-10A	W	06-11-13 12:15		464886-003
MW-12A	W	06-11-13 13:30		464886-004
MW-13A	W	06-11-13 12:00		464886-005
MW-14A	W	06-11-13 13:45		464886-006
MW-15	W	06-11-13 14:30		464886-007
MW-17	W	06-11-13 12:30		464886-008

CASE NARRATIVE

Client Name: PLAINS ALL AMERICAN EH&S

Project Name: C.S. Cayler

Project ID: *700376.049.01*
Work Order Number(s): *464886*

Report Date: *14-JUN-13*
Date Received: *06/11/2013*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:
Batch: LBA-916172 BTEX by EPA 8021B
SW8021BM

Batch 916172, Toluene recovered below QC limits in the Matrix Spike.
Samples affected are: 464886-006, -004, -003, -001, -002, -007, -005, -008.
The Laboratory Control Sample for Toluene is within laboratory Control Limits

Certificate of Analytical Results 464886

PLAINS ALL AMERICAN EH&S, Midland, TX

C.S. Cayler

Sample Id: **MW-8A** Matrix: Water Date Received:06.11.13 15.05

Lab Sample Id: 464886-001 Date Collected: 06.11.13 12.45

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

Tech: DYV % Moisture:

Analyst: DYV Date Prep: 06.13.13 14.00

Seq Number: 916172

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.113**	0.00100	mg/L	06.13.13 20.16		1
Toluene	108-88-3	**0.0621**	0.00200	mg/L	06.13.13 20.16		1
Ethylbenzene	100-41-4	**0.00774**	0.00100	mg/L	06.13.13 20.16		1
m,p-Xylenes	179601-23-1	**0.0190**	0.00200	mg/L	06.13.13 20.16		1
o-Xylene	95-47-6	**0.00695**	0.00100	mg/L	06.13.13 20.16		1
Total Xylenes	1330-20-7	**0.0260**	0.00100	mg/L	06.13.13 20.16		1
Total BTEX		**0.209**	0.00100	mg/L	06.13.13 20.16		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	93	%	80-120	06.13.13 20.16	
4-Bromofluorobenzene	460-00-4	85	%	80-120	06.13.13 20.16	

Certificate of Analytical Results 464886

PLAINS ALL AMERICAN EH&S, Midland, TX

C.S. Cayler

Sample Id: **MW-9A** Matrix: Water Date Received:06.11.13 15.05

Lab Sample Id: 464886-002 Date Collected: 06.11.13 13.00

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

Tech: DYV % Moisture:

Analyst: DYV Date Prep: 06.13.13 14.00

Seq Number: 916172

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.00885**	0.00100	mg/L	06.13.13 20.32		1
Toluene	108-88-3	ND	0.00200	mg/L	06.13.13 20.32	U	1
Ethylbenzene	100-41-4	**0.00103**	0.00100	mg/L	06.13.13 20.32		1
m,p-Xylenes	179601-23-1	ND	0.00200	mg/L	06.13.13 20.32	U	1
o-Xylene	95-47-6	ND	0.00100	mg/L	06.13.13 20.32	U	1
Total Xylenes	1330-20-7	ND	0.00100	mg/L	06.13.13 20.32	U	1
Total BTEX		**0.00988**	0.00100	mg/L	06.13.13 20.32		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	96	%	80-120	06.13.13 20.32	
4-Bromofluorobenzene	460-00-4	82	%	80-120	06.13.13 20.32	

Certificate of Analytical Results 464886

PLAINS ALL AMERICAN EH&S, Midland, TX

C.S. Cayler

Sample Id:	**MW-10A**	Matrix:	Water	Date Received:	06.11.13 15.05
Lab Sample Id:	464886-003	Date Collected:	06.11.13 12.15		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	DYV			% Moisture:	
Analyst:	DYV	Date Prep:	06.13.13 14.00		
Seq Number:	916172				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.0479**	0.00100	mg/L	06.13.13 20.48		1
Toluene	108-88-3	**0.0207**	0.00200	mg/L	06.13.13 20.48		1
Ethylbenzene	100-41-4	**0.00245**	0.00100	mg/L	06.13.13 20.48		1
m,p-Xylenes	179601-23-1	**0.00465**	0.00200	mg/L	06.13.13 20.48		1
o-Xylene	95-47-6	**0.00198**	0.00100	mg/L	06.13.13 20.48		1
Total Xylenes	1330-20-7	**0.00663**	0.00100	mg/L	06.13.13 20.48		1
Total BTEX		**0.0777**	0.00100	mg/L	06.13.13 20.48		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	90	%	80-120	06.13.13 20.48	
4-Bromofluorobenzene	460-00-4	80	%	80-120	06.13.13 20.48	

Certificate of Analytical Results 464886

PLAINS ALL AMERICAN EH&S, Midland, TX

C.S. Cayler

Sample Id: **MW-12A** Matrix: Water Date Received:06.11.13 15.05

Lab Sample Id: 464886-004 Date Collected: 06.11.13 13.30

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

Tech: DYV % Moisture:

Analyst: DYV Date Prep: 06.13.13 14.00

Seq Number: 916172

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**10.4**	0.0500	mg/L	06.14.13 09.00		50
Toluene	108-88-3	ND	0.100	mg/L	06.14.13 09.00	U	50
Ethylbenzene	100-41-4	**0.308**	0.0500	mg/L	06.14.13 09.00		50
m,p-Xylenes	179601-23-1	**0.368**	0.100	mg/L	06.14.13 09.00		50
o-Xylene	95-47-6	ND	0.0500	mg/L	06.14.13 09.00	U	50
Total Xylenes	1330-20-7	**0.368**	0.0500	mg/L	06.14.13 09.00		50
Total BTEX		**11.1**	0.0500	mg/L	06.14.13 09.00		50

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	92	%	80-120	06.14.13 09.00	
4-Bromofluorobenzene	460-00-4	82	%	80-120	06.14.13 09.00	

Certificate of Analytical Results 464886

PLAINS ALL AMERICAN EH&S, Midland, TX

C.S. Cayler

Sample Id: **MW-13A** Matrix: Water Date Received:06.11.13 15.05

Lab Sample Id: 464886-005 Date Collected: 06.11.13 12.00

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

Tech: DYV % Moisture:

Analyst: DYV Date Prep: 06.13.13 14.00

Seq Number: 916172

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	ND	0.00100	mg/L	06.14.13 08.12	U	1
Toluene	108-88-3	ND	0.00200	mg/L	06.14.13 08.12	U	1
Ethylbenzene	100-41-4	ND	0.00100	mg/L	06.14.13 08.12	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	mg/L	06.14.13 08.12	U	1
o-Xylene	95-47-6	ND	0.00100	mg/L	06.14.13 08.12	U	1
Total Xylenes	1330-20-7	ND	0.00100	mg/L	06.14.13 08.12	U	1
Total BTEX		ND	0.00100	mg/L	06.14.13 08.12	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	103	%	80-120	06.14.13 08.12	
4-Bromofluorobenzene	460-00-4	87	%	80-120	06.14.13 08.12	

Certificate of Analytical Results 464886

PLAINS ALL AMERICAN EH&S, Midland, TX

C.S. Cayler

Sample Id: **MW-14A** Matrix: Water Date Received:06.11.13 15.05

Lab Sample Id: 464886-006 Date Collected: 06.11.13 13.45

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

Tech: DYV % Moisture:

Analyst: DYV Date Prep: 06.13.13 14.00

Seq Number: 916172

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	ND	0.00100	mg/L	06.14.13 08.28	U	1
Toluene	108-88-3	ND	0.00200	mg/L	06.14.13 08.28	U	1
Ethylbenzene	100-41-4	ND	0.00100	mg/L	06.14.13 08.28	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	mg/L	06.14.13 08.28	U	1
o-Xylene	95-47-6	ND	0.00100	mg/L	06.14.13 08.28	U	1
Total Xylenes	1330-20-7	ND	0.00100	mg/L	06.14.13 08.28	U	1
Total BTEX		ND	0.00100	mg/L	06.14.13 08.28	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	100	%	80-120	06.14.13 08.28	
4-Bromofluorobenzene	460-00-4	85	%	80-120	06.14.13 08.28	

Certificate of Analytical Results 464886

PLAINS ALL AMERICAN EH&S, Midland, TX

C.S. Cayler

Sample Id:	**MW-15**	Matrix:	Water	Date Received:	06.11.13 15.05
Lab Sample Id:	464886-007	Date Collected:	06.11.13 14.30		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	DYV			% Moisture:	
Analyst:	DYV	Date Prep:	06.13.13 14.00		
Seq Number:	916172				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	ND	0.00100	mg/L	06.14.13 08.44	U	1
Toluene	108-88-3	ND	0.00200	mg/L	06.14.13 08.44	U	1
Ethylbenzene	100-41-4	ND	0.00100	mg/L	06.14.13 08.44	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	mg/L	06.14.13 08.44	U	1
o-Xylene	95-47-6	ND	0.00100	mg/L	06.14.13 08.44	U	1
Total Xylenes	1330-20-7	ND	0.00100	mg/L	06.14.13 08.44	U	1
Total BTEX		ND	0.00100	mg/L	06.14.13 08.44	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	93	%	80-120	06.14.13 08.44	
4-Bromofluorobenzene	460-00-4	81	%	80-120	06.14.13 08.44	

Certificate of Analytical Results 464886

PLAINS ALL AMERICAN EH&S, Midland, TX

C.S. Cayler

Sample Id: **MW-17** Matrix: Water Date Received:06.11.13 15.05

Lab Sample Id: 464886-008 Date Collected: 06.11.13 12.30

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

Tech: DYV % Moisture:

Analyst: DYV Date Prep: 06.13.13 14.00

Seq Number: 916172

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	ND	0.00100	mg/L	06.13.13 23.13	U	1
Toluene	108-88-3	ND	0.00200	mg/L	06.13.13 23.13	U	1
Ethylbenzene	100-41-4	ND	0.00100	mg/L	06.13.13 23.13	U	1
m,p-Xylenes	179601-23-1	ND	0.00200	mg/L	06.13.13 23.13	U	1
o-Xylene	95-47-6	ND	0.00100	mg/L	06.13.13 23.13	U	1
Total Xylenes	1330-20-7	ND	0.00100	mg/L	06.13.13 23.13	U	1
Total BTEX		ND	0.00100	mg/L	06.13.13 23.13	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	102	%	80-120	06.13.13 23.13	
4-Bromofluorobenzene	460-00-4	81	%	80-120	06.13.13 23.13	

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 quantiation 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

PLAINS ALL AMERICAN EH&S

C.S. Cayler

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 916172 Matrix: Water Date Prep: 06.13.13
MB Sample Id: 639656-1-BLK LCS Sample Id: 639656-1-BKS LCSD Sample Id: 639656-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00100	0.100	0.0815	82	0.0801	80	70-125	2	25	mg/L	06.13.13 17:51	
Toluene	<0.00200	0.100	0.0812	81	0.0804	80	70-125	1	25	mg/L	06.13.13 17:51	
Ethylbenzene	<0.00100	0.100	0.0893	89	0.0884	88	71-129	1	25	mg/L	06.13.13 17:51	
m,p-Xylenes	<0.00200	0.200	0.179	90	0.178	89	70-131	1	25	mg/L	06.13.13 17:51	
o-Xylene	<0.00100	0.100	0.0930	93	0.0926	93	71-133	0	25	mg/L	06.13.13 17:51	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	99		105		104		80-120	%	06.13.13 17:51
4-Bromofluorobenzene	83		101		106		80-120	%	06.13.13 17:51

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 916172 Matrix: Water Date Prep: 06.13.13
Parent Sample Id: 464886-001 MS Sample Id: 464886-001 S MSD Sample Id: 464886-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	0.113	0.100	0.202	89	0.203	90	70-125	0	25	mg/L	06.13.13 21:37	
Toluene	0.0621	0.100	0.128	66	0.140	78	70-125	9	25	mg/L	06.13.13 21:37	X
Ethylbenzene	0.00774	0.100	0.0860	78	0.0927	85	71-129	7	25	mg/L	06.13.13 21:37	
m,p-Xylenes	0.0190	0.200	0.174	78	0.189	85	70-131	8	25	mg/L	06.13.13 21:37	
o-Xylene	0.00695	0.100	0.0872	80	0.0952	88	71-133	9	25	mg/L	06.13.13 21:37	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	93		98		80-120	%	06.13.13 21:37
4-Bromofluorobenzene	89		90		80-120	%	06.13.13 21:37

Xenco Laboratories

The Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12600 West I-20 East
Odessa, Texas 79765

Phone: 432-563-1800
Fax: 432-563-1713

Project Manager: Brad Ivy
Company Name: Talon/LPE
Company Address: 921 N. Bivins St.
City/State/Zip: Amarillo, TX 79107
Telephone No: (432) 978-5414
Fax No: 806 467-0622
Sampler Signature: [signature]
e-mail: Bivy@talonlpe.com

Project Name: C.S. Cayler
Project #: 700376.049.01
Project Loc: Lea Co., NM
PO #: Plains
Report Format: ☑ Standard ☐ TRRP ☐ NPDES

(lab use only)
ORDER #: 464886

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	Ice	HNO_3	HCl	H_2SO_4	NaOH	$Na_2S_2O_3$	None	Other (Specify)	Matrix (DW=Drinking Water SL=Sludge GW=Groundwater S=Soil/Solid NP=Non-Potable Specify Other)	TPH: 418.1 8015M 8015B	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.				RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
	MW-8A			6.11.13	12:45		3	X		X						GW									X							X
	MW-9A			6.11.13	13:00		3	X		X						GW									X							X
	MW-10A			6.11.13	12:15		3	X		X						GW									X							X
	MW-12A			6.11.13	13:30		3	X		X						GW									X							X
	MW-13A			6.11.13	12:00		3	X		X						GW									X							X
	MW-14A			6.11.13	13:45		3	X		X						GW									X							X
	MW-15			6.11.13	14:30		3	X		X						GW									X							X
	MW-17			6.11.13	12:30		3	X		X						GW									X							X

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	6.11.13	15:05	[signature]	6-11-13	3:05
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by ELOT: [signature]	6-12-13	11:00

Laboratory Comments: 2.0
Sample Containers Intact? Y N
VOCs Free of Headspace? Y N
Labels on container(s) Y N
Custody seals on container(s) Y N
Custody seals on cooler(s) Y N
Sample Hand Delivered Y N
by Sampler/Client Rep. ? Y N
by Courier? UPS DHL FedEx Lone Star
Temperature Upon Receipt: As Read 8.2 Corrected 8.2 °C

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: PLAINS ALL AMERICAN EH&S

Date/ Time Received: 06/11/2013 03:05:00 PM

Work Order #: 464886

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

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

Analyst:	PH Device/Lot#:

Checklist completed by: Kelsey Brooks Date: 06/12/2013

Checklist reviewed by: Kelsey Brooks Date: 06/12/2013

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972•242•7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Brad Ivy
Talon LPE-Amarillo
921 North Bivins
Amarillo, TX, 79107

Report Date: October 10, 2013

Work Order: 13100207

Project Location: Lea Co. New Mexico
Project Name: C.S. Taylor
Project Number: 700376.049.01
SRS #: 2002-10250

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
343077	MW-8A	water	2013-09-29	06:40	2013-10-02
343078	MW-9A	water	2013-09-29	07:00	2013-10-02
343079	MW-10A	water	2013-09-29	06:20	2013-10-02
343080	MW-13A	water	2013-09-29	06:00	2013-10-02
343081	MW-14A	water	2013-09-29	07:20	2013-10-02
343082	MW-15	water	2013-09-29	07:40	2013-10-02
343083	MW-17	water	2013-09-29	08:00	2013-10-02

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

Report Contents

Case Narrative

Samples for project C.S. Taylor were received by TraceAnalysis, Inc. on 2013-10-02 and assigned to work order 13100207. Samples for work order 13100207 were received intact without headspace and at a temperature of 2.5 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	89498	2013-10-02 at 13:56	105674	2013-10-02 at 13:56
BTEX	S 8021B	89534	2013-10-03 at 15:28	105713	2013-10-03 at 15:28
BTEX	S 8021B	89535	2013-10-03 at 15:28	105715	2013-10-03 at 15:28
PAH	S 8270D	89658	2013-10-04 at 15:00	105853	2013-10-10 at 11:24

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 13100207 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 343077 - MW-8A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	105713	Date Analyzed:	2013-10-03	Analyzed By:	JS
Prep Batch:	89534	Sample Preparation:	2013-10-03	Prepared By:	JS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene		1	**1.56**	mg/L	20	0.00100
Toluene		1	**0.328**	mg/L	20	0.00100
Ethylbenzene	U	1	<0.0200	mg/L	20	0.00100
Xylene		1	**0.184**	mg/L	20	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.11	mg/L	20	2.00	106	75.4 - 120
4-Bromofluorobenzene (4-BFB)			2.10	mg/L	20	2.00	105	74.6 - 120

Sample: 343077 - MW-8A

Laboratory:	Lubbock				
Analysis:	PAH	Analytical Method:	S 8270D	Prep Method:	S 3510C
QC Batch:	105853	Date Analyzed:	2013-10-10	Analyzed By:	MN
Prep Batch:	89658	Sample Preparation:	2013-10-04	Prepared By:	MN

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Naphthalene	U	1	<0.000184	mg/L	0.922	0.000200
2-Methylnaphthalene	U	1	<0.000184	mg/L	0.922	0.000200
1-Methylnaphthalene	U		<0.000184	mg/L	0.922	0.000200
Acenaphthylene	U	1	<0.000184	mg/L	0.922	0.000200
Acenaphthene	U	1	<0.000184	mg/L	0.922	0.000200
Dibenzofuran	U	1	<0.000184	mg/L	0.922	0.000200
Fluorene	U	1	<0.000184	mg/L	0.922	0.000200
Anthracene	Qs,U	1	<0.000184	mg/L	0.922	0.000200
Phenanthrene	U	1	<0.000184	mg/L	0.922	0.000200
Fluoranthene	Qs,U	1	<0.000184	mg/L	0.922	0.000200
Pyrene	U	1	<0.000184	mg/L	0.922	0.000200
Benzo(a)anthracene	Qc,U	1	<0.000184	mg/L	0.922	0.000200
Chrysene	U	1	<0.000184	mg/L	0.922	0.000200

continued ...

sample 343077 continued . . .

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzo(b)fluoranthene	U	1	<0.000184	mg/L	0.922	0.000200
Benzo(k)fluoranthene	U	1	<0.000184	mg/L	0.922	0.000200
Benzo(a)pyrene	U	1	<0.000184	mg/L	0.922	0.000200
Indeno(1,2,3-cd)pyrene	U	1	<0.000184	mg/L	0.922	0.000200
Dibenzo(a,h)anthracene	U	1	<0.000184	mg/L	0.922	0.000200
Benzo(g,h,i)perylene	U	1	<0.000184	mg/L	0.922	0.000200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5			0.0520	mg/L	0.922	0.0800	65	40 - 110
2-Fluorobiphenyl			0.0494	mg/L	0.922	0.0800	62	50 - 110
Terphenyl-d14			0.0738	mg/L	0.922	0.0800	92	50 - 135

Sample: 343078 - MW-9A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	105713	Date Analyzed:	2013-10-03	Analyzed By:	JS
Prep Batch:	89534	Sample Preparation:	2013-10-03	Prepared By:	JS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	**0.0298**	mg/L	1	0.00100
Toluene	U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	1	<0.00100	mg/L	1	0.00100
Xylene	U	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.108	mg/L	1	0.100	108	75.4 - 120
4-Bromofluorobenzene (4-BFB)			0.108	mg/L	1	0.100	108	74.6 - 120

Sample: 343078 - MW-9A

Laboratory:	Lubbock				
Analysis:	PAH	Analytical Method:	S 8270D	Prep Method:	S 3510C
QC Batch:	105853	Date Analyzed:	2013-10-10	Analyzed By:	MN
Prep Batch:	89658	Sample Preparation:	2013-10-04	Prepared By:	MN

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Naphthalene	U	1	<0.000197	mg/L	0.985	0.000200
2-Methylnaphthalene	U	1	<0.000197	mg/L	0.985	0.000200
1-Methylnaphthalene	U		<0.000197	mg/L	0.985	0.000200
Acenaphthylene	U	1	<0.000197	mg/L	0.985	0.000200
Acenaphthene	U	1	<0.000197	mg/L	0.985	0.000200
Dibenzofuran	U	1	<0.000197	mg/L	0.985	0.000200
Fluorene	U	1	<0.000197	mg/L	0.985	0.000200
Anthracene	Qs,U	1	<0.000197	mg/L	0.985	0.000200
Phenanthrene	U	1	<0.000197	mg/L	0.985	0.000200
Fluoranthene	Qs,U	1	<0.000197	mg/L	0.985	0.000200
Pyrene	U	1	<0.000197	mg/L	0.985	0.000200
Benzo(a)anthracene	Qc,U	1	<0.000197	mg/L	0.985	0.000200
Chrysene	U	1	<0.000197	mg/L	0.985	0.000200
Benzo(b)fluoranthene	U	1	<0.000197	mg/L	0.985	0.000200
Benzo(k)fluoranthene	U	1	<0.000197	mg/L	0.985	0.000200
Benzo(a)pyrene	U	1	<0.000197	mg/L	0.985	0.000200
Indeno(1,2,3-cd)pyrene	U	1	<0.000197	mg/L	0.985	0.000200
Dibenzo(a,h)anthracene	U	1	<0.000197	mg/L	0.985	0.000200
Benzo(g,h,i)perylene	U	1	<0.000197	mg/L	0.985	0.000200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5			0.0621	mg/L	0.985	0.0800	78	40 - 110
2-Fluorobiphenyl			0.0550	mg/L	0.985	0.0800	69	50 - 110
Terphenyl-d14			0.0840	mg/L	0.985	0.0800	105	50 - 135

Sample: 343079 - MW-10A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	105715	Date Analyzed:	2013-10-03	Analyzed By:	JS
Prep Batch:	89535	Sample Preparation:	2013-10-03	Prepared By:	JS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Qr	1	**0.00200**	mg/L	1	0.00100
Toluene	Qr,U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	Qr,U	1	<0.00100	mg/L	1	0.00100
Xylene	Qr,U	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.105	mg/L	1	0.100	105	75.4 - 120
4-Bromofluorobenzene (4-BFB)			0.105	mg/L	1	0.100	105	74.6 - 120

Sample: 343079 - MW-10A

Laboratory:	Lubbock				
Analysis:	PAH	Analytical Method:	S 8270D	Prep Method:	S 3510C
QC Batch:	105853	Date Analyzed:	2013-10-10	Analyzed By:	MN
Prep Batch:	89658	Sample Preparation:	2013-10-04	Prepared By:	MN

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Naphthalene	U	1	<0.000197	mg/L	0.985	0.000200
2-Methylnaphthalene	U	1	<0.000197	mg/L	0.985	0.000200
1-Methylnaphthalene	U		<0.000197	mg/L	0.985	0.000200
Acenaphthylene	U	1	<0.000197	mg/L	0.985	0.000200
Acenaphthene	U	1	<0.000197	mg/L	0.985	0.000200
Dibenzofuran	U	1	<0.000197	mg/L	0.985	0.000200
Fluorene	U	1	<0.000197	mg/L	0.985	0.000200
Anthracene	Qs,U	1	<0.000197	mg/L	0.985	0.000200
Phenanthrene	U	1	<0.000197	mg/L	0.985	0.000200
Fluoranthene	Qs,U	1	<0.000197	mg/L	0.985	0.000200
Pyrene	U	1	<0.000197	mg/L	0.985	0.000200
Benzo(a)anthracene	Qc,U	1	<0.000197	mg/L	0.985	0.000200
Chrysene	U	1	<0.000197	mg/L	0.985	0.000200
Benzo(b)fluoranthene	U	1	<0.000197	mg/L	0.985	0.000200
Benzo(k)fluoranthene	U	1	<0.000197	mg/L	0.985	0.000200
Benzo(a)pyrene	U	1	<0.000197	mg/L	0.985	0.000200
Indeno(1,2,3-cd)pyrene	U	1	<0.000197	mg/L	0.985	0.000200
Dibenzo(a,h)anthracene	U	1	<0.000197	mg/L	0.985	0.000200
Benzo(g,h,i)perylene	U	1	<0.000197	mg/L	0.985	0.000200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5			0.0561	mg/L	0.985	0.0800	70	40 - 110
2-Fluorobiphenyl			0.0509	mg/L	0.985	0.0800	64	50 - 110
Terphenyl-d14			0.0815	mg/L	0.985	0.0800	102	50 - 135

Sample: 343080 - MW-13A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	105674	Date Analyzed:	2013-10-02	Analyzed By:	JS
Prep Batch:	89498	Sample Preparation:	2013-10-02	Prepared By:	JS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	Qs,U	1	<0.00100	mg/L	1	0.00100
Toluene	U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	1	<0.00100	mg/L	1	0.00100
Xylene	U	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0957	mg/L	1	0.100	96	75.4 - 120
4-Bromofluorobenzene (4-BFB)			0.0939	mg/L	1	0.100	94	74.6 - 120

Sample: 343080 - MW-13A

Laboratory:	Lubbock				
Analysis:	PAH	Analytical Method:	S 8270D	Prep Method:	S 3510C
QC Batch:	105853	Date Analyzed:	2013-10-10	Analyzed By:	MN
Prep Batch:	89658	Sample Preparation:	2013-10-04	Prepared By:	MN

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Naphthalene	U	1	<0.000184	mg/L	0.922	0.000200
2-Methylnaphthalene	U	1	<0.000184	mg/L	0.922	0.000200
1-Methylnaphthalene	U		<0.000184	mg/L	0.922	0.000200
Acenaphthylene	U	1	<0.000184	mg/L	0.922	0.000200
Acenaphthene	U	1	<0.000184	mg/L	0.922	0.000200
Dibenzofuran	U	1	<0.000184	mg/L	0.922	0.000200
Fluorene	U	1	<0.000184	mg/L	0.922	0.000200
Anthracene	Qs,U	1	<0.000184	mg/L	0.922	0.000200
Phenanthrene	U	1	<0.000184	mg/L	0.922	0.000200
Fluoranthene	Qs,U	1	<0.000184	mg/L	0.922	0.000200
Pyrene	U	1	<0.000184	mg/L	0.922	0.000200
Benzo(a)anthracene	Qc,U	1	<0.000184	mg/L	0.922	0.000200
Chrysene	U	1	<0.000184	mg/L	0.922	0.000200
Benzo(b)fluoranthene	U	1	<0.000184	mg/L	0.922	0.000200
Benzo(k)fluoranthene	U	1	<0.000184	mg/L	0.922	0.000200
Benzo(a)pyrene	U	1	<0.000184	mg/L	0.922	0.000200
Indeno(1,2,3-cd)pyrene	U	1	<0.000184	mg/L	0.922	0.000200
Dibenzo(a,h)anthracene	U	1	<0.000184	mg/L	0.922	0.000200

continued ...

sample 343080 continued . . .

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzo(g,h,i)perylene	U	1	<0.000184	mg/L	0.922	0.000200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5			0.0543	mg/L	0.922	0.0800	68	40 - 110
2-Fluorobiphenyl			0.0520	mg/L	0.922	0.0800	65	50 - 110
Terphenyl-d14			0.0803	mg/L	0.922	0.0800	100	50 - 135

Sample: 343081 - MW-14A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	105674	Date Analyzed:	2013-10-02	Analyzed By:	JS
Prep Batch:	89498	Sample Preparation:	2013-10-02	Prepared By:	JS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Qs,U	1	<0.00100	mg/L	1	0.00100
Toluene	U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	1	<0.00100	mg/L	1	0.00100
Xylene	U	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0943	mg/L	1	0.100	94	75.4 - 120
4-Bromofluorobenzene (4-BFB)			0.0929	mg/L	1	0.100	93	74.6 - 120

Sample: 343081 - MW-14A

Laboratory:	Lubbock				
Analysis:	PAH	Analytical Method:	S 8270D	Prep Method:	S 3510C
QC Batch:	105853	Date Analyzed:	2013-10-10	Analyzed By:	MN
Prep Batch:	89658	Sample Preparation:	2013-10-04	Prepared By:	MN

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Naphthalene	U	1	<0.000199	mg/L	0.995	0.000200
2-Methylnaphthalene	U	1	<0.000199	mg/L	0.995	0.000200
1-Methylnaphthalene	U		<0.000199	mg/L	0.995	0.000200

continued . . .

sample 343081 continued . . .

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Acenaphthylene	U	1	<0.000199	mg/L	0.995	0.000200
Acenaphthene	U	1	<0.000199	mg/L	0.995	0.000200
Dibenzofuran	U	1	<0.000199	mg/L	0.995	0.000200
Fluorene	U	1	<0.000199	mg/L	0.995	0.000200
Anthracene	Qs,U	1	<0.000199	mg/L	0.995	0.000200
Phenanthrene	U	1	<0.000199	mg/L	0.995	0.000200
Fluoranthene	Qs,U	1	<0.000199	mg/L	0.995	0.000200
Pyrene	U	1	<0.000199	mg/L	0.995	0.000200
Benzo(a)anthracene	Qc,U	1	<0.000199	mg/L	0.995	0.000200
Chrysene	U	1	<0.000199	mg/L	0.995	0.000200
Benzo(b)fluoranthene	U	1	<0.000199	mg/L	0.995	0.000200
Benzo(k)fluoranthene	U	1	<0.000199	mg/L	0.995	0.000200
Benzo(a)pyrene	U	1	<0.000199	mg/L	0.995	0.000200
Indeno(1,2,3-cd)pyrene	U	1	<0.000199	mg/L	0.995	0.000200
Dibenzo(a,h)anthracene	U	1	<0.000199	mg/L	0.995	0.000200
Benzo(g,h,i)perylene	U	1	<0.000199	mg/L	0.995	0.000200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5			0.0641	mg/L	0.995	0.0800	80	40 - 110
2-Fluorobiphenyl			0.0600	mg/L	0.995	0.0800	75	50 - 110
Terphenyl-d14			0.102	mg/L	0.995	0.0800	128	50 - 135

Sample: 343082 - MW-15

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	105715	Date Analyzed:	2013-10-03	Analyzed By:	JS
Prep Batch:	89535	Sample Preparation:	2013-10-03	Prepared By:	JS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Qr,U	1	<0.00100	mg/L	1	0.00100
Toluene	Qr,U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	Qr,U	1	<0.00100	mg/L	1	0.00100
Xylene	Qr,U	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.104	mg/L	1	0.100	104	75.4 - 120

continued . . .

sample continued . . .

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			0.105	mg/L	1	0.100	105	74.6 - 120

Sample: 343083 - MW-17

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	105715	Date Analyzed:	2013-10-03	Analyzed By:	JS
Prep Batch:	89535	Sample Preparation:	2013-10-03	Prepared By:	JS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Qr,U	1	<0.00100	mg/L	1	0.00100
Toluene	Qr,U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	Qr,U	1	<0.00100	mg/L	1	0.00100
Xylene	Qr,U	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.101	mg/L	1	0.100	101	75.4 - 120
4-Bromofluorobenzene (4-BFB)			0.101	mg/L	1	0.100	101	74.6 - 120

Method Blanks

Method Blank (1) QC Batch: 105674

QC Batch: 105674 | Date Analyzed: 2013-10-02 | Analyzed By: JS
Prep Batch: 89498 | QC Preparation: 2013-10-02 | Prepared By: JS

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.000567	mg/L	0.001
Toluene		1	<0.000518	mg/L	0.001
Ethylbenzene		1	<0.000518	mg/L	0.001
Xylene		1	<0.000548	mg/L	0.001

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0953	mg/L	1	0.100	95	75.4 - 120
4-Bromofluorobenzene (4-BFB)			0.0952	mg/L	1	0.100	95	74.6 - 120

Method Blank (1) QC Batch: 105713

QC Batch: 105713 | Date Analyzed: 2013-10-03 | Analyzed By: JS
Prep Batch: 89534 | QC Preparation: 2013-10-03 | Prepared By: JS

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.000567	mg/L	0.001
Toluene		1	<0.000518	mg/L	0.001
Ethylbenzene		1	<0.000518	mg/L	0.001
Xylene		1	<0.000548	mg/L	0.001

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.105	mg/L	1	0.100	105	75.4 - 120
4-Bromofluorobenzene (4-BFB)			0.104	mg/L	1	0.100	104	74.6 - 120

Method Blank (1) QC Batch: 105715

QC Batch: 105715 | Date Analyzed: 2013-10-03 | Analyzed By: JS
Prep Batch: 89535 | QC Preparation: 2013-10-03 | Prepared By: JS

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.000567	mg/L	0.001
Toluene		1	<0.000518	mg/L	0.001
Ethylbenzene		1	<0.000518	mg/L	0.001
Xylene		1	<0.000548	mg/L	0.001

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.106	mg/L	1	0.100	106	75.4 - 120
4-Bromofluorobenzene (4-BFB)			0.107	mg/L	1	0.100	107	74.6 - 120

Method Blank (1) QC Batch: 105853

QC Batch: 105853 | Date Analyzed: 2013-10-10 | Analyzed By: MN
Prep Batch: 89658 | QC Preparation: 2013-10-04 | Prepared By: MN

Parameter	Flag	Cert	MDL Result	Units	RL
Naphthalene		1	<0.000121	mg/L	0.0002
2-Methylnaphthalene		1	<0.0000913	mg/L	0.0002
1-Methylnaphthalene			<0.000109	mg/L	0.0002
Acenaphthylene		1	<0.000100	mg/L	0.0002
Acenaphthene		1	<0.000122	mg/L	0.0002
Dibenzofuran		1	<0.000108	mg/L	0.0002
Fluorene		1	<0.000100	mg/L	0.0002
Anthracene		1	<0.0000791	mg/L	0.0002
Phenanthrene		1	<0.0000824	mg/L	0.0002
Fluoranthene		1	<0.000124	mg/L	0.0002
Pyrene		1	<0.0000691	mg/L	0.0002
Benzo(a)anthracene		1	<0.000101	mg/L	0.0002
Chrysene		1	<0.0000769	mg/L	0.0002
Benzo(b)fluoranthene		1	<0.0000813	mg/L	0.0002
Benzo(k)fluoranthene		1	<0.0000790	mg/L	0.0002
Benzo(a)pyrene		1	<0.0000701	mg/L	0.0002
Indeno(1,2,3-cd)pyrene		1	<0.0000770	mg/L	0.0002
Dibenzo(a,h)anthracene		1	<0.0000851	mg/L	0.0002
Benzo(g,h,i)perylene		1	<0.0000798	mg/L	0.0002

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5			0.0427	mg/L	1	0.0800	53	40 - 110
2-Fluorobiphenyl			0.0412	mg/L	1	0.0800	52	50 - 110

continued ...

method blank continued . . .

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Terphenyl-d14			0.0540	mg/L	1	0.0800	68	50 - 135

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 105674 | Date Analyzed: 2013-10-02 | Analyzed By: JS
Prep Batch: 89498 | QC Preparation: 2013-10-02 | Prepared By: JS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	0.0936	mg/L	1	0.100	<0.000567	94	74.3 - 120
Toluene		1	0.0943	mg/L	1	0.100	<0.000518	94	77.6 - 120
Ethylbenzene		1	0.0997	mg/L	1	0.100	<0.000518	100	78.5 - 120
Xylene		1	0.292	mg/L	1	0.300	<0.000548	97	77.6 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	0.0894	mg/L	1	0.100	<0.000567	89	74.3 - 120	5	20
Toluene		1	0.0904	mg/L	1	0.100	<0.000518	90	77.6 - 120	4	20
Ethylbenzene		1	0.0957	mg/L	1	0.100	<0.000518	96	78.5 - 120	4	20
Xylene		1	0.281	mg/L	1	0.300	<0.000548	94	77.6 - 120	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0925	0.0887	mg/L	1	0.100	92	89	75.4 - 120
4-Bromofluorobenzene (4-BFB)	0.0935	0.0897	mg/L	1	0.100	94	90	74.6 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 105713 | Date Analyzed: 2013-10-03 | Analyzed By: JS
Prep Batch: 89534 | QC Preparation: 2013-10-03 | Prepared By: JS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	0.0981	mg/L	1	0.100	<0.000567	98	74.3 - 120
Toluene		1	0.0994	mg/L	1	0.100	<0.000518	99	77.6 - 120
Ethylbenzene		1	0.101	mg/L	1	0.100	<0.000518	101	78.5 - 120
Xylene		1	0.305	mg/L	1	0.300	<0.000548	102	77.6 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	0.0998	mg/L	1	0.100	<0.000567	100	74.3 - 120	2	20
Toluene		1	0.0998	mg/L	1	0.100	<0.000518	100	77.6 - 120	0	20
Ethylbenzene		1	0.101	mg/L	1	0.100	<0.000518	101	78.5 - 120	0	20
Xylene		1	0.306	mg/L	1	0.300	<0.000548	102	77.6 - 120	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.100	0.102	mg/L	1	0.100	100	102	75.4 - 120
4-Bromofluorobenzene (4-BFB)	0.100	0.102	mg/L	1	0.100	100	102	74.6 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 105715 | Date Analyzed: 2013-10-03 | Analyzed By: JS
Prep Batch: 89535 | QC Preparation: 2013-10-03 | Prepared By: JS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	0.104	mg/L	1	0.100	<0.000567	104	74.3 - 120
Toluene		1	0.103	mg/L	1	0.100	<0.000518	103	77.6 - 120
Ethylbenzene		1	0.105	mg/L	1	0.100	<0.000518	105	78.5 - 120
Xylene		1	0.317	mg/L	1	0.300	<0.000548	106	77.6 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	0.102	mg/L	1	0.100	<0.000567	102	74.3 - 120	2	20
Toluene		1	0.101	mg/L	1	0.100	<0.000518	101	77.6 - 120	2	20
Ethylbenzene		1	0.103	mg/L	1	0.100	<0.000518	103	78.5 - 120	2	20
Xylene		1	0.313	mg/L	1	0.300	<0.000548	104	77.6 - 120	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.102	0.101	mg/L	1	0.100	102	101	75.4 - 120
4-Bromofluorobenzene (4-BFB)	0.103	0.103	mg/L	1	0.100	103	103	74.6 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 105853 | Date Analyzed: 2013-10-10 | Analyzed By: MN
Prep Batch: 89658 | QC Preparation: 2013-10-04 | Prepared By: MN

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Naphthalene		1	0.0444	mg/L	1	0.0800	<0.000121	56	40 - 100
2-Methylnaphthalene		1	0.0415	mg/L	1	0.0800	<0.0000913	52	45 - 105
1-Methylnaphthalene			0.0429	mg/L	1	0.0800	<0.000109	54	34.3 - 120
Acenaphthylene		1	0.0483	mg/L	1	0.0800	<0.000100	60	55 - 105
Acenaphthene		1	0.0437	mg/L	1	0.0800	<0.000122	55	45 - 110
Dibenzofuran		1	0.0505	mg/L	1	0.0800	<0.000108	63	55 - 105
Fluorene		1	0.0453	mg/L	1	0.0800	<0.000100	57	50 - 110
Anthracene	Qs	Qs 1	0.0378	mg/L	1	0.0800	<0.0000791	47	55 - 110
Phenanthrene		1	0.0404	mg/L	1	0.0800	<0.0000824	50	50 - 115
Fluoranthene	Qs	Qs 1	0.0383	mg/L	1	0.0800	<0.000124	48	55 - 115
Pyrene		1	0.0451	mg/L	1	0.0800	<0.0000691	56	50 - 130
Benzo(a)anthracene		1	0.0544	mg/L	1	0.0800	<0.000101	68	55 - 110
Chrysene		1	0.0859	mg/L	1	0.0800	<0.0000769	107	55 - 110
Benzo(b)fluoranthene		1	0.0460	mg/L	1	0.0800	<0.0000813	58	45 - 120
Benzo(k)fluoranthene		1	0.0603	mg/L	1	0.0800	<0.0000790	75	45 - 125
Benzo(a)pyrene		1	0.0499	mg/L	1	0.0800	<0.0000701	62	55 - 110
Indeno(1,2,3-cd)pyrene		1	0.0537	mg/L	1	0.0800	<0.0000770	67	45 - 125
Dibenzo(a,h)anthracene		1	0.0702	mg/L	1	0.0800	<0.0000851	88	40 - 125
Benzo(g,h,i)perylene		1	0.0481	mg/L	1	0.0800	<0.0000798	60	40 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Naphthalene		1	0.0441	mg/L	1	0.0800	<0.000121	55	40 - 100	1	20
2-Methylnaphthalene		1	0.0430	mg/L	1	0.0800	<0.0000913	54	45 - 105	4	20
1-Methylnaphthalene			0.0444	mg/L	1	0.0800	<0.000109	56	34.3 - 120	3	20
Acenaphthylene		1	0.0492	mg/L	1	0.0800	<0.000100	62	55 - 105	2	20
Acenaphthene		1	0.0457	mg/L	1	0.0800	<0.000122	57	45 - 110	4	20
Dibenzofuran		1	0.0528	mg/L	1	0.0800	<0.000108	66	55 - 105	4	20
Fluorene		1	0.0483	mg/L	1	0.0800	<0.000100	60	50 - 110	6	20
Anthracene	Qs	Qs 1	0.0398	mg/L	1	0.0800	<0.0000791	50	55 - 110	5	20
Phenanthrene		1	0.0425	mg/L	1	0.0800	<0.0000824	53	50 - 115	5	20
Fluoranthene	Qs	Qs 1	0.0398	mg/L	1	0.0800	<0.000124	50	55 - 115	4	20
Pyrene		1	0.0474	mg/L	1	0.0800	<0.0000691	59	50 - 130	5	20
Benzo(a)anthracene		1	0.0547	mg/L	1	0.0800	<0.000101	68	55 - 110	0	20
Chrysene		1	0.0869	mg/L	1	0.0800	<0.0000769	109	55 - 110	1	20
Benzo(b)fluoranthene		1	0.0477	mg/L	1	0.0800	<0.0000813	60	45 - 120	4	20
Benzo(k)fluoranthene		1	0.0622	mg/L	1	0.0800	<0.0000790	78	45 - 125	3	20
Benzo(a)pyrene		1	0.0506	mg/L	1	0.0800	<0.0000701	63	55 - 110	1	20

continued ...

control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Indeno(1,2,3-cd)pyrene		1	0.0544	mg/L	1	0.0800	<0.0000770	68	45 - 125	1	20
Dibenzo(a,h)anthracene		1	0.0737	mg/L	1	0.0800	<0.0000851	92	40 - 125	5	20
Benzo(g,h,i)perylene		1	0.0496	mg/L	1	0.0800	<0.0000798	62	40 - 125	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Nitrobenzene-d5	0.0594	0.0592	mg/L	1	0.0800	74	74	40 - 110
2-Fluorobiphenyl	0.0562	0.0577	mg/L	1	0.0800	70	72	50 - 110
Terphenyl-d14	0.0640	0.0689	mg/L	1	0.0800	80	86	50 - 135

Matrix Spike (MS-1) Spiked Sample: 343072

QC Batch: 105674 | Date Analyzed: 2013-10-02 | Analyzed By: JS
Prep Batch: 89498 | QC Preparation: 2013-10-02 | Prepared By: JS

Param		F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	Qs	Qs	1	2.33	mg/L	1	0.100	2.32	10	50.2 - 129
Toluene			1	0.0851	mg/L	1	0.100	0.0008	84	58.1 - 129
Ethylbenzene			1	0.0912	mg/L	1	0.100	0.001	90	58.1 - 127
Xylene			1	0.276	mg/L	1	0.300	0.001	92	53.1 - 128

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	Qs	Qs	1	2.31	mg/L	1	0.100	2.32	-8	50.2 - 129	1	20
Toluene			1	0.0893	mg/L	1	0.100	0.0008	88	58.1 - 129	5	20
Ethylbenzene			1	0.0977	mg/L	1	0.100	0.001	97	58.1 - 127	7	20
Xylene			1	0.292	mg/L	1	0.300	0.001	97	53.1 - 128	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.108	0.109	mg/L	1	0.1	108	109	75.4 - 120
4-Bromofluorobenzene (4-BFB)	0.112	0.114	mg/L	1	0.1	112	114	74.6 - 120

Matrix Spike (MS-1) Spiked Sample: 343036

QC Batch: 105713 | Date Analyzed: 2013-10-03 | Analyzed By: JS
Prep Batch: 89534 | QC Preparation: 2013-10-03 | Prepared By: JS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.67	mg/L	10	1.00	0.652	102	50.2 - 129
Toluene		1	0.969	mg/L	10	1.00	<0.00518	97	58.1 - 129
Ethylbenzene		1	1.07	mg/L	10	1.00	0.0484	102	58.1 - 127
Xylene		1	3.10	mg/L	10	3.00	0.073	101	53.1 - 128

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.61	mg/L	10	1.00	0.652	96	50.2 - 129	4	20
Toluene		1	0.902	mg/L	10	1.00	<0.00518	90	58.1 - 129	7	20
Ethylbenzene		1	1.00	mg/L	10	1.00	0.0484	95	58.1 - 127	7	20
Xylene		1	2.92	mg/L	10	3.00	0.073	95	53.1 - 128	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.04	1.02	mg/L	10	1	104	102	75.4 - 120
4-Bromofluorobenzene (4-BFB)	1.02	1.01	mg/L	10	1	102	101	74.6 - 120

Matrix Spike (MS-1) Spiked Sample: 343082

QC Batch: 105715 | Date Analyzed: 2013-10-03 | Analyzed By: JS
Prep Batch: 89535 | QC Preparation: 2013-10-03 | Prepared By: JS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	0.0867	mg/L	1	0.100	<0.000567	87	50.2 - 129
Toluene		1	0.0849	mg/L	1	0.100	<0.000518	85	58.1 - 129
Ethylbenzene		1	0.0860	mg/L	1	0.100	<0.000518	86	58.1 - 127
Xylene		1	0.262	mg/L	1	0.300	<0.000548	87	53.1 - 128

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	Qr	Qr 1	0.0647	mg/L	1	0.100	<0.000567	65	50.2 - 129	29	20
Toluene	Qr	Qr 1	0.0624	mg/L	1	0.100	<0.000518	62	58.1 - 129	30	20

continued . . .

matrix spikes continued ...

Param		F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Ethylbenzene	Qr	Qr	1	0.0647	mg/L	1	0.100	<0.000518	65	58.1 - 127	28	20
Xylene	Qr	Qr	1	0.196	mg/L	1	0.300	<0.000548	65	53.1 - 128	29	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0977	0.0998	mg/L	1	0.1	98	100	75.4 - 120
4-Bromofluorobenzene (4-BFB)	0.0988	0.101	mg/L	1	0.1	99	101	74.6 - 120

Calibration Standards

Standard (CCV-1)

QC Batch: 105674 | Date Analyzed: 2013-10-02 | Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.0940	94	80 - 120	2013-10-02
Toluene		1	mg/L	0.100	0.0947	95	80 - 120	2013-10-02
Ethylbenzene		1	mg/L	0.100	0.0966	97	80 - 120	2013-10-02
Xylene		1	mg/L	0.300	0.290	97	80 - 120	2013-10-02

Standard (CCV-2)

QC Batch: 105674 | Date Analyzed: 2013-10-02 | Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.0920	92	80 - 120	2013-10-02
Toluene		1	mg/L	0.100	0.0911	91	80 - 120	2013-10-02
Ethylbenzene		1	mg/L	0.100	0.0931	93	80 - 120	2013-10-02
Xylene		1	mg/L	0.300	0.280	93	80 - 120	2013-10-02

Standard (CCV-1)

QC Batch: 105713 | Date Analyzed: 2013-10-03 | Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.0987	99	80 - 120	2013-10-03
Toluene		1	mg/L	0.100	0.0998	100	80 - 120	2013-10-03
Ethylbenzene		1	mg/L	0.100	0.104	104	80 - 120	2013-10-03
Xylene		1	mg/L	0.300	0.308	103	80 - 120	2013-10-03

Standard (CCV-2)

QC Batch: 105713 Date Analyzed: 2013-10-03 Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.120	120	80 - 120	2013-10-03
Toluene		1	mg/L	0.100	0.117	117	80 - 120	2013-10-03
Ethylbenzene		1	mg/L	0.100	0.118	118	80 - 120	2013-10-03
Xylene		1	mg/L	0.300	0.356	119	80 - 120	2013-10-03

Standard (CCV-3)

QC Batch: 105713 Date Analyzed: 2013-10-03 Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.103	103	80 - 120	2013-10-03
Toluene		1	mg/L	0.100	0.102	102	80 - 120	2013-10-03
Ethylbenzene		1	mg/L	0.100	0.105	105	80 - 120	2013-10-03
Xylene		1	mg/L	0.300	0.317	106	80 - 120	2013-10-03

Standard (CCV-1)

QC Batch: 105715 Date Analyzed: 2013-10-03 Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.0997	100	80 - 120	2013-10-03
Toluene		1	mg/L	0.100	0.0988	99	80 - 120	2013-10-03
Ethylbenzene		1	mg/L	0.100	0.102	102	80 - 120	2013-10-03
Xylene		1	mg/L	0.300	0.305	102	80 - 120	2013-10-03

Standard (CCV-2)

QC Batch: 105715 Date Analyzed: 2013-10-03 Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.102	102	80 - 120	2013-10-03
Toluene		1	mg/L	0.100	0.101	101	80 - 120	2013-10-03
Ethylbenzene		1	mg/L	0.100	0.104	104	80 - 120	2013-10-03
Xylene		1	mg/L	0.300	0.311	104	80 - 120	2013-10-03

Standard (CCV-3)

QC Batch: 105715 Date Analyzed: 2013-10-03 Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.0993	99	80 - 120	2013-10-03
Toluene		1	mg/L	0.100	0.0985	98	80 - 120	2013-10-03
Ethylbenzene		1	mg/L	0.100	0.101	101	80 - 120	2013-10-03
Xylene		1	mg/L	0.300	0.304	101	80 - 120	2013-10-03

Standard (CCV-1)

QC Batch: 105853 Date Analyzed: 2013-10-10 Analyzed By: MN

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Naphthalene		1	mg/L	60.0	68.4	114	80 - 120	2013-10-10
2-Methylnaphthalene		1	mg/L	60.0	65.2	109	80 - 120	2013-10-10
1-Methylnaphthalene			mg/L	60.0	68.6	114	80 - 120	2013-10-10
Acenaphthylene		1	mg/L	60.0	67.6	113	80 - 120	2013-10-10
Acenaphthene		1	mg/L	60.0	63.8	106	80 - 120	2013-10-10
Dibenzofuran		1	mg/L	60.0	64.6	108	80 - 120	2013-10-10
Fluorene		1	mg/L	60.0	68.8	115	80 - 120	2013-10-10
Anthracene		1	mg/L	60.0	63.5	106	80 - 120	2013-10-10
Phenanthrene		1	mg/L	60.0	62.0	103	80 - 120	2013-10-10
Fluoranthene		1	mg/L	60.0	58.2	97	80 - 120	2013-10-10
Pyrene		1	mg/L	60.0	70.4	117	80 - 120	2013-10-10
Benzo(a)anthracene	Qc	Qc	1	mg/L	60.0	75.7	126	80 - 120	2013-10-10
Chrysene			1	mg/L	60.0	67.9	113	80 - 120	2013-10-10
Benzo(b)fluoranthene			1	mg/L	60.0	63.9	106	80 - 120	2013-10-10
Benzo(k)fluoranthene			1	mg/L	60.0	67.4	112	80 - 120	2013-10-10
Benzo(a)pyrene			1	mg/L	60.0	68.2	114	80 - 120	2013-10-10

continued . . .

standard continued . . .

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Indeno(1,2,3-cd)pyrene		1	mg/L	60.0	65.2	109	80 - 120	2013-10-10
Dibenzo(a,h)anthracene		1	mg/L	60.0	61.5	102	80 - 120	2013-10-10
Benzo(g,h,i)perylene		1	mg/L	60.0	66.7	111	80 - 120	2013-10-10

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limit
Nitrobenzene-d5			77.3	mg/L	1	60.0	129	-
2-Fluorobiphenyl			62.5	mg/L	1	60.0	104	-
Terphenyl-d14			71.0	mg/L	1	60.0	118	-

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-13-9	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

LAB Order ID # 1310020 7

Page 1 of 1

TraceAnalysis, Inc.

email: lab@traceanalysis.com

6701 Aberdeen Avenue, Suite 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

5002 Basin Street, Suite A1
Midland, Texas 79703
Tel (432) 689-6301
Fax (432) 689-6313

200 East Sunset Rd., Suite E
El Paso, Texas 79922
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

BioAquatic Testing
2501 Mayes Rd., Ste 100
Carrollton, Texas 75006
Tel (972) 242-7750

Brandon & Clark
3403 Industrial Blvd.
Hobbs, NM 88240
Tel (575) 392-7561
Fax (575) 392-4508

Company Name: Talon / LPE
Phone #: 806-350-2877
Address: (Street, City, Zip) 921 N. Bivins Amarillo, Tx 79107
Fax #: 806-467-0622
Contact Person: ~~Jason Shubert~~ Brad Ivy
E-mail: ~~Jshubert@talon-lpe.com~~ Bivy@talonlpe.com
Invoice to: (If different from above) ~~Talon/LPE, Ltd.~~ Plains (GRS# 2002 10252)
Project #: 700376.049.01
Project Name: C.S. Cayler
Project Location (including state): Lea Co., NM
Sampler Signature: Mary Barnes

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME	MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1005 Ext(C35)	TPH 8015 GRO / DRO / TVHC	PAH 8270 / 625	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260 / 624	GC/MS Semi. Vol. 8270 / 625	PCB's 8082 / 608	Pesticides 8081 / 608	BOD, TSS, pH	Moisture Content	Cl, F, SO_4, NO_3-N, NO_2-N, PO_4-P, Alkalinity	Na, Ca, Mg, K, TDS, EC					Turn Around Time if different from standard	Hold
343077	MW-8A	4		X				X				X		9.29.13	6:40		X			X																				
078	MW-9A	4		X				X				X		9.29.13	7:00		X			X																				
079	MW-10A	4		X				X				X		9.29.13	6:20		X			X																				
080	MW-13A	4		X				X				X		9.29.13	6:00		X			X																				
081	MW-14A	4		X				X				X		9.29.13	7:20		X			X																				
082	MW-15	3		X				X				X		9.29.13	7:40		X																							
083	MW-17	3		X				X				X		9.29.13	8:00		X																							

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
Mary Barnes	Talon/LPE	10/1/13	3:02 pm					INST ____ °C OBS ____ °C COR ____ °C
								INST ____ °C OBS ____ °C COR ____ °C
				Brandy Ward	TA Lubbock	10/1/13	3:02 pm	INST IR 3 °C OBS 2.6 °C COR 2.5 °C

LAB USE ONLY
Intact Y / N
Headspace Y / N / NA
Log-in-Review MA

REMARKS:

- [ ] Dry Weight Basis Required
- [ ] TRRP Report Required
- [ ] Check If Special Reporting Limits Are Needed

Carrier # Cayler

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C.

ORIGINAL COPY

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972•242•7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

(Corrected Report)

Brad Ivy
Talon LPE-Amarillo
921 North Bivins
Amarillo, TX, 79107

Report Date: January 30, 2014

Work Order: 14010303

Project Location: Lea Co. New Mexico
Project Name: C.S. Caylor
Project Number: 700376.049.01
SRS #: 2002-10250

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
350552	MW-8A	water	2013-12-31	10:20	2013-12-31
350553	MW-9A	water	2013-12-31	10:40	2013-12-31
350554	MW-10A	water	2013-12-31	11:00	2013-12-31
350555	MW-11A	water	2013-12-31	11:20	2013-12-31
350556	MW-12A	water	2013-12-31	11:40	2013-12-31
350557	MW-13A	water	2013-12-31	12:00	2013-12-31
350558	MW-14A	water	2013-12-31	12:20	2013-12-31
350560	MW-17	water	2013-12-31	13:20	2013-12-31
350561	MW-18A	water	2013-12-31	13:00	2013-12-31

Report Corrections (Work Order 14010303)

- 1/30/14: Corrected Project Name and Field Code on sample 350561.

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch

basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 17 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

Report Contents

Case Narrative

Samples for project C.S. Caylor were received by TraceAnalysis, Inc. on 2013-12-31 and assigned to work order 14010303. Samples for work order 14010303 were received damaged without headspace and at a temperature of 3.0 C. Several frozen VOAs. No sample for MW-15 all frozen and broken.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	91425	2014-01-03 at 15:28	108023	2014-01-03 at 15:28
BTEX	S 8021B	91507	2014-01-08 at 15:44	108141	2014-01-08 at 15:44

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 14010303 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 350552 - MW-8A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	108141	Date Analyzed:	2014-01-08	Analyzed By:	MT
Prep Batch:	91507	Sample Preparation:	2014-01-08	Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	**0.955**	mg/L	10	0.00100
Toluene		1	**0.230**	mg/L	10	0.00100
Ethylbenzene	U	1	<0.0100	mg/L	10	0.00100
Xylene		1	**0.203**	mg/L	10	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.919	mg/L	10	1.00	92	75.4 - 120
4-Bromofluorobenzene (4-BFB)			0.884	mg/L	10	1.00	88	74.6 - 120

Sample: 350553 - MW-9A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	108141	Date Analyzed:	2014-01-08	Analyzed By:	MT
Prep Batch:	91507	Sample Preparation:	2014-01-08	Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	**0.00180**	mg/L	1	0.00100
Toluene	U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	1	<0.00100	mg/L	1	0.00100
Xylene	U	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0949	mg/L	1	0.100	95	75.4 - 120
4-Bromofluorobenzene (4-BFB)			0.0849	mg/L	1	0.100	85	74.6 - 120

Sample: 350554 - MW-10A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	108141	Date Analyzed:	2014-01-08	Analyzed By:	MT
Prep Batch:	91507	Sample Preparation:	2014-01-08	Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	**0.00140**	mg/L	1	0.00100
Toluene	U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	1	<0.00100	mg/L	1	0.00100
Xylene	U	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0958	mg/L	1	0.100	96	75.4 - 120
4-Bromofluorobenzene (4-BFB)			0.0874	mg/L	1	0.100	87	74.6 - 120

Sample: 350555 - MW-11A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	108023	Date Analyzed:	2014-01-03	Analyzed By:	JS
Prep Batch:	91425	Sample Preparation:	2014-01-03	Prepared By:	JS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Qs,U	1	<0.00100	mg/L	1	0.00100
Toluene	Qs,U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	Qr,Qs,U	1	<0.00100	mg/L	1	0.00100
Xylene	Jb,Qr,Qs	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0936	mg/L	1	0.100	94	68.8 - 120
4-Bromofluorobenzene (4-BFB)			0.0951	mg/L	1	0.100	95	67.5 - 120

Sample: 350556 - MW-12A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	108023	Date Analyzed:	2014-01-03	Analyzed By:	JS
Prep Batch:	91425	Sample Preparation:	2014-01-03	Prepared By:	JS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	Qs	1	**16.2**	mg/L	50	0.00100
Toluene	Qs	1	**0.122**	mg/L	50	0.00100
Ethylbenzene	Qr,Qs	1	**0.850**	mg/L	50	0.00100
Xylene	Qr,Qs	1	**1.20**	mg/L	50	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			5.09	mg/L	50	5.00	102	68.8 - 120
4-Bromofluorobenzene (4-BFB)			4.88	mg/L	50	5.00	98	67.5 - 120

Sample: 350557 - MW-13A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	108023	Date Analyzed:	2014-01-03	Analyzed By:	JS
Prep Batch:	91425	Sample Preparation:	2014-01-03	Prepared By:	JS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	Qs,U	1	<0.00100	mg/L	1	0.00100
Toluene	Qs,U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	Qr,Qs,U	1	<0.00100	mg/L	1	0.00100
Xylene	Jb,Qr,Qs	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0892	mg/L	1	0.100	89	68.8 - 120
4-Bromofluorobenzene (4-BFB)			0.0894	mg/L	1	0.100	89	67.5 - 120

Sample: 350558 - MW-14A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	108023	Date Analyzed:	2014-01-03	Analyzed By:	JS
Prep Batch:	91425	Sample Preparation:	2014-01-03	Prepared By:	JS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	Qs,U	1	<0.00100	mg/L	1	0.00100
Toluene	Qs,U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	Qr,Qs,U	1	<0.00100	mg/L	1	0.00100
Xylene	Jb,Qr,Qs	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0760	mg/L	1	0.100	76	68.8 - 120
4-Bromofluorobenzene (4-BFB)			0.0764	mg/L	1	0.100	76	67.5 - 120

Sample: 350560 - MW-17

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	108023	Date Analyzed:	2014-01-03	Analyzed By:	JS
Prep Batch:	91425	Sample Preparation:	2014-01-03	Prepared By:	JS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	Qs,U	1	<0.00100	mg/L	1	0.00100
Toluene	Qs,U	1	<0.00100	mg/L	1	0.00100
Ethylbenzene	Qr,Qs,U	1	<0.00100	mg/L	1	0.00100
Xylene	Qr,Qs,U	1	<0.00100	mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0971	mg/L	1	0.100	97	68.8 - 120
4-Bromofluorobenzene (4-BFB)			0.0976	mg/L	1	0.100	98	67.5 - 120

Sample: 350561 - MW-18A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	108023	Date Analyzed:	2014-01-03	Analyzed By:	JS
Prep Batch:	91425	Sample Preparation:	2014-01-03	Prepared By:	JS

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Benzene	Qs	1	**0.0864**		mg/L	1	0.00100
Toluene	Qs,U	1	<0.00100		mg/L	1	0.00100
Ethylbenzene	Qr,Qs	1	<0.00100		mg/L	1	0.00100
Xylene	B,Qr,Qs	1	**0.00100**		mg/L	1	0.00100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0814	mg/L	1	0.100	81	68.8 - 120
4-Bromofluorobenzene (4-BFB)			0.0842	mg/L	1	0.100	84	67.5 - 120

Method Blanks

Method Blank (1) QC Batch: 108023

QC Batch: 108023 | Date Analyzed: 2014-01-03 | Analyzed By: JS
Prep Batch: 91425 | QC Preparation: 2014-01-03 | Prepared By: JS

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.000387	mg/L	0.001
Toluene		1	<0.000465	mg/L	0.001
Ethylbenzene		1	<0.000442	mg/L	0.001
Xylene		1	0.00240	mg/L	0.001

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0938	mg/L	1	0.100	94	68.8 - 120
4-Bromofluorobenzene (4-BFB)			0.0944	mg/L	1	0.100	94	67.5 - 120

Method Blank (1) QC Batch: 108141

QC Batch: 108141 | Date Analyzed: 2014-01-08 | Analyzed By: MT
Prep Batch: 91507 | QC Preparation: 2014-01-08 | Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.000567	mg/L	0.001
Toluene		1	<0.000518	mg/L	0.001
Ethylbenzene		1	<0.000518	mg/L	0.001
Xylene		1	<0.000548	mg/L	0.001

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0954	mg/L	1	0.100	95	75.4 - 120
4-Bromofluorobenzene (4-BFB)			0.0861	mg/L	1	0.100	86	74.6 - 120

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 108023 | Date Analyzed: 2014-01-03 | Analyzed By: JS
Prep Batch: 91425 | QC Preparation: 2014-01-03 | Prepared By: JS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	0.0954	mg/L	1	0.100	<0.000387	95	71.6 - 120
Toluene		1	0.0974	mg/L	1	0.100	<0.000465	97	71.6 - 120
Ethylbenzene		1	0.0959	mg/L	1	0.100	<0.000442	96	71.1 - 120
Xylene		1	0.287	mg/L	1	0.300	0.0024	95	72.5 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	0.0951	mg/L	1	0.100	<0.000387	95	71.6 - 120	0	20
Toluene		1	0.0972	mg/L	1	0.100	<0.000465	97	71.6 - 120	0	20
Ethylbenzene		1	0.0958	mg/L	1	0.100	<0.000442	96	71.1 - 120	0	20
Xylene		1	0.289	mg/L	1	0.300	0.0024	96	72.5 - 120	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0968	0.0911	mg/L	1	0.100	97	91	68.8 - 120
4-Bromofluorobenzene (4-BFB)	0.0982	0.0974	mg/L	1	0.100	98	97	67.5 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 108141 | Date Analyzed: 2014-01-08 | Analyzed By: MT
Prep Batch: 91507 | QC Preparation: 2014-01-08 | Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	0.101	mg/L	1	0.100	<0.000567	101	74.3 - 120
Toluene		1	0.103	mg/L	1	0.100	<0.000518	103	77.6 - 120
Ethylbenzene		1	0.104	mg/L	1	0.100	<0.000518	104	78.5 - 120
Xylene		1	0.303	mg/L	1	0.300	<0.000548	101	77.6 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	0.102	mg/L	1	0.100	<0.000567	102	74.3 - 120	1	20
Toluene		1	0.103	mg/L	1	0.100	<0.000518	103	77.6 - 120	0	20
Ethylbenzene		1	0.103	mg/L	1	0.100	<0.000518	103	78.5 - 120	1	20
Xylene		1	0.300	mg/L	1	0.300	<0.000548	100	77.6 - 120	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0965	0.0955	mg/L	1	0.100	96	96	75.4 - 120
4-Bromofluorobenzene (4-BFB)	0.100	0.0972	mg/L	1	0.100	100	97	74.6 - 120

Matrix Spike (MS-1) Spiked Sample: 350233

QC Batch: 108023 | Date Analyzed: 2014-01-03 | Analyzed By: JS
Prep Batch: 91425 | QC Preparation: 2014-01-03 | Prepared By: JS

Param		F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	Qs	Qs	1	0.0517	mg/L	1	0.100	<0.000387	52	54.2 - 120
Toluene	Qs	Qs	1	0.0526	mg/L	1	0.100	<0.000465	53	55.6 - 120
Ethylbenzene	Qs	Qs	1	0.0519	mg/L	1	0.100	0.0008	51	59.6 - 120
Xylene	Qs	Qs	1	0.158	mg/L	1	0.300	0.0093	50	61.4 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	0.0627	mg/L	1	0.100	<0.000387	63	54.2 - 120	19	20
Toluene		1	0.0637	mg/L	1	0.100	<0.000465	64	55.6 - 120	19	20
Ethylbenzene	Qr	Qr	1	0.0638	mg/L	1	0.100	0.0008	63	59.6 - 120	21	20
Xylene	Qr	Qr	1	0.196	mg/L	1	0.300	0.0093	62	61.4 - 120	22	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0929	0.0922	mg/L	1	0.1	93	92	68.8 - 120
4-Bromofluorobenzene (4-BFB)	0.0977	0.0962	mg/L	1	0.1	98	96	67.5 - 120

Matrix Spike (MS-1) Spiked Sample: 350552

QC Batch: 108141 | Date Analyzed: 2014-01-08 | Analyzed By: MT
Prep Batch: 91507 | QC Preparation: 2014-01-08 | Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.93	mg/L	10	1.00	0.955	98	50.2 - 129
Toluene		1	1.21	mg/L	10	1.00	0.23	98	58.1 - 129
Ethylbenzene		1	0.962	mg/L	10	1.00	<0.00518	96	58.1 - 127
Xylene		1	3.02	mg/L	10	3.00	0.203	94	53.1 - 128

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.88	mg/L	10	1.00	0.955	92	50.2 - 129	3	20
Toluene		1	1.19	mg/L	10	1.00	0.23	96	58.1 - 129	2	20
Ethylbenzene		1	0.950	mg/L	10	1.00	<0.00518	95	58.1 - 127	1	20
Xylene		1	2.97	mg/L	10	3.00	0.203	92	53.1 - 128	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.937	0.947	mg/L	10	1	94	95	75.4 - 120
4-Bromofluorobenzene (4-BFB)	0.985	0.987	mg/L	10	1	98	99	74.6 - 120

Calibration Standards

Standard (CCV-1)

QC Batch: 108023 | Date Analyzed: 2014-01-03 | Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.0961	96	80 - 120	2014-01-03
Toluene		1	mg/L	0.100	0.0985	98	80 - 120	2014-01-03
Ethylbenzene		1	mg/L	0.100	0.0979	98	80 - 120	2014-01-03
Xylene		1	mg/L	0.300	0.295	98	80 - 120	2014-01-03

Standard (CCV-2)

QC Batch: 108023 | Date Analyzed: 2014-01-03 | Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.0966	97	80 - 120	2014-01-03
Toluene		1	mg/L	0.100	0.0977	98	80 - 120	2014-01-03
Ethylbenzene		1	mg/L	0.100	0.0960	96	80 - 120	2014-01-03
Xylene		1	mg/L	0.300	0.287	96	80 - 120	2014-01-03

Standard (CCV-3)

QC Batch: 108023 | Date Analyzed: 2014-01-03 | Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.0958	96	80 - 120	2014-01-03
Toluene		1	mg/L	0.100	0.0975	98	80 - 120	2014-01-03
Ethylbenzene		1	mg/L	0.100	0.0947	95	80 - 120	2014-01-03
Xylene		1	mg/L	0.300	0.283	94	80 - 120	2014-01-03

Standard (CCV-1)

QC Batch: 108141 Date Analyzed: 2014-01-08 Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.104	104	80 - 120	2014-01-08
Toluene		1	mg/L	0.100	0.105	105	80 - 120	2014-01-08
Ethylbenzene		1	mg/L	0.100	0.106	106	80 - 120	2014-01-08
Xylene		1	mg/L	0.300	0.309	103	80 - 120	2014-01-08

Standard (CCV-2)

QC Batch: 108141 Date Analyzed: 2014-01-08 Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.101	101	80 - 120	2014-01-08
Toluene		1	mg/L	0.100	0.102	102	80 - 120	2014-01-08
Ethylbenzene		1	mg/L	0.100	0.102	102	80 - 120	2014-01-08
Xylene		1	mg/L	0.300	0.299	100	80 - 120	2014-01-08

Standard (CCV-3)

QC Batch: 108141 Date Analyzed: 2014-01-08 Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/L	0.100	0.101	101	80 - 120	2014-01-08
Toluene		1	mg/L	0.100	0.102	102	80 - 120	2014-01-08
Ethylbenzene		1	mg/L	0.100	0.102	102	80 - 120	2014-01-08
Xylene		1	mg/L	0.300	0.300	100	80 - 120	2014-01-08

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-13-9	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

LAB Order ID # 14010303

TraceAnalysis, Inc.

email: lab@traceanalysis.com

6701 Aberdeen Avenue, Suite 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

5002 Basin Street, Suite A1
Midland, Texas 79703
Tel (432) 689-6301
Fax (432) 689-6313

200 East Sunset Rd., Suite E
El Paso, Texas 79922
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

BioAquatic Testing
2501 Mayes Rd., Ste 100
Carrollton, Texas 75006
Tel (972) 242-7750

Company Name: Talon LPE
Phone #: 806-467-0607
Address: (Street, City, Zip) 921 N. Bivins Amarillo, TX 79107
Fax #: 806-467-0622
Contact Person: Brad Ivy
E-mail: bivy@talonlpe.com and cjbryant@paaplp.com
Invoice to: (If different from above) Plains: SRS# 2002-10250
Project #: 700376.049.01
Project Name: C.S. Cayler
Project Location (including state): Lea Co., NM
Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME	MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1005 Ext(C35)	TPH 8015 GRO / DRO / TVHC	PAH 8270 / 625	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260 / 624	GC/MS Semi. Vol. 8270 / 625	PCB's 8082 / 608	Pesticides 8081 / 608	BOD, TSS, pH	Moisture Content	Cl, F, SO_4, NO_3-N, NO_2-N, PO_4-P, Alkalinity	Na, Ca, Mg, K, TDS, EC					Turn Around Time if different from standard	Hold
350552	MW-8A	3		X				X				X		12-31-13	10:20		X																								
553	MW-9A	~~3~~ 2		X				X				X		12-31-13	10:40		X																								
554	MW-10A	3		X				X				X		12-31-13	11:00		X																								
555	MW-11A	3		X				X				X		12-31-13	11:20		X																								
556	MW-12A	3		X				X				X		12-31-13	11:40		X																								
557	MW-13A	3		X				X				X		12-31-13	12:00		X																								
558	MW-14A	3		X				X				X		12-31-13	12:20		X																								
559	MW-15 all frozen	~~3~~		X				X				X		12-31-13	12:40		~~X~~																								
560	MW-17	3		X				X				X		12-31-13	13:20		X																								
561	MW-18-A	3		X				X				X		12-31-13	13:00		X																								

ANALYSIS REQUEST
(Circle or Specify Method No.)

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
	Talon/LPE	12-31-13	16:30	John G	Brenda Clark	12-31-13	4:30	INST ___ °C OBS 2 °C COR ___ °C
								INST ___ °C OBS ___ °C COR ___ °C
				Brenda Wood	TA Lubbock	1/3/14	9:00	INST IR-3 °C OBS 1.1 °C COR 1.0 °C

LAB USE ONLY
Intact Y / N
Headspace Y / N / NA
Log-in-Review

REMARKS:

- Dry Weight Basis Required
- TRRP Report Required
- Check If Special Reporting Limits Are Needed

Analytical Report 477575

for

PLAINS ALL AMERICAN EH&S

Project Manager: Wesley Ty Burrow

Cayler

700376.049.01

20-JAN-14

Collected By: Client

12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-13-15-TX), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
New Jersey (TX007), North Carolina(681), Oklahoma (9218), Pennsylvania (68-03610)

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

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Lakeland: Florida (E84098)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)
Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

20-JAN-14

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

Reference: XENCO Report No(s): **477575**
Cayler
Project Address: Lea Co, NM

Wesley Ty Burrow:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 477575. 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. 477575 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 477575

PLAINS ALL AMERICAN EH&S, Midland, TX

Cayler

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-3A 90	S	01-07-14 10:00	- 90 ft	477575-001
MW-3A 110	S	01-07-14 11:30	- 110 ft	477575-002
MW-6A 90	S	01-07-14 16:00	- 90 ft	477575-003
MW-6A 110	S	01-07-14 17:50	- 110 ft	477575-004

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-932220 BTEX by EPA 8021B
Ethylbenzene, Toluene, m_p-Xylenes recovered below QC limits in the Matrix Spike Duplicate.
Samples affected are: 477575-004, -002, -003, -001.
The Laboratory Control Sample for Toluene, Ethylbenzene, m_p-Xylenes is within laboratory Control Limits

Certificate of Analysis Summary 477575

PLAINS ALL AMERICAN EH&S, Midland, TX

Project Name: Cayler

Project Id: 700376.049.01
Contact: Wesley Ty Burrow
Project Location: Lea Co, NM

Date Received in Lab: Thu Jan-16-14 02:15 pm
Report Date: 20-JAN-14
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	477575-001		477575-002		477575-003		477575-004					
	Field Id:	MW-3A 90		MW-3A 110		MW-6A 90		MW-6A 110					
	Depth:	90 ft		110 ft		90 ft		110 ft					
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	Jan-07-14 10:00		Jan-07-14 11:30		Jan-07-14 16:00		Jan-07-14 17:50					
BTEX by EPA 8021B	***Extracted:***	Jan-16-14 17:00		Jan-16-14 17:00		Jan-16-14 17:00		Jan-16-14 17:00					
	Analyzed:	Jan-17-14 16:10		Jan-17-14 16:27		Jan-17-14 15:54		Jan-17-14 15:38					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Benzene		0.323	0.108	0.128	0.108	ND	0.00113	ND	0.00111				
Toluene		10.8	0.217	7.41	0.216	ND	0.00226	0.00224	0.00223				
Ethylbenzene		10.3	0.108	9.44	0.108	ND	0.00113	0.00123	0.00111				
m_p-Xylenes		22.3	0.217	21.4	0.216	0.00372	0.00226	0.00354	0.00223				
o-Xylene		8.26	0.108	8.06	0.108	0.00115	0.00113	0.00125	0.00111				
Total Xylenes		30.6	0.108	29.5	0.108	0.00487	0.00113	0.00479	0.00111				
Total BTEX		52.0	0.108	46.4	0.108	0.00487	0.00113	0.00826	0.00111				
Percent Moisture	***Extracted:***												
	Analyzed:	Jan-16-14 15:43		Jan-16-14 15:43		Jan-16-14 15:43		Jan-16-14 15:43					
	Units/RL:	%	RL	%	RL	%	RL	%	RL				
Percent Moisture		7.27	1.00	7.22	1.00	12.3	1.00	10.8	1.00				
TPH By SW8015 Mod	***Extracted:***	Jan-16-14 16:50		Jan-16-14 16:50		Jan-16-14 16:50		Jan-16-14 16:50					
	Analyzed:	Jan-17-14 04:13		Jan-17-14 04:40		Jan-17-14 05:07		Jan-17-14 05:34					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
C6-C12 Gasoline Range Hydrocarbons		1430	16.1	1330	16.1	ND	17.0	ND	16.7				
C12-C28 Diesel Range Hydrocarbons		3210	16.1	2940	16.1	ND	17.0	ND	16.7				
C28-C35 Oil Range Hydrocarbons		ND	16.1	ND	16.1	ND	17.0	ND	16.7				
Total TPH		4640	16.1	4270	16.1	ND	17.0	ND	16.7				

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: Cayler

Work Orders : 477575,

Project ID: 700376.049.01

Lab Batch #: 932185 **Sample:** 477575-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/17/14 04:13

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	128	99.5	129	70-135	
o-Terphenyl	48.1	49.8	97	70-135	

Lab Batch #: 932185 **Sample:** 477575-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/17/14 04:40

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	123	99.6	123	70-135	
o-Terphenyl	45.7	49.8	92	70-135	

Lab Batch #: 932185 **Sample:** 477575-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/17/14 05:07

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	109	99.2	110	70-135	
o-Terphenyl	50.7	49.6	102	70-135	

Lab Batch #: 932185 **Sample:** 477575-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/17/14 05:34

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	107	99.5	108	70-135	
o-Terphenyl	50.2	49.8	101	70-135	

Lab Batch #: 932220 **Sample:** 477575-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/17/14 15:38

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0243	0.0300	81	80-120	
4-Bromofluorobenzene	0.0280	0.0300	93	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: Cayler

Work Orders : 477575,

Project ID: 700376.049.01

Lab Batch #: 932220 **Sample:** 477575-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/17/14 15:54

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0256	0.0300	85	80-120	
4-Bromofluorobenzene	0.0274	0.0300	91	80-120	

Lab Batch #: 932220 **Sample:** 477575-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/17/14 16:10

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0269	0.0300	90	80-120	
4-Bromofluorobenzene	0.0268	0.0300	89	80-120	

Lab Batch #: 932220 **Sample:** 477575-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/17/14 16:27

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0244	0.0300	81	80-120	
4-Bromofluorobenzene	0.0289	0.0300	96	80-120	

Lab Batch #: 932185 **Sample:** 649867-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 01/16/14 18:17

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	118	100	118	70-135	
o-Terphenyl	54.2	50.0	108	70-135	

Lab Batch #: 932220 **Sample:** 649871-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 01/17/14 10:25

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0259	0.0300	86	80-120	
4-Bromofluorobenzene	0.0286	0.0300	95	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: Cayler

Work Orders : 477575,

Project ID: 700376.049.01

Lab Batch #: 932185 **Sample:** 649867-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 01/16/14 18:47

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	126	100	126	70-135	
o-Terphenyl	59.5	50.0	119	70-135	

Lab Batch #: 932220 **Sample:** 649871-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 01/17/14 09:21

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	0.0321	0.0300	107	80-120	

Lab Batch #: 932185 **Sample:** 649867-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 01/16/14 19:17

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	123	99.9	123	70-135	
o-Terphenyl	59.6	50.0	119	70-135	

Lab Batch #: 932220 **Sample:** 649871-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 01/17/14 09:05

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0302	0.0300	101	80-120	
4-Bromofluorobenzene	0.0314	0.0300	105	80-120	

Lab Batch #: 932185 **Sample:** 477580-003 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/16/14 21:14

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	127	100	127	70-135	
o-Terphenyl	60.6	50.0	121	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: Cayler

Work Orders : 477575,

Project ID: 700376.049.01

Lab Batch #: 932220 **Sample:** 477580-003 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/17/14 09:38

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0298	0.0300	99	80-120	
4-Bromofluorobenzene	0.0317	0.0300	106	80-120	

Lab Batch #: 932185 **Sample:** 477580-003 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/16/14 21:43

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	126	99.2	127	70-135	
o-Terphenyl	60.6	49.6	122	70-135	

Lab Batch #: 932220 **Sample:** 477580-003 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/17/14 09:54

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0302	0.0300	101	80-120	
4-Bromofluorobenzene	0.0321	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.

BS / BSD Recoveries

Project Name: Cayler

Work Order #: 477575 **Project ID:** 700376.049.01

Analyst: KEB **Date Prepared:** 01/16/2014 **Date Analyzed:** 01/17/2014

Lab Batch ID: 932220 **Sample:** 649871-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00100	0.100	0.0809	81	0.0994	0.0823	83	2	70-130	35	
Toluene	<0.00200	0.100	0.0829	83	0.0994	0.0816	82	2	70-130	35	
Ethylbenzene	<0.00100	0.100	0.0899	90	0.0994	0.0855	86	5	71-129	35	
m_p-Xylenes	<0.00200	0.200	0.185	93	0.199	0.174	87	6	70-135	35	
o-Xylene	<0.00100	0.100	0.0925	93	0.0994	0.0882	89	5	71-133	35	

Analyst: ARM **Date Prepared:** 01/16/2014 **Date Analyzed:** 01/16/2014

Lab Batch ID: 932185 **Sample:** 649867-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod 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	880	88	999	868	87	1	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.0	1000	793	79	999	772	77	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

Form 3 - MS / MSD Recoveries

Project Name: Cayler

Work Order # : 477575 **Project ID:** 700376.049.01

Lab Batch ID: 932220 **QC- Sample ID:** 477580-003 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 01/17/2014 **Date Prepared:** 01/16/2014 **Analyst:** KEB

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00122	0.122	0.0968	79	0.121	0.0860	71	12	70-130	35	
Toluene	<0.00243	0.122	0.0899	74	0.121	0.0795	66	12	70-130	35	X
Ethylbenzene	<0.00122	0.122	0.0930	76	0.121	0.0793	66	16	71-129	35	X
m_p-Xylenes	<0.00243	0.243	0.183	75	0.241	0.158	66	15	70-135	35	X
o-Xylene	<0.00122	0.122	0.106	87	0.121	0.0951	79	11	71-133	35	

Lab Batch ID: 932185 **QC- Sample ID:** 477580-003 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 01/16/2014 **Date Prepared:** 01/16/2014 **Analyst:** ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod 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	<18.2	1220	1060	87	1210	1060	88	0	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<18.2	1220	938	77	1210	929	77	1	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.

Sample Duplicate Recovery

Project Name: Cayler

Work Order #: 477575

Lab Batch #: 932170 **Project ID:** 700376.049.01

Date Analyzed: 01/16/2014 14:45 **Date Prepared:** 01/16/2014 **Analyst:** WRU

QC- Sample ID: 477488-001 D **Batch #:** 1 **Matrix:** Sludge

Reporting Units: %

Percent Moisture Analyte	SAMPLE / SAMPLE DUPLICATE RECOVERY Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	22.5	24.6	9	20	

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

BRL - Below Reporting Limit

XENCO Laboratories

☐ 11381 Meadowglen, Suite L, Houston TX 77082 **281-589-0692**
☐ 5309 Wurzbach, Suite 104, San Antonio, TX 78238 **210-509-3334**
☐ 11078 Morrison Lane, Suite D, Dallas, TX 75229 **972-481-9999**

ANALYSIS REQUEST & CHAIN OF CUSTODY RECORD

☐ 5757 N.W. 158th Street, Miami Lakes, Fl 33014 **305-823-8500**
☐ 2618 South Falkenburg Rd, Riverview, Fl 33569 **813-620-2000**

LAB ONLY: 477575

Serial #: 188922 Page 1 of 1

Company-City Talon LPE **Phone**

TAT: 5h 12h 24h 48h 3d 5d 7d 10d 21d Standard TAT is project specific.
It is typically 5-7 Working Days for level II and 10+ Working days for level III and IV data.

Project Name ☐Previously performed at XENCO **Site** Loco Co. NM **Project ID** 700376.049.01

Caylee

Proj. Manager (PM) Brad Loy

Fax Results to ☐ PM or **Fax No:**
e-mail to: Brad Loy, Camille Bryant

Invoice to ☐ Accounting ☐ Inc. Invoice with Final Report ☐ Invoice must have a P.O
Bill to: Plains SRS# 2002-10250

Quote No: **P.O No:** ☐ Call for a P.O.

Reg Program: CLP AFCEE **TRRP** DW UST State Other:

Target DLs (DW CRDL TRRP QAPP MDLs See Lab PM Attached Call)

TRRP PCLs: Tier 1 Tier 2 Residential Industrial

LPST No.:(Required)

Sampler Name Wesley Ty Burns Signature

	Sample ID	Sampling Date	Time	Depth ft' In" m	Matrix	Composite	Grab	# Containers	Container Size	Container Type	Preservatives	BTEX by 8021	BTEX-MTBE by 8021	TPH by TX1005 FL-Pro 1664 8015GRO 8015BRO 418.1	PAHs by 8270 8310	Metals by 6020 200.8 8RCRA Tot Pb TCLP8 13PP 23TAL	VOCs by 8021 8260 VOA VOH PPs TCL	SVOCs by 8270 625 PAHs BN&A TCL PPs	FL Preburn - Revised: Virgin Non-Virgin	TAT 5h 12h 24h 48h 3d 5d 7d 10d 21d	Addn: PAH above mg/L W, mg/Kg S Highest Hit	Hold Disposal Hold Analysis (Surcharges will apply)	Sample Clean-ups are pre-approved
1	MW3A	90	1-7-14	1000	90	S		X	1	4oz	G		X	X									
2	MW-3A	110	1-7-14	1130	110	S		X	1				X	X									
3	MW-6A	90	1-7-14	1600	90	S		X	1				X	X									
4	MW6A	110	1-7-14	1750	110	S		X	1				X	X									
5																							
6																							
7																							
8																							
9																							
10																							

	Relinquished by (Initials and Sign)	Date & Time	Relinquished to (Initials and Sign)	Date & Time
1		1-16-14 1415	Julian Martinez	1-16-14 14:15
2				
3			Lab:	

Rush Charges are Pre-Approved upon requesting them.
Instructions:
All XENCO Standard Terms and Conditions Apply.
Containers Received: 4 Cooler Temperature: 2°C +1 = 3°C

Preservatives: Various (**V**), HCl pH<2 (**H**), H2SO4 pH<2 (**S**), HNO3 pH<2 (**N**), Asbc Acid&NaOH (**A**), ZnAc&NaOH (**Z**), (Cool,<4C) (**C**), None (**NA**), See Label (**L**), Other (**O**) _____
Cont. Size: 4oz (**4**), 8oz (**8**), 32oz (**32**), 40ml VOA (**V**), 1L (**1**), 500ml (**5**), Tedlar Bag (**B**), Wipe (**W**), Other _____ **Cont. Type:** Glass Amb (**A**), Glass Clear (**C**), Plastic (**P**), Other (**O**) _____

Matrix: Air (A), Product (P), Solid(S), Water (W)

SDBE Committed to Excellence in Service and Quality since 1990

www.xenco.com

Final 1.000

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: PLAINS ALL AMERICAN EH&S

Date/ Time Received: 01/16/2014 02:15:00 PM

Work Order #: 477575

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?	**N/A**
#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?	**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: 01/16/2014

Checklist reviewed by: Kelsey Brooks Date: 01/16/2014

Analytical Report 476342

for

PLAINS ALL AMERICAN EH&S

Project Manager: Brad Ivy

Cayler

700376.049.01

27-DEC-13

Collected By: Client

12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-13-15-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

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

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Lakeland: Florida (E84098)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)
Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

27-DEC-13

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

Reference: XENCO Report No(s): **476342**
Cayler
Project Address: New Mexico

Brad Ivy:

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) 476342. 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. 476342 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 476342

PLAINS ALL AMERICAN EH&S, Midland, TX

Cayler

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW4A	S	12-19-13 10:30	- 90 ft	476342-001
MW4A	S	12-19-13 12:05	- 110 ft	476342-002

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Hits Summary 476342

PLAINS ALL AMERICAN EH&S, Midland, TX

Cayler

Sample Id : **MW4A**
Lab Sample Id : 476342-001
Sample Depth : 90 ft

Matrix : Soil
Date Collected : 12.19.13 10.30
Date Received : 12.20.13 15.35

% Moisture : 4.98
Basis : Dry Weight

Analytical Method : TPH by SW8015 Mod
Seq Number 930772

Prep Method: TX1005P
Date Prep: 12.20.13 16.00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
C6-C12 Gasoline Range Hydrocarbons	PHC612	372	mg/kg	12.21.13 23.03		1
C12-C28 Diesel Range Hydrocarbons	PHCG1028	1590	mg/kg	12.21.13 23.03		1
C28-C35 Oil Range Hydrocarbons	PHCG2835	55.1	mg/kg	12.21.13 23.03		1
Total TPH	PHC635	2020	mg/kg	12.21.13 23.03		1

Hits Summary 476342

PLAINS ALL AMERICAN EH&S, Midland, TX

Cayler

Sample Id : **MW4A**
Lab Sample Id : 476342-001
Sample Depth : 90 ft

Matrix : Soil
Date Collected : 12.19.13 10.30
Date Received : 12.20.13 15.35

% Moisture :
Basis : Wet Weight

Analytical Method : BTEX by EPA 8021
Seq Number 930559

Prep Method: SW5030B
Date Prep: 12.20.13 16.00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	0.00335	mg/kg	12.20.13 19.56		1
Toluene	108-88-3	0.100	mg/kg	12.20.13 19.56		1
Ethylbenzene	100-41-4	0.253	mg/kg	12.20.13 19.56		1
m_p-Xylenes	179601-23-1	0.579	mg/kg	12.20.13 19.56		1
o-Xylene	95-47-6	0.273	mg/kg	12.20.13 19.56		1
Xylenes, Total	1330-20-7	0.852	mg/kg	12.20.13 19.56		1
Total BTEX		1.21	mg/kg	12.20.13 19.56		1

Hits Summary 476342

PLAINS ALL AMERICAN EH&S, Midland, TX

Cayler

Sample Id : **MW4A**
Lab Sample Id : 476342-002
Sample Depth : 110 ft

Matrix : Soil
Date Collected : 12.19.13 12.05
Date Received : 12.20.13 15.35

% Moisture : 8.44
Basis : Dry Weight

Analytical Method : TPH by SW8015 Mod
Seq Number 930772

Prep Method: TX1005P
Date Prep: 12.20.13 16.00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
C6-C12 Gasoline Range Hydrocarbons	PHC612	123	mg/kg	12.21.13 23.33		1
C12-C28 Diesel Range Hydrocarbons	PHCG1028	488	mg/kg	12.21.13 23.33		1
C28-C35 Oil Range Hydrocarbons	PHCG2835	19.0	mg/kg	12.21.13 23.33		1
Total TPH	PHC635	630	mg/kg	12.21.13 23.33		1

Hits Summary 476342

PLAINS ALL AMERICAN EH&S, Midland, TX

Cayler

Sample Id : **MW4A**
Lab Sample Id : 476342-002
Sample Depth : 110 ft

Matrix : Soil
Date Collected : 12.19.13 12.05
Date Received : 12.20.13 15.35

% Moisture :
Basis : Wet Weight

Analytical Method : BTEX by EPA 8021
Seq Number 930559

Prep Method: SW5030B
Date Prep: 12.20.13 16.00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	0.00144	mg/kg	12.20.13 20.11		1
Toluene	108-88-3	0.0540	mg/kg	12.20.13 20.11		1
Ethylbenzene	100-41-4	0.189	mg/kg	12.20.13 20.11		1
m_p-Xylenes	179601-23-1	0.410	mg/kg	12.20.13 20.11		1
o-Xylene	95-47-6	0.192	mg/kg	12.20.13 20.11		1
Xylenes, Total	1330-20-7	0.602	mg/kg	12.20.13 20.11		1
Total BTEX		0.846	mg/kg	12.20.13 20.11		1

Certificate of Analysis Summary 476342

PLAINS ALL AMERICAN EH&S, Midland, TX

Project Name: Cayler

Project Id: 700376.049.01
Contact: Brad Ivy
Project Location: New Mexico

Date Received in Lab: Fri Dec-20-13 03:35 pm
Report Date: 27-DEC-13
Project Manager: Kelsey Brooks

Analysis Requested									
	Lab Id:	476342-001		476342-002					
	Field Id:	MW4A		MW4A					
	Depth:	90 ft		110 ft					
	Matrix:	SOIL		SOIL					
	Sampled:	Dec-19-13 10:30		Dec-19-13 12:05					
BTEX by EPA 8021	***Extracted:***	Dec-20-13 16:00		Dec-20-13 16:00					
	Analyzed:	Dec-20-13 19:56		Dec-20-13 20:11					
	Units/RL:	mg/kg	RL	mg/kg	RL				
Benzene		0.00335	0.000994	0.00144	0.000994				
Toluene		0.100	0.00199	0.0540	0.00199				
Ethylbenzene		0.253	0.000994	0.189	0.000994				
m_p-Xylenes		0.579	0.00199	0.410	0.00199				
o-Xylene		0.273	0.000994	0.192	0.000994				
Xylenes, Total		0.852	0.000994	0.602	0.000994				
Total BTEX		1.21	0.000994	0.846	0.000994				
Percent Moisture	***Extracted:***								
	Analyzed:	Dec-20-13 16:10		Dec-20-13 16:10					
	Units/RL:	%	RL	%	RL				
Percent Moisture		4.98	1.00	8.44	1.00				
TPH by SW8015 Mod	***Extracted:***	Dec-20-13 16:00		Dec-20-13 16:00					
	Analyzed:	Dec-21-13 23:03		Dec-21-13 23:33					
	Units/RL:	mg/kg	RL	mg/kg	RL				
C6-C12 Gasoline Range Hydrocarbons		372	15.8	123	16.3				
C12-C28 Diesel Range Hydrocarbons		1590	15.8	488	16.3				
C28-C35 Oil Range Hydrocarbons		55.1	15.8	19.0	16.3				
Total TPH		2020	15.8	630	16.3				

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: Cayler

Work Orders : 476342,

Project ID: 700376.049.01

Lab Batch #: 930559 **Sample:** 476342-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/20/13 19:56

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0275	0.0300	92	80-120	
4-Bromofluorobenzene	0.0280	0.0300	93	80-120	

Lab Batch #: 930559 **Sample:** 476342-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/20/13 20:11

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0261	0.0300	87	80-120	
4-Bromofluorobenzene	0.0287	0.0300	96	80-120	

Lab Batch #: 930772 **Sample:** 476342-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/13 23:03

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	119	99.9	119	70-135	
o-Terphenyl	45.5	50.0	91	70-135	

Lab Batch #: 930772 **Sample:** 476342-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/13 23:33

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	126	99.7	126	70-135	
o-Terphenyl	57.8	49.9	116	70-135	

Lab Batch #: 930559 **Sample:** 648874-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/20/13 17:30

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0284	0.0300	95	80-120	
4-Bromofluorobenzene	0.0260	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: Cayler

Work Orders : 476342,

Project ID: 700376.049.01

Lab Batch #: 930772 **Sample:** 648883-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/21/13 19:27

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	122	100	122	70-135	
o-Terphenyl	60.5	50.0	121	70-135	

Lab Batch #: 930559 **Sample:** 648874-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/20/13 16:10

SURROGATE RECOVERY STUDY

BTEX by EPA 8021

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0328	0.0300	109	80-120	
4-Bromofluorobenzene	0.0308	0.0300	103	80-120	

Lab Batch #: 930772 **Sample:** 648883-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/21/13 18:24

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	112	100	112	70-135	
o-Terphenyl	63.4	50.0	127	70-135	

Lab Batch #: 930559 **Sample:** 648874-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/20/13 16:26

SURROGATE RECOVERY STUDY

BTEX by EPA 8021

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0311	0.0300	104	80-120	
4-Bromofluorobenzene	0.0305	0.0300	102	80-120	

Lab Batch #: 930772 **Sample:** 648883-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/21/13 18:56

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	120	100	120	70-135	
o-Terphenyl	52.1	50.0	104	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: Cayler

Work Orders : 476342,

Project ID: 700376.049.01

Lab Batch #: 930559 **Sample:** 476306-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/20/13 16:58

BTEX by EPA 8021	SURROGATE RECOVERY STUDY				
Analytes	**Amount Found [A]**	**True Amount [B]**	**Recovery %R [D]**	**Control Limits %R**	**Flags**
1,4-Difluorobenzene	0.0310	0.0300	103	80-120	
4-Bromofluorobenzene	0.0303	0.0300	101	80-120	

Lab Batch #: 930772 **Sample:** 476341-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/13 20:29

TPH by SW8015 Mod	SURROGATE RECOVERY STUDY				
Analytes	**Amount Found [A]**	**True Amount [B]**	**Recovery %R [D]**	**Control Limits %R**	**Flags**
1-Chlorooctane	114	99.8	114	70-135	
o-Terphenyl	64.0	49.9	128	70-135	

Lab Batch #: 930772 **Sample:** 476341-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/13 21:00

TPH by SW8015 Mod	SURROGATE RECOVERY STUDY				
Analytes	**Amount Found [A]**	**True Amount [B]**	**Recovery %R [D]**	**Control Limits %R**	**Flags**
1-Chlorooctane	111	99.8	111	70-135	
o-Terphenyl	64.0	49.9	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.

BS / BSD Recoveries

Project Name: Cayler

Work Order #: 476342 **Project ID:** 700376.049.01

Analyst: ARM **Date Prepared:** 12/20/2013 **Date Analyzed:** 12/20/2013

Lab Batch ID: 930559 **Sample:** 648874-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021 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	0.0980	98	0.100	0.0986	99	1	70-130	35	
Toluene	<0.00200	0.100	0.0964	96	0.100	0.0984	98	2	70-130	35	
Ethylbenzene	<0.00100	0.100	0.0930	93	0.100	0.0942	94	1	71-129	35	
m_p-Xylenes	<0.00200	0.200	0.188	94	0.200	0.191	96	2	70-135	35	
o-Xylene	<0.00100	0.100	0.0953	95	0.100	0.0965	97	1	71-133	35	

Analyst: ARM **Date Prepared:** 12/20/2013 **Date Analyzed:** 12/21/2013

Lab Batch ID: 930772 **Sample:** 648883-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod 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	942	94	1000	956	96	1	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.0	1000	1010	101	1000	1030	103	2	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: Cayler

Work Order #: 476342

Lab Batch #: 930559

Project ID: 700376.049.01

Date Analyzed: 12/20/2013

Date Prepared: 12/20/2013

Analyst: ARM

QC- Sample ID: 476306-001 S

Batch #: 1

Matrix: Soil

Reporting Units: mg/kg

BTEX by EPA 8021B	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Benzene	<0.00102	0.102	0.0893	88	70-130	
Toluene	<0.00204	0.102	0.0877	86	70-130	
Ethylbenzene	<0.00102	0.102	0.0833	82	71-129	
m_p-Xylenes	<0.00204	0.204	0.167	82	70-135	
o-Xylene	<0.00102	0.102	0.0837	82	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: Cayler

Work Order # : 476342 **Project ID:** 700376.049.01

Lab Batch ID: 930772 **QC- Sample ID:** 476341-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 12/21/2013 **Date Prepared:** 12/20/2013 **Analyst:** ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod 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	<15.7	1050	1030	98	1050	957	91	7	70-135	35	
C12-C28 Diesel Range Hydrocarbons	34.5	1050	995	91	1050	990	91	1	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.

Sample Duplicate Recovery

Project Name: Cayler

Work Order #: 476342

Lab Batch #: 930480 **Project ID:** 700376.049.01

Date Analyzed: 12/20/2013 13:50 **Date Prepared:** 12/20/2013 **Analyst:** WRU

QC- Sample ID: 476319-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: %

Percent Moisture Analyte	SAMPLE / SAMPLE DUPLICATE RECOVERY Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	24.5	27.2	10	20	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
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: 12/20/2013 03:35:00 PM

Work Order #: 476342

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?	**N/A**
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**N/A**

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

Analyst:	PH Device/Lot#:

Checklist completed by: Candace James Date: 12/20/2013
Candace James

Checklist reviewed by: Kelsey Brooks Date: 12/20/2013
Kelsey Brooks

ANALYSIS REQUEST & CHAIN OF CUSTODY RECORD

XENCO Laboratories

☐ 4143 Greenbriar Drive, Stafford, TX 77477 **281-240-4200**
☐ 5332, Blackberry Drive, San Antonio, TX 78238 **210-509-3334**
☐ 9701 Harry Hines Blvd., Dallas, TX 75220 **214-902-0300**
☑ 12600 West I-20 East, Odessa, TX 79765 **432-563-1800**

Serial #: 326748 Page 1 of 1

Company-City Talon LPE **Phone**

Lab Only: 476342

Project Name-Location Cayler ☑ Previously done at XENCO **Project ID** 700376.044.01

TAT: ASAP 5h 12h 24h 48h 3d (5d) 7d 10d 21d Standard TAT is project specific.
It is typically 5-7 Working Days for level II and 10+ Working days for level III and IV data.

Proj. State: TX, AL, FL, GA, LA, MS, NC, NJ, PA, SC, TN, UT Other **Proj. Manager (PM)** Brad Icy

E-mail Results to ☑ PM and **Fax No:**
WTB Brad Icy, Cam.Ic Bryant

Invoice to ☐ Accounting ☐ Inc. Invoice with Final Report ☐ Invoice must have a P.O.
Bill to: Plains SRS# 2002-10250

Quote/Pricing: **P.O. No:** ☐ Call for P.O.

Reg Program: UST DRY-CLEAN Land-Fill Waste-Disp NPDES DW **TRRP**

QAPP Per-Contract CLP AGCEE NAVY DOE DOD USACE OTHER:

Special DLs (GW DW QAPP MDLs RLs See Lab PM Included Call PM)

Sampler Name Wesley S Burns **Signature**

	Sample ID	Sampling Date	Time	Depth ft' In" m	Matrix	Composite	Grab	# Containers	Container Size	Container Type	Preservatives	VOA: Full-List BTEX-MTBE EtOH Oxyg VOHs VOAs NM	VOA: PP TCL DW Appdx-1 Appdx-2 CALL Other:	PAHs SIM 8310 8270	TX-1005 DRO GRO MA EPH MA VPH NM	SVOCs: Full-List DW BN&AE TCLP PP Appdx-2 CALL	OC Pesticides PCBs Herbicides OP Pesticides	Metals: RCRA-8 RCRA-4 Pb 13PP 23TAL Appdx 1 Appdx2	SPLP - TCLP (Metals VOCs SVOCs Pest. Herb. PCBs)	EDB / DBCP	TATASAP 5h 12h 24h 48h 3d 5d 7d 10d 21d	Addn: PAH above mg/L W, mg/Kg S Highest Hit	Hold Samples (Surcharges will apply and are pre-approved)	Sample Clean-ups are pre-approved as needed	Addn: Date Rcv. by: From:
1	MW4A 90'	12-19-13	1030	90	S		X	1	4oz	G		X			X										
2	MW4A 110'	12-19-13	1205	110	S		X	1	4oz	G		X			X										
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									

Remarks

Relinquished by: (Initials and Sign)	Date & Time	Relinquished to (Initials and Sign)	Date & Time
1)		2)	
3)	12-20-13 1535	4)	12-20-13 15:33
5)		6)	

Total Containers per COC: 2 Cooler Temp: 3.1 (-4°C)

Otherwise agreed on writing. Reports are the Intellectual Property of XENCO until paid. Samples will be held 30 days after final report is e-mailed unless hereby requested. Rush Charges and Collection Fees are pre-approved if needed.

Preservatives: Various (**V**), HCl pH<2 (**H**), H2SO4 pH<2 (**S**), HNO3 pH<2 (**N**), Asbc Acid&NaOH (**A**), ZnAc&NaOH (**Z**), (Cool, <4C) (**C**), None (**NA**),See Label (**L**), Other (**O**) _____
Cont. Size: 4oz (**4**), 8oz (**8**), 32oz (**32**), 40ml VOA (**40**), 1L (**1**), 500ml (**5**), Tedlar Bag (**B**), Various (**V**), Other _____ **Cont. Type:** Glass Amb (**A**), Glass Clear (**C**), Plastic (**P**), Various (**V**)

Matrix: Air (**A**), Product (**P**), Solid (**S**), Water (**W**), Liquid (**L**)

Committed to Excellence in Service and Quality *www.xenco.com*

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: PLAINS ALL AMERICAN EH&S

Date/ Time Received: 12/20/2013 03:35:00 PM

Work Order #: 476342

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?	**N/A**
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**N/A**

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

Analyst:	PH Device/Lot#:

Checklist completed by: Candace James Date: 12/20/2013
Candace James

Checklist reviewed by: Kelsey Brooks Date: 12/20/2013
Kelsey Brooks

Analytical Report 476158

for

PLAINS ALL AMERICAN EH&S

Project Manager: Brad Ivy

Cayler

700376.049.01

19-DEC-13

Collected By: Client

12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-13-15-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

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

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Lakeland: Florida (E84098)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)
Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

19-DEC-13

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

Reference: XENCO Report No(s): **476158**
Cayler
Project Address: New Mexico

Brad Ivy:

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) 476158. 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. 476158 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Kelsey Brooks
Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.
Certified and approved by numerous States and Agencies.
A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Odessa - San Antonio - Tampa - Lakeland - Atlanta - Phoenix - Oklahoma - Latin America

Sample Cross Reference 476158

PLAINS ALL AMERICAN EH&S, Midland, TX

Cayler

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW 11A 90ft	S	12-05-13 13:00	- 90 ft	476158-001
MW 11A 110ft	S	12-05-13 14:40	- 110 ft	476158-002
MW 18A 90ft	S	12-04-13 13:30	- 90 ft	476158-003
MW 18A 110ft	S	12-04-13 15:00	- 110 ft	476158-004

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 476158

PLAINS ALL AMERICAN EH&S, Midland, TX

Project Name: Cayler

Project Id: 700376.049.01
Contact: Brad Ivy
Project Location: New Mexico

Date Received in Lab: Tue Dec-17-13 11:10 am
Report Date: 19-DEC-13
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	476158-001		476158-002		476158-003		476158-004					
	Field Id:	MW 11A 90ft		MW 11A 110ft		MW 18A 90ft		MW 18A 110ft					
	Depth:	90 ft		110 ft		90 ft		110 ft					
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	Dec-05-13 13:00		Dec-05-13 14:40		Dec-04-13 13:30		Dec-04-13 15:00					
BTEX by EPA 8021	***Extracted:***	Dec-18-13 11:00		Dec-18-13 11:00		Dec-18-13 11:00		Dec-18-13 11:00					
	Analyzed:	Dec-18-13 18:50		Dec-18-13 19:06		Dec-18-13 19:22		Dec-18-13 19:38					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Benzene		ND	0.00129	ND	0.00124	ND	0.00121	ND	0.00122				
Toluene		ND	0.00258	ND	0.00249	ND	0.00242	ND	0.00245				
Ethylbenzene		ND	0.00129	ND	0.00124	ND	0.00121	ND	0.00122				
m_p-Xylenes		ND	0.00258	ND	0.00249	ND	0.00242	ND	0.00245				
o-Xylene		ND	0.00129	ND	0.00124	ND	0.00121	ND	0.00122				
Xylenes, Total		ND	0.00129	ND	0.00124	ND	0.00121	ND	0.00122				
Total BTEX		ND	0.00129	ND	0.00124	ND	0.00121	ND	0.00122				
Percent Moisture	***Extracted:***												
	Analyzed:	Dec-18-13 16:35		Dec-18-13 16:00		Dec-18-13 16:35		Dec-18-13 16:00					
	Units/RL:	%	RL	%	RL	%	RL	%	RL				
Percent Moisture		22.8	1.00	19.7	1.00	17.6	1.00	18.6	1.00				
TPH by SW8015 Mod	***Extracted:***	Dec-18-13 11:00		Dec-18-13 11:00		Dec-18-13 11:00		Dec-18-13 11:00					
	Analyzed:	Dec-18-13 21:42		Dec-18-13 22:15		Dec-18-13 22:47		Dec-18-13 23:19					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
C6-C12 Gasoline Range Hydrocarbons		ND	19.4	ND	18.7	ND	18.2	ND	18.4				
C12-C28 Diesel Range Hydrocarbons		ND	19.4	ND	18.7	ND	18.2	ND	18.4				
C28-C35 Oil Range Hydrocarbons		ND	19.4	ND	18.7	ND	18.2	ND	18.4				
Total TPH		ND	19.4	ND	18.7	ND	18.2	ND	18.4				

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: Cayler

Work Orders : 476158,

Project ID: 700376.049.01

Lab Batch #: 930256 **Sample:** 476158-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/18/13 18:50

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	0.0249	0.0300	83	80-120	

Lab Batch #: 930256 **Sample:** 476158-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/18/13 19:06

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0284	0.0300	95	80-120	
4-Bromofluorobenzene	0.0259	0.0300	86	80-120	

Lab Batch #: 930256 **Sample:** 476158-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/18/13 19:22

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0286	0.0300	95	80-120	
4-Bromofluorobenzene	0.0255	0.0300	85	80-120	

Lab Batch #: 930256 **Sample:** 476158-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/18/13 19:38

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0291	0.0300	97	80-120	
4-Bromofluorobenzene	0.0266	0.0300	89	80-120	

Lab Batch #: 930279 **Sample:** 476158-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/18/13 21:42

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	116	99.9	116	70-135	
o-Terphenyl	54.0	50.0	108	70-135	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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

Form 2 - Surrogate Recoveries

Project Name: Cayler

Work Orders : 476158,

Project ID: 700376.049.01

Lab Batch #: 930279 **Sample:** 476158-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/18/13 22:15

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	120	99.9	120	70-135	
o-Terphenyl	55.8	50.0	112	70-135	

Lab Batch #: 930279 **Sample:** 476158-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/18/13 22:47

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	115	99.8	115	70-135	
o-Terphenyl	52.4	49.9	105	70-135	

Lab Batch #: 930279 **Sample:** 476158-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/18/13 23:19

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	119	99.6	119	70-135	
o-Terphenyl	54.8	49.8	110	70-135	

Lab Batch #: 930256 **Sample:** 648649-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/18/13 18:35

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0285	0.0300	95	80-120	
4-Bromofluorobenzene	0.0262	0.0300	87	80-120	

Lab Batch #: 930279 **Sample:** 648668-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/18/13 21:08

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	110	100	110	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: Cayler

Work Orders : 476158,

Project ID: 700376.049.01

Lab Batch #: 930256 **Sample:** 648649-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/18/13 17:15

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0311	0.0300	104	80-120	
4-Bromofluorobenzene	0.0302	0.0300	101	80-120	

Lab Batch #: 930279 **Sample:** 648668-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/18/13 20:01

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	116	100	116	70-135	
o-Terphenyl	63.0	50.0	126	70-135	

Lab Batch #: 930256 **Sample:** 648649-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/18/13 17:31

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0319	0.0300	106	80-120	
4-Bromofluorobenzene	0.0296	0.0300	99	80-120	

Lab Batch #: 930279 **Sample:** 648668-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/18/13 20:34

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	121	100	121	70-135	
o-Terphenyl	62.5	50.0	125	70-135	

Lab Batch #: 930256 **Sample:** 476123-010 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/18/13 17:47

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0326	0.0300	109	80-120	
4-Bromofluorobenzene	0.0316	0.0300	105	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: Cayler

Work Orders : 476158, **Project ID:** 700376.049.01

Lab Batch #: 930279 **Sample:** 476121-004 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/19/13 02:00

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	122	99.6	122	70-135	
o-Terphenyl	64.5	49.8	130	70-135	

Lab Batch #: 930256 **Sample:** 476123-010 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/18/13 18:03

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0317	0.0300	106	80-120	
4-Bromofluorobenzene	0.0322	0.0300	107	80-120	

Lab Batch #: 930279 **Sample:** 476121-004 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/19/13 02:32

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	124	99.7	124	70-135	
o-Terphenyl	59.2	49.9	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.

BS / BSD Recoveries

Project Name: Cayler

Work Order #: 476158 **Project ID:** 700376.049.01

Analyst: ARM **Date Prepared:** 12/18/2013 **Date Analyzed:** 12/18/2013

Lab Batch ID: 930256 **Sample:** 648649-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021 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	0.0989	99	0.100	0.0960	96	3	70-130	35	
Toluene	<0.00200	0.100	0.0984	98	0.100	0.0950	95	4	70-130	35	
Ethylbenzene	<0.00100	0.100	0.0954	95	0.100	0.0913	91	4	71-129	35	
m_p-Xylenes	<0.00200	0.200	0.194	97	0.200	0.185	93	5	70-135	35	
o-Xylene	<0.00100	0.100	0.0978	98	0.100	0.0932	93	5	71-133	35	

Analyst: ARM **Date Prepared:** 12/18/2013 **Date Analyzed:** 12/18/2013

Lab Batch ID: 930279 **Sample:** 648668-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod 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	941	94	1000	946	95	1	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.0	1000	938	94	1000	938	94	0	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: Cayler

Work Order # : 476158 **Project ID:** 700376.049.01

Lab Batch ID: 930256 **QC- Sample ID:** 476123-010 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 12/18/2013 **Date Prepared:** 12/18/2013 **Analyst:** ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021 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	<0.00123	0.123	0.109	89	0.123	0.109	89	0	70-130	35	
Toluene	<0.00246	0.123	0.106	86	0.123	0.108	88	2	70-130	35	
Ethylbenzene	<0.00123	0.123	0.0998	81	0.123	0.102	83	2	71-129	35	
m_p-Xylenes	<0.00246	0.246	0.201	82	0.246	0.205	83	2	70-135	35	
o-Xylene	<0.00123	0.123	0.101	82	0.123	0.102	83	1	71-133	35	

Lab Batch ID: 930279 **QC- Sample ID:** 476121-004 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 12/19/2013 **Date Prepared:** 12/18/2013 **Analyst:** ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod 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	<19.2	1280	1370	107	1280	1350	105	1	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<19.2	1280	1450	113	1280	1300	102	11	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.

Sample Duplicate Recovery

Project Name: Cayler

Work Order #: 476158

Lab Batch #: 930260 **Project ID:** 700376.049.01

Date Analyzed: 12/18/2013 16:00 **Date Prepared:** 12/18/2013 **Analyst:** CAJ

QC- Sample ID: 476121-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: %

Percent Moisture Analyte	SAMPLE / SAMPLE DUPLICATE RECOVERY Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	11.4	12.9	12	20	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
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: 12/17/2013 11:10:00 AM

Work Order #: 476158

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)?	8.5
#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?	**N/A**
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**N/A**

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

Analyst:	PH Device/Lot#:

Checklist completed by: Candace James Date: 12/18/2013
Candace James

Checklist reviewed by: Kelsey Brooks Date: 12/18/2013
Kelsey Brooks

ANALYSIS REQUEST & CHAIN OF CUSTODY RECORD

XENCO Laboratories

☐ 4143 Greenbriar Drive, Stafford, TX 77477 **281-240-4200**
☐ 5332, Blackberry Drive, San Antonio, TX 78238 **210-509-3334**
☐ 9701 Harry Hines Blvd., Dallas, TX 75220 **214-902-0300**
☐ 12600 West I-20 East, Odessa, TX 79765 **432-563-1800**

Serial #: 316778 Page 1 of 1

Company-City Talon LPE **Phone** [redacted]

Lab Only: 476158

Project Name-Location Cayler ☐ Previously done at XENCO **Project ID** 700376.049.01

TAT: ASAP 5h 12h 24h 48h 3d 5d 7d 10d 21d Standard TAT is project specific.
It is typically 5-7 Working Days for level II and 10+ Working days for level III and IV data.

Proj. State: TX, AL, FL, GA, LA, MS, NC, NJ, PA, SC, TN, UT Other **Proj. Manager (PM)** Brad Ivy

E-mail Results to ☐ PM and WB, Brad Ivy, Camille Bryant **Fax No:**

Invoice to ☐ Accounting ☐ Inc. Invoice with Final Report ☐ Invoice must have a P.O.
Bill to: Plains SRSH 2002-10250

Quote/Pricing: **P.O. No:** ☐ Call for P.O.

Reg Program: UST DRY-CLEAN Land-Fill Waste-Disp NPDES DW **TRRP**

QAPP Per-Contract CLP AGCEE NAVY DOE DOD USACE OTHER:

Special DLs (GW DW QAPP MDLs RLs See Lab PM Included Call PM)

Sampler Name Wesley Ty Burrow **Signature**

	Sample ID	Sampling Date	Time	Depth ft' in" m	Matrix	Composite	Grab	# Containers	Container Size	Container Type	Preservatives	VOA: Full-List BTEX-MTBE EtOH Oxyg VOHs VOAs	VOA: PP TCL DW Appdx-1 Appdx-2 CALL Other: nm	PAHs SIM 8310 8270	TX-1005 DRO GRO MA-EPH MA VPH 8015 nm	SVOCs: Full-List DW BN&AE TCLP PP Appdx-2 CALL	OC Pesticides PCBs Herbicides OP Pesticides	Metals: RCRA-8 RCRA-4 Pb 13PP 23TAL Appdx 1 Appdx2	SPLP - TCLP (Metals VOCs SVOCs Pest. Herb. PCBs)	EDB / DBCP	TATASAP 5h 12h 24h 48h 3d 5d 7d 10d 21d	Addn: PAH above mg/L W, mg/Kg S Highest Hit	Hold Samples (Surcharges will apply and are pre-approved)	Sample Clean-ups are pre-approved as needed	Addn: Date Rcv. by: From:	
1	MW 11A 90'	12-5-13	1300	90	S		X	1	40z	G		X			X										1
2	MW 11A 110'	12-5-13	1440	110	S		X	1	40z	G		X			X										2
3	MW 18A 90'	12-4-13	1330	90	S		X	1	40z	G		X			X										3
4	MW 18A 110'	12-4-13	1500	110	S		X	1	40z	G		X			X										4
5																									5
6																									6
7																									7
8																									8
9																									9
10																									10

Remarks

	Relinquished by (Initials and Sign)	Date & Time	Relinquished to (Initials and Sign)	Date & Time
1	1)	12-17-13	2) Rena Resendiz	12-17-13 11:10
2	3)		4)	
3	5)		6)	

Total Containers per COC: Cooler Temp: [redacted] °C 8.5

Otherwise agreed on writing. Reports are the Intellectual Property of XENCO until paid. Samples will be held 30 days after final report is e-mailed unless hereby requested. Rush Charges and Collection Fees are pre-approved if needed.

Preservatives: Various (**V**), HCl pH<2 (**H**), H2SO4 pH<2 (**S**), HNO3 pH<2 (**N**), Asbc Acid&NaOH (**A**), ZnAc&NaOH (**Z**), (Cool, <4C) (**C**), None (**NA**),See Label (**L**), Other (**O**) _____
Cont. Size: 4oz (**4**), 8oz (**8**), 32oz (**32**), 40ml VOA (**40**), 1L (**1**), 500ml (**5**), Tedlar Bag (**B**), Various (**V**), Other _____ **Cont. Type:** Glass Amb (**A**), Glass Clear (**C**), Plastic (**P**), Various (**V**)

Matrix: Air (**A**), Product (**P**), Solid (**S**), Water (**W**), Liquid (**L**)

Committed to Excellence in Service and Quality *www.xenco.com*

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: PLAINS ALL AMERICAN EH&S

Date/ Time Received: 12/17/2013 11:10:00 AM

Work Order #: 476158

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)?	8.5
#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?	**N/A**
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**N/A**

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

Analyst:	PH Device/Lot#:

Checklist completed by: Candace James Date: 12/18/2013
Candace James

Checklist reviewed by: Kelsey Brooks Date: 12/18/2013
Kelsey Brooks

APPENDIX D

NMOCD C-141

October 2, 2002

Mr. Paul Sheeley, Environmental Engineer
State of New Mexico
Energy Minerals and Natural Resources Department
Oil Conservation Division, Environmental Bureau
1625 North French
Hobbs, New Mexico 88240

Subject: EOTT Energy Pipeline 8" Sweet Vacuum (C.S. Cayler) 9-19-02- #2002-10249
UL-B NW¼ of the NE¼ of Section 6 T17S R37E
Latitude: 32° 52' 2.45"N Longitude: 103° 17' 17.73"W

Dear Mr. Sheeley,

The attached New Mexico Oil Conservation Division Form C-141 and supporting documentation is being submitted by Environmental Plus, Inc. (EPI) on behalf of Mr. Frank Hernandez, District Environmental Supervisor for EOTT Energy Pipeline for the above referenced crude oil leak site. The land owner of record according to the Lea County Assessor's Office is Mr. Robert C. Rice. Volume released was estimated to be 70 bbls with 0 bbls recovered. The New Mexico Office of the State Engineer records one water well approximately 2,500 southwest of the site with a water level of 40 below ground surface ('bgs). The New Mexico Office of the State Engineer water well information report is attached. The attached site information and metrics form summarizes and ranks the site according to the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks and Spills, 1993. Based on the depth to ground water, the following acceptable remedial thresholds for Benzene, BTEX, i.e., the mass sum of Benzene, Toluene, Ethyl Benzene, and Xylenes, and Total Petroleum Hydrocarbon EPA method 8015m (TPH^{8015m}) are as follows;

- Soil from surface to 40.0'bgs

  Benzene 10 mg/Kg
  BTEX 50 mg/Kg
  TPH^{8015m} 100 mg/Kg

EOTT is currently delineating the vertical and horizontal extents of crude oil contamination at the site. Based on the delineation information, a viable remediation plan will be developed consistent with the NMOCD approved "General Work Plan for Remediation of E.O.T.T. Pipeline Spills, Leaks and Releases in New Mexico, July 2000" and submitted to the NMOCD for approval. The near surface soil will be disposed of in an NMOCD approved facility.

ENVIRONMENTAL PLUS, INC.

All official communication should be addressed to;

Mr. Frank Hernandez
E.O.T.T. Energy Pipeline
P.O. Box 1660
Midland, Texas 79703
e-mail: frank.hernandez@eott.com

If there are any questions please call Mr. Ben Miller or myself at the office or at 505.390.0288 and 505.390.7864, respectively, or Mr. Frank Hernandez at 915.638.3799.

Sincerely,

Pat McCasland
EPI Technical Services Manager

cc: Frank Hernandez, ENRON Transportation Services w/enclosure
William Kendrick, ENRON Transportation Services w/enclosure
Ben Miller, EPI Vice President and General Manager
Sherry Miller, EPI President
file

ENVIRONMENTAL PLUS, INC.

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 March 17, 1999

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

OPERATOR "INFORMATION ONLY NON-REPORTABLE" ☒ Initial Report ☐ Final Report

Name of Company	Contact
EOTT Energy Pipeline	Frank Hernandez
Address 5805 East Highway 80 / P.O. Box 1660, Midland, TX 79703	Telephone No. 915.638.3799
Facility Name: Moore to Kimbrough 8" Sweet Vacuum (C.S. Cayler) 9-19-02 #2002-10250	Facility Type Crude Oil Pipeline

Surface Owner	Mineral Owner	Lease No.
Robert C. Rice		

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County: Lea Lat.: 32°52'2.45"N Lon:103°17'17.73"W
B	6	17S	37E					

NATURE OF RELEASE

Type of Release	Volume of Release	Volume Recovered
Crude Oil	70 bbls	0 bbls
Source of Release 8" steel pipeline	Date and Hour of Occurrence 9-19-02 8:00 AM	Date and Hour of Discovery 9-19-02 12:00 PM
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Paul Sheeley, Hobbs NMOCD	
By Whom? Pat McCasland (Environmental Plus, Inc.)	Date and Hour: NMOCD notified on 9-19-02 3:15 PM	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
The cause of the leak was internal/external corrosion. The contaminated soil was stockpiled on a plastic barrier on site awaiting remediation.

Describe Area Affected and Cleanup Action Taken.*

Spill Area = ~2,199 ft^2 Near surface soil will be characterized in accordance with 40 CFR 261 and with NMOCD approval, disposed of in a NMOCD approved facility. The site will be delineated and remediated.

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: Frank Hernandez	**OIL CONSERVATION DIVISION**	
Printed Name: Frank Hernandez	Approved by District Supervisor:	
Title: District Environmental Supervisor	Approval Date:	Expiration Date:
Date: October 2, 2002 Phone: 915.638.3799	Conditions of Approval:	Attached ☐

* Attach Additional Sheets If Necessary

EOTT Energy Pipeline Site Information and Metrics	**Incident Date and NMOCD Notified?:** Discovered 9-19-02 NMOCD verbally notified on 9-19-02
SITE: 8" Sweet Vacuum (C.S. Cayler) 9-19-02	Assigned Site Reference #: #2002-10250
Company: EOTT Energy Pipeline	
Street Address: 5805 East Highway 80	
Mailing Address: P.O. Box 1660	
City, State, Zip: Midland, Texas 79703	
Representative: Frank Hernandez, District Environmental Supervisor	
Representative Telephone: 915.638.3799	
Telephone:	
Fluid volume released (bbls): 70 bbls	Recovered (bbls): 0
>25 bbls : Notify NMOCD verbally within 24 hrs and submit form C-141 within 15 days. (Also applies to unauthorized releases >500 mcf Natural Gas)	
5-25 bbls: Submit form C-141 within 15 days (Also applies to unauthorized releases of 50-500 mcf Natural Gas)	
Leak, Spill, or Pit (LSP) Name: 8" Sweet Vacuum (C.S. Cayler) 9-19-02 #2002-10250	
Source of contamination: Crude Oil Pipeline	
Land Owner, i.e., BLM, ST, Fee, Other: Robert C. Rice	
LSP Dimensions 85' X 45'	
LSP Area: Spill Area 2,199 ft^2	
Location of Reference Point (RP)	
Location distance and direction from RP	
Latitude: 32°52'2.45"N	
Longitude: 103°17'17.73"W	
Elevation above mean sea level: ~3,805 'amsl	
Feet from South Section Line	
Feet from West Section Line	
Location- Unit or ¼¼: UL-B NW ¼ of the NE ¼	
Location- Section: 6	
Location- Township: 17S	
Location- Range: 37E	
Surface water body within 1000 ' radius of site: None	
Domestic water wells within 1000' radius of site: None	
Agricultural water wells within 1000' radius of site: None	
Public water supply wells within 1000' radius of site: None	
Depth from land surface to ground water (DG) ~40.0'below ground surface	
Depth of contamination (DC) – ?	
Depth to ground water (DG – DC = DtGW) - to be determined	

1. Ground Water	**2. Wellhead Protection Area**	**3. Distance to Surface Water Body**
If Depth to GW <50 feet: *20 points*	If <1000' from water source, or;<200' from private domestic water source: *20 points*	<200 horizontal feet: *20 points*
If Depth to GW 50 to 99 feet: *10 points*		200-100 horizontal feet: *10 points*
If Depth to GW >100 feet: *0 points*	If >1000' from water source, or; >200' from private domestic water source: *0 points*	>1000 horizontal feet: *0 points*
Ground water Score = 20	*Wellhead Protection Area Score= 0*	*Surface Water Score= 0*
Site Rank (1+2+3) = 20		

Total Site Ranking Score and Acceptable Concentrations

Parameter	**>19 (Surface to 40.0'bgs)**	10-19	0-9
Benzene[1]	**10 ppm**	10 ppm	10 ppm
BTEX[1]	**50 ppm**	50 ppm	50 ppm
TPH	**100 ppm**	1000 ppm	5000 ppm

[1]100 ppm field VOC headspace measurement may be substituted for lab analysis

New Mexico Office of the State Engineer
Well Reports and Downloads

Township: 17S Range: 37E Sections: 6

NAD27 X: Y: Zone: Search Radius:

County: Basin: Number: Suffix:

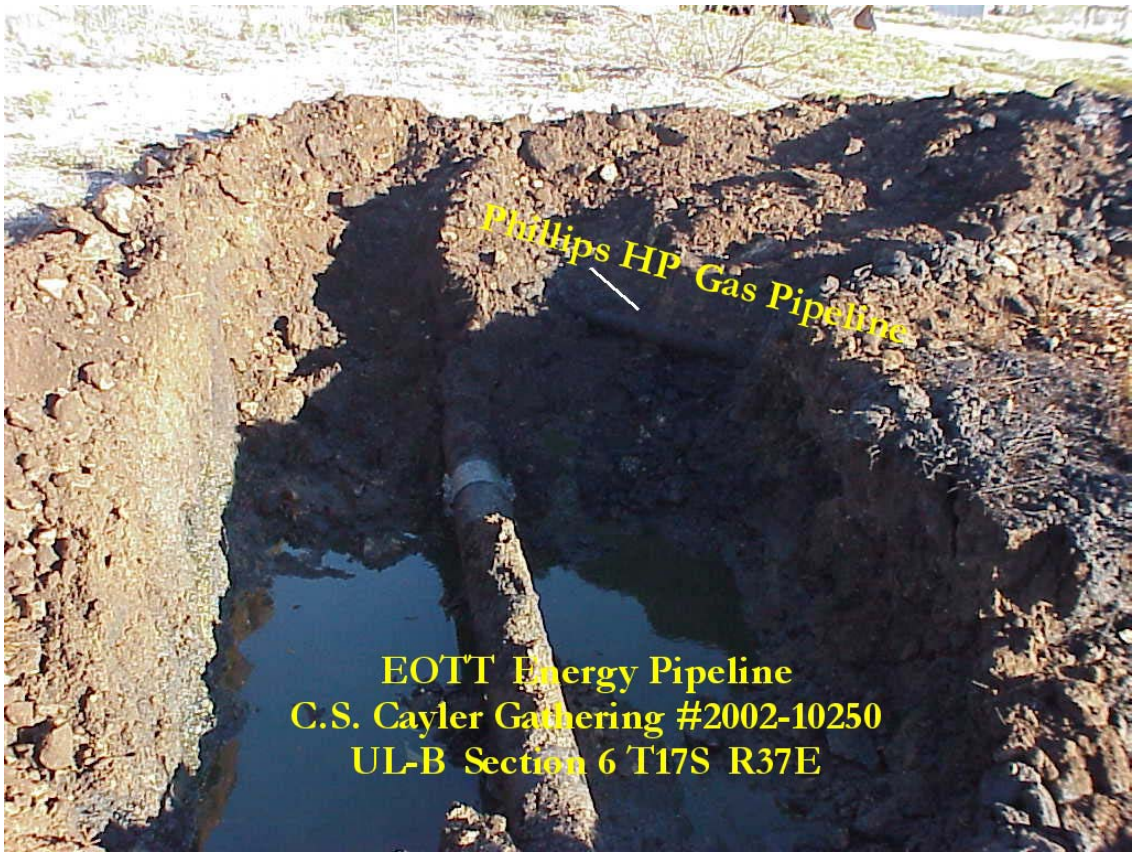
Owner Name: (First) (Last) Non-Domestic Domestic All

Well / Surface Data Report | Avg Depth to Water Report | Water Column Report | Clear Form | WATERS Menu | Help

AVERAGE DEPTH OF WATER REPORT 10/10/2002

Bsn	Tws	Rng	Sec	Zone	X	Y	Wells	(Depth Water in Feet) Min	Max	Avg
L	17S	37E	06				2	40	40	40

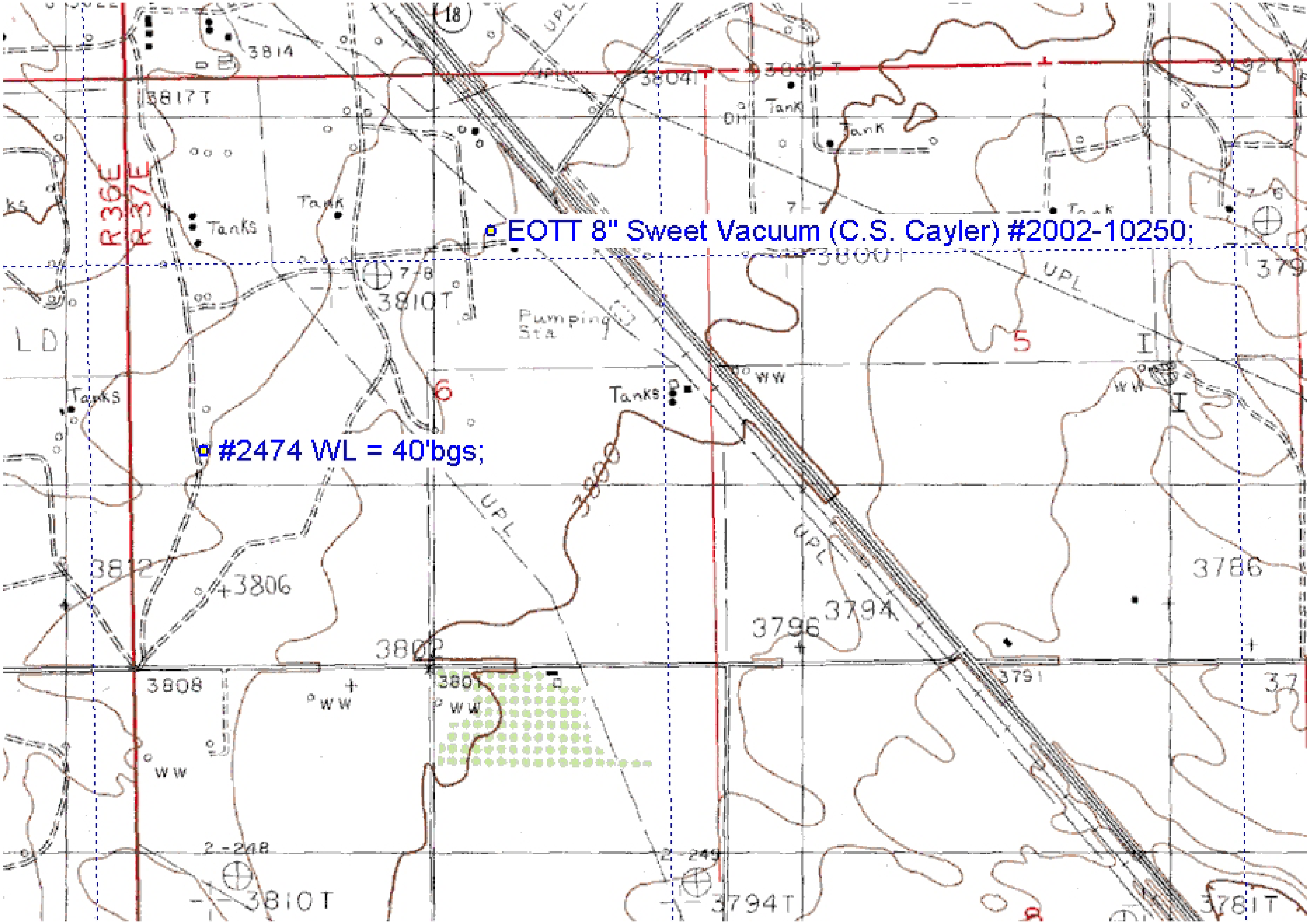
Record Count: 2

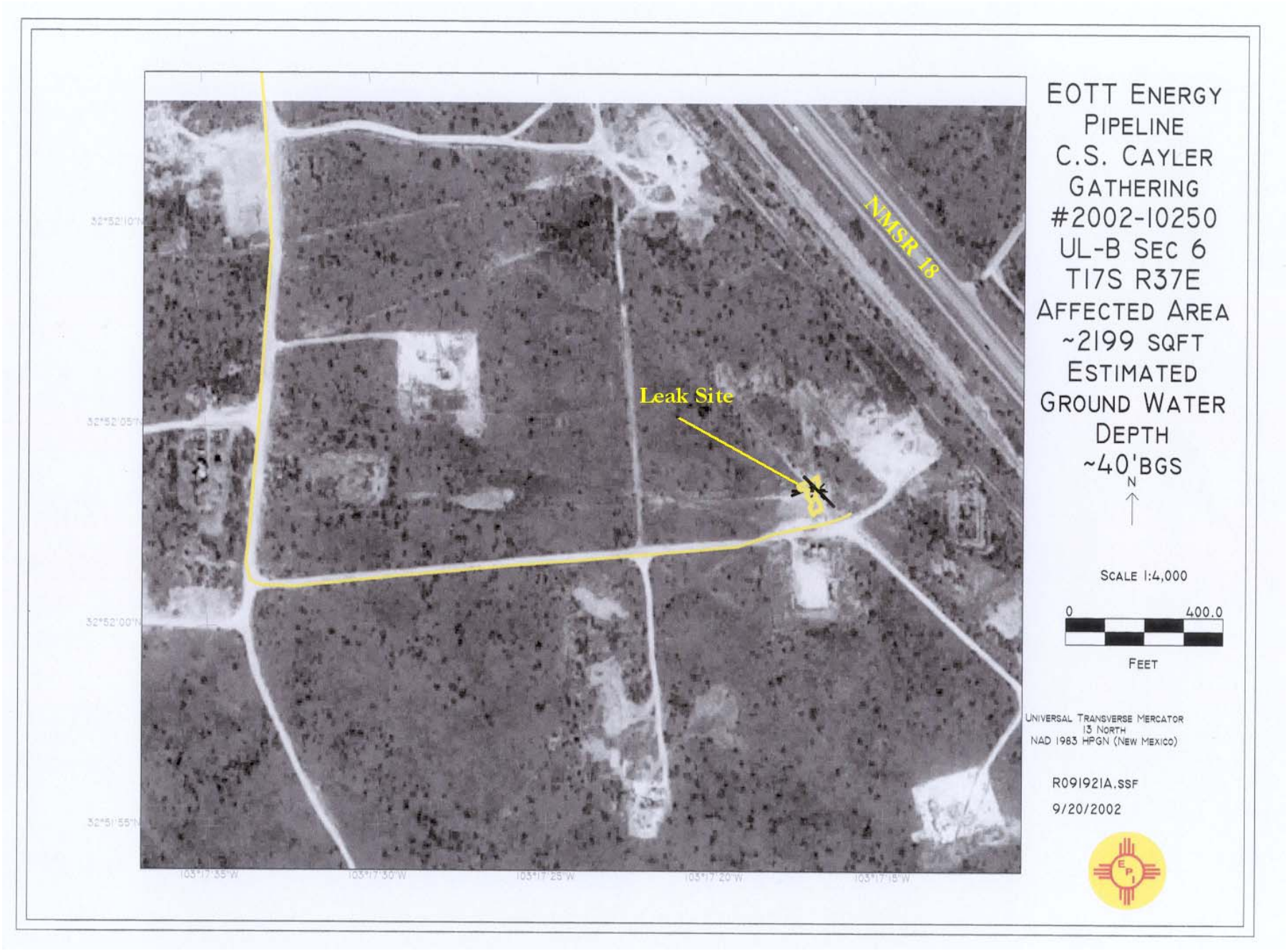

Phillips HP Gas Pipeline
EOTT Energy Pipeline
C.S. Cayler Gathering #2002-10250
UL-B Section 6 T17S R37E

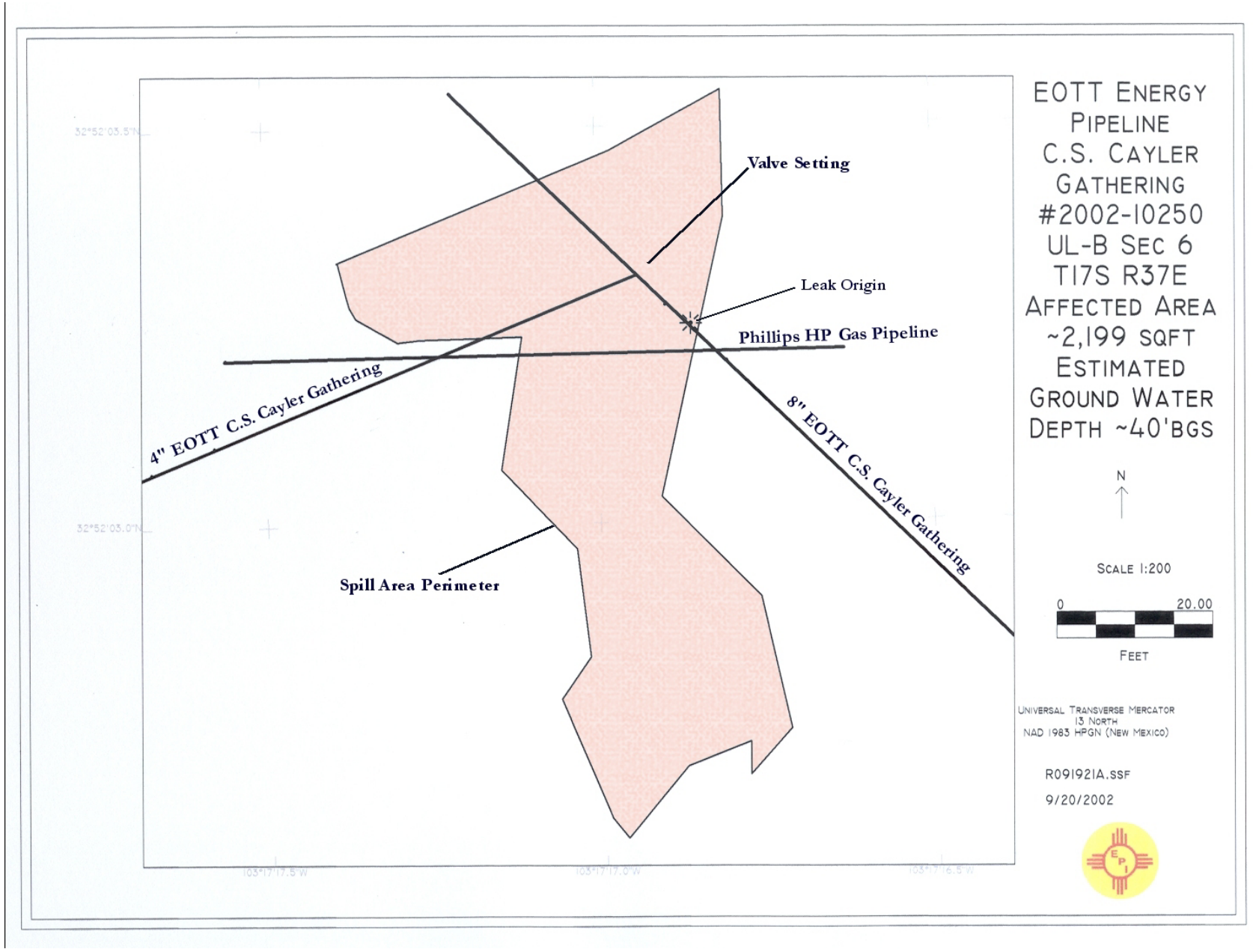

EOTT Energy Pipeline
C.S. Cayler Gathering #2002-10250
UL-B Section 6 T17S R37E


EOTT Energy Pipeline
C.S. Cayler Gathering #2002-10250
UL-B Section 6 T17S R37E


EOTT Energy Pipeline
C.S. Cayler Gathering #2002-10250
UL-B Section 6 T17S R37E


EOTT 8" Sweet Vacuum (C.S. Cayler) #2002-10250;
#2474 WL = 40'bgs;
R36E
R37E
Pumping Sta
Tanks
Tank
UPL
3814
3817T
3810T
3806
3812
3808
3802
3800
3796
3794
3786
3791
3794T
3810T
3781T
2-248
ww
6
5


EOTT ENERGY
PIPELINE
C.S. CAYLER
GATHERING
#2002-10250
UL-B SEC 6
T17S R37E
AFFECTED AREA
~2199 SQFT
ESTIMATED
GROUND WATER
DEPTH
~40'BGS
N
NMSR 18
Leak Site
SCALE 1:4,000
0
400.0
FEET
UNIVERSAL TRANSVERSE MERCATOR
13 NORTH
NAD 1983 HPGN (NEW MEXICO)
R091921A.SSF
9/20/2002
32°52'10"N
32°52'05"N
32°52'00"N
32°51'55"N
103°17'35"W
103°17'30"W
103°17'25"W
103°17'20"W
103°17'15"W


Valve Setting
Leak Origin
Phillips HP Gas Pipeline
4" EOTT C.S. Cayler Gathering
8" EOTT C.S. Cayler Gathering
Spill Area Perimeter
EOTT ENERGY PIPELINE
C.S. CAYLER GATHERING
#2002-10250
UL-B SEC 6
T17S R37E
AFFECTED AREA
~2,199 SQFT
ESTIMATED
GROUND WATER
DEPTH ~40'BGS
N
SCALE 1:200
0
20.00
FEET
UNIVERSAL TRANSVERSE MERCATOR
13 NORTH
NAD 1983 HPGN (NEW MEXICO)
R091921A.SSF
9/20/2002