District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., 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 August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

# Release Notification and Corrective Action

## OPERATOR

☒ Initial Report ☐ Final Report

| | | | |
|---|---|---|---|
| Name of Company Targa Midstream Services, L.P. | | Contact Roger | Roger Holland |
| Address | P.O. Box 1909, Eunice, New Mexico 88231 | Telephone No. | (575) 394-2534 |
| Facility Name | Irvin Boyd 9" Pipeline Leak | Facility Type | 9" Natural Gas Pipeline |

| | | | | | |
|---|---|---|---|---|---|
| Surface Owner | Irvin Boyd | Mineral Owner | Chevron | API No. | Near 30-025-10425 |

## LOCATION OF RELEASE

| Unit Letter | Section | Township | Range | Feet from the | North/South Line | Feet from the | East/West Line | County |
|---|---|---|---|---|---|---|---|---|
| K | 23 | 22S | 37E | 2,000 | South | 1,900 | West | LEA |

**Latitude** N32° 22' 32.54" **Longitude** 103° 08' 11.56"

## NATURE OF RELEASE

| | | |
|---|---|---|
| Type of Release<br>Natural Gas/Liquids | Volume of Release<br>Unknown | Volume Recovered<br>None |
| Source of Release<br>Steel Pipeline (corrosion) | Date and Hour of Occurrence<br>Unknown | Date and Hour of Discovery<br>February 13, 2012 |
| Was Immediate Notice Given?<br>☐ Yes ☒ No ☐ Not Required | If YES, To Whom? | |
| By Whom? | Date and Hour | |
| Was a Watercourse Reached?<br>☐ Yes ☒ No | If YES, Volume Impacting the Watercourse. | |

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.* Corrosion in 9" steel Pipeline caused leaks at two locations. Pipeline was shut-in and section of pipeline was replaced with poly pipe. Soil was excavated at both locations o approximately 15 below ground surface (bgs) and disposed at Sundance Services (Parabo) located east of Eunice, New Mexico.

Describe Area Affected and Cleanup Action Taken.* North and South leak locations are separated by approximately 50 feet. Soil was excavated from area around north leak (50' x 75') and around south leak (40' x 40'). On March 12, 2012, Larson & Associates, Inc., collected 5-spot composite soil samples from the sidewalls and discreet samples from the bottom of the excavations for BTEX, TPH and chloride by laboratory methods SW-8021B, SW8015 and E300, respectively.

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: Chuck Tolsma | OIL CONSERVATION DIVISION | |
| Printed Name: Chuck Tolsma | Approved by Environmental Specialist: | |
| Title: Field Supervisor | Approval Date: | Expiration Date: |
| E-mail Address: ctolsma@targaresources.com | Conditions of Approval: | Attached ☐ |
| Date: April 11, 2012 Phone: 432-788-0761 | | |

* Attach Additional Sheets If Necessary

# FINAL REPORT

## Irvin Boyd 9 – Inch Pipeline Release
## 1RP-04-12-2802

## Lea County, New Mexico

LAI Project No. 12-0118-01

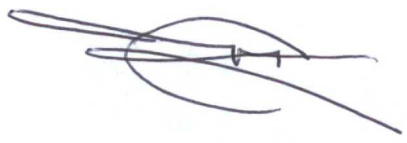
January 2013

Prepared for:

Targa Midstream Services, LLC
6 Desta Drive, Suite 3300
Midland, Texas 79705

Prepared by:

Larson & Associates, Inc.
507 North Marienfeld, Suite 200
Midland, Texas 79701



Mark J. Larson
Certified Professional Geologist No. 10490

# 1.0 EXECUTIVE SUMMARY

This report is submitted on behalf of Targa Midstream Services, LLC (Targa) to the New Mexico Oil Conservation Division (OCD) District 1 to present the analysis of soil samples collected from the excavation activity resulting from remediation of natural gas liquid (NGL) releases on a 9 inch pipeline segment referred to as the "Boyd 9"" (Site). The Site is located in Unit K (NE/4, SW/4), Section 23, Township 22 South, Range 37 East in Lea County, New Mexico.

In February 2012, Targa personnel discovered 2 releases on the north to south trending steel pipeline. The releases are separated by approximately 40 feet and were repaired by replacing the steel pipeline with approximately 200 feet of polyethylene pipe. Targa submitted the initial C-141 report to the OCD District 1 on April 11, 2012. The OCD assigned the release remediation project (RP) number 1RP-04-12-2802. The geodetic position is north 32° 22' 32.54" and west 103° 08' 11.56".

Between February 28, 2012 and March 12, 2012, Environmental Plus, Inc. (EPI) excavated soil at the north and south releases to approximately 15 feet below ground surface (bgs). Approximately 1,372 cubic yards of soil was disposed at Sundance Disposal located east of Eunice, New Mexico.

On March 12, 2012, Larson & Associates, Inc. (LAI) personnel collected initial soil samples from the bottom and sidewalls of the north and south excavations. A backhoe was used to collect samples from the bottom of the north excavation at approximately 15, 20 and 25 feet below ground surface (bgs). Samples were collected from the bottom of south excavation at approximately 15, 20, 25 and 30 feet bgs. The sidewall samples were collected at approximately 10 feet bgs. The samples were delivered under preservation and chain of custody to Xenco Laboratories, located in Odessa, Texas. The laboratory analyzed the samples for benzene, toluene, ethylbenzene, xylene (BTEX), total petroleum hydrocarbons (TPH) and chloride by methods SW-8021B, SW-8015 and E300, respectively.

Remediation action levels were calculated for benzene, BTEX and TPH using criteria established by the OCD (*Guidelines for Remediation of Leaks, Spills and Releases, August 13,* 1993) assuming the following:

| Ranking Criteria | Result | Ranking Score |
|---|---|---|
| Depth-to-Groundwater | 50 – 99 feet | 10 |
| Wellhead Protection Area | No | 0 |
| Distance to Surface Water Body | >1000 Horizontal Feet | 0 |
| | **Total Score:** | **10** |

The nearest water well is an out-of-service windmill located approximately 2,400 feet northwest of the release. Depth to groundwater in this well is approximately 60 feet bgs. The nearest surface water (Monument Draw) is located approximately 5,400 feet east of the release. The following RRAL were calculated for 1RP-04-12-2802:

| | |
|---|---|
| **Benzene:** | **10 mg/kg** |
| **BTEX:** | **50 mg/kg** |
| **TPH:** | **1,000 mg/kg** |

Benzene, BTEX and TPH were less than the method detection limits. Chloride in the north excavation sidewall samples ranged from 1,410 milligrams per kilogram (mg/kg) in the north sidewall to 8,290 mg/kg in the east sidewall. Chloride concentrations in the bottom samples of the north excavation were 7,680 mg/kg (15 feet), 1,700 mg/kg (20 feet) and 223 mg/kg (25 feet). Chloride concentrations in the south excavation sidewall samples ranged from 1,480 mg/kg in the west sidewall to 13,800 mg/kg in the east sidewall. Chloride concentrations in the bottom samples from the south excavation were 3,220 mg/kg (15 feet), 1,310 mg/kg (20 feet), 546 mg/kg (25 feet) and 249 mg/kg (30 feet).

On June 15, 2012, the OCD District 1 approved closure for the excavations by installing a polyethylene liner in the bottom of the excavation and filling with clean soil. The closure approval was not accepted by the landowner and Targa voluntarily excavated additional soil.

Between June 16, 2012 and August 9, 2012, Environmental Plus, Inc. (EPI) excavated soil at the north and south releases to approximately 30 feet below ground surface (bgs). Approximately 5,580 cubic yards of soil was removed for a total of 6,952 cubic yards disposed at Sundance Disposal located east of Eunice, New Mexico.

On June 27, 2012, Larson & Associates, Inc. (LAI) personnel collected preliminary samples from the bottom and sidewalls of the excavation. Chloride concentrations in the sidewall samples ranged from 69.8 mg/kg in the north sidewall (4 feet) to 8,330 mg/kg in the west sidewall (15 feet). Chloride concentrations in two samples from the bottom of the excavation were 9,060 and 556 mg/kg at 25 and 30 feet, respectively. Additional soil was excavated to further reduce the chloride concentrations.

On August 9, 2012, Larson & Associates, Inc. (LAI) personnel collected confirmation soil samples from the bottom and sidewalls of the excavation site. Samples were collected from the bottom of the excavation at approximately 30 feet below ground surface (bgs). Samples were collected from the sidewalls at approximately 8 and 16 feet bgs. Trace Analysis Laboratories, located in Midland, Texas, analyzed the samples for chloride by method E300.

Chloride concentrations in the excavation sidewall samples ranged from 1,210 milligrams per kilogram (mg/kg) from the south sidewall to 4,600 mg/kg in the west sidewall at eight feet bgs. The chloride concentration in the bottom sample of the excavation was 146 mg/kg (30 feet).

Targa requests permission to fill the excavation with clean soil. The surface will be seeded to a seed blend recommended for the area. A final report will be submitted to the OCD upon completion of the excavation backfilling.

# 2.0 INTRODUCTION

Larson & Associates, Inc. (LAI) submits this report to the New Mexico Oil Conservation Division (OCD) on behalf of Targa Midstream Services, LLC (Targa) to present the analysis of soil samples collected from the Boyd 9 inch pipeline release (Site). Two natural gas releases were discovered due to external corrosion of the 9 inch steel pipeline which transfers natural gas to the Eunice Plant located northwest of the Site. Targa discovered the two releases in February 2012 and replaced the steel pipe with approximately 200 feet of polyethylene pipe. The initial C-141 report was submitted to the OCD District 1 in Hobbs, New Mexico, on April 11, 2012. The Site is located in Unit K (NE/4, SW/4), Section 23, Township 22 South, Range 37 east, in Lea County, New Mexico. The geodetic position is north 32° 22' 32.54" and west 103° 08' 11.56". Figure 1 presents a location and topographic map. Figure 2 presents an aerial photograph. Appendix E presents the initial C-141 report.

## *2.1 Setting*

The Site is located about 4 miles southeast of Eunice, New Mexico. The surface elevation is approximately 3,330 feet above mean sea level (MSL) and slopes gently to the southeast. The soil is designated "Simona fine sandy loam, 0 to 3 percent slopes" with color from pale brown to grayish brown and fine sandy loam with fragments of hard caliche. The "c" layer is comprised of white caliche that is indurated to strongly cemented. The surrounding area is used for range, wildlife and recreation. The nearest surface water feature is Monument Draw which is located about 1 mile (5,400 feet) east of the Site.

According to the *Geologic Map of New Mexico* and the *Geologic Atlas of Texas, Hobbs Sheet* the surface geology is comprised of Holocene to mid-Pleistocene age wind-blown sand. This material covers the eastern flank of the Pecos River valley and derived principally from reworking the underlying Tertiary-aged Ogallala formation of the Southern High Plains. The Ogallala formation is comprised of fluvial sand, silt, clay and localized gravel, with indistinct to massive crossbeds. The Ogallala sand is generally fine- to medium-grained quartz, and is known to contain arsenic, barium and other heavy metals.

In the Eunice area, the Ogallala formation consists mainly of unconsolidated to poorly consolidated, very fine to medium-grained quartz sand and gravel, with minor amount of silt and clay. An upper-most unit, the Blackwater Draw formation, consists of reddish brown, very fine to fine grained eolian sand with minor amounts of clay and caliche. Locally the "c" horizon of the Simona fine sandy loam, 0 to 3 percent slopes, is called the caprock caliche. The caprock is a hard, erosion resistant, pedogenic calcrete that is typically five to ten feet thick but may exceed 20 feet in some areas. The Ogallala formation is underlain by the Chile formation (Triassic).

The nearest water well is an out-of-service windmill located approximately 2,400 feet northwest of the Site. According to records from the New Mexico Office of the State Engineer (OSE) depth to groundwater ranges between approximately 55 and 65 feet below ground surface (bgs).

# 3.0 REMEDIATION

## *3.1 Initial Remediation*

Between February 28 and March 12, 2012, Environmental Plus, Inc. (EPI) excavated approximately 1,372 cubic yards of soil which was disposed at the Sundance Services (Parabo) disposal facility (NM – 01 – 0003) located east of Eunice, New Mexico.

On March 12, 2012, LAI personnel collected bottom and sidewall samples from the excavations. The samples were analyzed for benzene, toluene, ethylbenzene, xylene (BTEX), total petroleum hydrocarbon (TPH) and chloride by Xenco Laboratories located in Odessa, Texas. BTEX and TPH were not detected above laboratory method detection limits and therefore the vertical extent of chloride was delineated below 250 milligrams per kilogram (mg/kg).

On June 15, 2012, the OCD District 1 approved closure with the installation of a polyethylene liner in the bottom of the excavation. However, installation of a liner was not acceptable to the landowner therefore Targa voluntarily performed additional soil excavation. Appendix A presents the initial report cover page with OCD approval.

## *3.2 Additional Remediation*

Between June 16, 2012 and August 9, 2012, EPI expanded the excavation laterally and deepened to approximately 30 feet bgs. Approximately 5,580 cubic yards of additional soil was excavated and disposed at Sundance Disposal (NM-01-003), located east of Eunice, New Mexico.

On June 27, 2012, Larson & Associates, Inc. (LAI) personnel collected preliminary samples from the bottom and sidewalls of the excavation. A backhoe was used to collect samples from 2 locations in the bottom of the excavation (north and south) at approximately 25 - 30 feet bgs. Samples were collected from the sidewalls between approximately 4 and 15 feet bgs. A stainless steel trowel was used to transfer the samples to 4 ounce laboratory containers which were filled to near zero headspace. The samples were delivered under preservation and chain of custody to Trace Analysis Laboratories, located in Midland, Texas. The laboratory analyzed the samples for chloride by method E300. Table 1 presents analytical data summary. Appendix B presents the laboratory reports. Appendix C presents photographs.

Chloride concentrations in the sidewall samples ranged from 69.8 mg/kg for the north sidewall at four feet bgs. to 8,330 mg/kg in the west sidewall at fifteen feet bgs. The chloride concentration in the two bottom samples of the excavation were 9,060 and 556 mg/kg (25 - 30 feet).

On August 9, 2012, Larson & Associates, Inc. (LAI) personnel collected the final soil samples from the bottom and sidewalls of the excavation site. Samples were collected from the bottom of the excavation at approximately 30 bgs and from the sidewalls at approximately 8 and 16 feet bgs. The sample containers were delivered under preservation and chain of custody to Trace Analysis, Inc., in Midland, Texas, and analyzed for chloride by method E300.

Chloride concentrations in the final sidewall samples ranged from 1,210 mg/kg (south sidewall) to 4,600 mg/kg (west sidewall) at approximately 8 feet bgs. The chloride concentration in the bottom sample near the center of the excavation was 146 mg/kg (30 feet).

## *3.3 Aerial Photographs*

LAI personnel reviewed an aerial photograph that was taken on February 4, 1968. The photograph shows oil and gas production equipment and visual evidence of spills in the vicinity of the Site. This evidence suggests that the chloride in soil may be the result of past releases from historical oil and gas operations. This is further supported by Targa's pipeline which conveys natural gas. No other releases have occurred on this pipeline within ¼ mile of the release site which supports the finding that that

releases were caused by external corrosion due to elevated chloride in soil from historical oil and gas production operations. According to Targa operations personnel the release points on the pipeline were from external corrosion which suggests an external source impacting the pipeline. Figure Appendix D presents the aerial photographs.

## 4.0 CONCLUSIONS

- The remediation action levels are 10 mg/kg (benzene), 50 mg/kg (BTEX) and 1,000 mg/kg (TPH);
- Benzene, BTEX and TPH were below the method detection limits in all soil samples;
- Chloride was delineated vertically to 250 mg/kg in the bottom of the excavation;

## 5.0 RECOMMENDATIONS

Targa requests permission to fill the excavation with clean soil. The surface will be seeded to a seed blend recommended for the area. A final report, including final C-141, will be submitted to the OCD upon completion of the excavation backfilling.

Table 1
Soil Sample Analytical Data Summary
Targa Midstream Services, L.P., Boyd 9" Pipeline Release
Unit K (NE/4, SW/4), Section 23, Township 22 South, Range 37 East
Lea County, New Mexico

| Location | Sample | Date | Depth Feet BGS | Status | Chloride (mg/Kg) | Benzene (mg/Kg) | BTEX (mg/Kg) | GRO (mg/Kg) | DRO (mg/Kg) | Oil (mg/Kg) | Total TPH (mg/Kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bottom | North | 03/12/2012 | 15 | Excavated | 7,680 | <0.00116 | <0.00116 | <17.5 | <17.5 | <17.5 | <17.5 |
| | | | 20 | Excavated | 1,700 | -- | -- | -- | -- | -- | -- |
| | | | 25 | Excavated | 223 | -- | -- | -- | -- | -- | -- |
| Bottom | South | 03/12/2012 | 15 | Excavated | 3,220 | <0.001 | <0.001 | <15.5 | <15.5 | <15.5 | <15.5 |
| | | | 20 | Excavated | 1,310 | -- | -- | -- | -- | -- | -- |
| | | | 25 | Excavated | 546 | -- | -- | -- | -- | -- | -- |
| | | | 30 | Excavated | 249 | -- | -- | -- | -- | -- | -- |
| Bottom | 1 | 6/27/2012 | 15 | Excavated | 9060 | -- | -- | -- | -- | -- | -- |
| | 2 | 6/27/2012 | 20 | Excavated | 556 | -- | -- | -- | -- | -- | -- |
| Bottom | 1 | 8/9/2012 | 30 | Insitu | 146 | -- | -- | -- | -- | -- | -- |
| Sidewall | North (South) | 03/12/2012 | 10 | Excavated | 2,050 | <0.001 | <0.001 | <16.7 | <16.7 | <16.7 | <16.7 |
| | North (West) | 03/12/2012 | 10 | Excavated | 4,110 | <0.000998 | <0.000998 | <17.4 | <17.4 | <17.4 | <17.4 |
| | North (North) | 03/12/2012 | 10 | Excavated | 1,410 | <0.001 | <0.001 | <16.9 | <16.9 | <16.9 | <16.9 |
| | North (East) | 03/12/2012 | 10 | Excavated | 8,290 | <0.001 | <0.001 | <16.5 | <16.5 | <16.5 | <16.5 |
| Sidewall | South (South) | 03/12/2012 | 10 | Excavated | 2,950 | <0.001 | <0.001 | <17.8 | <17.8 | <17.8 | <17.8 |
| | South (West) | 03/12/2012 | 10 | Excavated | 1,480 | <0.000992 | <0.000992 | <15.9 | <15.9 | <15.9 | <15.9 |
| | South (East) | 03/12/2012 | 10 | Excavated | 13,800 | <0.001 | <0.001 | <18.8 | <18.8 | <18.8 | <18.8 |
| Sidewall | NW-1 | 6/27/2012 | 4 | Excavated | 496 | -- | -- | -- | -- | -- | -- |
| | NW-1 | 6/27/2012 | 6 | Excavated | 853 | -- | -- | -- | -- | -- | -- |
| | NW-1 | 6/27/2012 | 10 | Excavated | 1850 | -- | -- | -- | -- | -- | -- |
| | NW-2 | 6/27/2012 | 4 | Excavated | 69.8 | -- | -- | -- | -- | -- | -- |
| | NW-2 | 6/27/2012 | 8 | Excavated | 1850 | -- | -- | -- | -- | -- | -- |

Table 1
Soil Sample Analytical Data Summary
Targa Midstream Services, L.P., Boyd 9" Pipeline Release
Unit K (NE/4, SW/4), Section 23, Township 22 South, Range 37 East
Lea County, New Mexico

| Location | Sample | Date | Depth Feet BGS | Status | Chloride (mg/Kg) | Benzene (mg/Kg) | BTEX (mg/Kg) | GRO (mg/Kg) | DRO (mg/Kg) | Oil (mg/Kg) | Total TPH (mg/Kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NW-2 | 6/27/2012 | 15 | Excavated | 3570 | -- | -- | -- | -- | -- | -- |
| Sidewall | SW-1 | 6/27/2012 | 4 | Excavated | 664 | -- | -- | -- | -- | -- | -- |
| | SW-1 | 6/27/2012 | 10 | Excavated | 1510 | -- | -- | -- | -- | -- | -- |
| Sidewall | EW-1 | 6/27/2012 | 6 | Excavated | 6880 | -- | -- | -- | -- | -- | -- |
| | EW-1 | 6/27/2012 | 10 | Excavated | 6620 | -- | -- | -- | -- | -- | -- |
| | EW-2 | 6/27/2012 | 4 | Excavated | 1050 | -- | -- | -- | -- | -- | -- |
| | EW-2 | 6/27/2012 | 6 | Excavated | 720 | -- | -- | -- | -- | -- | -- |
| | EW-2 | 6/27/2012 | 10 | Excavated | 1340 | -- | -- | -- | -- | -- | -- |
| Sidewall | WW-1 | 6/27/2012 | 4 | Excavated | 99.5 | -- | -- | -- | -- | -- | -- |
| | WW-1 | 6/27/2012 | 8 | Excavated | 4190 | -- | -- | -- | -- | -- | -- |
| | WW-1 | 6/27/2012 | 15 | Excavated | 8330 | -- | -- | -- | -- | -- | -- |
| | WW-2 | 6/27/2012 | 4 | Excavated | 1850 | -- | -- | -- | -- | -- | -- |
| | WW-2 | 6/27/2012 | 8 | Excavated | 4460 | -- | -- | -- | -- | -- | -- |
| | WW-2 | 6/27/2012 | 12 | Excavated | 6710 | -- | -- | -- | -- | -- | -- |
| Sidewall | N-1 | 8/9/2012 | 8 | Insitu | 1270 | -- | -- | -- | -- | -- | -- |
| | N-1 | 8/9/2012 | 16 | Insitu | 1830 | -- | -- | -- | -- | -- | -- |
| | N-2 | 8/9/2012 | 8 | Insitu | 1290 | -- | -- | -- | -- | -- | -- |
| | N-2 | 8/9/2012 | 16 | Insitu | 1820 | -- | -- | -- | -- | -- | -- |
| Sidewall | S1 | 8/9/2012 | 8 | Insitu | 1210 | -- | -- | -- | -- | -- | -- |
| | S1 | 8/9/2012 | 16 | Insitu | 1380 | -- | -- | -- | -- | -- | -- |
| | S2 | 8/9/2012 | 8 | Insitu | 1940 | -- | -- | -- | -- | -- | -- |
| | S2 | 8/9/2012 | 16 | Insitu | 1220 | -- | -- | -- | -- | -- | -- |

Table 1
Soil Sample Analytical Data Summary
Targa Midstream Services, L.P., Boyd 9" Pipeline Release
Unit K (NE/4, SW/4), Section 23, Township 22 South, Range 37 East
Lea County, New Mexico

| Location | Sample | Date | Depth Feet BGS | Status | Chloride (mg/Kg) | Benzene (mg/Kg) | BTEX (mg/Kg) | GRO (mg/Kg) | DRO (mg/Kg) | Oil (mg/Kg) | Total TPH (mg/Kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sidewall** | **E1** | 8/9/2012 | 8 | Insitu | 4070 | -- | -- | -- | -- | -- | -- |
| | **E1** | 8/9/2012 | 16 | Insitu | 6920 | -- | -- | -- | -- | -- | -- |
| | **E2** | 8/9/2012 | 8 | Insitu | 4130 | -- | -- | -- | -- | -- | -- |
| | **E2** | 8/9/2012 | 16 | Insitu | 5850 | -- | -- | -- | -- | -- | -- |
| **Sidewall** | **W1** | 8/9/2012 | 8 | Insitu | 3520 | -- | -- | -- | -- | -- | -- |
| | **W2** | 8/9/2012 | 8 | Insitu | 4600 | -- | -- | -- | -- | -- | -- |
| | **W2** | 8/9/2012 | 16 | Insitu | 3670 | -- | -- | -- | -- | -- | -- |

Notes: All samples analyzed by Xenco Laboratories, Inc., Odessa, Texas and Trace Analysis, Midland, Texas
Samples analyzed via EPA method SW-8021B (BTEX), SW-8015M (TPH) and E-300 (chloride).
Depth measurements are in feet below ground surface (bgs).
All concentrations are in milligrams per kilogram (mg/Kg) equivalent to parts per million (ppm).

V:\PROJECTS\TARGA\12-0118-01 Irvine Boyd 9in\TARGA IRVINE BOYD 9 INCH_recover.dwg, 12/4/2012 4:02:34 PM

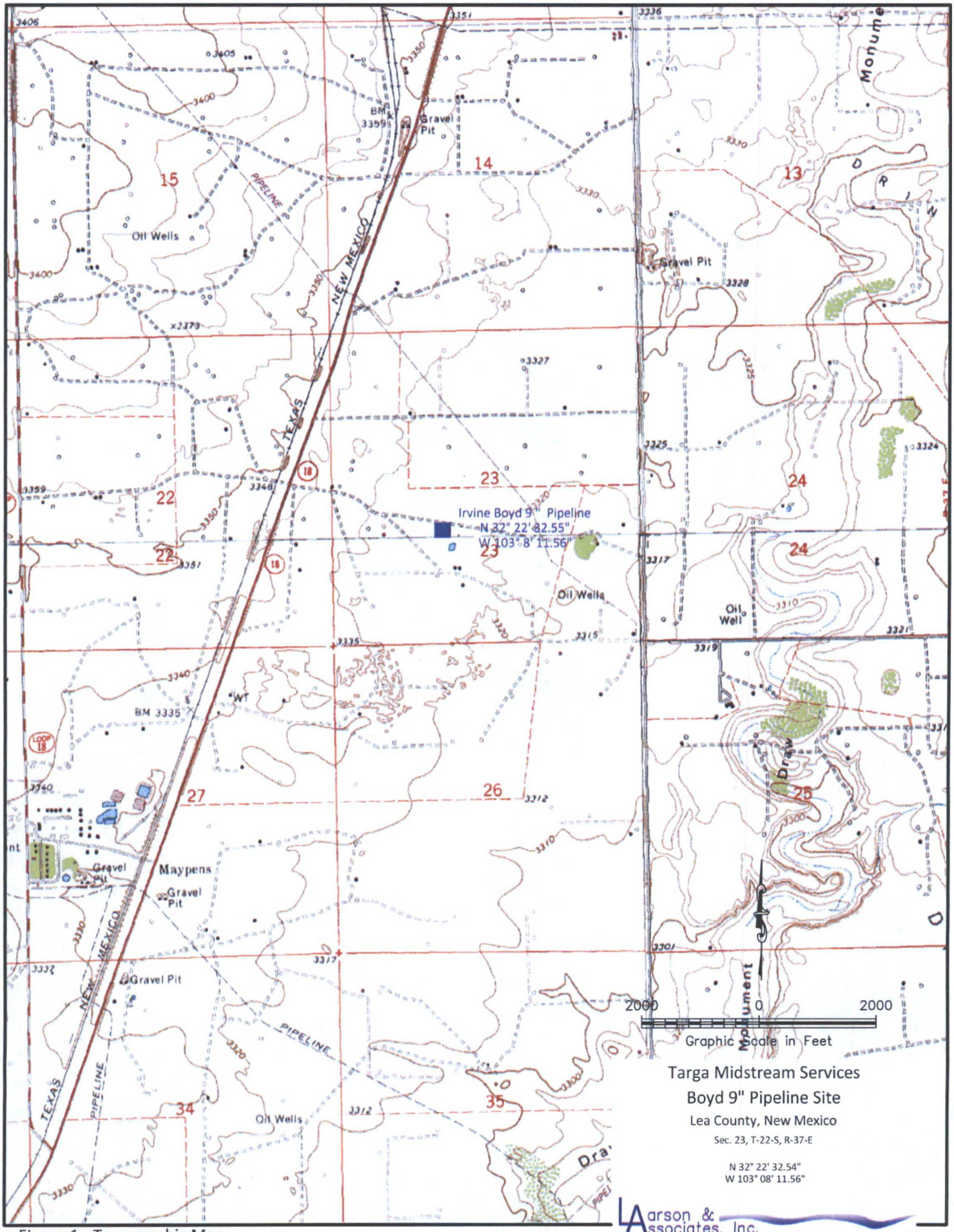
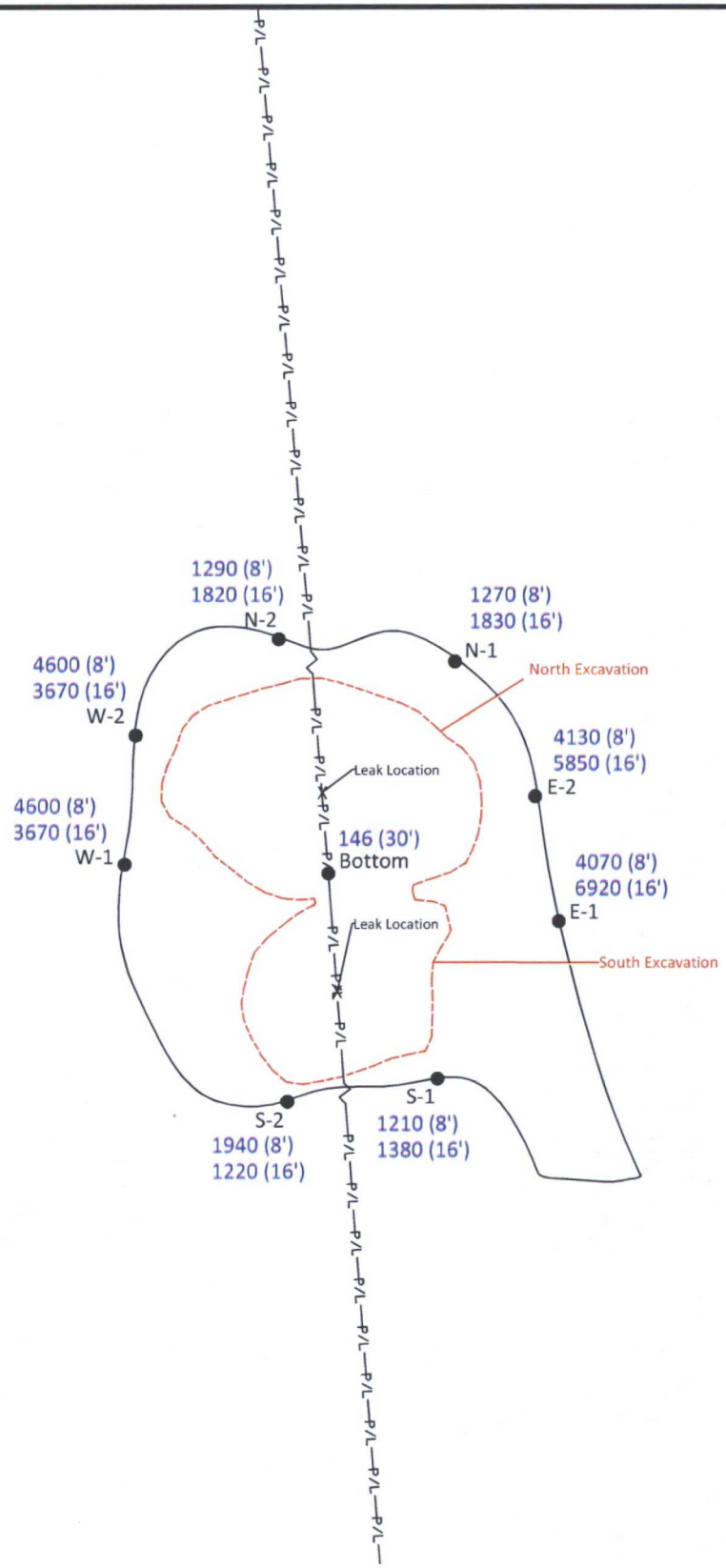



FIgure 1 - Topographic Map


Figure 2 - Aerial Map




Chevron, O.I.
Boyd #3
1980' FSL, 1980' FWL

30 0 30

Graphic Scale in Feet

Legend

1210 (8')
1380 (16')
SW-1 - Sample Location and Chloride Concentration With Depth, Feet BGS, August 9, 2012

- - - - Excavation From March 12, 2012

- P&A Well Location

Targa Midstream Services
Boyd 9" Pipeline Site
Lea County, New Mexico
Sec. 23, T-22-S, R-37-E
N 32° 22' 32.54"
W 103° 08' 11.56"

Larson & Associates, Inc.
Environmental Consultants

Figure 3 - Site Drawing

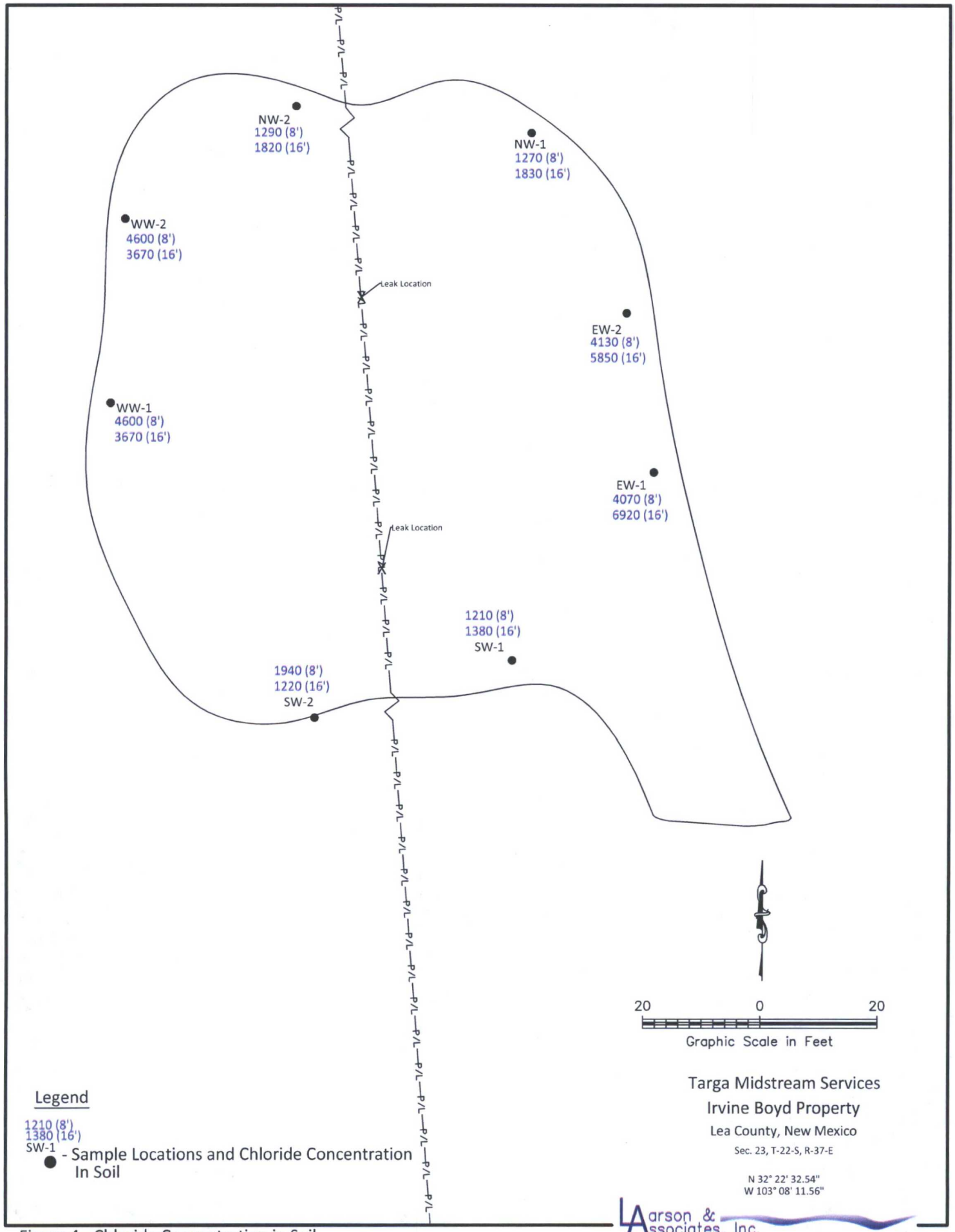



Figure 4 - Chloride Concentration in Soil

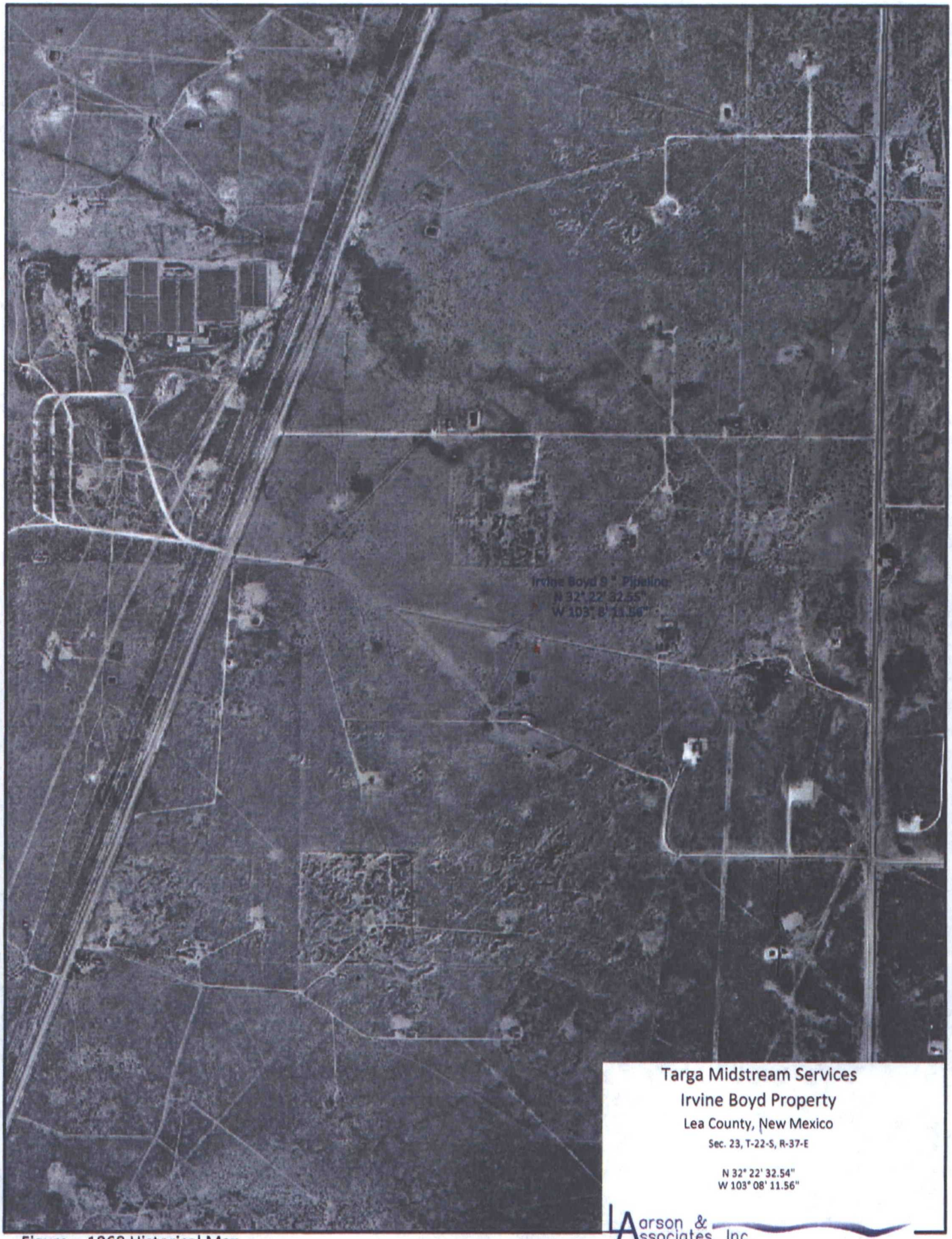



Figure - 1968 Historical Map

# REMEDIATION REPORT

Boyd 9 Inch Pipeline Release

1RP-04-12-2802

Lea County, New Mexico

LAI Project No. 12-0118-01

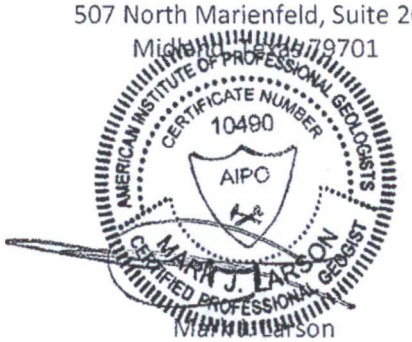
June 14, 20112

Prepared for:

Targa Midstream Services, L.P.
6 Desta Drive, Suite 3300
Midland, Texas 79705

Prepared by:

Larson & Associates, Inc.
507 North Marienfeld, Suite 200
Midland, Texas 79701




Mark J. Larson
Certified Professional Geologist No. 10490

Approved
Geoff Leking
Env. Specialist
NMOCD-DIST I

# Analytical Report 438637

## for

## Larson & Associates

**Project Manager: Mark Larson**

**Boyd 9"**

**12-0118-01**

**22-MAR-12**

Collected By: Client

**Celebrating 20 Years of commitment to excellence in Environmental Testing Services**

**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)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)
Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
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)

XENCO Laboratories

22-MAR-12

Project Manager: **Mark Larson**
**Larson & Associates**
P.O. Box 50685
Midland, TX 79710

Reference: XENCO Report No: **438637**
**Boyd 9"**
Project Address: Lea County, NM

**Mark Larson**:

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 438637. 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. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. 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. 438637 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,

**Brent Barron II**
Odessa Laboratory Manager

# Sample Cross Reference 438637

## Larson & Associates, Midland, TX

Boyd 9"

| Sample Id | Matrix | Date Collected | Sample Depth | Lab Sample Id |
|---|---|---|---|---|
| North Bottom 15' | S | 03-12-12 14:20 | | 438637-001 |
| North Bottom 20' | S | 03-12-12 14:40 | | 438637-002 |
| North Bottom 25' | S | 03-12-12 15:05 | | 438637-003 |
| North South 10' | S | 03-12-12 14:45 | | 438637-004 |
| North West 10' | S | 03-12-12 15:00 | | 438637-005 |
| North North 10' | S | 03-12-12 15:15 | | 438637-006 |
| North East 10' | S | 03-12-12 15:25 | | 438637-007 |
| South Bottom 15' | S | 03-12-12 15:30 | | 438637-008 |
| South Bottom 20' | S | 03-12-12 15:45 | | 438637-009 |
| South Bottom 25' | S | 03-12-12 15:50 | | 438637-010 |
| South Bottom 30' | S | 03-12-12 16:02 | | 438637-011 |
| South South 10' | S | 03-12-12 15:42 | | 438637-012 |
| South West 10' | S | 03-12-12 16:12 | | 438637-013 |
| South East 10' | S | 03-12-12 16:14 | | 438637-014 |

# CASE NARRATIVE

XENCO Laboratories

*Client Name: Larson & Associates*
*Project Name: Boyd 9"*

| | | | |
|---|---|---|---|
| *Project ID:* | *12-0118-01* | *Report Date:* | *22-MAR-12* |
| *Work Order Number:* | *438637* | *Date Received:* | *03/13/2012* |

***Sample receipt non conformances and comments:***
*None*

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

*None*

***Analytical non nonformances and comments:***

*Batch: LBA-883586 BTEX by EPA 8021B*
*SW8021BM*

*Batch 883586, Benzene, Toluene, m_p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike. Ethylbenzene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate.*
*Samples affected are: 438637-009, -004, -005, -014, -006, -008, -007, -012, -013.*
*The Laboratory Control Sample for Toluene, Benzene, Ethylbenzene, m_p-Xylenes , o-Xylene is within laboratory Control Limits*

*Batch: LBA-883636 TPH By SW8015 Mod*
*SW8015MOD_NM*

*Batch 883636, C6-C12 Gasoline Range Hydrocarbons recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate.*
*Samples affected are: 438637-009, -004, -005, -014, -006, -008, -007, -012, -013.*
*The Laboratory Control Sample for C6-C12 Gasoline Range Hydrocarbons is within laboratory Control Limits*

*SW8015MOD_NM*

*Batch 883636, o-Terphenyl recovered below QC limits Data not confirmed by re-analysis.*
*Samples affected are: 619206-1-BKS,438637-013. Matrix interference is suspected in sample QC failures.*

# CASE NARRATIVE

XENCO Laboratories

*Client Name: Larson & Associates*
*Project Name: Boyd 9"*

*Project ID:* 12-0118-01
*Work Order Number:* 438637

*Report Date:* 22-MAR-12
*Date Received:* 03/13/2012

*Batch: LBA-883686 BTEX by EPA 8021B*
*SW8021BM*

*Batch 883686, 4-Bromofluorobenzene recovered above QC limits . Matrix interferences is suspected; data not confirmed by re-analysis*
*Samples affected are: 438791-001 SD.*

*SW8021BM*

*Batch 883686, Benzene, Ethylbenzene, Toluene, m_p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate.*
*Samples affected are: 438637-001.*
*The Laboratory Control Sample for Toluene, Benzene, Ethylbenzene, m_p-Xylenes , o-Xylene is within laboratory Control Limits*

# Certificate of Analysis Summary 438637

**Larson & Associates, Midland, TX**

**Project Name: Boyd 9"**

**Project Id:** 12-0118-01
**Contact:** Mark Larson
**Project Location:** Lea County, NM

**Date Received in Lab:** Tue Mar-13-12 03:50 pm
**Report Date:** 22-MAR-12
**Project Manager:** Brent Barron II

| *Analysis Requested* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 438637-001 | | 438637-002 | | 438637-003 | | 438637-004 | | 438637-005 | | 438637-006 | |
| | ***Field Id:*** | North Bottom 15' | | North Bottom 20' | | North Bottom 25' | | North South 10' | | North West 10' | | North North 10' | |
| | ***Depth:*** | | | | | | | | | | | | |
| | ***Matrix:*** | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | |
| | ***Sampled:*** | Mar-12-12 14:20 | | Mar-12-12 14:40 | | Mar-12-12 15:05 | | Mar-12-12 14:45 | | Mar-12-12 15:00 | | Mar-12-12 15:15 | |
| **Anions by E300** | ***Extracted:*** | | | | | | | | | | | | |
| | ***Analyzed:*** | Mar-14-12 18:13 | | Mar-20-12 10:48 | | Mar-20-12 10:48 | | Mar-14-12 18:13 | | Mar-14-12 18:13 | | Mar-14-12 18:13 | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL |
| Chloride | | 7680 | 97.7 | 1700 | 23.0 | 223 | 4.61 | 2050 | 23.4 | 4110 | 48.9 | 1410 | 23.6 |
| **BTEX by EPA 8021B** | ***Extracted:*** | Mar-15-12 11:29 | | | | | | Mar-14-12 14:43 | | Mar-14-12 14:43 | | Mar-14-12 14:43 | |
| | ***Analyzed:*** | Mar-15-12 13:20 | | | | | | Mar-14-12 17:12 | | Mar-14-12 17:34 | | Mar-14-12 18:20 | |
| | ***Units/RL:*** | mg/kg | RL | | | | | mg/kg | RL | mg/kg | RL | mg/kg | RL |
| Benzene | | ND | 0.00116 | | | | | ND | 0.00101 | ND | 0.000998 | ND | 0.00100 |
| Toluene | | ND | 0.00231 | | | | | ND | 0.00202 | ND | 0.00200 | ND | 0.00200 |
| Ethylbenzene | | ND | 0.00116 | | | | | ND | 0.00101 | ND | 0.000998 | ND | 0.00100 |
| m_p-Xylenes | | ND | 0.00231 | | | | | ND | 0.00202 | ND | 0.00200 | ND | 0.00200 |
| o-Xylene | | ND | 0.00116 | | | | | ND | 0.00101 | ND | 0.000998 | ND | 0.00100 |
| Total Xylenes | | ND | 0.00116 | | | | | ND | 0.00101 | ND | 0.000998 | ND | 0.00100 |
| Total BTEX | | ND | 0.00116 | | | | | ND | 0.00101 | ND | 0.000998 | ND | 0.00100 |
| **Percent Moisture** | ***Extracted:*** | | | | | | | | | | | | |
| | ***Analyzed:*** | Mar-14-12 09:00 | | Mar-20-12 08:05 | | Mar-20-12 08:05 | | Mar-14-12 09:00 | | Mar-14-12 09:00 | | Mar-14-12 09:00 | |
| | ***Units/RL:*** | % | RL | % | RL | % | RL | % | RL | % | RL | % | RL |
| Percent Moisture | | 14.0 | 1.00 | 8.54 | 1.00 | 8.99 | 1.00 | 10.3 | 1.00 | 14.1 | 1.00 | 11.1 | 1.00 |
| **TPH By SW8015 Mod** | ***Extracted:*** | Mar-14-12 10:15 | | | | | | Mar-14-12 11:30 | | Mar-14-12 11:30 | | Mar-14-12 11:30 | |
| | ***Analyzed:*** | Mar-15-12 03:53 | | | | | | Mar-14-12 17:13 | | Mar-14-12 17:38 | | Mar-14-12 18:03 | |
| | ***Units/RL:*** | mg/kg | RL | | | | | mg/kg | RL | mg/kg | RL | mg/kg | RL |
| C6-C12 Gasoline Range Hydrocarbons | | ND | 17.5 | | | | | ND | 16.7 | ND | 17.4 | ND | 16.9 |
| C12-C28 Diesel Range Hydrocarbons | | ND | 17.5 | | | | | ND | 16.7 | ND | 17.4 | ND | 16.9 |
| C28-C35 Oil Range Hydrocarbons | | ND | 17.5 | | | | | ND | 16.7 | ND | 17.4 | ND | 16.9 |
| Total TPH | | ND | 17.5 | | | | | ND | 16.7 | ND | 17.4 | ND | 16.9 |





Brent Barron II
Odessa Laboratory Manager

# Certificate of Analysis Summary 438637

**Larson & Associates, Midland, TX**

**Project Name: Boyd 9"**

**Project Id:** 12-0118-01
**Contact:** Mark Larson
**Project Location:** Lea County, NM

**Date Received in Lab:** Tue Mar-13-12 03:50 pm
**Report Date:** 22-MAR-12
**Project Manager:** Brent Barron II

| *Analysis Requested* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Lab Id:* | 438637-007 | | 438637-008 | | 438637-009 | | 438637-010 | | 438637-011 | | 438637-012 | |
| | *Field Id:* | North East 10' | | South Bottom 15' | | South Bottom 20' | | South Bottom 25' | | South Bottom 30' | | South South 10' | |
| | *Depth:* | | | | | | | | | | | | |
| | *Matrix:* | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | |
| | *Sampled:* | Mar-12-12 15:25 | | Mar-12-12 15:30 | | Mar-12-12 15:45 | | Mar-12-12 15:50 | | Mar-12-12 16:02 | | Mar-12-12 15:42 | |
| **Anions by E300** | *Extracted:* | | | | | | | | | | | | |
| | *Analyzed:* | Mar-14-12 18:13 | | Mar-14-12 18:13 | | Mar-14-12 18:13 | | Mar-20-12 10:48 | | Mar-20-12 10:48 | | Mar-14-12 18:13 | |
| | *Units/RL:* | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL | mg/kg | RL |
| Chloride | | 8290 | 184 | 3220 | 43.5 | 1310 | 20.0 | 546 | 10.7 | 249 | 5.53 | 2950 | 45.4 |
| **BTEX by EPA 8021B** | *Extracted:* | Mar-14-12 14:43 | | Mar-14-12 14:43 | | Mar-14-12 14:43 | | | | | | Mar-14-12 14:43 | |
| | *Analyzed:* | Mar-14-12 18:42 | | Mar-14-12 19:05 | | Mar-14-12 19:28 | | | | | | Mar-14-12 19:50 | |
| | *Units/RL:* | mg/kg | RL | mg/kg | RL | mg/kg | RL | | | | | mg/kg | RL |
| Benzene | | ND | 0.00100 | ND | 0.00100 | ND | 0.00100 | | | | | ND | 0.00100 |
| Toluene | | ND | 0.00200 | ND | 0.00200 | ND | 0.00201 | | | | | ND | 0.00200 |
| Ethylbenzene | | ND | 0.00100 | ND | 0.00100 | ND | 0.00100 | | | | | ND | 0.00100 |
| m_p-Xylenes | | ND | 0.00200 | ND | 0.00200 | ND | 0.00201 | | | | | ND | 0.00200 |
| o-Xylene | | ND | 0.00100 | ND | 0.00100 | ND | 0.00100 | | | | | ND | 0.00100 |
| Total Xylenes | | ND | 0.00100 | ND | 0.00100 | ND | 0.00100 | | | | | ND | 0.00100 |
| Total BTEX | | ND | 0.00100 | ND | 0.00100 | ND | 0.00100 | | | | | ND | 0.00100 |
| **Percent Moisture** | *Extracted:* | | | | | | | | | | | | |
| | *Analyzed:* | Mar-14-12 09:00 | | Mar-14-12 09:00 | | Mar-14-12 09:00 | | Mar-20-12 08:05 | | Mar-20-12 08:05 | | Mar-14-12 09:00 | |
| | *Units/RL:* | % | RL | % | RL | % | RL | % | RL | % | RL | % | RL |
| Percent Moisture | | 8.91 | 1.00 | 3.52 | 1.00 | 15.8 | 1.00 | 21.2 | 1.00 | 24.0 | 1.00 | 7.59 | 1.00 |
| **TPH By SW8015 Mod** | *Extracted:* | Mar-14-12 11:30 | | Mar-14-12 11:30 | | Mar-14-12 11:30 | | | | | | Mar-14-12 11:30 | |
| | *Analyzed:* | Mar-14-12 18:27 | | Mar-14-12 18:51 | | Mar-14-12 19:16 | | | | | | Mar-14-12 19:41 | |
| | *Units/RL:* | mg/kg | RL | mg/kg | RL | mg/kg | RL | | | | | mg/kg | RL |
| C6-C12 Gasoline Range Hydrocarbons | | ND | 16.5 | ND | 15.5 | ND | 17.8 | | | | | ND | 16.2 |
| C12-C28 Diesel Range Hydrocarbons | | ND | 16.5 | ND | 15.5 | ND | 17.8 | | | | | ND | 16.2 |
| C28-C35 Oil Range Hydrocarbons | | ND | 16.5 | ND | 15.5 | ND | 17.8 | | | | | ND | 16.2 |
| Total TPH | | ND | 16.5 | ND | 15.5 | ND | 17.8 | | | | | ND | 16.2 |





Brent Barron II
Odessa Laboratory Manager

# Certificate of Analysis Summary 438637

**Larson & Associates, Midland, TX**

**Project Name: Boyd 9"**

**Project Id:** 12-0118-01
**Contact:** Mark Larson
**Project Location:** Lea County, NM

**Date Received in Lab:** Tue Mar-13-12 03:50 pm
**Report Date:** 22-MAR-12
**Project Manager:** Brent Barron II

| *Analysis Requested* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ***Lab Id:*** | 438637-013 | | 438637-014 | | | | | | | | | |
| | ***Field Id:*** | South West 10' | | South East 10' | | | | | | | | | |
| | ***Depth:*** | | | | | | | | | | | | |
| | ***Matrix:*** | SOIL | | SOIL | | | | | | | | | |
| | ***Sampled:*** | Mar-12-12 16:12 | | Mar-12-12 16:14 | | | | | | | | | |
| **Anions by E300** | ***Extracted:*** | | | | | | | | | | | | |
| | ***Analyzed:*** | Mar-14-12 18:13 | | Mar-15-12 16:27 | | | | | | | | | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | | | | | | | | |
| Chloride | | 1480 | 17.8 | 13800 | 211 | | | | | | | | |
| **BTEX by EPA 8021B** | ***Extracted:*** | Mar-14-12 14:43 | | Mar-14-12 14:43 | | | | | | | | | |
| | ***Analyzed:*** | Mar-14-12 20:13 | | Mar-14-12 20:36 | | | | | | | | | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | | | | | | | | |
| Benzene | | ND | 0.000992 | ND | 0.00100 | | | | | | | | |
| Toluene | | ND | 0.00198 | ND | 0.00200 | | | | | | | | |
| Ethylbenzene | | ND | 0.000992 | ND | 0.00100 | | | | | | | | |
| m_p-Xylenes | | ND | 0.00198 | ND | 0.00200 | | | | | | | | |
| o-Xylene | | ND | 0.000992 | ND | 0.00100 | | | | | | | | |
| Total Xylenes | | ND | 0.000992 | ND | 0.00100 | | | | | | | | |
| Total BTEX | | ND | 0.000992 | ND | 0.00100 | | | | | | | | |
| **Percent Moisture** | ***Extracted:*** | | | | | | | | | | | | |
| | ***Analyzed:*** | Mar-14-12 09:00 | | Mar-14-12 09:00 | | | | | | | | | |
| | ***Units/RL:*** | % | RL | % | RL | | | | | | | | |
| Percent Moisture | | 5.58 | 1.00 | 20.5 | 1.00 | | | | | | | | |
| **TPH By SW8015 Mod** | ***Extracted:*** | Mar-14-12 11:30 | | Mar-14-12 11:30 | | | | | | | | | |
| | ***Analyzed:*** | Mar-14-12 20:07 | | Mar-14-12 20:34 | | | | | | | | | |
| | ***Units/RL:*** | mg/kg | RL | mg/kg | RL | | | | | | | | |
| C6-C12 Gasoline Range Hydrocarbons | | ND | 15.9 | ND | 18.8 | | | | | | | | |
| C12-C28 Diesel Range Hydrocarbons | | ND | 15.9 | ND | 18.8 | | | | | | | | |
| C28-C35 Oil Range Hydrocarbons | | ND | 15.9 | ND | 18.8 | | | | | | | | |
| Total TPH | | ND | 15.9 | ND | 18.8 | | | | | | | | |





Brent Barron II
Odessa Laboratory Manager

XENCO Laboratories

# 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

XENCO Laboratories

# Form 2 - Surrogate Recoveries

**Project Name: Boyd 9"**

**Work Orders :** 438637,

**Project ID:** 12-0118-01

**Lab Batch #:** 883586 **Sample:** 438637-004 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 17:12

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0281 | 0.0300 | 94 | 80-120 | |
| 4-Bromofluorobenzene | 0.0316 | 0.0300 | 105 | 80-120 | |

**Lab Batch #:** 883636 **Sample:** 438637-004 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 17:13

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 87.9 | 99.8 | 88 | 70-135 | |
| o-Terphenyl | 35.7 | 49.9 | 72 | 70-135 | |

**Lab Batch #:** 883586 **Sample:** 438637-005 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 17:34

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>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 | 0.0270 | 0.0300 | 90 | 80-120 | |

**Lab Batch #:** 883636 **Sample:** 438637-005 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 17:38

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 86.8 | 99.5 | 87 | 70-135 | |
| o-Terphenyl | 35.2 | 49.8 | 71 | 70-135 | |

**Lab Batch #:** 883636 **Sample:** 438637-006 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 18:03

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 90.5 | 100 | 91 | 70-135 | |
| o-Terphenyl | 36.5 | 50.0 | 73 | 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.

XENCO Laboratories

# Form 2 - Surrogate Recoveries

**Project Name: Boyd 9"**

**Work Orders :** 438637,

**Project ID:** 12-0118-01

**Lab Batch #:** 883586 **Sample:** 438637-006 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 18:20

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0272 | 0.0300 | 91 | 80-120 | |
| 4-Bromofluorobenzene | 0.0296 | 0.0300 | 99 | 80-120 | |

**Lab Batch #:** 883636 **Sample:** 438637-007 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 18:27

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 89.5 | 100 | 90 | 70-135 | |
| o-Terphenyl | 36.3 | 50.0 | 73 | 70-135 | |

**Lab Batch #:** 883586 **Sample:** 438637-007 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 18:42

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0276 | 0.0300 | 92 | 80-120 | |
| 4-Bromofluorobenzene | 0.0322 | 0.0300 | 107 | 80-120 | |

**Lab Batch #:** 883636 **Sample:** 438637-008 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 18:51

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 90.1 | 99.5 | 91 | 70-135 | |
| o-Terphenyl | 36.3 | 49.8 | 73 | 70-135 | |

**Lab Batch #:** 883586 **Sample:** 438637-008 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 19:05

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0281 | 0.0300 | 94 | 80-120 | |
| 4-Bromofluorobenzene | 0.0311 | 0.0300 | 104 | 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.

XENCO Laboratories

# Form 2 - Surrogate Recoveries

**Project Name: Boyd 9"**

**Work Orders :** 438637, **Project ID:** 12-0118-01

**Lab Batch #:** 883636 **Sample:** 438637-009 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 19:16

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 89.0 | 99.9 | 89 | 70-135 | |
| o-Terphenyl | 36.0 | 50.0 | 72 | 70-135 | |

**Lab Batch #:** 883586 **Sample:** 438637-009 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 19:28

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0278 | 0.0300 | 93 | 80-120 | |
| 4-Bromofluorobenzene | 0.0304 | 0.0300 | 101 | 80-120 | |

**Lab Batch #:** 883636 **Sample:** 438637-012 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 19:41

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 90.7 | 100 | 91 | 70-135 | |
| o-Terphenyl | 36.8 | 50.0 | 74 | 70-135 | |

**Lab Batch #:** 883586 **Sample:** 438637-012 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 19:50

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0282 | 0.0300 | 94 | 80-120 | |
| 4-Bromofluorobenzene | 0.0322 | 0.0300 | 107 | 80-120 | |

**Lab Batch #:** 883636 **Sample:** 438637-013 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 20:07

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 86.0 | 100 | 86 | 70-135 | |
| o-Terphenyl | 34.7 | 50.1 | 69 | 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.

XENCO Laboratories

# Form 2 - Surrogate Recoveries

**Project Name: Boyd 9"**

**Work Orders :** 438637,

**Project ID:** 12-0118-01

**Lab Batch #:** 883586 **Sample:** 438637-013 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 20:13

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0283 | 0.0300 | 94 | 80-120 | |
| 4-Bromofluorobenzene | 0.0315 | 0.0300 | 105 | 80-120 | |

**Lab Batch #:** 883636 **Sample:** 438637-014 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 20:34

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 89.6 | 99.8 | 90 | 70-135 | |
| o-Terphenyl | 36.5 | 49.9 | 73 | 70-135 | |

**Lab Batch #:** 883586 **Sample:** 438637-014 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 20:36

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0280 | 0.0300 | 93 | 80-120 | |
| 4-Bromofluorobenzene | 0.0340 | 0.0300 | 113 | 80-120 | |

**Lab Batch #:** 883615 **Sample:** 438637-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/15/12 03:53

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 89.8 | 100 | 90 | 70-135 | |
| o-Terphenyl | 42.8 | 50.1 | 85 | 70-135 | |

**Lab Batch #:** 883686 **Sample:** 438637-001 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/15/12 13:20

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0281 | 0.0300 | 94 | 80-120 | |
| 4-Bromofluorobenzene | 0.0316 | 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.

XENCO Laboratories

# Form 2 - Surrogate Recoveries

**Project Name:** Boyd 9"

**Work Orders :** 438637, **Project ID:** 12-0118-01

**Lab Batch #:** 883615 **Sample:** 619195-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 03/14/12 16:12

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 89.5 | 100 | 90 | 70-135 | |
| o-Terphenyl | 42.4 | 50.0 | 85 | 70-135 | |

**Lab Batch #:** 883586 **Sample:** 619197-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 03/14/12 16:49

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0278 | 0.0300 | 93 | 80-120 | |
| 4-Bromofluorobenzene | 0.0304 | 0.0300 | 101 | 80-120 | |

**Lab Batch #:** 883636 **Sample:** 619206-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 03/14/12 16:49

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 88.0 | 100 | 88 | 70-135 | |
| o-Terphenyl | 35.9 | 50.0 | 72 | 70-135 | |

**Lab Batch #:** 883686 **Sample:** 619262-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 03/15/12 12:35

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>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 | 0.0295 | 0.0300 | 98 | 80-120 | |

**Lab Batch #:** 883615 **Sample:** 619195-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 03/14/12 15:10

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 101 | 100 | 101 | 70-135 | |
| o-Terphenyl | 38.7 | 50.0 | 77 | 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.

XENCO Laboratories

# Form 2 - Surrogate Recoveries

**Project Name:** Boyd 9"

**Work Orders :** 438637,

**Project ID:** 12-0118-01

**Lab Batch #:** 883586 **Sample:** 619197-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 03/14/12 15:18

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0294 | 0.0300 | 98 | 80-120 | |
| 4-Bromofluorobenzene | 0.0325 | 0.0300 | 108 | 80-120 | |

**Lab Batch #:** 883636 **Sample:** 619206-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 03/14/12 16:00

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 102 | 100 | 102 | 70-135 | |
| o-Terphenyl | 33.5 | 50.0 | 67 | 70-135 | * |

**Lab Batch #:** 883686 **Sample:** 619262-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 03/15/12 11:03

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0296 | 0.0300 | 99 | 80-120 | |
| 4-Bromofluorobenzene | 0.0322 | 0.0300 | 107 | 80-120 | |

**Lab Batch #:** 883615 **Sample:** 619195-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 03/14/12 15:41

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 94.3 | 100 | 94 | 70-135 | |
| o-Terphenyl | 38.9 | 50.0 | 78 | 70-135 | |

**Lab Batch #:** 883586 **Sample:** 619197-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 03/14/12 15:41

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0295 | 0.0300 | 98 | 80-120 | |
| 4-Bromofluorobenzene | 0.0320 | 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.

XENCO Laboratories

# Form 2 - Surrogate Recoveries

**Project Name: Boyd 9"**

**Work Orders :** 438637, **Project ID:** 12-0118-01

**Lab Batch #:** 883636 **Sample:** 619206-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 03/14/12 16:24

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 88.1 | 100 | 88 | 70-135 | |
| o-Terphenyl | 36.3 | 50.0 | 73 | 70-135 | |

**Lab Batch #:** 883686 **Sample:** 619262-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

**Units:** mg/kg **Date Analyzed:** 03/15/12 11:26

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0292 | 0.0300 | 97 | 80-120 | |
| 4-Bromofluorobenzene | 0.0315 | 0.0300 | 105 | 80-120 | |

**Lab Batch #:** 883586 **Sample:** 438637-006 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 21:21

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0258 | 0.0300 | 86 | 80-120 | |
| 4-Bromofluorobenzene | 0.0299 | 0.0300 | 100 | 80-120 | |

**Lab Batch #:** 883636 **Sample:** 438675-001 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/15/12 02:14

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 88.6 | 99.5 | 89 | 70-135 | |
| o-Terphenyl | 36.5 | 49.8 | 73 | 70-135 | |

**Lab Batch #:** 883615 **Sample:** 438609-003 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/15/12 04:29

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 89.4 | 99.9 | 89 | 70-135 | |
| o-Terphenyl | 35.8 | 50.0 | 72 | 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.

XENCO Laboratories

# Form 2 - Surrogate Recoveries

**Project Name: Boyd 9"**

**Work Orders :** 438637, **Project ID:** 12-0118-01

**Lab Batch #:** 883686 **Sample:** 438791-001 S / MS **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/15/12 17:31

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>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 | 0.0361 | 0.0300 | 120 | 80-120 | |

**Lab Batch #:** 883586 **Sample:** 438637-006 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/14/12 21:44

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1,4-Difluorobenzene | 0.0257 | 0.0300 | 86 | 80-120 | |
| 4-Bromofluorobenzene | 0.0307 | 0.0300 | 102 | 80-120 | |

**Lab Batch #:** 883636 **Sample:** 438675-001 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/15/12 02:41

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 106 | 99.9 | 106 | 70-135 | |
| o-Terphenyl | 37.4 | 50.0 | 75 | 70-135 | |

**Lab Batch #:** 883615 **Sample:** 438609-003 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/15/12 05:03

| TPH By SW8015 Mod<br>Analytes | SURROGATE RECOVERY STUDY<br>Amount Found [A] | True Amount [B] | Recovery %R [D] | Control Limits %R | Flags |
|---|---|---|---|---|---|
| 1-Chlorooctane | 95.7 | 99.8 | 96 | 70-135 | |
| o-Terphenyl | 37.0 | 49.9 | 74 | 70-135 | |

**Lab Batch #:** 883686 **Sample:** 438791-001 SD / MSD **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 03/15/12 17:53

| BTEX by EPA 8021B<br>Analytes | SURROGATE RECOVERY STUDY<br>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 | 0.0365 | 0.0300 | 122 | 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.

XENCO Laboratories

# BS / BSD Recoveries

## Project Name: Boyd 9"

**Work Order #:** 438637 **Project ID:** 12-0118-01

**Analyst:** ASA **Date Prepared:** 03/14/2012 **Date Analyzed:** 03/14/2012

**Lab Batch ID:** 883586 **Sample:** 619197-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

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

| BTEX by EPA 8021B<br>Analytes | Blank Sample Result [A] | Spike Added [B] | Blank Spike Result [C] | Blank Spike %R [D] | Spike Added [E] | Blank Spike Duplicate Result [F] | Blk. Spk Dup. %R [G] | RPD % | Control Limits %R | Control Limits %RPD | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | <0.00100 | 0.100 | 0.0979 | 98 | 0.100 | 0.0970 | 97 | 1 | 70-130 | 35 | |
| Toluene | <0.00200 | 0.100 | 0.0971 | 97 | 0.100 | 0.0970 | 97 | 0 | 70-130 | 35 | |
| Ethylbenzene | <0.00100 | 0.100 | 0.0972 | 97 | 0.100 | 0.0973 | 97 | 0 | 71-129 | 35 | |
| m_p-Xylenes | <0.00200 | 0.200 | 0.203 | 102 | 0.200 | 0.203 | 102 | 0 | 70-135 | 35 | |
| o-Xylene | <0.00100 | 0.100 | 0.0990 | 99 | 0.100 | 0.0991 | 99 | 0 | 71-133 | 35 | |

**Analyst:** ASA **Date Prepared:** 03/15/2012 **Date Analyzed:** 03/15/2012

**Lab Batch ID:** 883686 **Sample:** 619262-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

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

| BTEX by EPA 8021B<br>Analytes | Blank Sample Result [A] | Spike Added [B] | Blank Spike Result [C] | Blank Spike %R [D] | Spike Added [E] | Blank Spike Duplicate Result [F] | Blk. Spk Dup. %R [G] | RPD % | Control Limits %R | Control Limits %RPD | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | <0.00100 | 0.100 | 0.0961 | 96 | 0.100 | 0.0959 | 96 | 0 | 70-130 | 35 | |
| Toluene | <0.00200 | 0.100 | 0.0955 | 96 | 0.100 | 0.0962 | 96 | 1 | 70-130 | 35 | |
| Ethylbenzene | <0.00100 | 0.100 | 0.0957 | 96 | 0.100 | 0.0963 | 96 | 1 | 71-129 | 35 | |
| m_p-Xylenes | <0.00200 | 0.200 | 0.201 | 101 | 0.200 | 0.201 | 101 | 0 | 70-135 | 35 | |
| o-Xylene | <0.00100 | 0.100 | 0.0979 | 98 | 0.100 | 0.0979 | 98 | 0 | 71-133 | 35 | |

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

# BS / BSD Recoveries

## Project Name: Boyd 9"

**Work Order #:** 438637 **Project ID:** 12-0118-01

**Analyst:** BRB **Date Prepared:** 03/14/2012 **Date Analyzed:** 03/14/2012

**Lab Batch ID:** 883576 **Sample:** 883576-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

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

| Anions by E300<br>Analytes | Blank Sample Result [A] | Spike Added [B] | Blank Spike Result [C] | Blank Spike %R [D] | Spike Added [E] | Blank Spike Duplicate Result [F] | Blk. Spk Dup. %R [G] | RPD % | Control Limits %R | Control Limits %RPD | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | <0.840 | 20.0 | 19.5 | 98 | 20.0 | 19.6 | 98 | 1 | 75-125 | 20 | |

**Analyst:** BRB **Date Prepared:** 03/15/2012 **Date Analyzed:** 03/15/2012

**Lab Batch ID:** 883802 **Sample:** 883802-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

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

| Anions by E300<br>Analytes | Blank Sample Result [A] | Spike Added [B] | Blank Spike Result [C] | Blank Spike %R [D] | Spike Added [E] | Blank Spike Duplicate Result [F] | Blk. Spk Dup. %R [G] | RPD % | Control Limits %R | Control Limits %RPD | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | <0.840 | 20.0 | 19.8 | 99 | 20.0 | 19.6 | 98 | 1 | 75-125 | 20 | |

**Analyst:** BRB **Date Prepared:** 03/20/2012 **Date Analyzed:** 03/20/2012

**Lab Batch ID:** 884044 **Sample:** 884044-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

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

| Anions by E300<br>Analytes | Blank Sample Result [A] | Spike Added [B] | Blank Spike Result [C] | Blank Spike %R [D] | Spike Added [E] | Blank Spike Duplicate Result [F] | Blk. Spk Dup. %R [G] | RPD % | Control Limits %R | Control Limits %RPD | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | <0.840 | 20.0 | 18.9 | 95 | 20.0 | 20.4 | 102 | 8 | 75-125 | 20 | |

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

XENCO Laboratories

# BS / BSD Recoveries

## Project Name: Boyd 9"

**Work Order #:** 438637 **Project ID:** 12-0118-01

**Analyst:** BRB **Date Prepared:** 03/14/2012 **Date Analyzed:** 03/14/2012

**Lab Batch ID:** 883615 **Sample:** 619195-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

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

| TPH By SW8015 Mod<br>Analytes | Blank Sample Result [A] | Spike Added [B] | Blank Spike Result [C] | Blank Spike %R [D] | Spike Added [E] | Blank Spike Duplicate Result [F] | Blk. Spk Dup. %R [G] | RPD % | Control Limits %R | Control Limits %RPD | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C6-C12 Gasoline Range Hydrocarbons | <15.0 | 1000 | 822 | 82 | 1000 | 793 | 79 | 4 | 70-135 | 35 | |
| C12-C28 Diesel Range Hydrocarbons | <15.0 | 1000 | 1100 | 110 | 1000 | 1090 | 109 | 1 | 70-135 | 35 | |

**Analyst:** BRB **Date Prepared:** 03/14/2012 **Date Analyzed:** 03/14/2012

**Lab Batch ID:** 883636 **Sample:** 619206-1-BKS **Batch #:** 1 **Matrix:** Solid

**Units:** mg/kg

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

| TPH By SW8015 Mod<br>Analytes | Blank Sample Result [A] | Spike Added [B] | Blank Spike Result [C] | Blank Spike %R [D] | Spike Added [E] | Blank Spike Duplicate Result [F] | Blk. Spk Dup. %R [G] | RPD % | Control Limits %R | Control Limits %RPD | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C6-C12 Gasoline Range Hydrocarbons | <15.0 | 1000 | 810 | 81 | 1000 | 823 | 82 | 2 | 70-135 | 35 | |
| C12-C28 Diesel Range Hydrocarbons | <15.0 | 1000 | 959 | 96 | 1000 | 941 | 94 | 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

XENCO Laboratories

# Form 3 - MS Recoveries

## Project Name: Boyd 9"

**Work Order #:** 438637

**Lab Batch #:** 883576 **Project ID:** 12-0118-01

**Date Analyzed:** 03/14/2012 **Date Prepared:** 03/14/2012 **Analyst:** BRB

**QC- Sample ID:** 438611-012 S **Batch #:** 1 **Matrix:** Soil

**Reporting Units:** mg/kg

| MATRIX / MATRIX SPIKE RECOVERY STUDY | | | | | | |
|---|---|---|---|---|---|---|
| **Inorganic Anions by EPA 300** **Analytes** | **Parent Sample Result [A]** | **Spike Added [B]** | **Spiked Sample Result [C]** | **%R [D]** | **Control Limits %R** | **Flag** |
| Chloride | 48.6 | 105 | 163 | 109 | 75-125 | |

**Lab Batch #:** 883576

**Date Analyzed:** 03/14/2012 **Date Prepared:** 03/14/2012 **Analyst:** BRB

**QC- Sample ID:** 438637-001 S **Batch #:** 1 **Matrix:** Soil

**Reporting Units:** mg/kg

| MATRIX / MATRIX SPIKE RECOVERY STUDY | | | | | | |
|---|---|---|---|---|---|---|
| **Inorganic Anions by EPA 300** **Analytes** | **Parent Sample Result [A]** | **Spike Added [B]** | **Spiked Sample Result [C]** | **%R [D]** | **Control Limits %R** | **Flag** |
| Chloride | 7680 | 2330 | 9890 | 95 | 75-125 | |

**Lab Batch #:** 883802

**Date Analyzed:** 03/15/2012 **Date Prepared:** 03/15/2012 **Analyst:** BRB

**QC- Sample ID:** 438795-001 S **Batch #:** 1 **Matrix:** Soil

**Reporting Units:** mg/kg

| MATRIX / MATRIX SPIKE RECOVERY STUDY | | | | | | |
|---|---|---|---|---|---|---|
| **Inorganic Anions by EPA 300** **Analytes** | **Parent Sample Result [A]** | **Spike Added [B]** | **Spiked Sample Result [C]** | **%R [D]** | **Control Limits %R** | **Flag** |
| Chloride | 2330 | 1060 | 3320 | 93 | 75-125 | |

**Lab Batch #:** 884044

**Date Analyzed:** 03/20/2012 **Date Prepared:** 03/20/2012 **Analyst:** BRB

**QC- Sample ID:** 439008-001 S **Batch #:** 1 **Matrix:** Soil

**Reporting Units:** mg/kg

| MATRIX / MATRIX SPIKE RECOVERY STUDY | | | | | | |
|---|---|---|---|---|---|---|
| **Inorganic Anions by EPA 300** **Analytes** | **Parent Sample Result [A]** | **Spike Added [B]** | **Spiked Sample Result [C]** | **%R [D]** | **Control Limits %R** | **Flag** |
| Chloride | 159 | 213 | 374 | 101 | 75-125 | |

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: Boyd 9"**

**Work Order # :** 438637 **Project ID:** 12-0118-01

**Lab Batch ID:** 883586 **QC- Sample ID:** 438637-006 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 03/14/2012 **Date Prepared:** 03/14/2012 **Analyst:** ASA

**Reporting Units:** mg/kg

| BTEX by EPA 8021B Analytes | MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Parent Sample Result [A] | Spike Added [B] | Spiked Sample Result [C] | Spiked Sample %R [D] | Spike Added [E] | Duplicate Spiked Sample Result [F] | Spiked Dup. %R [G] | RPD % | Control Limits %R | Control Limits %RPD | Flag |
| Benzene | <0.00101 | 0.101 | 0.0684 | 68 | 0.0998 | 0.0706 | 71 | 3 | 70-130 | 35 | X |
| Toluene | <0.00201 | 0.101 | 0.0678 | 67 | 0.0998 | 0.0718 | 72 | 6 | 70-130 | 35 | X |
| Ethylbenzene | <0.00101 | 0.101 | 0.0648 | 64 | 0.0998 | 0.0702 | 70 | 8 | 71-129 | 35 | X |
| m_p-Xylenes | <0.00201 | 0.201 | 0.139 | 69 | 0.200 | 0.144 | 72 | 4 | 70-135 | 35 | X |
| o-Xylene | <0.00101 | 0.101 | 0.0677 | 67 | 0.0998 | 0.0709 | 71 | 5 | 71-133 | 35 | X |

**Lab Batch ID:** 883686 **QC- Sample ID:** 438791-001 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 03/15/2012 **Date Prepared:** 03/15/2012 **Analyst:** ASA

**Reporting Units:** mg/kg

| BTEX by EPA 8021B Analytes | MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Parent Sample Result [A] | Spike Added [B] | Spiked Sample Result [C] | Spiked Sample %R [D] | Spike Added [E] | Duplicate Spiked Sample Result [F] | Spiked Dup. %R [G] | RPD % | Control Limits %R | Control Limits %RPD | Flag |
| Benzene | <0.00101 | 0.101 | 0.0654 | 65 | 0.100 | 0.0639 | 64 | 2 | 70-130 | 35 | X |
| Toluene | <0.00201 | 0.101 | 0.0661 | 65 | 0.100 | 0.0647 | 65 | 2 | 70-130 | 35 | X |
| Ethylbenzene | <0.00101 | 0.101 | 0.0671 | 66 | 0.100 | 0.0665 | 67 | 1 | 71-129 | 35 | X |
| m_p-Xylenes | <0.00201 | 0.201 | 0.138 | 69 | 0.200 | 0.135 | 68 | 2 | 70-135 | 35 | X |
| o-Xylene | <0.00101 | 0.101 | 0.0648 | 64 | 0.100 | 0.0630 | 63 | 3 | 71-133 | 35 | X |

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

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

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit

# Form 3 - MS / MSD Recoveries

**Project Name: Boyd 9"**

**Work Order # :** 438637 **Project ID:** 12-0118-01

**Lab Batch ID:** 883615 **QC- Sample ID:** 438609-003 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 03/15/2012 **Date Prepared:** 03/14/2012 **Analyst:** BRB

**Reporting Units:** mg/kg

| TPH By SW8015 Mod<br>Analytes | MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | 26.1 | 1110 | 807 | 70 | 1110 | 817 | 71 | 1 | 70-135 | 35 | |
| C12-C28 Diesel Range Hydrocarbons | 299 | 1110 | 1310 | 91 | 1110 | 1380 | 97 | 5 | 70-135 | 35 | |

**Lab Batch ID:** 883636 **QC- Sample ID:** 438675-001 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 03/15/2012 **Date Prepared:** 03/14/2012 **Analyst:** BRB

**Reporting Units:** mg/kg

| TPH By SW8015 Mod<br>Analytes | MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | 36.9 | 1120 | 797 | 68 | 1130 | 815 | 69 | 2 | 70-135 | 35 | X |
| C12-C28 Diesel Range Hydrocarbons | 113 | 1120 | 1170 | 94 | 1130 | 1170 | 94 | 0 | 70-135 | 35 | |

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

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

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit

XENCO Laboratories

# Sample Duplicate Recovery

## Project Name: Boyd 9"

**Work Order #:** 438637

**Lab Batch #:** 883576 **Project ID:** 12-0118-01

**Date Analyzed:** 03/14/2012 18:13 **Date Prepared:** 03/14/2012 **Analyst:** BRB

**QC- Sample ID:** 438637-001 D **Batch #:** 1 **Matrix:** Soil

**Reporting Units:** mg/kg

| | SAMPLE / SAMPLE DUPLICATE RECOVERY | | | | |
|---|---|---|---|---|---|
| **Anions by E300** **Analyte** | **Parent Sample Result [A]** | **Sample Duplicate Result [B]** | **RPD** | **Control Limits %RPD** | **Flag** |
| Chloride | 7680 | 7650 | 0 | 20 | |

**Lab Batch #:** 883802

**Date Analyzed:** 03/15/2012 16:27 **Date Prepared:** 03/15/2012 **Analyst:** BRB

**QC- Sample ID:** 438795-001 D **Batch #:** 1 **Matrix:** Soil

**Reporting Units:** mg/kg

| | SAMPLE / SAMPLE DUPLICATE RECOVERY | | | | |
|---|---|---|---|---|---|
| **Anions by E300** **Analyte** | **Parent Sample Result [A]** | **Sample Duplicate Result [B]** | **RPD** | **Control Limits %RPD** | **Flag** |
| Chloride | 2330 | 2330 | 0 | 20 | |

**Lab Batch #:** 884044

**Date Analyzed:** 03/20/2012 10:48 **Date Prepared:** 03/20/2012 **Analyst:** BRB

**QC- Sample ID:** 439008-001 D **Batch #:** 1 **Matrix:** Soil

**Reporting Units:** mg/kg

| | SAMPLE / SAMPLE DUPLICATE RECOVERY | | | | |
|---|---|---|---|---|---|
| **Anions by E300** **Analyte** | **Parent Sample Result [A]** | **Sample Duplicate Result [B]** | **RPD** | **Control Limits %RPD** | **Flag** |
| Chloride | 159 | 152 | 5 | 20 | |

**Lab Batch #:** 883599

**Date Analyzed:** 03/14/2012 09:00 **Date Prepared:** 03/14/2012 **Analyst:** BRB

**QC- Sample ID:** 438636-001 D **Batch #:** 1 **Matrix:** Soil

**Reporting Units:** %

| | SAMPLE / SAMPLE DUPLICATE RECOVERY | | | | |
|---|---|---|---|---|---|
| **Percent Moisture** **Analyte** | **Parent Sample Result [A]** | **Sample Duplicate Result [B]** | **RPD** | **Control Limits %RPD** | **Flag** |
| Percent Moisture | 10.1 | 11.2 | 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

# Sample Duplicate Recovery

## Project Name: Boyd 9"

**Work Order #:** 438637

**Lab Batch #:** 884001 **Project ID:** 12-0118-01

**Date Analyzed:** 03/20/2012 08:05 **Date Prepared:** 03/20/2012 **Analyst:** BRB

**QC- Sample ID:** 438985-001 D **Batch #:** 1 **Matrix:** Soil

**Reporting Units:** %

| | SAMPLE / SAMPLE DUPLICATE RECOVERY | | | | |
|---|---|---|---|---|---|
| **Percent Moisture** **Analyte** | **Parent Sample Result [A]** | **Sample Duplicate Result [B]** | **RPD** | **Control Limits %RPD** | **Flag** |
| Percent Moisture | 4.28 | 4.42 | 3 | 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

# CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 3-12-2012 PAGE 1 OF 1
PO #: LAB WORK ORDER #: 438637
PROJECT LOCATION OR NAME: Lea County, NM / Boyd 9"
LAI PROJECT #: 12-0118-01 COLLECTOR: MJL

TRRP report? ☐ Yes ☑ No
TIME ZONE: Time zone/State: MT, √NM
S=SOIL W=WATER A=AIR P=PAINT SL=SLUDGE OT=OTHER

| Field Sample I.D. | Lab # | Date | Time | Matrix | # of Containers | PRESERVATION: HCl | $HNO_3$ | $H_2SO_4$ ☐ NaOH ☐ | ICE | UNPRESERVED | ANALYSES: BTEX ☑ MTBE ☐ | TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☑ | DIESEL - MOD 8015 ☑ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☑ ANIONS ☐ ALKALINITY ☐ Hold | FIELD NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North Bottom 15' | -01 | 3/12/12 | 1420 | S | 2 | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | | | | ✓ | |
| North Bottom 20' | -02 | | 1440 | | 2 | | | ✓ | ✓ | | | | | | | | | | | | | | | | | ✓ | ✓ | |
| North Bottom 25' | -03 | | 1505 | | 2 | | | ✓ | ✓ | | | | | | | | | | | | | | | | | ✓ | ✓ | |
| North-South 10' | -04 | | 1445 | | 2 | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | | | ✓ | | |
| North-West 10' | -05 | | 1500 | | 2 | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | | | ✓ | | |
| North-North 10' | -06 | | 1515 | | 2 | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | | | ✓ | | |
| North-East 10' | -07 | | 1525 | | 2 | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | | | ✓ | | |
| South Bottom 15' | -08 | | 1530 | | 2 | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | | | ✓ | | |
| South Bottom 20' | -09 | | 1545 | | 2 | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | | | ✓ | | |
| South Bottom 25' | -10 | | 1550 | | 2 | | | ✓ | ✓ | | | | | | | | | | | | | | | | | ✓ | ✓ | |
| South Bottom 30' | -11 | | 1602 | | 2 | | | ✓ | ✓ | | | | | | | | | | | | | | | | | ✓ | ✓ | |
| South-South 10' | -12 | | 1542 | | 2 | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | | | ✓ | | |
| South-West 10' | -13 | | 1612 | | 2 | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | | | ✓ | | |
| South-East 10' | -14 | | 1614 | ↓ | 2 | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | | | ✓ | | |
| | | ↓ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL | | | | | 28 | | | | | | | | | | | | | | | | | | | | | | | |

RELINQUISHED BY:(Signature) [signature] DATE/TIME 3/13/2012 350 pm RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature) A. Hernandez 3/13/12 350

**TURN AROUND TIME**
NORMAL ☑
1 DAY ☐
2 DAY ☐
OTHER ☐ _____

**LABORATORY USE ONLY:**
RECEIVING TEMP: 1.0°C THERM #: _____
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL # _____
☑ HAND DELIVERED

XENCO Laboratories

XENCO Laboratories
Atlanta, Boca Raton, Corpus Christi, Dallas
Houston, Miami, Odessa, Philadelphia
Phoenix, San Antonio, Tampa

Document Title: Sample Receipt Checklist
Document No.: SYS-SRC
Revision/Date: No. 01, 5/27/2010
Effective Date: 6/1/2010 Page 1 of 1

## Prelogin / Nonconformance Report - Sample Log-In

Client: Larson + Assoc.
Date/Time: 3/13/12 3:50
Lab ID # : 438637
Initials: AH

### Sample Receipt Checklist

| | | | | |
|---|---|---|---|---|
| 1. Samples on ice? | Blue | (Water) | No | |
| 2. Shipping container in good condition? | (Yes) | No | None | |
| 3. Custody seals intact on shipping container (cooler) and bottles? | Yes | No | (N/A) | |
| 4. Chain of Custody present? | (Yes) | No | | |
| 5. Sample instructions complete on chain of custody? | (Yes) | No | | |
| 6. Any missing / extra samples? | Yes | (No) | | |
| 7. Chain of custody signed when relinquished / received? | (Yes) | No | | |
| 8. Chain of custody agrees with sample label(s)? | (Yes) | No | | |
| 9. Container labels legible and intact? | (Yes) | No | | |
| 10. Sample matrix / properties agree with chain of custody? | (Yes) | No | | |
| 11. Samples in proper container / bottle? | (Yes) | No | | |
| 12. Samples properly preserved? | (Yes) | No | N/A | |
| 13. Sample container intact? | (Yes) | No | | |
| 14. Sufficient sample amount for indicated test(s)? | (Yes) | No | | |
| 15. All samples received within sufficient hold time? | (Yes) | No | | |
| 16. Subcontract of sample(s)? | Yes | No | (N/A) | |
| 17. VOC sample have zero head space? | (Yes) | No | N/A | |

| 18. Cooler 1 No. | | Cooler 2 No. | | Cooler 3 No. | | Cooler 4 No. | | Cooler 5 No. | |
|---|---|---|---|---|---|---|---|---|---|
| lbs | 1.0 °C | lbs | °C | lbs | °C | lbs | °C | lbs | °C |

### Nonconformance Documentation

Contact:_____ Contacted by:_____ Date/Time:_____

Regarding: _____

Corrective Action Taken: _____

Check all that apply:
- ☐ Cooling process has begun shortly after sampling event and out of temperature condition acceptable by NELAC 5.5.8.3.1.a.1.
- ☐ Initial and Backup Temperature confirm out of temperature conditions
- ☐ Client understands and would like to proceed with analysis

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

Coty Woolf
Larson and Associates, Inc.

P. O. Box 50685
Midland, TX, 79710

Report Date: July 11, 2012

Work Order: 12062838

Project Name: Boyd 9
Project Number: 12-0118-01

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 |
|---|---|---|---|---|---|
| 302298 | NW-1 (4') | soil | 2012-06-27 | 09:00 | 2012-06-28 |
| 302299 | NW-1 (6') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302300 | NW-1 (10') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302301 | NW-2 (4') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302302 | NW-2 (8') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302303 | NW-2 (15') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302304 | SW-1 (4') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302305 | SW-1 (10') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302306 | EW-2 (10') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302307 | EW-1 (6') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302308 | EW-2 (4') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302309 | EW-2 (6') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302310 | EW-1 (10') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302311 | WW-1 (4') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302312 | WW-1 (8') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302313 | WW-1 (15') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302314 | WW-2 (4') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302315 | WW-2 (8') | soil | 2012-06-27 | 00:00 | 2012-06-28 |

| Sample | Description | Matrix | Date Taken | Time Taken | Date Received |
|---|---|---|---|---|---|
| 302316 | WW-2 (12') | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302317 | Bottom-1 | soil | 2012-06-27 | 00:00 | 2012-06-28 |
| 302318 | Bottom-2 | soil | 2012-06-27 | 00:00 | 2012-06-28 |

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 Boyd 9 were received by TraceAnalysis, Inc. on 2012-06-28 and assigned to work order 12062838. Samples for work order 12062838 were received intact at a temperature of 16.9 C.

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

| Test | Method | Prep Batch | Prep Date | QC Batch | Analysis Date |
|---|---|---|---|---|---|
| Chloride (IC) | E 300.0 | 78674 | 2012-07-05 at 08:58 | 92890 | 2012-07-05 at 15:26 |
| Chloride (IC) | E 300.0 | 78674 | 2012-07-05 at 08:58 | 92891 | 2012-07-05 at 15:27 |
| Chloride (IC) | E 300.0 | 78674 | 2012-07-05 at 08:58 | 92893 | 2012-07-06 at 15:29 |
| Chloride (IC) | E 300.0 | 78674 | 2012-07-05 at 08:58 | 92894 | 2012-07-06 at 15:30 |

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 12062838 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: 302298 - NW-1 (4')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92890 | Date Analyzed: | 2012-07-05 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | Result | RL Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **496** | mg/Kg | 1 | 10.0 |

**Sample: 302299 - NW-1 (6')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92890 | Date Analyzed: | 2012-07-05 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | Result | RL Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **853** | mg/Kg | 10 | 10.0 |

**Sample: 302300 - NW-1 (10')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92890 | Date Analyzed: | 2012-07-05 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | Result | RL Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **1850** | mg/Kg | 10 | 10.0 |

**Sample: 302301 - NW-2 (4')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92890 | Date Analyzed: | 2012-07-05 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | RL Result | Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **69.8** | mg/Kg | 1 | 10.0 |

**Sample: 302302 - NW-2 (8')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92890 | Date Analyzed: | 2012-07-05 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | RL Result | Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **1850** | mg/Kg | 10 | 10.0 |

**Sample: 302303 - NW-2 (15')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92891 | Date Analyzed: | 2012-07-05 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | RL Result | Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **3570** | mg/Kg | 10 | 10.0 |

**Sample: 302304 - SW-1 (4')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92891 | Date Analyzed: | 2012-07-05 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | RL Result | Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **664** | mg/Kg | 10 | 10.0 |

**Sample: 302305 - SW-1 (10')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92891 | Date Analyzed: | 2012-07-05 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | RL Result | Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **1510** | mg/Kg | 10 | 10.0 |

**Sample: 302306 - EW-2 (10')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92891 | Date Analyzed: | 2012-07-05 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | RL Result | Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **1340** | mg/Kg | 10 | 10.0 |

**Sample: 302307 - EW-1 (6')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92891 | Date Analyzed: | 2012-07-05 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | RL Result | Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **6880** | mg/Kg | 10 | 10.0 |

**Sample: 302308 - EW-2 (4')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92893 | Date Analyzed: | 2012-07-06 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | Result | RL Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **1050** | mg/Kg | 10 | 10.0 |

**Sample: 302309 - EW-2 (6')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92893 | Date Analyzed: | 2012-07-06 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | Result | RL Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **720** | mg/Kg | 10 | 10.0 |

**Sample: 302310 - EW-1 (10')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92893 | Date Analyzed: | 2012-07-06 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | Result | RL Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **6620** | mg/Kg | 10 | 10.0 |

**Sample: 302311 - WW-1 (4')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92893 | Date Analyzed: | 2012-07-06 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | RL Result | Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **99.5** | mg/Kg | 1 | 10.0 |

**Sample: 302312 - WW-1 (8')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92893 | Date Analyzed: | 2012-07-06 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | RL Result | Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **4190** | mg/Kg | 10 | 10.0 |

**Sample: 302313 - WW-1 (15')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92894 | Date Analyzed: | 2012-07-06 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | RL Result | Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **8330** | mg/Kg | 10 | 10.0 |

**Sample: 302314 - WW-2 (4')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92894 | Date Analyzed: | 2012-07-06 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | RL Result | Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **1850** | mg/Kg | 10 | 10.0 |

**Sample: 302315 - WW-2 (8')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92894 | Date Analyzed: | 2012-07-06 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | Result | RL Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **4460** | mg/Kg | 10 | 10.0 |

**Sample: 302316 - WW-2 (12')**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92894 | Date Analyzed: | 2012-07-06 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | Result | RL Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **6710** | mg/Kg | 10 | 10.0 |

**Sample: 302317 - Bottom-1**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92894 | Date Analyzed: | 2012-07-06 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | Result | RL Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **9060** | mg/Kg | 10 | 10.0 |

**Sample: 302318 - Bottom-2**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Midland | | | | |
| Analysis: | Chloride (IC) | Analytical Method: | E 300.0 | Prep Method: | N/A |
| QC Batch: | 92894 | Date Analyzed: | 2012-07-06 | Analyzed By: | AR |
| Prep Batch: | 78674 | Sample Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | RL Result | Units | Dilution | RL |
|---|---|---|---|---|---|---|
| Chloride | Qs | | **556** | mg/Kg | 1 | 10.0 |

# Method Blanks

**Method Blank (1)** QC Batch: 92890

| | | | | | |
|---|---|---|---|---|---|
| QC Batch: | 92890 | Date Analyzed: | 2012-07-05 | Analyzed By: | AR |
| Prep Batch: | 78674 | QC Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | MDL Result | Units | RL |
|---|---|---|---|---|---|
| Chloride | | | 1.26 | mg/Kg | 10 |

**Method Blank (1)** QC Batch: 92891

| | | | | | |
|---|---|---|---|---|---|
| QC Batch: | 92891 | Date Analyzed: | 2012-07-05 | Analyzed By: | AR |
| Prep Batch: | 78674 | QC Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | MDL Result | Units | RL |
|---|---|---|---|---|---|
| Chloride | | | 1.31 | mg/Kg | 10 |

**Method Blank (1)** QC Batch: 92893

| | | | | | |
|---|---|---|---|---|---|
| QC Batch: | 92893 | Date Analyzed: | 2012-07-06 | Analyzed By: | AR |
| Prep Batch: | 78674 | QC Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | MDL Result | Units | RL |
|---|---|---|---|---|---|
| Chloride | | | 1.29 | mg/Kg | 10 |

**Method Blank (1)** QC Batch: 92894

| | | | | | |
|---|---|---|---|---|---|
| QC Batch: | 92894 | Date Analyzed: | 2012-07-06 | Analyzed By: | AR |
| Prep Batch: | 78674 | QC Preparation: | 2012-07-05 | Prepared By: | AR |

| Parameter | Flag | Cert | MDL Result | Units | RL |
|---|---|---|---|---|---|
| Chloride | | | <0.0460 | mg/Kg | 10 |

# Laboratory Control Spikes

**Laboratory Control Spike (LCS-1)**

QC Batch: 92890 | Date Analyzed: 2012-07-05 | Analyzed By: AR
Prep Batch: 78674 | QC Preparation: 2012-07-05 | Prepared By: AR

| Param | F | C | LCS Result | Units | Dil. | Spike Amount | Matrix Result | Rec. | Rec. Limit |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | | | 264 | mg/Kg | 1 | 250 | <0.0460 | 106 | 90 - 110 |

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | | | 264 | mg/Kg | 1 | 250 | <0.0460 | 106 | 90 - 110 | 0 | 20 |

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

**Laboratory Control Spike (LCS-1)**

QC Batch: 92891 | Date Analyzed: 2012-07-05 | Analyzed By: AR
Prep Batch: 78674 | QC Preparation: 2012-07-05 | Prepared By: AR

| Param | F | C | LCS Result | Units | Dil. | Spike Amount | Matrix Result | Rec. | Rec. Limit |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | | | 268 | mg/Kg | 1 | 250 | <0.0460 | 107 | 90 - 110 |

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | | | 267 | mg/Kg | 1 | 250 | <0.0460 | 107 | 90 - 110 | 0 | 20 |

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

**Laboratory Control Spike (LCS-1)**

QC Batch: 92893 | Date Analyzed: 2012-07-06 | Analyzed By: AR
Prep Batch: 78674 | QC Preparation: 2012-07-05 | Prepared By: AR

| Param | F | C | LCS Result | Units | Dil. | Spike Amount | Matrix Result | Rec. | Rec. Limit |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | | | 266 | mg/Kg | 1 | 250 | <0.0460 | 106 | 90 - 110 |

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | | | 268 | mg/Kg | 1 | 250 | <0.0460 | 107 | 90 - 110 | 1 | 20 |

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

**Laboratory Control Spike (LCS-1)**

QC Batch: 92894 Date Analyzed: 2012-07-06 Analyzed By: AR
Prep Batch: 78674 QC Preparation: 2012-07-05 Prepared By: AR

| Param | F | C | LCS Result | Units | Dil. | Spike Amount | Matrix Result | Rec. | Rec. Limit |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | | | 262 | mg/Kg | 1 | 250 | <0.0460 | 105 | 90 - 110 |

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | | | 263 | mg/Kg | 1 | 250 | <0.0460 | 105 | 90 - 110 | 0 | 20 |

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

**Matrix Spike (MS-1)** Spiked Sample: 302298

QC Batch: 92890 Date Analyzed: 2012-07-05 Analyzed By: AR
Prep Batch: 78674 QC Preparation: 2012-07-05 Prepared By: AR

| Param | | F | C | MS Result | Units | Dil. | Spike Amount | Matrix Result | Rec. | Rec. Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | Qs | Qs | | 3760 | mg/Kg | 10 | 2750 | 523 | 118 | 90 - 110 |

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | Qs | Qs | | 3780 | mg/Kg | 10 | 2750 | 523 | 118 | 90 - 110 | 0 | 20 |

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

**Matrix Spike (MS-1)** Spiked Sample: 302303

QC Batch: 92891 | Date Analyzed: 2012-07-05 | Analyzed By: AR
Prep Batch: 78674 | QC Preparation: 2012-07-05 | Prepared By: AR

| Param | | F | C | MS Result | Units | Dil. | Spike Amount | Matrix Result | Rec. | Rec. Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | Qs | Qs | | 7370 | mg/Kg | 10 | 2750 | 3570 | 138 | 90 - 110 |

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | Qs | Qs | | 7380 | mg/Kg | 10 | 2750 | 3570 | 138 | 90 - 110 | 0 | 20 |

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

**Matrix Spike (MS-1)** Spiked Sample: 302308

QC Batch: 92893 | Date Analyzed: 2012-07-06 | Analyzed By: AR
Prep Batch: 78674 | QC Preparation: 2012-07-05 | Prepared By: AR

| Param | | F | C | MS Result | Units | Dil. | Spike Amount | Matrix Result | Rec. | Rec. Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | Qs | Qs | | 4150 | mg/Kg | 10 | 2750 | 1050 | 113 | 90 - 110 |

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | Qs | Qs | | 4160 | mg/Kg | 10 | 2750 | 1050 | 113 | 90 - 110 | 0 | 20 |

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

**Matrix Spike (MS-1)** Spiked Sample: 302313

QC Batch: 92894 | Date Analyzed: 2012-07-06 | Analyzed By: AR
Prep Batch: 78674 | QC Preparation: 2012-07-05 | Prepared By: AR

| Param | | F | C | MS Result | Units | Dil. | Spike Amount | Matrix Result | Rec. | Rec. Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | Qs | Qs | | 11700 | mg/Kg | 10 | 2750 | 8330 | 122 | 90 - 110 |

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | Qs | Qs | | 11700 | mg/Kg | 10 | 2750 | 8330 | 122 | 90 - 110 | 0 | 20 |

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

# Calibration Standards

**Standard (CCV-1)**

QC Batch: 92890 Date Analyzed: 2012-07-05 Analyzed By: AR

| Param | Flag | Cert | Units | CCVs True Conc. | CCVs Found Conc. | CCVs Percent Recovery | Percent Recovery Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloride | | | mg/Kg | 25.0 | 27.1 | 108 | 90 - 110 | 2012-07-05 |

**Standard (CCV-2)**

QC Batch: 92890 Date Analyzed: 2012-07-05 Analyzed By: AR

| Param | Flag | Cert | Units | CCVs True Conc. | CCVs Found Conc. | CCVs Percent Recovery | Percent Recovery Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloride | | | mg/Kg | 25.0 | 26.2 | 105 | 90 - 110 | 2012-07-05 |

**Standard (CCV-1)**

QC Batch: 92891 Date Analyzed: 2012-07-05 Analyzed By: AR

| Param | Flag | Cert | Units | CCVs True Conc. | CCVs Found Conc. | CCVs Percent Recovery | Percent Recovery Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloride | | | mg/Kg | 25.0 | 26.2 | 105 | 90 - 110 | 2012-07-05 |

**Standard (CCV-2)**

QC Batch: 92891 Date Analyzed: 2012-07-05 Analyzed By: AR

| Param | Flag | Cert | Units | CCVs True Conc. | CCVs Found Conc. | CCVs Percent Recovery | Percent Recovery Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloride | | | mg/Kg | 25.0 | 26.5 | 106 | 90 - 110 | 2012-07-05 |

**Standard (CCV-1)**

QC Batch: 92893 Date Analyzed: 2012-07-06 Analyzed By: AR

| Param | Flag | Cert | Units | CCVs True Conc. | CCVs Found Conc. | CCVs Percent Recovery | Percent Recovery Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloride | | | mg/Kg | 25.0 | 26.5 | 106 | 90 - 110 | 2012-07-06 |

**Standard (CCV-2)**

QC Batch: 92893 Date Analyzed: 2012-07-06 Analyzed By: AR

| Param | Flag | Cert | Units | CCVs True Conc. | CCVs Found Conc. | CCVs Percent Recovery | Percent Recovery Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloride | | | mg/Kg | 25.0 | 26.0 | 104 | 90 - 110 | 2012-07-06 |

**Standard (CCV-1)**

QC Batch: 92894 Date Analyzed: 2012-07-06 Analyzed By: AR

| Param | Flag | Cert | Units | CCVs True Conc. | CCVs Found Conc. | CCVs Percent Recovery | Percent Recovery Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloride | | | mg/Kg | 25.0 | 26.0 | 104 | 90 - 110 | 2012-07-06 |

**Standard (CCV-2)**

QC Batch: 92894 Date Analyzed: 2012-07-06 Analyzed By: AR

| Param | Flag | Cert | Units | CCVs True Conc. | CCVs Found Conc. | CCVs Percent Recovery | Percent Recovery Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloride | | | mg/Kg | 25.0 | 26.2 | 105 | 90 - 110 | 2012-07-06 |

# 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 |

## 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. |
| 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.

# CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to: Coty Wolf

DATE: 6-27-12 PAGE 1 OF 2
PO #: LAB WORK ORDER #: 12062838
PROJECT LOCATION OR NAME: Boyd 9
LAI PROJECT #: 12-0118-01 COLLECTOR:

TRRP report? ☐ Yes ☐ No
TIME ZONE: Time zone/State:

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

| Field Sample I.D. | Lab # | Date | Time | Matrix | # of Containers | PRESERVATION: HCl | $HNO_3$ | $H_2SO_4$ ☐ NaOH ☐ | ICE | UNPRESERVED | ANALYSES: BTEX ☐ MTBE ☐ | TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDES ☐ ANIONS ☐ ALKALINITY ☐ | FIELD NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NW-1 (4') | 302298 | 6-27-12 | 900 | Soil | 1 | | | | | | | | | | | | | | | | | | | | | X | | E-300 method |
| NW-1 (6') | 299 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| NW-1 (10') | 300 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| NW-2 (4') | 301 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| NW-2 (8') | 302 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| NW-2 (15') | 303 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| SW-1 (4') | 304 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| SW-1 (10') | 305 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| EW-2 (6') | 306 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| EW-1 (6') | 307 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| EW-2 (4') | 308 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| EW-2 (6') | 309 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| EW-1 (10') | 310 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| WW-1 (4') | 311 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| WW-1 (8') | 312 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

RELINQUISHED BY:(Signature) DATE/TIME: 6-28-12 RECEIVED BY: (Signature) 6-28-12 16:10
RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

TURN AROUND TIME
NORMAL ☐
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 16.9 THERM #: IR-1
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL #
☑ HAND DELIVERED

# CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants

507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to: Coty Wolf

DATE: 6-27-12 PAGE 2 OF 2
PO #: _____ LAB WORK ORDER #: 12062838
PROJECT LOCATION OR NAME: Boyd 9
LAI PROJECT #: 12-0118-01 COLLECTOR: _____

TRRP report? ☐ Yes ☐ No

TIME ZONE: Time zone/State:

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

| Field Sample I.D. | Lab # | Date | Time | Matrix | # of Containers | PRESERVATION: HCl | $HNO_3$ | $H_2SO_4$ ☐ NaOH ☐ | ICE | UNPRESERVED | ANALYSES | FIELD NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WW-1(15') | 312313 | 6-27-12 | | Soil | 1 | | | | | | X | E-300 method |
| WW-2(4') | 314 | | | | 1 | | | | | | | |
| WW-2(8') | 315 | | | | 1 | | | | | | | |
| WW-2(12') | 316 | | | | 1 | | | | | | | |
| Bottom-1 | 317 | | | | 1 | | | | | | | |
| Bottom-2 | 318 | | | | 1 | | | | | | | |

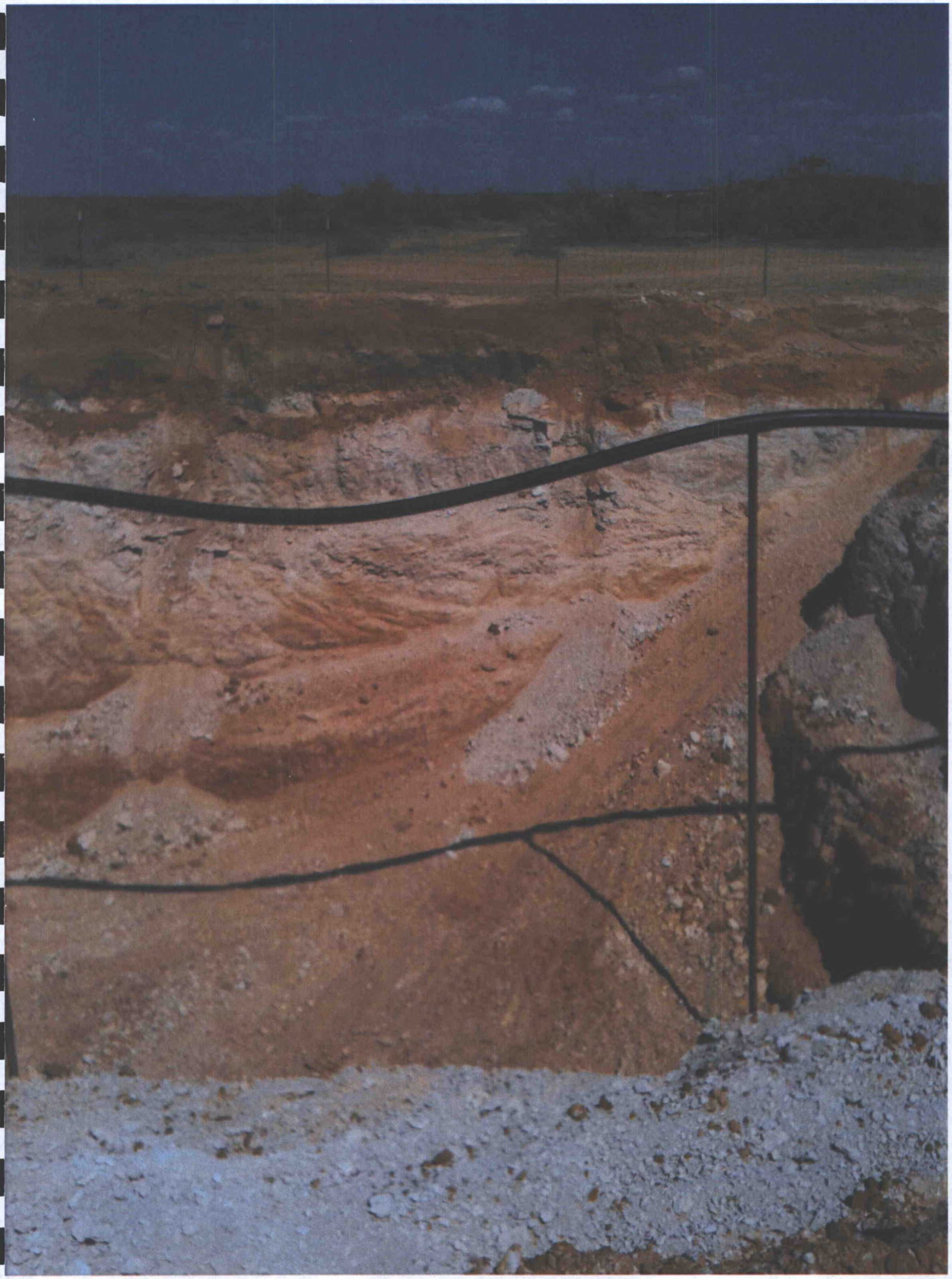
ANALYSES: BTEX ☐ MTBE ☐ | TRPH 418.1 ☐ | TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☐ ANIONS ☐ ALKALINITY ☐

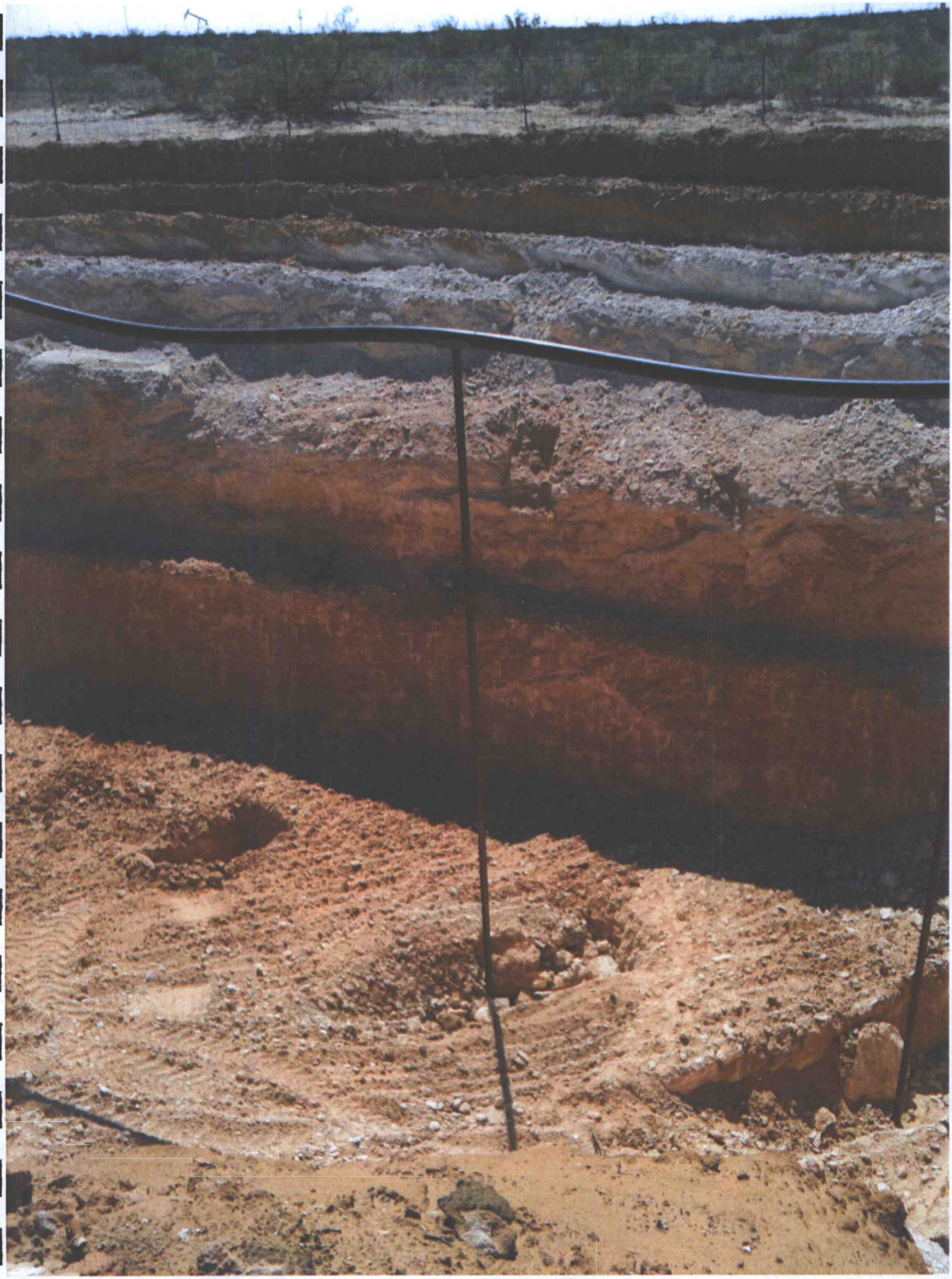
TOTAL

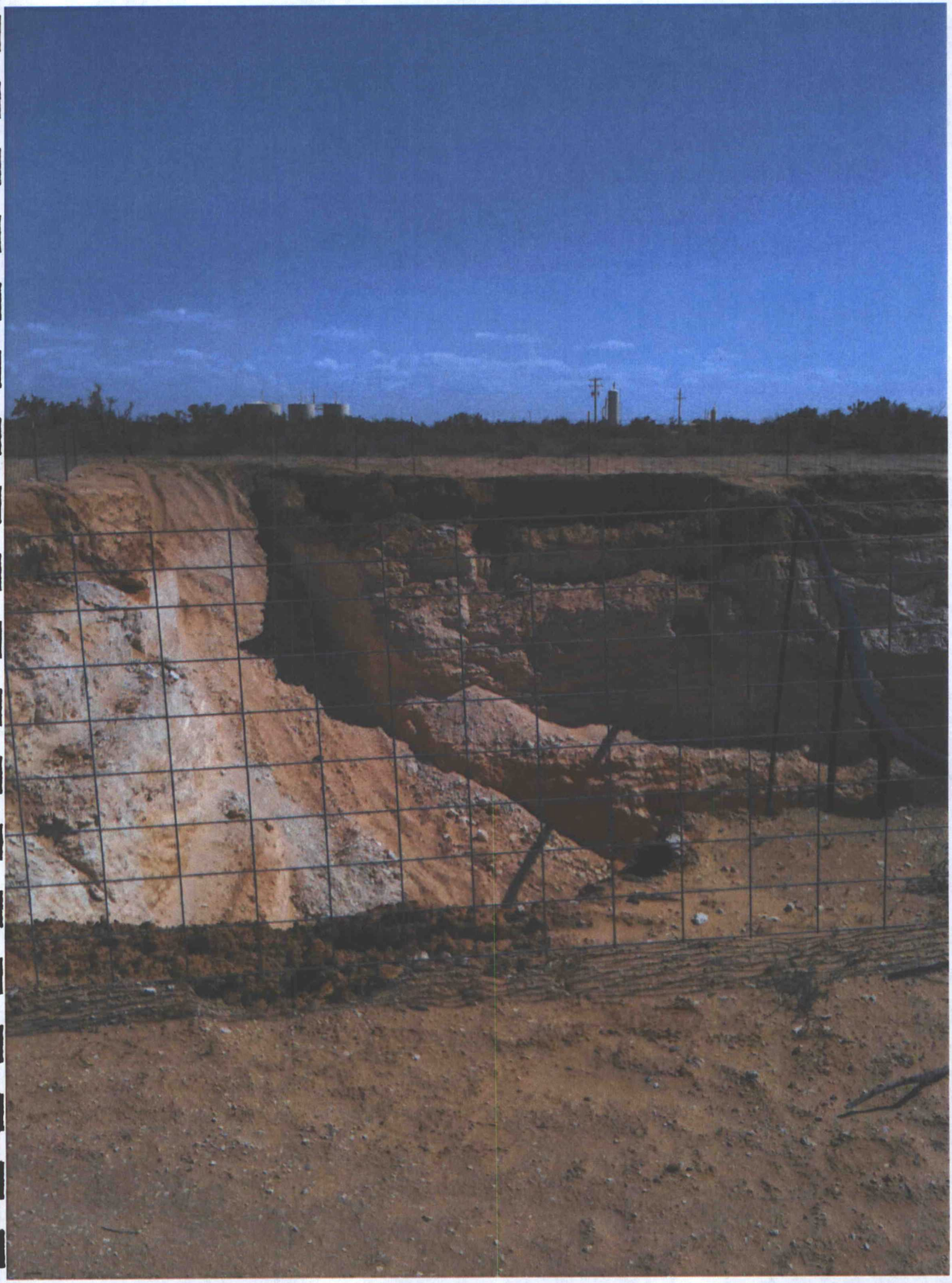
| | | |
|---|---|---|
| RELINQUISHED BY:(Signature) | DATE/TIME 6-28-12 | RECEIVED BY: (Signature) |
| RELINQUISHED BY:(Signature) | DATE/TIME | RECEIVED BY: (Signature) |
| RELINQUISHED BY:(Signature) | DATE/TIME | RECEIVED BY: (Signature) |

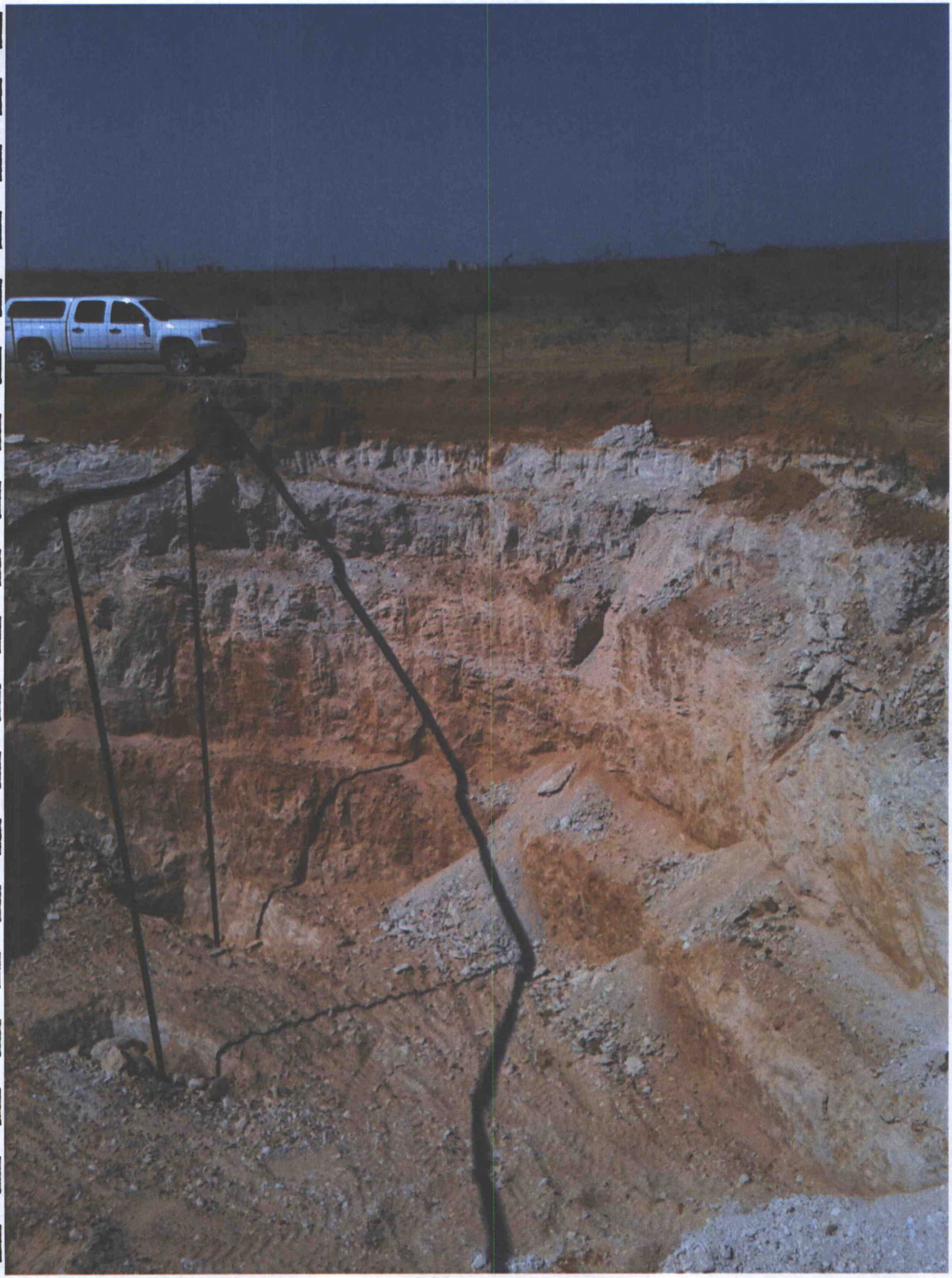
**TURN AROUND TIME**
NORMAL ☐
1 DAY ☐
2 DAY ☐
OTHER ☐

**LABORATORY USE ONLY:**
RECEIVING TEMP: 16.9 THERM #: IR-1
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL # _____
☑ HAND DELIVERED









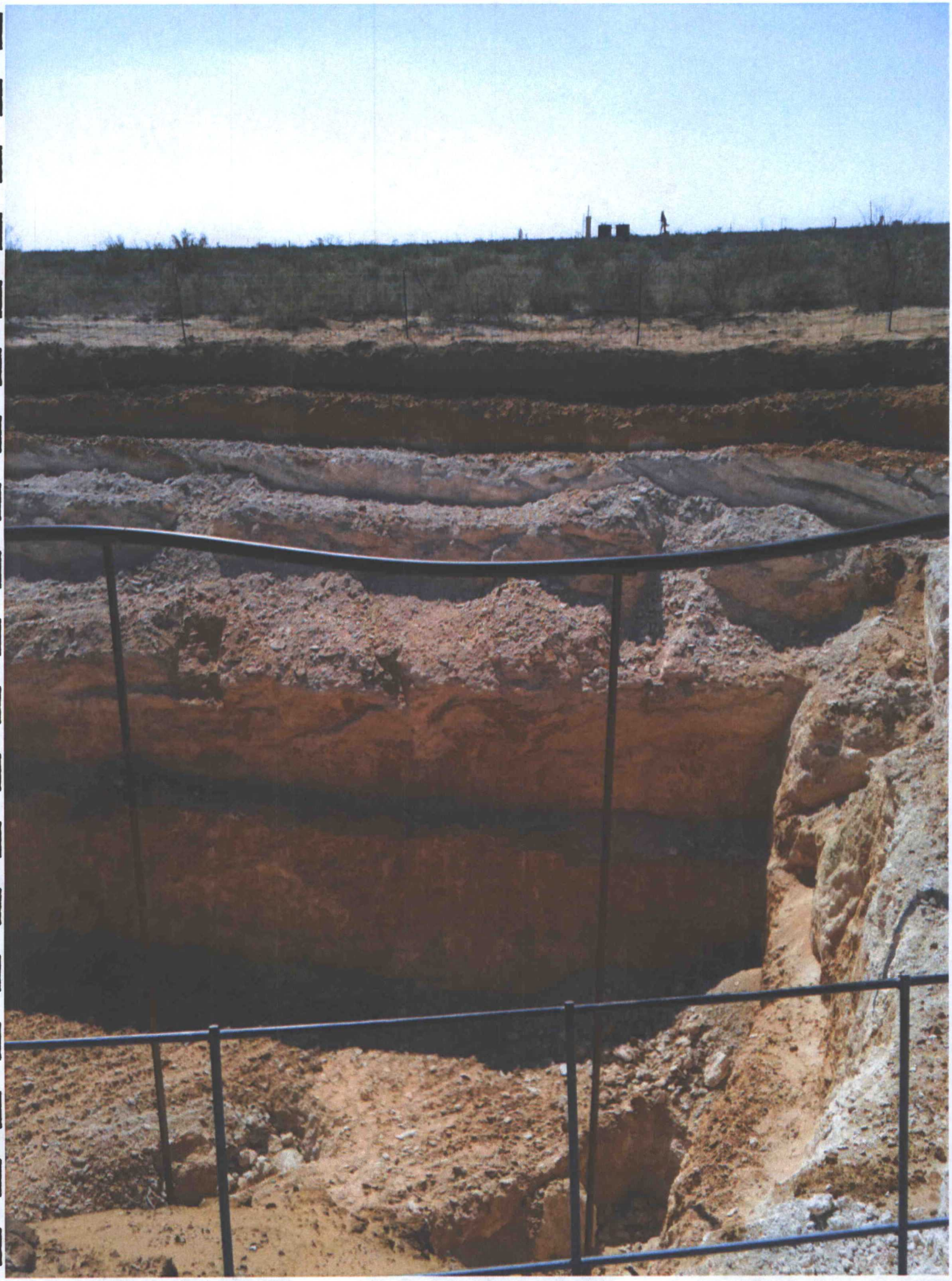



Figure - 1997 Historical Map