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Report Description

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App Number: pGRL1211156093

1RP - 2802

TARGA MIDSTREAM SERVICES LLC

January 12, 2013

Geoffrey Leking
Environmental Engineer
Energy, Minerals & Natural Resources Department
New Mexico Oil Conservation Division
1625 N. French Drive
Hobbs, NM 88240

HOBBS OCD

JAN 17 2013

RECEIVED

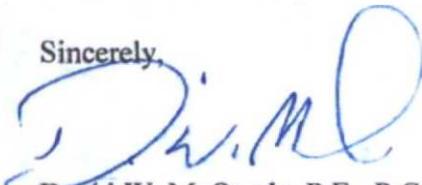
RE: Irvin Boyd 9 Inch Pipeline Release
Lea County, NM
OCD Release Remediation Project: IRP-04-12-2802

Dear Mr. Leking:

Attached please find the Final Report for the Irvin Boyd 9 Inch Pipeline Release, located in Lea County, NM. The report summarizes the response actions and remediation work performed by Targa to effectively address the soil conditions in the vicinity of the pipeline release. Based on the work performed and data results Targa respectfully requests that the NM OCD grant approval to backfill the open excavation and close the site.

Please contact me if you have any questions.

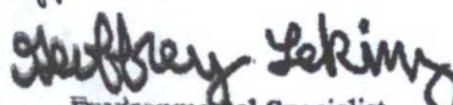
Sincerely,



David W. McQuade, P.E., P.G.
Environmental Manager

Cc: Cal Wrangham – Targa Midland
Mark Larson – Larson & Assoc.

Attachment

approved

Environmental Specialist

6/11/13 NMOC-DIST1

HOBBS OCD

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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



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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.

Tables

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

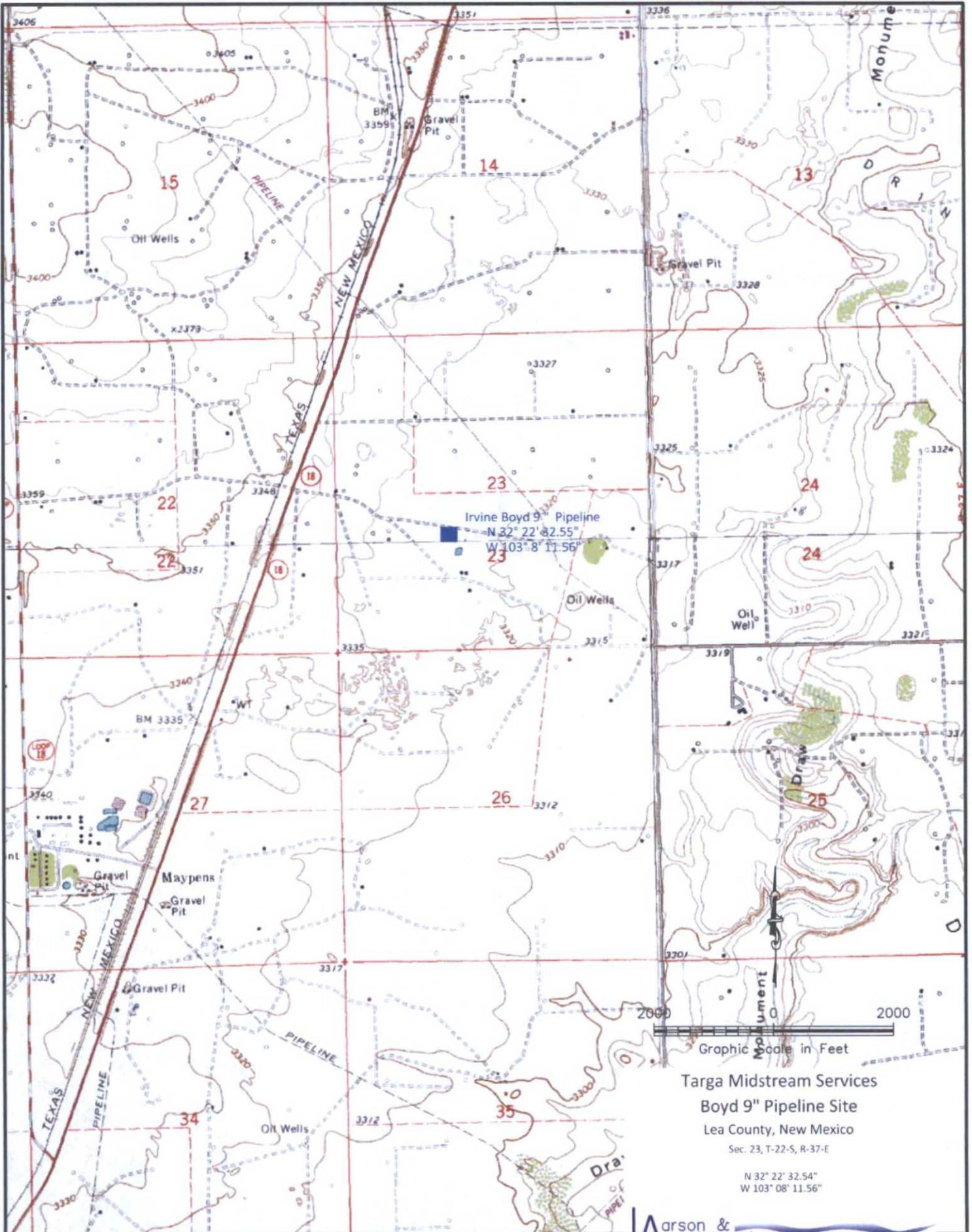
Samples analyzed via EPA method SW-8021B (BTEX), SW-8015M (TPH) and E-300 (chloride).

Depth measurements are in feet below ground surface (bgs).

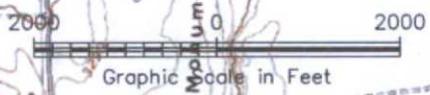
All concentrations are in milligrams per kilogram (mg/Kg) equivalent to parts per million (ppm).



Figures



Irvine Boyd 9" Pipeline
 N 32° 22' 32.55"
 W 103° 08' 11.56"



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"

Figure 1 - Topographic Map

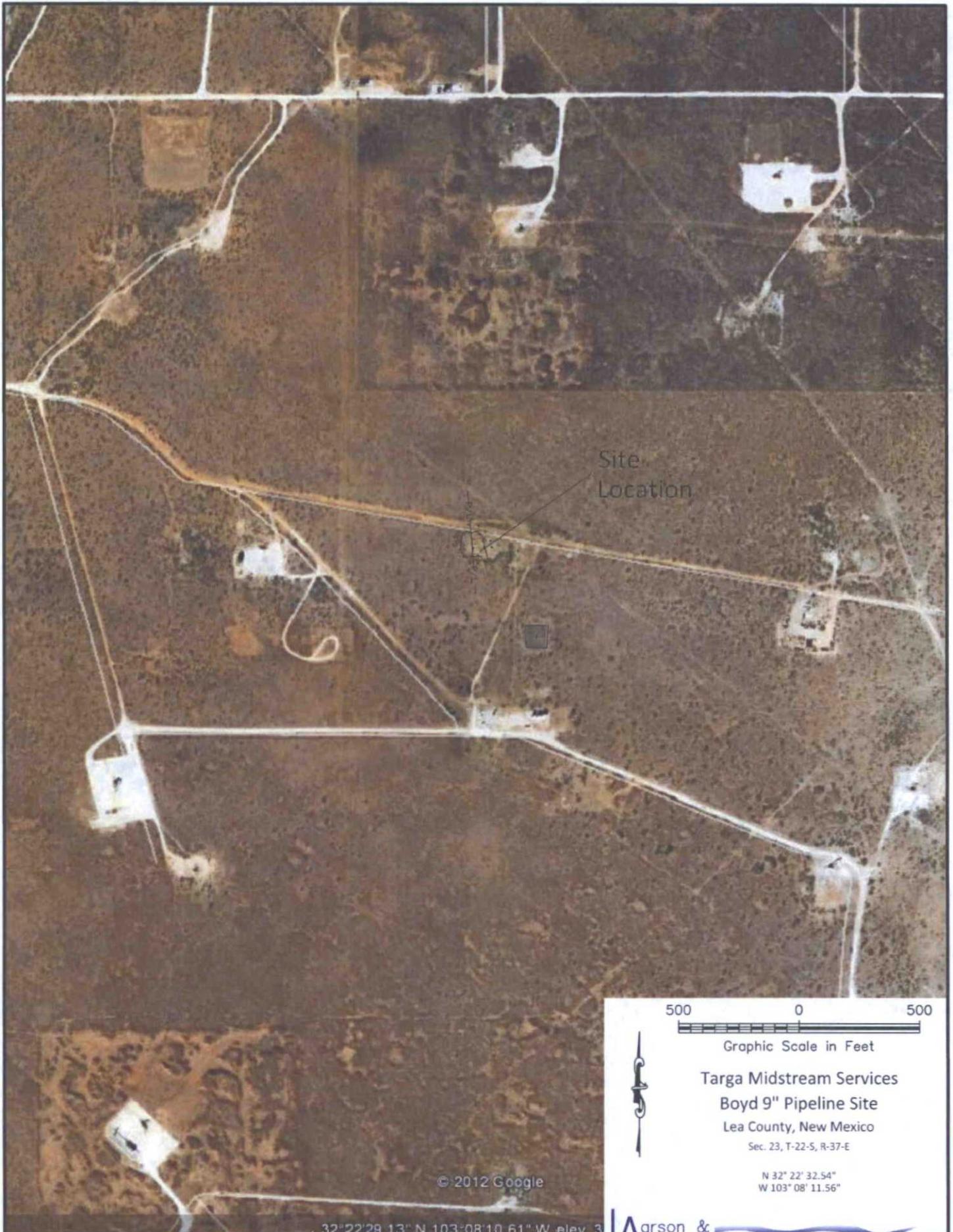
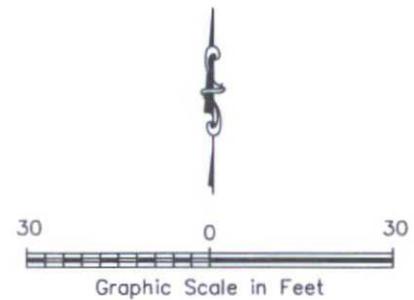
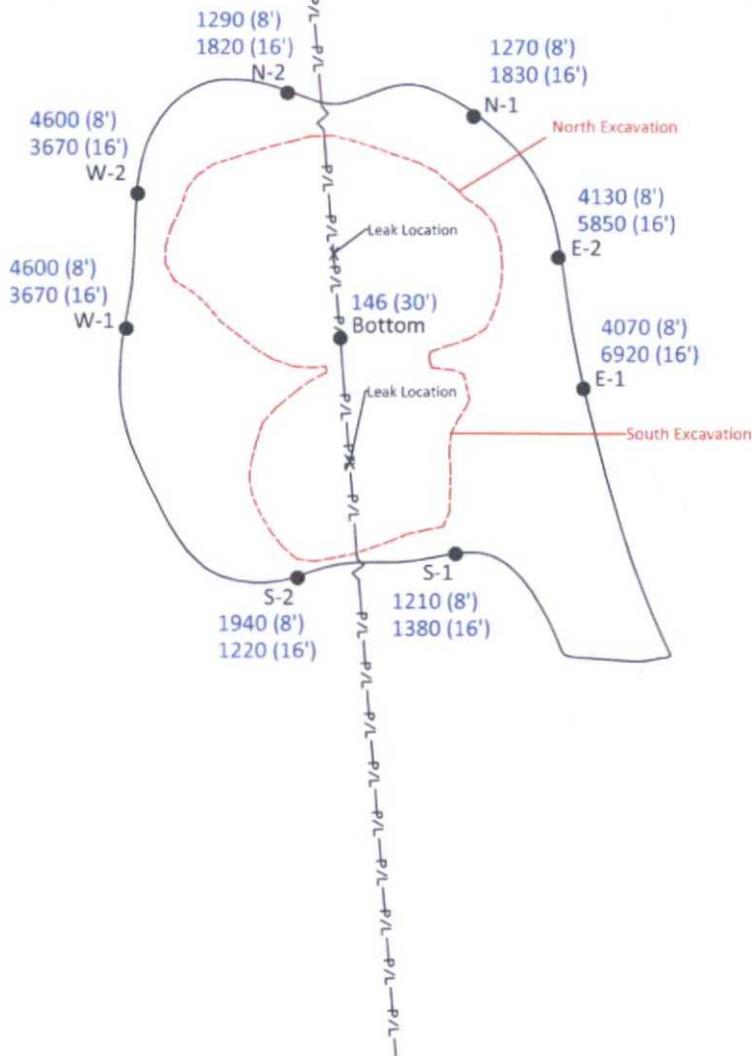


Figure 2 - Aerial Map



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

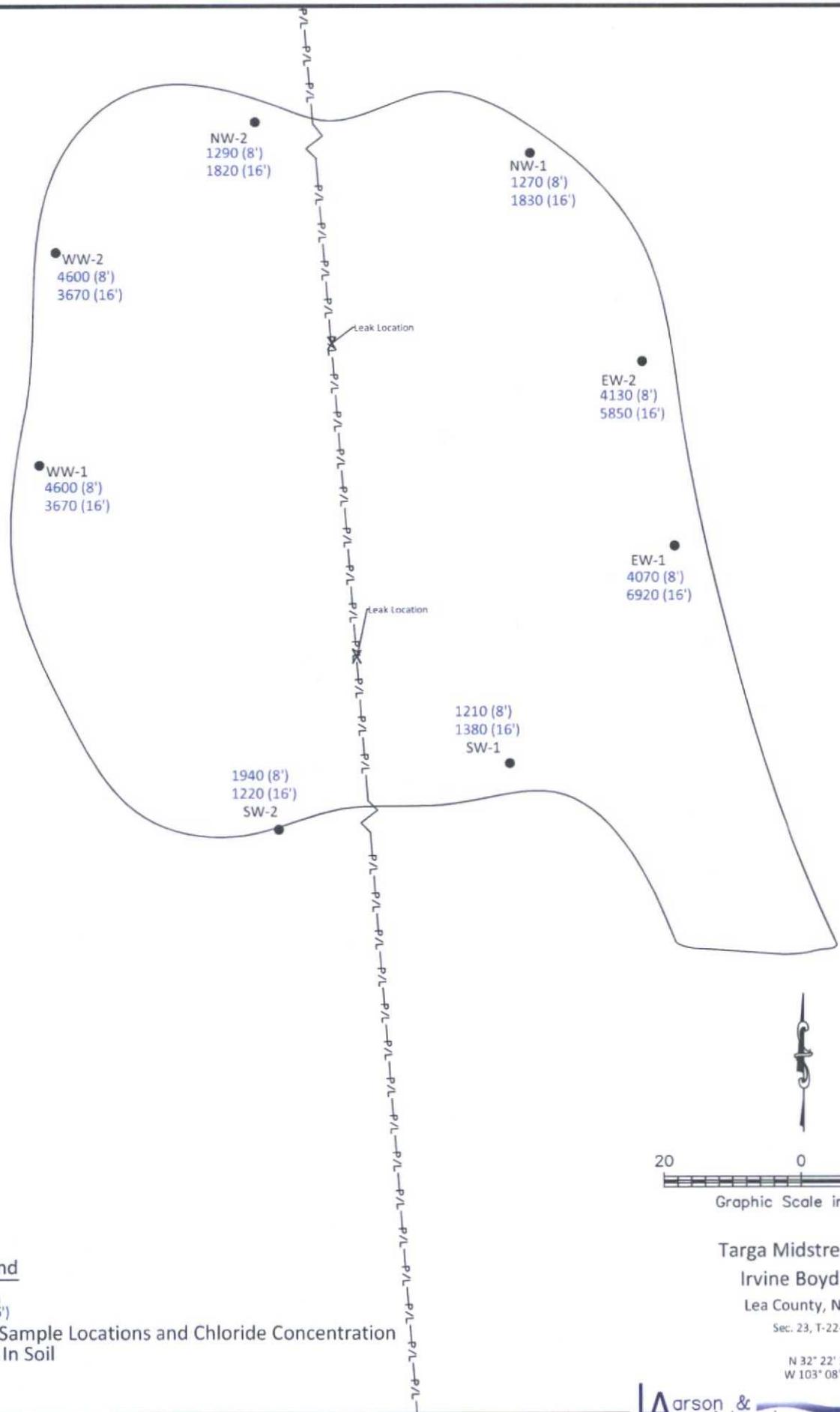
Targa Midstream Services
Boyd 9" Pipeline Site
Lea County, New Mexico

Sec. 23, T-22-S, R-37-E

N 32° 22' 32.54"
W 103° 08' 11.56"

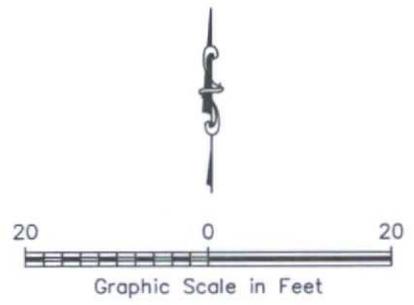
Larson &
Associates, Inc.
Environmental Consultants

Figure 3 - Site Drawing



Legend

1210 (8')
 1380 (16')
 SW-1 ● - Sample Locations and Chloride Concentration In Soil



Targa Midstream Services
 Irvine Boyd Property
 Lea County, New Mexico

Sec. 23, T-22-S, R-37-E

N 32° 22' 32.54"
 W 103° 08' 11.56"

Figure 4 - Chloride Concentration in Soil

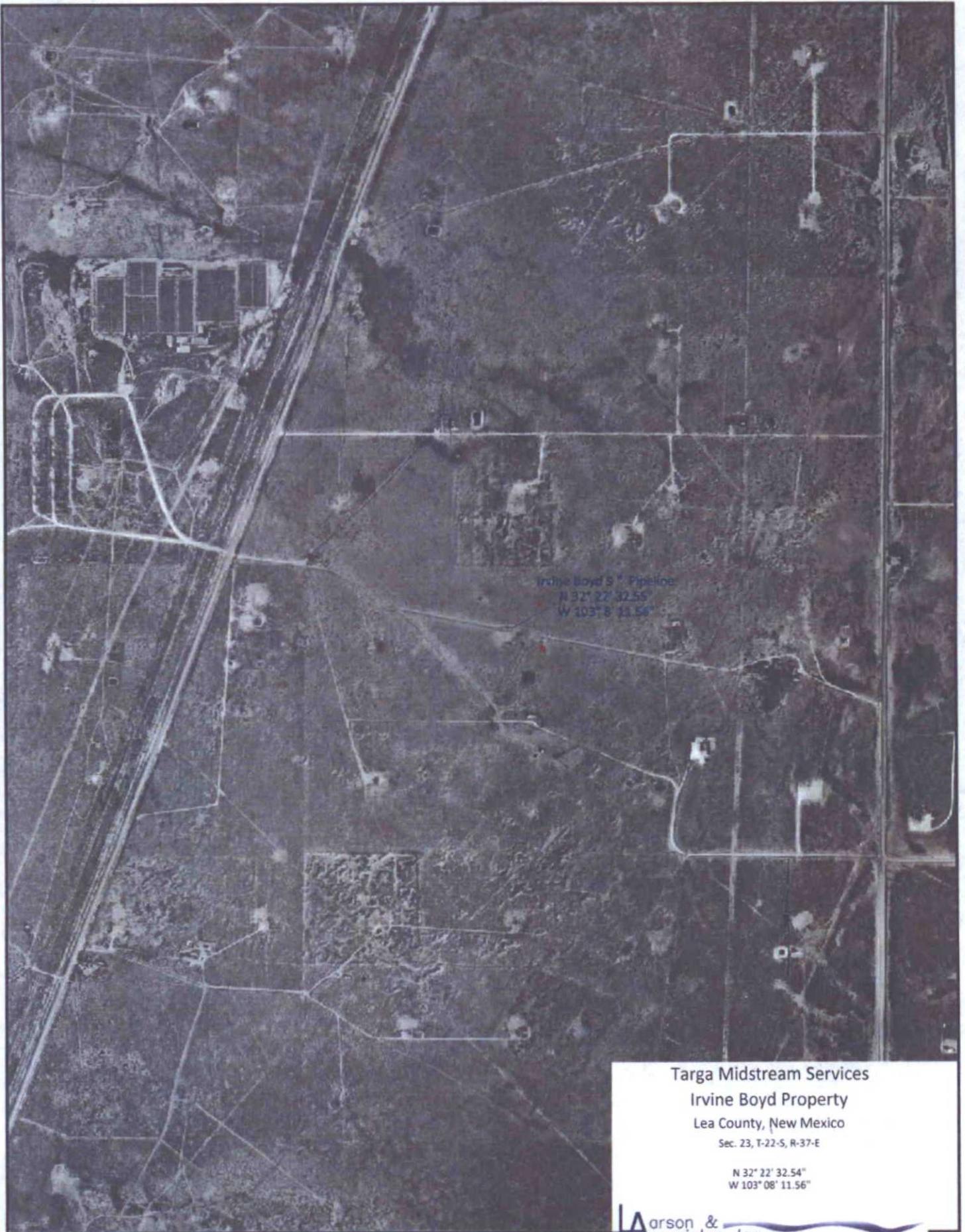


Figure - 1968 Historical Map

APPENDIX A

REMEDICATION REPORT
Boyd 9 Inch Pipeline Release
1RP-04-12-2802

Lea County, New Mexico

LAI Project No. 12-0118-01

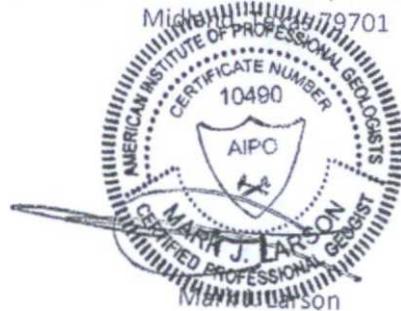
June 14, 2011

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



Certified Professional Geologist No. 10490

Approved
Jeff Skrim
Env. Specialist
NMOC-DIST 1

APPENDIX B

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 (AAL11), 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)



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

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Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America

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

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

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

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 Id: 12-0118-01 **Date Received in Lab:** Tue Mar-13-12 03:50 pm
Contact: Mark Larson **Report Date:** 22-MAR-12
Project Location: Lea County, NM **Project Manager:** Brent Barron II
Project Name: Boyd 9"

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 7680 97.7	mg/kg RL 1700 23.0	mg/kg RL 223 4.61	mg/kg RL 2050 23.4	mg/kg RL 4110 48.9	mg/kg RL 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 ND 0.00116			mg/kg RL ND 0.00101	mg/kg RL ND 0.000998	mg/kg RL ND 0.00100
Benzene	ND 0.00231			ND 0.00202	ND 0.00200	ND 0.00200
Toluene	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 14.0 1.00	% RL 8.54 1.00	% RL 8.99 1.00	% RL 10.3 1.00	% RL 14.1 1.00	% RL 11.1 1.00
Percent Moisture						
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 ND 17.5			mg/kg RL ND 16.7	mg/kg RL ND 17.4	mg/kg RL ND 16.9
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

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Brent Barron II
 Odessa Laboratory Manager

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



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

Project Name: Boyd 9"

Date Received in Lab: Tue Mar-13-12 03:50 pm
Report Date: 22-MAR-12

Project Manager: Brent Barron II

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
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 8290 184	mg/kg RL 3220 43.5	mg/kg RL 1310 20.0	mg/kg RL 546 10.7	mg/kg RL 249 5.53	mg/kg RL 2950 45.4
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 ND 0.00100	mg/kg RL ND 0.00100	mg/kg RL ND 0.00100			mg/kg RL ND 0.00100
Benzene	ND 0.00200	ND 0.00200	ND 0.00201			ND 0.00200
Toluene	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:	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
Analyzed:	Mar-14-12 11:30	Mar-14-12 11:30	Mar-14-12 11:30			
Units/RL:	% RL 8.91 1.00	% RL 3.52 1.00	% RL 15.8 1.00	% RL 21.2 1.00	% RL 24.0 1.00	% RL 7.59 1.00
Percent Moisture	8.91	3.52	15.8	21.2	24.0	7.59
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 ND 16.5	mg/kg RL ND 15.5	mg/kg RL ND 17.8			mg/kg RL ND 16.2
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

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Brent Barron II
Odessa Laboratory Manager



Certificate of Analysis Summary 438637

Larson & Associates, Midland, TX



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

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Brent Barron II
 Odessa Laboratory Manager

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Flagging Criteria

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

* Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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(432) 563-1800	(432) 563-1713
(770) 449-8800	(770) 449-5477
(602) 437-0330	

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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0281	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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0243	0.0300	81	80-120	
4-Bromofluorobenzene	0.0270	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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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.

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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0272	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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0276	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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0281	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.

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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0278	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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0282	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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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.

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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
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.

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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0278	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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0275	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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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.

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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0294	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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0296	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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0295	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.

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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0292	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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0258	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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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.

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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0287	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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0257	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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0275	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.

Project Name: Boyd 9"

Work Order #: 438637

Analyt: ASA

Lab Batch ID: 883586

Sample: 619197-1-BKS

Batch #: 1

Date Prepared: 03/14/2012

Project ID: 12-0118-01

Date Analyzed: 03/14/2012

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

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
BTEX by EPA 8021B											
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	

Analyt: ASA

Lab Batch ID: 883686

Sample: 619262-1-BKS

Batch #: 1

Date Prepared: 03/15/2012

Date Analyzed: 03/15/2012

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

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
BTEX by EPA 8021B											
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



Project Name: Boyd 9"

Work Order #: 438637

Analyst: BRB

Lab Batch ID: 883576

Sample: 883576-1-BKS

Date Prepared: 03/14/2012

Batch #: 1

Project ID: 12-0118-01

Date Analyzed: 03/14/2012

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
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	

Date Analyzed: 03/15/2012

Matrix: Solid

Date Prepared: 03/15/2012

Batch #: 1

Sample: 883802-1-BKS

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
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	

Date Analyzed: 03/20/2012

Matrix: Solid

Date Prepared: 03/20/2012

Batch #: 1

Sample: 884044-1-BKS

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
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

Work Order #: 438637

Analyst: BRB

Lab Batch ID: 883615

Sample: 619195-1-BKS

Batch #: 1

Matrix: Solid

Project ID: 12-0118-01

Date Analyzed: 03/14/2012

Project Name: Boyd 9"

Date Prepared: 03/14/2012

Batch #: 1

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
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											
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



Project Name: Boyd 9"

Work Order #: 438637

Project ID: 12-0118-01

Lab Batch #: 883576

Date Prepared: 03/14/2012

Analyst: BRB

Date Analyzed: 03/14/2012

Batch #: 1

Matrix: Soil

QC- Sample ID: 438611-012 S

Reporting Units: mg/kg

MATRIX / MATRIX SPIKE RECOVERY STUDY

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

Lab Batch #: 883576

Date Prepared: 03/14/2012

Analyst: BRB

Date Analyzed: 03/14/2012

Batch #: 1

Matrix: Soil

QC- Sample ID: 438637-001 S

Reporting Units: mg/kg

MATRIX / MATRIX SPIKE RECOVERY STUDY

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

Lab Batch #: 883802

Date Prepared: 03/15/2012

Analyst: BRB

Date Analyzed: 03/15/2012

Batch #: 1

Matrix: Soil

QC- Sample ID: 438795-001 S

Reporting Units: mg/kg

MATRIX / MATRIX SPIKE RECOVERY STUDY

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

Lab Batch #: 884044

Date Prepared: 03/20/2012

Analyst: BRB

Date Analyzed: 03/20/2012

Batch #: 1

Matrix: Soil

QC- Sample ID: 439008-001 S

Reporting Units: mg/kg

MATRIX / MATRIX SPIKE RECOVERY STUDY

Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
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

Lab Batch ID: 883586

Date Analyzed: 03/14/2012

Reporting Units: mg/kg

Project ID: 12-0118-01

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

Date Prepared: 03/14/2012 Analyst: ASA

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

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

Date Analyzed: 03/15/2012

Reporting Units: mg/kg

QC- Sample ID: 438791-001 S

Date Prepared: 03/15/2012

Batch #: 1 Matrix: Soil

Analyst: ASA

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

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*(F-G)/(C+F)

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

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

Project Name: Boyd 9"

Work Order #: 438637

Lab Batch ID: 883615

Date Analyzed: 03/15/2012

Reporting Units: mg/kg

Project ID: 12-0118-01

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

Date Prepared: 03/14/2012 Analyst: BRB

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	C6-C12 Gasoline Range Hydrocarbons	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

Date Analyzed: 03/15/2012

Reporting Units: mg/kg

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

Date Prepared: 03/14/2012 Analyst: BRB

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	C6-C12 Gasoline Range Hydrocarbons	36.9	1120	797	68	1130	815	69	2	70-135	35
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)|

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

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

Sample Duplicate Recovery



Project Name: Boyd 9"

Work Order #: 438637

Lab Batch #: 883576
Date Analyzed: 03/14/2012 18:13
QC- Sample ID: 438637-001 D
Reporting Units: mg/kg

Date Prepared: 03/14/2012
Batch #: 1

Project ID: 12-0118-01
Analyst: BRB
Matrix: Soil

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

Lab Batch #: 883802
Date Analyzed: 03/15/2012 16:27
QC- Sample ID: 438795-001 D
Reporting Units: mg/kg

Date Prepared: 03/15/2012
Batch #: 1

Analyst: BRB
Matrix: Soil

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

Lab Batch #: 884044
Date Analyzed: 03/20/2012 10:48
QC- Sample ID: 439008-001 D
Reporting Units: mg/kg

Date Prepared: 03/20/2012
Batch #: 1

Analyst: BRB
Matrix: Soil

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

Lab Batch #: 883599
Date Analyzed: 03/14/2012 09:00
QC- Sample ID: 438636-001 D
Reporting Units: %

Date Prepared: 03/14/2012
Batch #: 1

Analyst: BRB
Matrix: Soil

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

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	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
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



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	<u>Water</u>	No	
2. Shipping container in good condition?	<u>Yes</u>	No	<u>None</u>	
3. Custody seals intact on shipping container (cooler) and bottles?	Yes	No	<u>N/A</u>	
4. Chain of Custody present?	<u>Yes</u>	No		
5. Sample instructions complete on chain of custody?	<u>Yes</u>	No		
6. Any missing / extra samples?	Yes	<u>No</u>		
7. Chain of custody signed when relinquished / received?	<u>Yes</u>	No		
8. Chain of custody agrees with sample label(s)?	<u>Yes</u>	No		
9. Container labels legible and intact?	<u>Yes</u>	No		
10. Sample matrix / properties agree with chain of custody?	<u>Yes</u>	No		
11. Samples in proper container / bottle?	<u>Yes</u>	No		
12. Samples properly preserved?	<u>Yes</u>	No	N/A	
13. Sample container intact?	<u>Yes</u>	No		
14. Sufficient sample amount for indicated test(s)?	<u>Yes</u>	No		
15. All samples received within sufficient hold time?	<u>Yes</u>	No		
16. Subcontract of sample(s)?	Yes	No	<u>N/A</u>	
17. VOC sample have zero head space?	<u>Yes</u>	No	N/A	
18. Cooler 1 No.	Cooler 2 No.	Cooler 3 No.	Cooler 4 No.	Cooler 5 No.
lbs <u>1.0</u> °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



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.

Report Date: July 11, 2012

P. O. Box 50685
Midland, TX, 79710

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.

This report consists of a total of 21 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



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

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Q*		496	mg/Kg	1	10.0

Sample: 302299 - NW-1 (6')

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Q*		853	mg/Kg	10	10.0

Sample: 302300 - NW-1 (10')

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Q*		1850	mg/Kg	10	10.0

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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	Q*		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	Q*		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	Q*		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	Q*		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	Q*		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	Q*		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	Q*		6880	mg/Kg	10	10.0

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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	RL Result	Units	Dilution	RL
Chloride	Q*		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	RL Result	Units	Dilution	RL
Chloride	Q*		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	RL Result	Units	Dilution	RL
Chloride	Q*		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

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Q*		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	Q*		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	Q*		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	Q*		1850	mg/Kg	10	10.0

Report Date: July 11, 2012
12-0118-01

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Sample: 302315 - WW-2 (8')

Laboratory: Midland
Analysis: Chloride (IC)
QC Batch: 92894
Prep Batch: 78674

Analytical Method: E 300.0
Date Analyzed: 2012-07-06
Sample Preparation: 2012-07-05

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Q*		4460	mg/Kg	10	10.0

Sample: 302316 - WW-2 (12')

Laboratory: Midland
Analysis: Chloride (IC)
QC Batch: 92894
Prep Batch: 78674

Analytical Method: E 300.0
Date Analyzed: 2012-07-06
Sample Preparation: 2012-07-05

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Q*		6710	mg/Kg	10	10.0

Sample: 302317 - Bottom-1

Laboratory: Midland
Analysis: Chloride (IC)
QC Batch: 92894
Prep Batch: 78674

Analytical Method: E 300.0
Date Analyzed: 2012-07-06
Sample Preparation: 2012-07-05

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Q*		9060	mg/Kg	10	10.0

Sample: 302318 - Bottom-2

Laboratory: Midland
Analysis: Chloride (IC)
QC Batch: 92894
Prep Batch: 78674

Analytical Method: E 300.0
Date Analyzed: 2012-07-06
Sample Preparation: 2012-07-05

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Report Date: July 11, 2012
12-0118-01

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Q*		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

Report Date: July 11, 2012
12-0118-01

Work Order: 12062838
Boyd 9

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

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 92890
Prep Batch: 78674

Date Analyzed: 2012-07-05
QC Preparation: 2012-07-05

Analyzed By: AR
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. 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
Prep Batch: 78674

Date Analyzed: 2012-07-05
QC Preparation: 2012-07-05

Analyzed By: AR
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. 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
Prep Batch: 78674

Date Analyzed: 2012-07-06
QC Preparation: 2012-07-05

Analyzed By: AR
Prepared By: AR

Report Date: July 11, 2012
12-0118-01

Work Order: 12062838
Boyd 9

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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. 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
Prep Batch: 78674

Date Analyzed: 2012-07-06
QC Preparation: 2012-07-05

Analyzed By: AR
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. 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
Prep Batch: 78674

Date Analyzed: 2012-07-05
QC Preparation: 2012-07-05

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	Q*	Q*	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. Limit	RPD	RPD Limit	
Chloride	Q*	Q*	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.

Report Date: July 11, 2012
12-0118-01

Work Order: 12062838
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Page Number: 17 of 21

Matrix Spike (MS-1) Spiked Sample: 302303

QC Batch: 92891
Prep Batch: 78674

Date Analyzed: 2012-07-05
QC Preparation: 2012-07-05

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	Q*	Q*	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	Q*	Q*	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
Prep Batch: 78674

Date Analyzed: 2012-07-06
QC Preparation: 2012-07-05

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	Q*	Q*	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	Q*	Q*	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
Prep Batch: 78674

Date Analyzed: 2012-07-06
QC Preparation: 2012-07-05

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	Q*	Q*	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.

Report Date: July 11, 2012
12-0118-01

Work Order: 12062838
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Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	Q*	Q*	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

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12-0118-01

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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 than 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

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: cu

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

Aarson & Associates, Inc.
 Environmental Consultants
Coty Woolf

Data Reported to:

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION				ANALYSES	FIELD NOTES	
						HCl	HNO ₃	H ₂ SO ₄ □ NaOH □	ICE			UNPRESERVED
NW-1 (4')	302290	6-27-12	900	Sol	1							
NW-1 (6')	299											
NW-1 (10')	300											
NW-2 (4')	301											
NW-2 (8')	302											
NW-2 (15')	303											
SW-1 (4')	304											
SW-1 (10')	305											
EW-2 (4')	306											
EW-1 (6')	307											
EW-2 (4')	308											
EW-2 (6')	309											
EW-1 (10')	310											
WW-1 (4')	311											
WW-1 (8')	312											
TOTAL												

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

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

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

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

TURN AROUND TIME
 NORMAL
 1 DAY
 2 DAY
 OTHER

CHAIN-OF-CUSTODY

Arison & Associates, Inc.
 Environmental Consultants
 507 N. Marienfeld, Ste. 200
 Midland, TX 79701
 432-687-0901
 Data Reported to: *City Wolf*

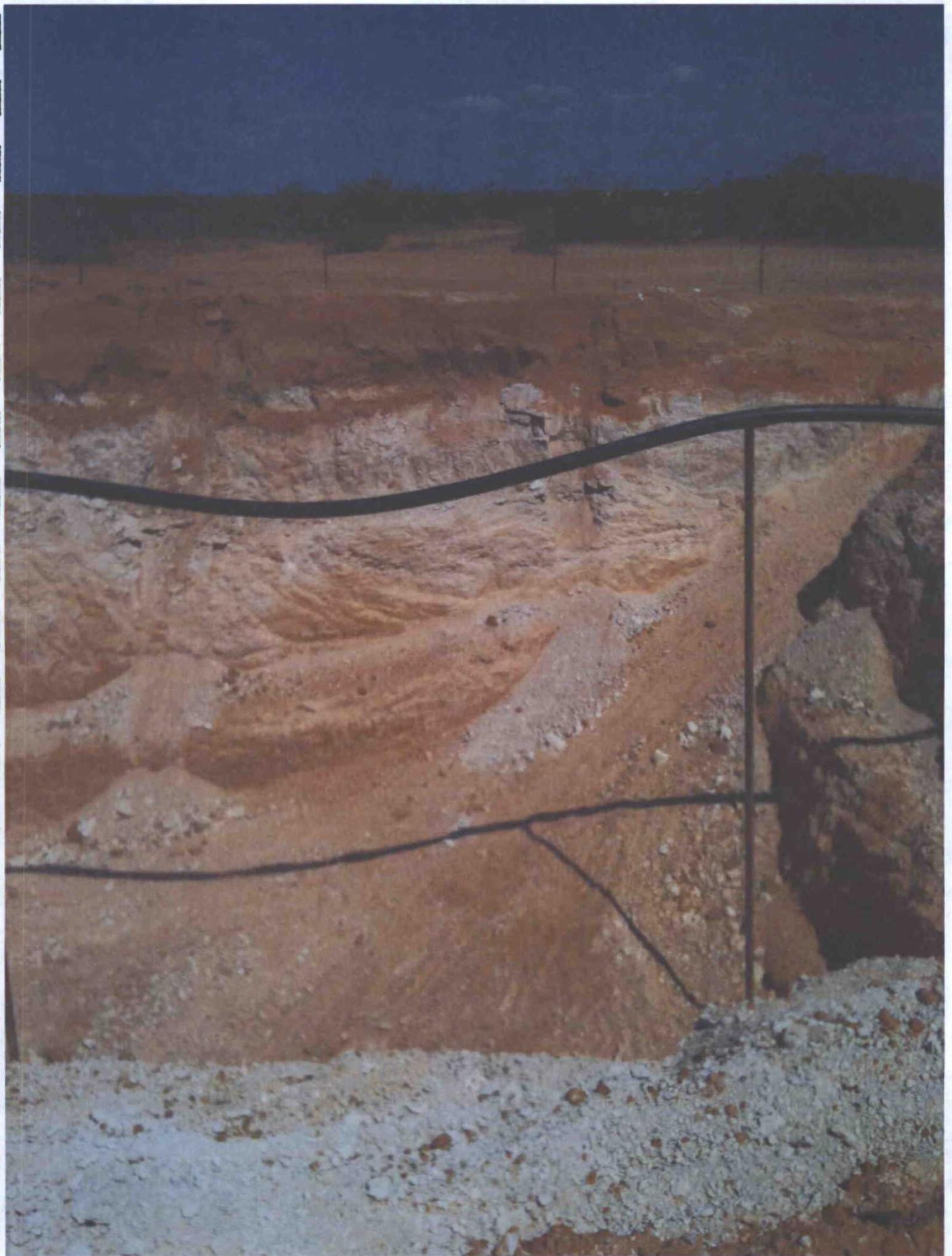
DATE: 6-27-12 PAGE 2 OF 2
 PO #: _____ LAB WORK ORDER #: 12062838
 PROJECT LOCATION OR NAME: Box 19
 LAI PROJECT #: 12-0118-01 COLLECTOR: [Signature]

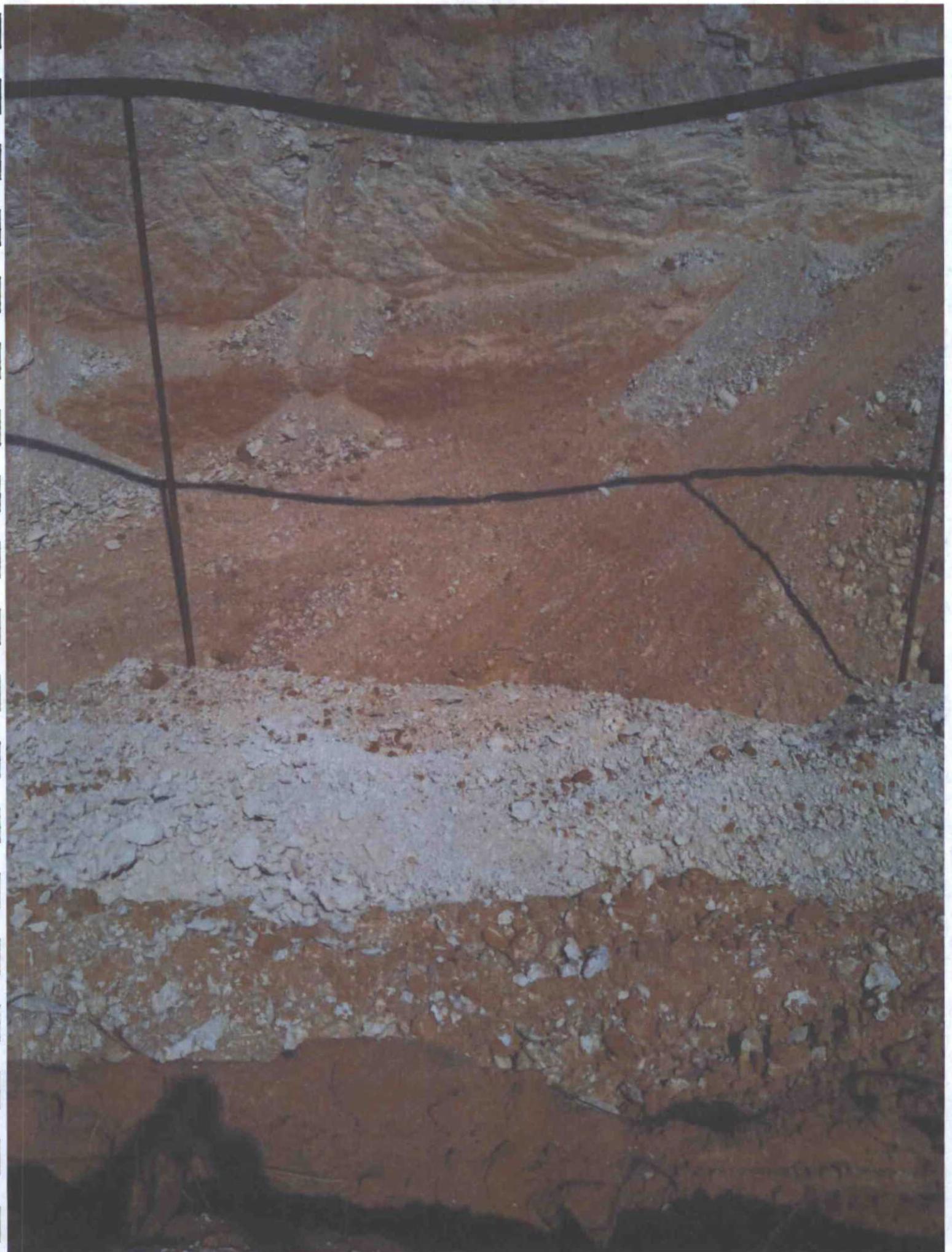
Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION				ANALYSES	FIELD NOTES	
						HCl	HNO ₃	H ₂ SO ₄	NaOH			
WW-1(15)	313	6-27-12		Soil	1							
WW-2(4)	314											
WW-2(8)	315											
WW-2(12)	316											
Bottom-1	317											
Bottom-2	318											
TOTAL												

RELINQUISHED BY: (Signature) <u>[Signature]</u>	DATE/TIME	RECEIVED BY: (Signature) <u>[Signature]</u>
RELINQUISHED BY: (Signature) <u>[Signature]</u>	6-28-12	RECEIVED BY: (Signature) <u>[Signature]</u>
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

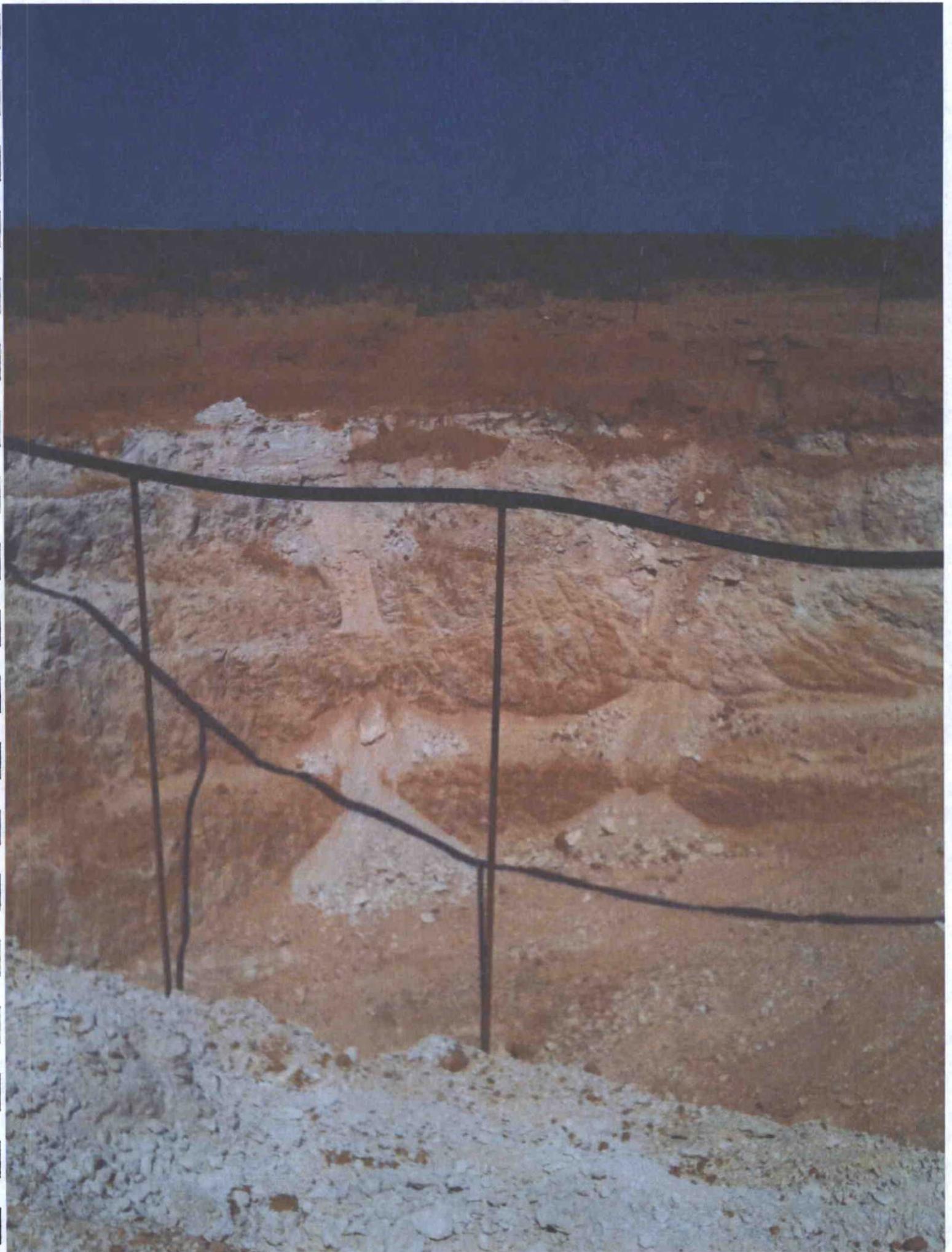
TURN AROUND TIME NORMAL <input type="checkbox"/> 1 DAY <input type="checkbox"/> 2 DAY <input type="checkbox"/> OTHER <input type="checkbox"/>	LABORATORY USE ONLY: RECEIVING TEMP. <u>16.9</u> THERM # <u>14-1</u> CUSTODY SEALS - <input type="checkbox"/> BROKEN <input type="checkbox"/> INTACT <input type="checkbox"/> NOT USED <input type="checkbox"/> CARRIER BILL # _____ <input checked="" type="checkbox"/> HAND DELIVERED
---	---

APPENDIX C





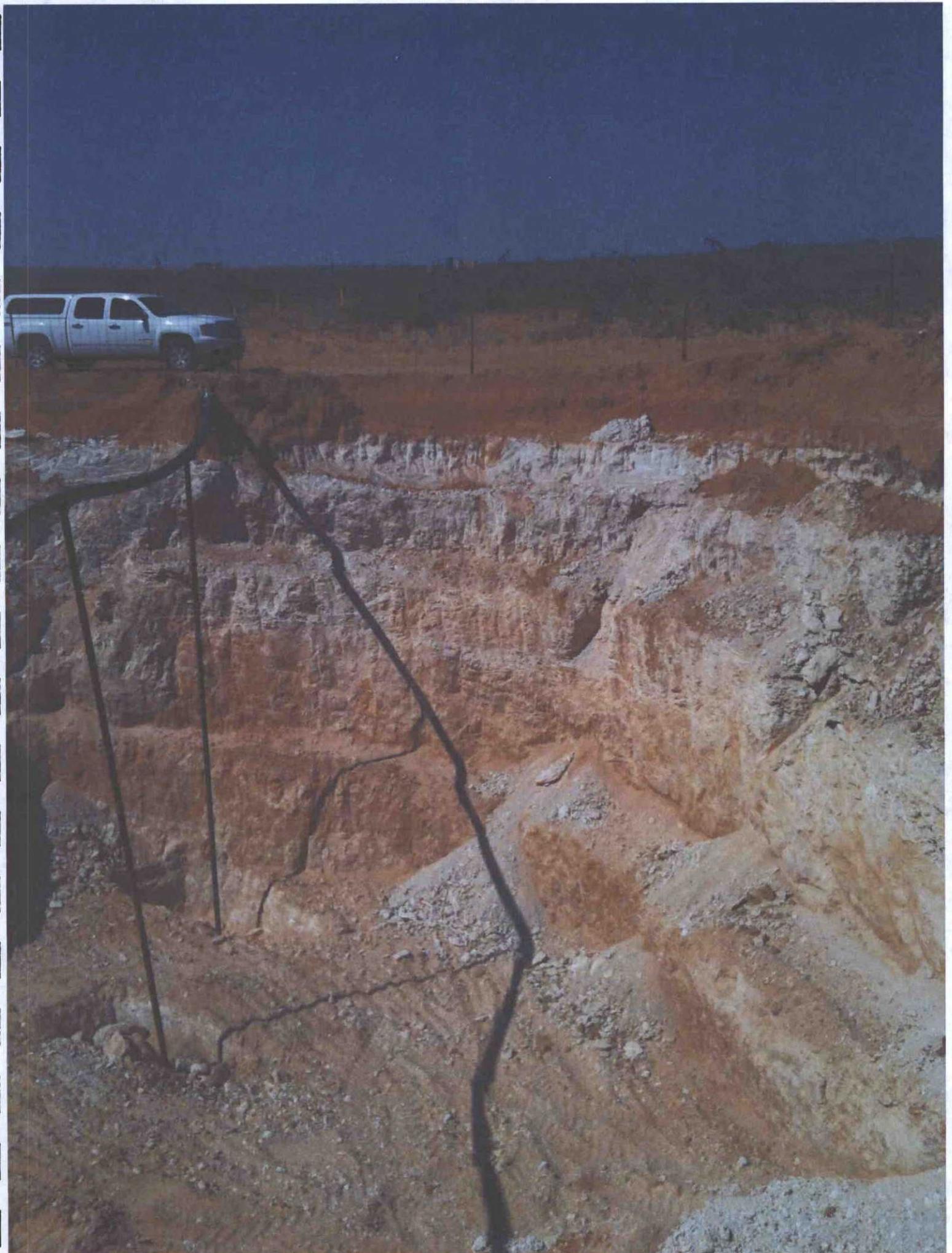


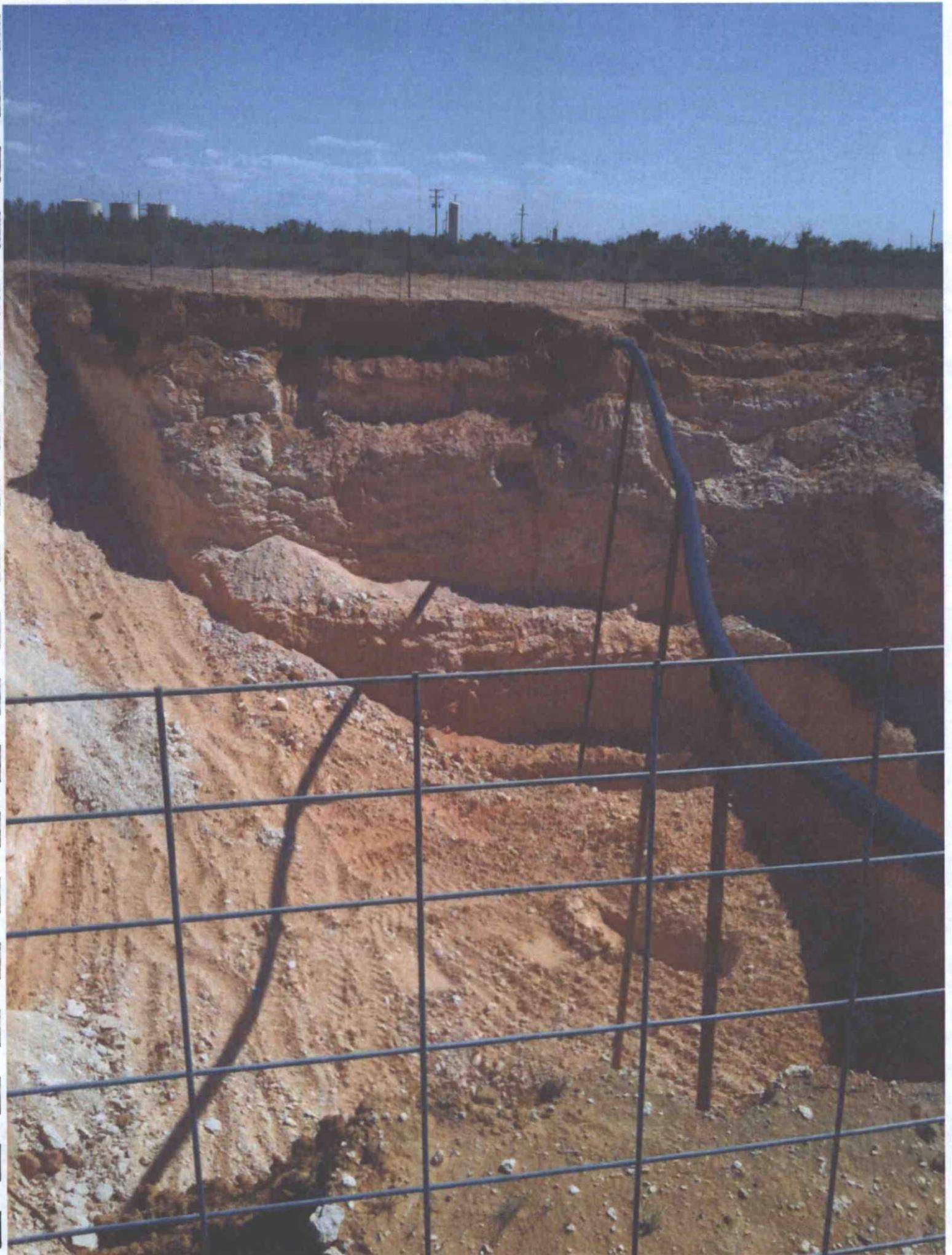


















APPENDIX D

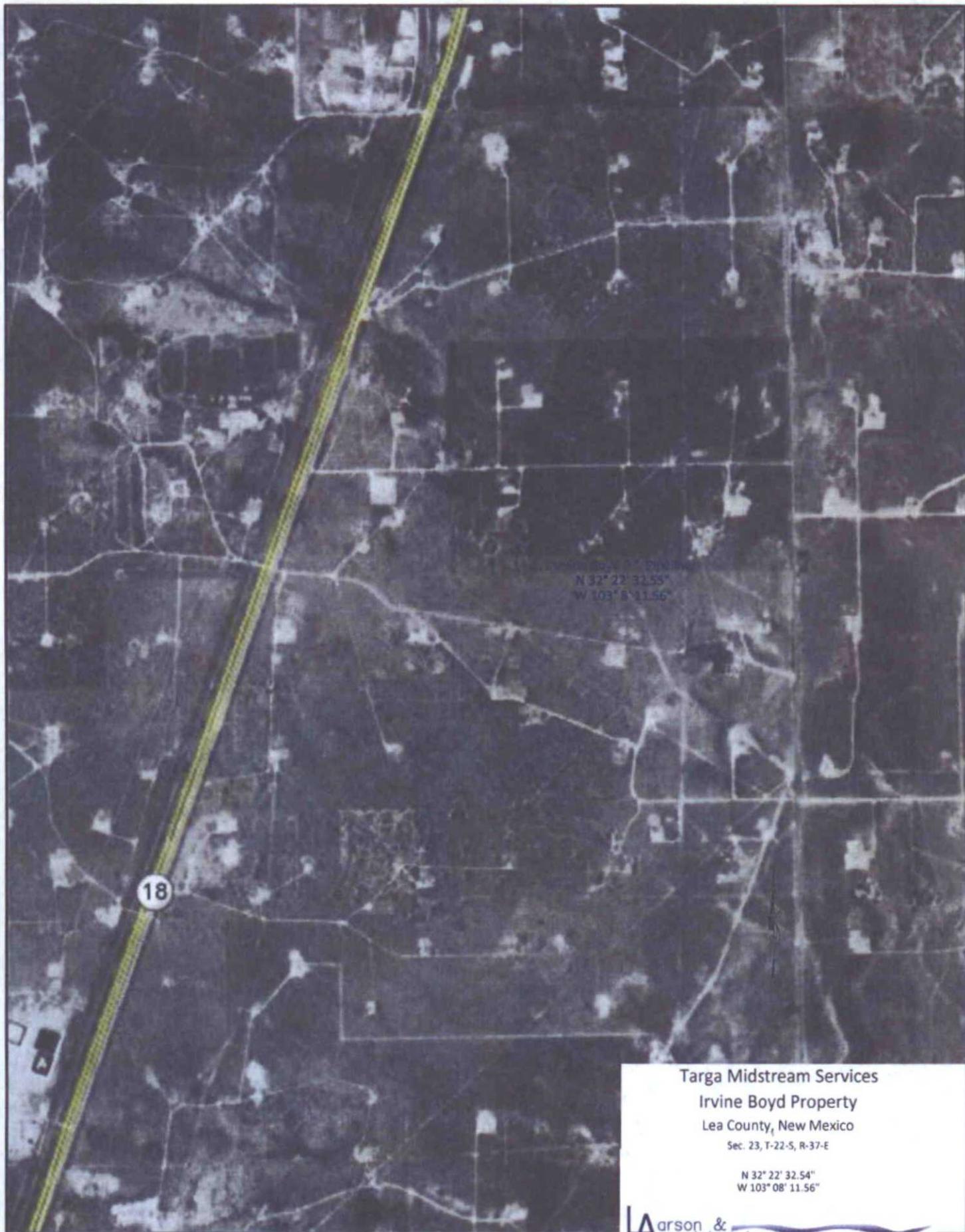


Figure - 1997 Historical Map

APPENDIX E

HOBBS OCD

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

JAN 17 2013

State of New Mexico
Energy Minerals and Natural Resources

Form C-141
Revised August 8, 2011

RECEIVED

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

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 Natural Gas/Liquids	Volume of Release Unknown	Volume Recovered None
Source of Release Steel Pipeline (corrosion)	Date and Hour of Occurrence Unknown	Date and Hour of Discovery February 13, 2012
Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

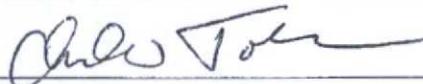
If a Watercourse was Impacted, Describe Fully.*

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.

OIL CONSERVATION DIVISION

Signature: 	Approved by Environmental Specialist:	
Printed Name: <u>Chuck Tolsma</u>	Approval Date:	Expiration Date:
Title: <u>Field Supervisor</u>	Conditions of Approval:	
E-mail Address: <u>ctolsma@targaresources.com</u>	Attached <input type="checkbox"/>	
Date: <u>April 11, 2012</u> Phone: <u>432-788-0791</u>		

* Attach Additional Sheets If Necessary