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# REMEDIATION SUMMARY AND PROPOSED RISK-BASED SITE CLOSURE STRAGEY

ETC FIELD SERVICES, LLC

(Formerly known as Southern Union Gas Services and Regency Field Services, LLC)
4 Inch Lateral (2/18/13)

Lea County, New Mexico

UNIT LTR "A" (NE ¼ /NE ¼), Section 17, Township 25 South, Range 37 East Latitude 32° 08.142' North, Longitude 103° 10.729' West NMOCD Reference # 1RP-2904

HOBBS OCD

Prepared For:

NOV 1 9 2015

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## TABLE OF CONTENTS

INTRODUCTION	1
NMOCD SITE CLASSIFICATION.	1
SUMMARY OF SOIL REMEDIATION ACTIVITIES	2
PROPOSED SOIL CLOSURE STRATEGY	7
REPORTING	7
LIMITATIONS.	7
DISTRIBUTION	9
FIGURES	
Figure 1 – Site Location Map Figure 2 – Site Details and Confirmation Soil Sample Location Map	
TABLES	
Table 1 – Concentrations of Benzene, BTEX, TPH, and Chlorides in Soil	

# **APPENDICES**

Appendix A – Analytical Reports
Appendix B – Photographs
Appendix C – Soil Boring Logs
Appendix D – Release Notification and Corrective Action (Form C-141)

#### **INTRODUCTION**

TRC Environmental Corporation (TRC) formerly NOVA Safety and Environmental (NOVA), on behalf of ETC Field Services, LLC (ETC), formerly known as Southern Union Gas Services (SUGS) and Regency Field Services, LLC (Regency), has prepared this Remediation Summary and Proposed Risk-Based Site Closure Strategy for the Release Site known as 4 Inch Lateral (2/18/13). The legal description of the Release Site is Unit Letter "A" (NE ¼ NE ¼), Section 17, Township 25 South, Range 37 East, in Lea County, New Mexico. The property affected by the release is owned by The Woolworth Trust. The Release Site GPS coordinates are 32°08.142' North and 103° 10.729' West. Please reference Figure 1 for the Site Location Map and Figure 2 for the Site Details and Confirmation Soil Sample Location Map. The Release Notification and Corrective Action (Form C-141) is provided as Appendix D.

On February 18, 2013, SUGS discovered a crude oil, produced water, and natural gas release from a four (4)-inch steel pipeline. The release fluid flowed from the release point to the south approximately two hundred (200) feet. The release was reported to the New Mexico Oil Conservation Division (NMOCD) on February 18, 2013. During initial response activities, SUGS installed a temporary pipeline clamp on the pipeline to mitigate the release. Approximately twenty-five (25) barrels of fluid was released from the pipeline, with no recovery. Approximately sixty (60) cubic yards (cy) of heavily saturated soil was excavated from the release flowpath and placed on a plastic liner. On February 25, 2013, the heavily saturated stockpiled soil was transported to Sundance Services in Eunice, New Mexico. General photographs of the site are provided as Appendix B.

#### NMOCD SITE CLASSIFICATION

According to data obtained from the New Mexico Office of the State Engineer (NMOSE), one (1) water well is registered in Section 17, Township 25S, Range 37E. The water well is located in Unit Letter "M" of Section 17, was installed in 1920 and no information is available as to the depth to groundwater in the water well. A depth to groundwater reference map utilized by the NMOCD indicates groundwater should be encountered at approximately eighty (80) feet below ground surface (bgs), according to the NMOCD Hobbs District Office. The depth to groundwater at the 4 Inch Lateral (2/18/13) Release Site results in ten (10) points being assigned to the site based on the NMOCD depth to groundwater criteria.

The water well database, maintained by the NMOSE, indicated there are no water wells less than 1,000 feet from the release, resulting in zero (0) points being assigned to this site as a result of this criteria.

There are no surface water bodies located within 1,000 feet of the site. Based on the NMOCD ranking system zero (0) points will be assigned to the site as a result of the criteria.

The NMOCD guidelines indicate the 4-Inch Lateral (2/18/13) Release Site has a ranking score of ten (10). Based on this score, the soil remediation levels for a site with a ranking score of ten (10) points are as follows:

- Benzene 10 mg/Kg (ppm)
- BTEX -50 mg/Kg (ppm)
- TPH 1,000 mg/Kg (ppm)

The NMOCD chloride cleanup level concentrations are site specific and will be determined by the NMOCD Hobbs District Office.

#### SUMMARY OF SOIL REMEDIATION ACTIVITIES

On March 19, 2013, following initial response activities, delineation and excavation of the impacted soil began at the Release Site. Soil samples were periodically collected, field screened for concentrations of chloride and the selected soil samples were submitted to the laboratory for analysis. Please reference Figure 2 for site details and soil sampling locations.

On March 19, 2013, a soil sample (RP Baseline) was collected beneath the release point. The soil sample was submitted to the laboratory and was analyzed for concentrations of benzene, toluene, ethylbenzene, and xylene (BTEX) using EPA Method SW 846-8021b, Total Petroleum Hydrocarbons (TPH) using EPA Method SW 846-8015M and chloride using EPA Method E 300.0. The analytical results indicated the benzene concentration was less than the laboratory Method Detection Limit (MDL) of 0.00107 mg/Kg, the BTEX concentration was less than the laboratory MDL of 0.00214 mg/Kg, the TPH concentration was 297 mg/Kg and the chloride concentration was 2,140 mg/Kg. Table 1 summarizes the Concentrations of Benzene, BTEX, TPH, and Chlorides in Soil. Analytical reports are provided as Appendix A.

In addition, a five (5) point composite stockpile soil sample (SP Baseline) was collected from a soil stockpile adjacent to the release point. The analytical results indicated the benzene and BTEX concentrations of the stockpile were less than the laboratory MDL. The TPH concentration of the stockpiled soil was 264.7 mg/Kg and the chloride concentration was 2,165 mg/Kg.

On March 21, 2013, a trench was advanced adjacent to the release point to investigate the vertical depth of impact at the release point. Soil samples (RP-1 @ 8', RP-2 @ 10', RP-3 @ 15') were collected at eight (8) feet below ground surface (bgs), ten (10) feet bgs and fifteen (15) feet bgs as the trench was advanced. The soil samples were submitted to the laboratory and the analytical results indicated soil sample RP-1 @ 8' exhibited a benzene, BTEX and TPH concentration less than the laboratory MDL. Chloride analysis indicated soil samples RP-1 @ 8', RP-2 @ 10' and RP-3 @ 15' exhibited concentrations of 663 mg/Kg, 775 mg/Kg and 4,840 mg/Kg, respectively. Please refer to Figure 2 for soil sample locations.

Based on the analytical results of the investigation trench, vertical delineation of the Release Site could not be achieved using an excavator. Horizontal delineation of Release Site continued to the north, south and west of the release point. Impacted soil from the surface to four (4) feet bgs was excavated and stockpiled on site. An investigation trench was utilized to delineate impacted soil at depths greater than four (4) feet bgs. Soil adjacent to and northeast of the release point was left in-situ to allow for mobilization of a drilling rig to advance a soil boring. Soil investigation activities and results will be discussed below.

On March 22, 2013, two (2) soil samples (WW-1 @ 3' and WW-1 @ 14') were collected from the west sidewall of the excavation and delineation trench. The soil samples were submitted to the laboratory and analytical results indicated benzene, BTEX and TPH concentrations were less the laboratory MDL. The analytical results indicated chloride concentrations for soil sample WW-1 @ 3' and WW-1 @ 14' were 437 mg/Kg and 193 mg/Kg, respectively. Based on the analytical results, soil represented by soil sample WW-1 @ 3' was excavated and stockpiled on site as the excavation progressed an additional five (5) feet to the west. Based on the analytical results, the delineation trench was not advanced to the west. Please refer to Figure 2 for soil sample locations.

An additional soil sample (WW-1A @ 3') was collected from the west sidewall of the excavation. The soil sample was submitted to the laboratory and analytical results indicated the benzene, BTEX and TPH concentrations were less the laboratory MDL and the chloride concentration was 1,320 mg/Kg. Based on the analytical results, soil represented by soil sample WW-1A @ 3' was excavated and stockpiled on site as the excavation progressed an additional five (5) feet to the west.

An additional soil sample (WW-1B @ 3') was collected from the west sidewall of the excavation. The soil sample were submitted to the laboratory and analytical results indicated the benzene, BTEX and TPH concentrations was less the laboratory MDL. The analytical results indicated the chloride concentration was 856 mg/Kg. Based on the analytical results, soil represented by soil sample WW-1B @ 3' was excavated and stockpiled on site as the excavation progressed an additional five (5) feet to the west. Please refer to Figure 2 for soil sample locations. Please refer to Figure 2 for soil sample locations.

On March 25, 2013, an additional soil sample (WW-1C @ 3') was collected from the west sidewall of the excavation. The soil sample was submitted to the laboratory and analytical results indicated the benzene, BTEX and TPH concentrations was less the laboratory MDL. The analytical results indicated the chloride concentration was 679 mg/Kg. Based on the analytical results, soil represented by soil sample WW-1C @ 3' was excavated and stockpiled on site as the excavation progressed an additional five (5) feet to the west.

An additional soil sample (WW-1D @ 3') was collected from the west sidewall of the excavation. The soil sample was submitted to the laboratory and analytical results indicated the benzene, BTEX and TPH concentrations was less the laboratory MDL. The analytical results indicated the chloride concentration was 73.6 mg/Kg. Based on the analytical results, no additional excavation was warranted on the west sidewall of the excavation. Please refer to Figure 2 for soil sample locations.

The excavation and delineation trench progressed to the south; periodic soil sampling and chloride field screening indicated chloride concentrations exceeded the NMOCD regulatory guidelines for the Release Site.

On April 2, 2013, two (2) soil samples (SW-1@3' and SW-1@15') were collected from the south sidewall of the excavation. The soil samples were submitted to the laboratory and analytical results indicated benzene, BTEX and TPH concentrations were less the laboratory MDL. The analytical results indicated chloride concentrations for SW-1 @ 3' and SW-1 @ 15' were 441 mg/Kg and 340 mg/Kg, respectively. Based on the analytical results, the delineation trench was extended

approximately ten (10) feet to the south and resampled. Soil excavated from the delineation trench was added to the existing soil stockpile.

Soil samples SW-1A@3' and SW-1A@15' were collected from the south sidewall of the excavation and submitted to the laboratory for analysis. The analytical results indicated soil samples SW-1A@3' and SW-1A@15' exhibited chloride concentrations of 154 mg/Kg and 393 mg/Kg, respectively. Based on the analytical results the delineation trench was extended approximately ten (10) feet to the south and resampled. Soil excavated from the trench was added to the existing soil stockpile.

Soil samples SW-1B@3' and SW-1B@15' were collected from the south sidewall and submitted to the laboratory for analysis. The analytical results indicated soil samples SW-1B@3' and SW-1B@15' exhibited chloride concentrations of 236 mg/Kg and 119 mg/Kg, respectively. Based on the analytical results of soil samples submitted to the laboratory the southernmost horizontal extent of impact was delineated. Please refer to Figure 2 for soil sample locations.

On April 3, 2013, delineation of the northernmost extent of impact commenced, soil samples (NWW-1@3' and NWW-1@15') were collected from the northwest sidewall of the excavation. The soil samples were submitted to the laboratory and analytical results indicated benzene, BTEX and TPH concentrations were less the laboratory MDL. The analytical results indicated soil samples NWW-1 @ 3' and NWW-1 @ 15' exhibited chloride concentration of 120 mg/Kg and 760 mg/Kg, respectively. Based on the analytical results the delineation trench was extended approximately five (5) feet to the northwest and resampled. Soil excavated from the trench was added to the existing soil stockpile.

Soil sample NWW-1A@15' was collected from the northwest sidewall of the delineation trench and submitted to the laboratory for analysis. The analytical results indicated the soil sample (NNW-1A@15') exhibited a chloride concentration of 97 mg/Kg. Based on the analytical results the delineation trench was terminated. Based on chloride field screening, it was determined chloride concentrations exceeding NMOCD regulatory guidelines were present at depths above four (4) feet bgs. Delineation and excavation continued approximately twenty (20) feet to the northwest. A soil sample (NWW-1B@3') was collected from the northwest sidewall of the excavation and submitted to the laboratory for chloride analysis. The analytical results the soil sample exhibited a chloride concentration of 1,220 mg/Kg. Based on the analytical results, delineation and excavation continued approximately fifteen (15) feet to the northwest. A soil sample (NWW-1C@3') was collected from the sidewall of the excavation and submitted to the laboratory. The analytical results indicated the soil sample exhibited a chloride concentration of 13.1 mg/Kg. Based on the analytical results of soil samples submitted to the laboratory the northwestern most horizontal extent of impact appears to be delineated. Please refer to Figure 2 for soil sample locations.

As stated above, the area adjacent to and east of the release point was not disturbed to allow a soil boring to be advanced at a future date. A delineation trench was advanced to the east of the undisturbed area to delineate the easternmost extent of horizontal impact.

On April 3, 2013, two (2) soil samples (EW-1@3' and EW-1@15') were collected from the east sidewall of the delineation trench. The analytical results indicated soil samples EW-1@3' and EW-1@15' exhibited benzene, BTEX and TPH concentration less than the laboratory MDL. Chloride

analysis indicated soil samples EW-1@3' and EW-1@15' exhibited chloride concentrations of 3,910 mg/Kg and 1,150 mg/Kg, respectively. Based on the analytical results, the delineation trench was advanced an additional five (5) feet to the east, excavated soil was added to the existing stockpile. A soil sample (EW-1A@15') was collected from the east sidewall of the delineation trench and submitted to the laboratory for chloride analysis. The analytical results indicated the soil sample exhibited a chloride concentration of 1,070 mg/Kg. Based on the analytical results, the delineation trench was advanced an additional five (5) feet to the east. Following advancement of the delineation trench, two (2) soil samples (EW-1B3' and EW-1B@15') were collected from the east sidewall of the delineation trench and submitted to the laboratory for chloride analysis. The analytical results indicated soil samples EW-1B@3' and EW-1B@15' exhibited chloride concentrations of 221 mg/Kg and 165 mg/Kg, respectively. Based on the analytical results of soil samples submitted to the laboratory the easternmost extent of horizontal impact appears to be delineated. Please refer to Figure 2 for soil sample locations.

Following the delineation of the easternmost extent of impact adjacent to the release point, equipment was moved to the south end of the investigation trench to delineate the easternmost extent of impact at the south end of the Release Site. The delineation trench was advanced approximately ten (10) feet to the east of soil sample SW-1B@3'.

On April 5, 2013, two (2) soil samples (EW-2@3' and EW-2@15') were collected and submitted to the laboratory. The analytical results indicated benzene and BTEX concentrations were less than the laboratory MDL. TPH analysis indicated soil sample EW-2@3' exhibited a TPH concentration of 34.5 mg/Kg and soil sample EW-2@15' exhibited a TPH concentration less than the laboratory MDL. Chloride analysis indicated soil samples EW-2@3' and EW-2@15' exhibited chloride concentrations of 2,800 mg/Kg and 4,100 mg/Kg, respectively. Based on the analytical results the delineation trench was advanced approximately thirty (30) feet to the east.

On April 9, 2013, two (2) soil samples (EW-2A@3' and EW-2A@15') were collected and submitted to the laboratory. Chloride analysis indicated soil samples EW-2A@3' and EW-2A@15' exhibited chloride concentrations of 163 mg/Kg and less than the laboratory MDL, respectively. Based on the analytical results of soil samples submitted to the laboratory the easternmost extent of horizontal impact at the south end of the Release Site appears to be delineated. Please refer to Figure 2 for soil sample locations.

Approximately 1,600 cubic yards (cy) of impacted soil was excavated and stockpiled on-site, pending final disposition. The final dimensions of the excavation were approximately two hundred fifty (250) feet in length, ranged from approximately twenty five (25) to one hundred (100) feet in width, and varied in depth from three (3) feet to fifteen (15) feet.

Following excavation and delineation activities, the delineation trenches were backfilled as a safety precaution.

On December 4, 2013, representatives of NOVA and the NMOCD, met in the NMOCD Hobbs District Office and discussed a closure strategy for the Release Site. The NMOCD representative requested three (3) soil boring be advanced at the Release Site to adequately delineate the vertical extent of chloride impact at the Release Site.

On an unknown date, the existing excavation was inadvertently backfilled with soil by another contractor. The analytical status of the backfill soil is unknown, but likely included the approximately 1,600 cy of impacted soil stockpiled on-site, awaiting final disposition.

On February 19, 2014, three (3) soil borings (SB-1 through SB-3) were advanced at the Release Site. Please reference Figure 2 for the locations of the soil borings. The soil borings were advanced until chloride field testing and visual and olfactory evidence indicated benzene, BTEX, TPH, and chloride concentrations were less than NMOCD regulatory guidelines for the Release Site. Soil samples were collected at five (5) foot drilling intervals and field screened using a Photo-Ionization Detector (PID) and a chloride field test kit. Selected soil samples were submitted to the laboratory for determination of concentrations of benzene, toluene, ethyl-benzene and xylene (BTEX), total petroleum hydrocarbon (TPH), and chlorides using EPA SW-846 8021b, SW-846 8015M, and E 300.1, respectively.

Soil boring SB-1 was advanced immediately east of the release point to a depth of approximately thirty-five (35) feet bgs. Soil samples collected at ten (10) feet bgs, fifteen (15) feet bgs, twenty (20) feet bgs, twenty-five (25) feet bgs, thirty (30) feet bgs, and thirty-five (35) feet bgs were submitted to the laboratory for analysis. The analytical results indicated benzene, BTEX, and TPH concentrations were less than the laboratory MDL. Chloride concentrations ranged from 68.8 mg/Kg for soil sample SB-1 @ 35' to 1,900 mg/Kg for soil sample SB-1 @ 15'. Based on the analytical results, vertical delineation of chloride impact in soil boring SB-1 was achieved at approximately thirty (30) feet bgs. The soil sample collected at thirty (30) feet bgs exhibited a chloride concentration of 127 mg/Kg. Soil boring logs are provided as Appendix C.

Soil boring SB-2 was advanced in the central area of the Release Site, to a depth of approximately forty (40) feet bgs. Soil samples were collected at ten (10) feet bgs, fifteen (15) feet bgs, twenty (20) feet bgs, twenty-five (25) feet bgs, thirty (30) feet bgs, thirty-five (35) feet bgs, and forty (40) feet bgs and submitted to the laboratory for analysis. The analytical results indicated benzene, BTEX, and TPH concentrations were less than the laboratory MDL. Chloride concentrations ranged from 85.6 mg/Kg for soil sample SB-2 @ 40' to 4,740 mg/Kg for soil sample SB-2 @ 10'. Based on the analytical results, vertical delineation of chloride impact in soil boring SB-2 was achieved at approximately forty (40) feet bgs. The soil sample collected at forty (40) feet bgs exhibited at chloride concentration of 85.6 mg/Kg.

Soil boring SB-3 was advanced in the southern area the Release Site, to a depth of approximately thirty-five (35) feet bgs. Soil samples collected at five (5) feet bgs, ten (10) feet bgs, twenty (20) feet bgs, thirty (30) feet bgs, and thirty-five (35) feet bgs were submitted to the laboratory for analysis. The analytical results indicated benzene, BTEX, and TPH concentrations were less than the laboratory MDL. Chloride concentrations ranged from 14.6 mg/Kg for soil sample SB-3 @ 30' to 204 mg/Kg for soil sample SB-3 @ 20'. Based on the analytical results, vertical delineation of chloride impact in soil boring SB-3 was achieved at approximately five (5) feet bgs. The soil sample collected at five (5) feet bgs exhibited at chloride concentration of 25 mg/Kg. Please refer to Figure 2 for soil sample locations.

On March 18, 2014, representatives of NOVA and the NMOCD, met in the NMOCD Hobbs District Office and discussed a closure strategy for the Release Site. The NMOCD representative reviewed the analytical results of the soil samples collected during the soil boring advancement and verbally approved Regency's request to utilize at Risk-Based closure strategy at the 4-Inch

Lateral (2/18/13) Release Site. The NMOCD representative approved the excavation of the Release Site to approximately twelve (12) feet bgs. In addition, the NMOCD approved the installation of a twenty (20) millimeter (mil) polyethylene liner at approximately twelve (12) feet bgs.

#### PROPOSED SOIL CLOSURE STRATEGY

Based on analytical results, ETC requests confirmation to proceed with a Risk-Based Closure Strategy at the 4-Inch Lateral (2/18/13) Release Site. The Release Site will be excavated to approximately twelve (12) feet bgs. Excavated soil will be stockpiled adjacent to the excavation, pending final disposition. When confirmation analytical results of the excavation sidewalls indicate benzene, BTEX, TPH, and chloride concentrations are less than the regulatory guidelines for the Release Site, a twenty (20) mil polyurethane liner will be installed at approximately twelve (12) feet bgs. The liner will be cushioned by a six (6) inch layer of sand above and below the liner to protect the liner from damage during backfilling activities. This engineering control will inhibit vertical migration of contaminants below the liner, by the process of shedding moisture to the edge of the liner and beyond the maximum horizontal extent of underlying impacted soil.

Stockpile soil samples will be collected for each five hundred (500) cy yards of excavated soil. The soil samples collected from the stockpiles will be submitted to the laboratory and analyzed for concentrations of benzene, BTEX, TPH, and chloride. In the event, the analytical results indicate benzene, BTEX, TPH, and chloride concentrations are less than 10 mg/Kg, 50 mg/Kg, 1,000 mg/Kg, and 500 mg/Kg, respectively, the stockpiled soil will be utilized as backfill. Should the analytical results indicate the soil stockpile exhibits benzene, BTEX, TPH, or chloride concentrations exceeding the NMOCD regulatory guideline, the stockpile will be transported (under manifest) to a NMOCD approved landfarm or landfill. On NMOCD approval, the excavation will be backfilled with soil deemed suitable by analysis and/or locally purchased non-impacted soil and water compacted in eighteen (18) inch lifts. Following backfill activities the surface will be contoured to fit the surrounding topography.

#### REPORTING

On completion of the soil closure strategy activities, ETC will submit a Remediation Summary and Risk-Based Site Closure Request for NMOCD approval.

#### LIMITATIONS

TRC Environmental Corporation has prepared this Remediation Summary and Proposed Site Closure Strategy to the best of its ability. No other warranty, expressed or implied, is made or intended.

TRC Environmental Corporation has examined and relied upon documents referenced in the report and has relied on oral statements made by certain individuals. TRC Environmental Corporation has not conducted an independent examination of the facts contained in referenced materials and statements. We have presumed the genuineness of the documents and that the information provided in documents or statements is true and accurate. TRC Environmental Corporation has prepared this report, in a professional manner, using the degree of skill and care exercised by similar environmental consultants. TRC Environmental Corporation also notes that the facts and

conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

This report has been prepared for the benefit of ETC Field Services, LLC. The information contained in this report, including all exhibits and attachments, may not be used by any other party without the express consent of TRC Environmental Corporation and/or ETC Field Services, LLC.

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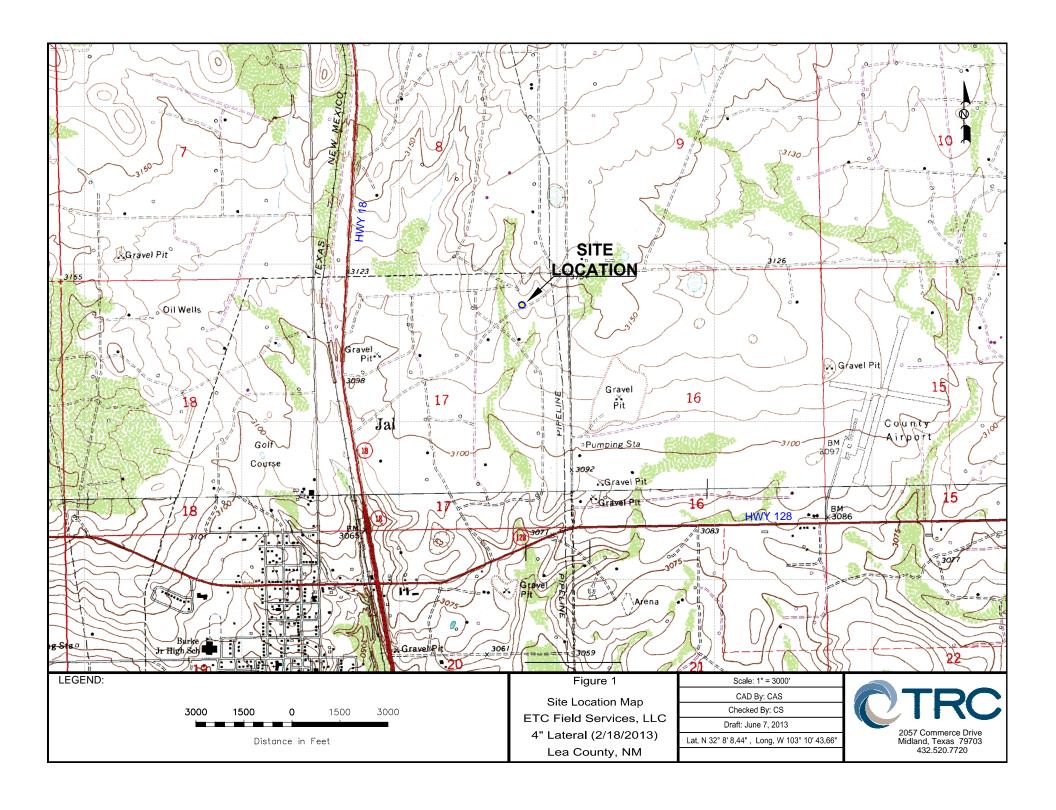
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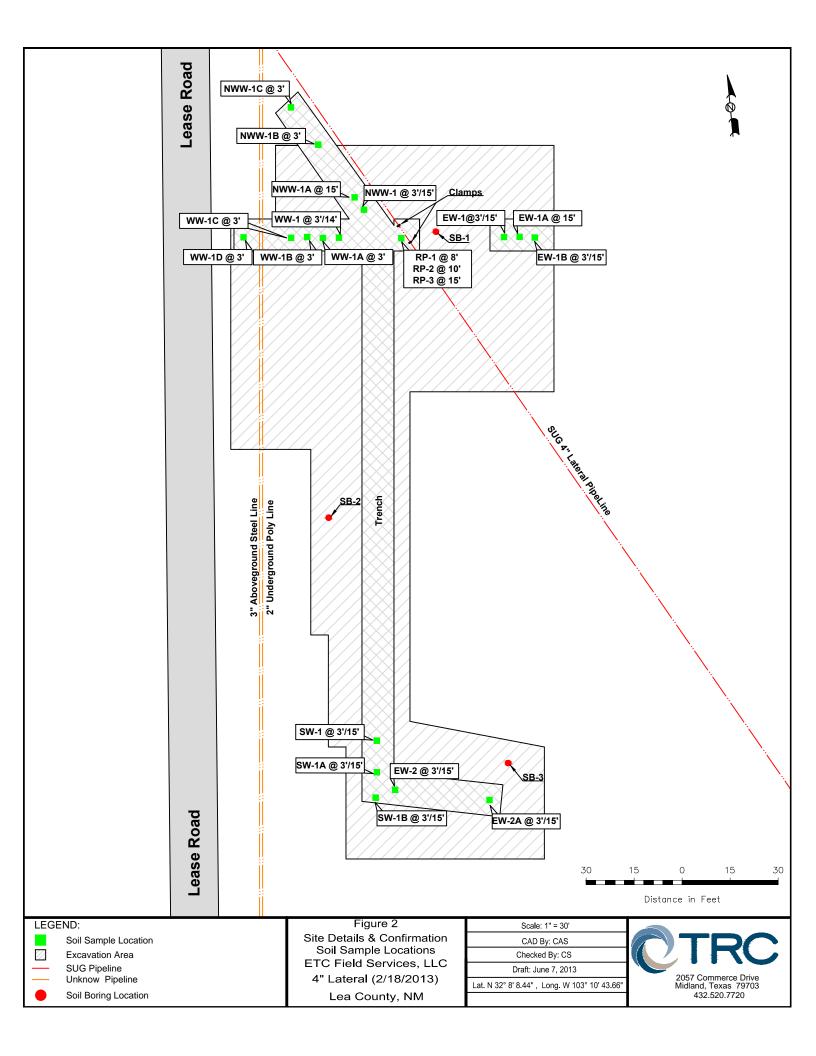


TABLE 1

#### CONCENTRATIONS OF BENZENE, BTEX, TPH AND CHLORIDE IN SOIL

# ETC FIELD SERVICES, LLC 4 INCH LATERAL 2-18-13 RELEASE SITE LEA COUNTY, NEW MEXICO 1RP-02-13-2904

All concentrations are reported in mg/Kg

				METHODS:	SW 846-8021b			METHOD: SW 8015M			E 300.1	
SAMPLE LOCATION	SAMPLE			ETHYL-	m, p -	0 -	TOTAL	TPH	TPH	TPH	TOTAL	
	DATE	BENZENE	TOLUENE		XYLENES	XYLENE	BTEX	GRO	DRO	ORO	TPH	CHLORIDE
								C <sub>6</sub> -C <sub>12</sub>	C <sub>12</sub> -C <sub>28</sub>	C <sub>28</sub> -C <sub>35</sub>	C <sub>6</sub> -C <sub>35</sub>	2.110
RP Baseline	03/19/13	< 0.00107	< 0.00214	< 0.00107	< 0.00214	< 0.00107	< 0.00214	<16.1	297	<16.1	297	2,140
SP Baseline	03/19/13	< 0.00104	< 0.00209	< 0.00104	< 0.00209	< 0.00104	< 0.00209	26.7	238	<15.6	264.7	265
RP-1 @ 8'	03/21/13	< 0.00108	< 0.00216	< 0.00108	< 0.00216	< 0.00108	< 0.00216	<16.1	<16.1	<16.1	<16.1	663
RP-2 @ 10'	03/21/13	-	-	-	-	-	-	-	-	-	-	775
RP-3 @ 15'	03/21/13	-	-	-	-	-	-	-	-	-	-	4,840
WW-1 @ 14'	03/22/13	< 0.00103	< 0.00206	< 0.00103	< 0.00206	< 0.00103	< 0.00206	<25.9	<25.9	<25.9	<25.9	193
WW-1 @ 3'	03/22/13	< 0.00110	< 0.00220	< 0.00110	< 0.00220	< 0.00110	< 0.00220	<16.5	<16.5	<16.5	<16.5	437
WW-1A @ 3'	03/22/13	< 0.00111	< 0.00223	< 0.00111	< 0.00223	< 0.00111	< 0.00223	<16.8	<16.8	<16.8	<16.8	1,320
WW-1B @ 3'	03/22/13	< 0.00108	< 0.00217	< 0.00108	< 0.00217	< 0.00108	< 0.00217	<16.3	<16.3	<16.3	<16.3	856
WW-1C @ 3'	03/25/13	< 0.00111	< 0.00222	< 0.00111	< 0.00222	< 0.00111	< 0.00222	<16.6	<16.6	<16.6	<16.6	679
WW-1D @ 3'	03/25/13	< 0.00104	< 0.00207	< 0.00104	< 0.00207	< 0.00104	< 0.00207	<15.6	<15.6	<15.6	<15.6	73.6
SW-1 @ 3'	04/02/13	< 0.00106	< 0.00213	< 0.00106	< 0.00213	< 0.00106	< 0.00213	<15.9	<15.9	<15.9	<15.9	441
SW-1 @ 15'	04/02/13	< 0.00106	< 0.00212	< 0.00106	< 0.00212	< 0.00106	< 0.00212	<16.1	<16.1	<16.1	<16.1	340
SW-1A @ 3'	04/02/13	-	-	-	-	-	-	-	-	-	-	154
SW-1A @ 15'	04/02/13	-	-	-	-	-	-	-	-	-	-	393
SW-1B @ 3'	04/02/13	-	-	1	-	-	-	-	-	-	-	236
SW-1B @ 15'	04/02/13	-	-	ı	-	-	-	-	-	-	-	119
NWW-1 @ 3'	04/03/13	< 0.00106	< 0.00212	< 0.00106	< 0.00212	< 0.00106	< 0.00212	<15.8	<15.8	<15.8	<15.8	120
NWW-1 @15'	04/03/13	< 0.00104	< 0.00209	< 0.00104	< 0.00209	< 0.00104	< 0.00209	<15.7	<15.7	<15.7	<15.7	760
NWW-1A @ 15'	04/03/13	-	-	ı	-	-	-	-	-	-	-	97.0
NWW-1B @ 3'	04/03/13	-	-	-	-	-	-	-	-	-	-	1,220
NWW-1C @ 3'	04/03/13	-	-	-	-	-	-	-	-	-	-	13.1
EW -1 @ 3'	04/03/13	< 0.00110	< 0.00221	< 0.00110	< 0.00221	< 0.00110	< 0.00221	<16.6	<16.6	<16.6	<16.6	3,910
EW -1 @ 15'	04/03/13	< 0.00102	< 0.00204	< 0.00102	< 0.00204	< 0.00102	< 0.00204	<15.5	<15.5	<15.5	<15.5	1,150
EW-1A @ 15'	04/03/13	-	-	_	-	-	-	-	-	-	-	1,070
EW-1B @ 3'	04/03/13	-	-	-	-	-	-	-	-	-	-	221
EW-1B @ 15'	04/03/13	-	-	-	-	-	-	-	-	-	-	165
EW-2 @ 3'	04/05/13	< 0.00107	< 0.00214	< 0.00107	< 0.00214	< 0.00107	< 0.00214	<15.9	34.5	<15.9	34.5	2,800

TABLE 1

#### CONCENTRATIONS OF BENZENE, BTEX, TPH AND CHLORIDE IN SOIL

# ETC FIELD SERVICES, LLC 4 INCH LATERAL 2-18-13 RELEASE SITE LEA COUNTY, NEW MEXICO 1RP-02-13-2904

All concentrations are reported in mg/Kg

				METHODS:	SW 846-8021b				METHOD: S	SW 8015M		E 300.1
SAMPLE LOCATION	SAMPLE DATE	BENZENE	TOLUENE	ETHYL- BENZENE	m, p - XYLENES	o - XYLENE	TOTAL BTEX	TPH GRO C <sub>6</sub> -C <sub>12</sub>	TPH DRO C <sub>12</sub> -C <sub>28</sub>	TPH ORO C <sub>28</sub> -C <sub>35</sub>	TOTAL TPH C <sub>6</sub> -C <sub>35</sub>	CHLORIDE
EW-2 @ 15'	04/05/13	< 0.00109	< 0.00218	< 0.00109	< 0.00218	< 0.00109	< 0.00218	<16.2	<16.2	<16.2	<16.2	4,110
EW-2A @ 3'	04/09/13	-	-	-	-	-	-	-	-	-	-	163
EW-2A @ 15'	04/09/13	-	-	-	-	-	-	-	-	-	-	<20.0
SB-1 @ 10'	02/19/14	< 0.00104	< 0.00209	< 0.00104	< 0.00209	< 0.00104	< 0.00209	<15.7	<15.7	<15.7	<15.7	1,190
SB-1 @ 15'	02/19/14	< 0.00104	< 0.00208	< 0.00104	< 0.00208	< 0.00104	< 0.00208	<15.6	<15.6	<15.6	<15.6	1,900
SB-1 @ 20'	02/19/14	< 0.00102	< 0.00205	< 0.00102	< 0.00205	< 0.00102	< 0.00205	<15.4	<15.4	<15.4	<15.4	1,840
SB-1 @ 25'	02/19/14	< 0.00104	< 0.00207	< 0.00104	< 0.00207	< 0.00104	< 0.00207	<15.7	<15.7	<15.7	<15.7	596
SB-1 @ 30'	02/19/14	< 0.00104	< 0.00207	< 0.00104	< 0.00207	< 0.00104	< 0.00207	<15.6	<15.6	<15.6	<15.6	127
SB-1 @ 35'	02/19/14	< 0.00103	< 0.00206	< 0.00103	< 0.00206	< 0.00103	< 0.00206	<15.5	<15.5	<15.5	<15.5	68.8
SB-2 @ 10'	02/19/14	< 0.00105	< 0.00210	< 0.00105	< 0.00210	< 0.00105	< 0.00210	<15.7	<15.7	<15.7	<15.7	4,740
SB-2 @ 15'	02/19/14	< 0.00103	< 0.00207	< 0.00103	< 0.00207	< 0.00103	< 0.00207	<15.6	<15.6	<15.6	<15.6	1,720
SB-2 @ 20'	02/19/14	< 0.00108	< 0.00216	< 0.00108	< 0.00216	< 0.00108	< 0.00216	<16.3	<16.3	<16.3	<16.3	824
SB-2 @ 25'	02/19/14	< 0.00104	< 0.00207	< 0.00104	< 0.00207	< 0.00104	< 0.00207	<15.5	<15.5	<15.5	<15.5	840
SB-2 @ 30'	02/19/14	< 0.00105	< 0.00211	< 0.00105	< 0.00211	< 0.00105	< 0.00211	<15.8	<15.8	<15.8	<15.8	268
SB-2 @ 35'	02/19/14	< 0.00110	< 0.00220	< 0.00110	< 0.00220	< 0.00110	< 0.00220	<16.5	<16.5	<16.5	<16.5	420
SB-2 @ 40'	02/19/14	< 0.00121	< 0.00243	< 0.00121	< 0.00243	< 0.00121	< 0.00243	<18.2	<18.2	<18.2	<18.2	85.6
SB-3 @ 5'	02/19/14	< 0.00104	< 0.00208	< 0.00104	< 0.00208	< 0.00104	< 0.00208	<15.7	<15.7	<15.7	<15.7	25.0
SB-3 @ 10'	02/19/14	< 0.00104	< 0.00208	< 0.00104	< 0.00208	< 0.00104	< 0.00208	<15.6	<15.6	<15.6	<15.6	152
SB-3 @ 20'	02/19/14	< 0.00104	< 0.00208	< 0.00104	< 0.00208	< 0.00104	< 0.00208	<15.7	<15.7	<15.7	<15.7	204
SB-3 @ 30'	02/19/14	< 0.00102	< 0.00204	< 0.00102	< 0.00204	< 0.00102	< 0.00204	<15.4	<15.4	<15.4	<15.4	14.6
SB-3 @ 35'	02/19/14	< 0.00113	< 0.00225	< 0.00113	< 0.00225	< 0.00113	< 0.00225	<16.9	<16.9	<16.9	<16.9	52.6

# **Analytical Report 459605**

# for

## **Southern Union Gas Services- Monahans**

Project Manager: Becky Haskell SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

21-MAR-13

Collected By: Client





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

Xenco-Houston (EPA Lab code: TX00122):

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

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

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

Tener i Maria (EDA I a la AZOCCO). A income (AZDAZE)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757) Xenco Tucson (EPA Lab code: AZ000989): Arizona (AZ0758)

Page 1 of 16





21-MAR-13

Project Manager: Becky Haskell

**Southern Union Gas Services- Monahans** 

801 South Loop 464 Monahans, TX 79756

Reference: XENCO Report No(s): **459605** 

SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Project Address: Lea County, NM

#### **Becky Haskell:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 459605. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 459605 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Nicholas Straccione** 

Project Manager

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# **Sample Cross Reference 459605**



## Southern Union Gas Services- Monahans, Monahans, TX

SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
RP Baseline	S	03-19-13 13:00		459605-001
SP Baseline	S	03-19-13 13:30		459605-002

## **CASE NARRATIVE**



Client Name: Southern Union Gas Services- Monahans Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904



Project ID: Report Date: 21-MAR-13 Work Order Number(s): 459605 Date Received: 03/20/2013

Sample receipt non conformances and comments:
None
Sample receipt non conformances and comments per sample:

None



## **Certificate of Analysis Summary 459605**

### Southern Union Gas Services- Monahans, Monahans, TX



TNI Lyboratori

**Project Id:** 

Contact: Becky Haskell

Project Location: Lea County, NM

Date Received in Lab: Wed Mar-20-13 09:14 am

**Report Date:** 21-MAR-13

Project Manager: Nicholas Straccione

						1 Toject Wanager.	Tyleholas Stracelone	
	Lab Id:	459605-0	01	459605-0	02			
Analysis Paguastad	Field Id:	RP Basel	ine	SP Baseli	ne			
Analysis Requested	Depth:							
	Matrix:	SOIL		SOIL				
	Sampled:	Mar-19-13	13:00	Mar-19-13 1	3:30			
BTEX by EPA 8021B	Extracted:	Mar-20-13	16:00	Mar-20-13 1	6:00			
	Analyzed:	Mar-20-13	21:21	Mar-20-13 2	21:37			
	Units/RL:	mg/kg	RL	mg/kg	RL			
Benzene			0.00107		0.00104			
Toluene		ND	0.00214	ND	0.00209			
Ethylbenzene		ND	0.00107		0.00104			
m_p-Xylenes		ND	0.00214	ND	0.00209			
o-Xylene		ND	0.00107		0.00104			
Total Xylenes		ND	0.00107		0.00104			
Total BTEX		ND	0.00107	ND	0.00104			
Inorganic Anions by EPA 300/300.1	Extracted:	Mar-20-13	12:00	Mar-20-13 1	12:00			
	Analyzed:	Mar-21-13	07:04	Mar-21-13 (	7:25			
	Units/RL:	mg/kg	RL	mg/kg	RL			
Chloride		2140	40.0	265	10.0			
Percent Moisture	Extracted:							
	Analyzed:	Mar-20-13	17:00	Mar-20-13 1	17:00			
	Units/RL:	%	RL	%	RL			
Percent Moisture		7.26	1.00	4.30	1.00			
TPH By SW8015 Mod	Extracted:	Mar-20-13	15:00	Mar-20-13 1	15:00			
	Analyzed:	Mar-21-13	01:33	Mar-21-13 (	02:01			
	Units/RL:	mg/kg	RL	mg/kg	RL			
C6-C12 Gasoline Range Hydrocarbons		ND	16.1	26.7	15.6			
C12-C28 Diesel Range Hydrocarbons		297	16.1	238	15.6			
C28-C35 Oil Range Hydrocarbons		ND	16.1	ND	15.6			
Total TPH		297	16.1	265	15.6			

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

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Nicholas Straccione Project Manager



## **Flagging Criteria**

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

**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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Page 6 of 16 Final 1.000

<sup>\*</sup> Surrogate recovered outside laboratory control limit.



## Form 2 - Surrogate Recoveries

Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Orders: 459605, Project ID:

 Lab Batch #: 909459
 Sample: 459605-001 / SMP
 Batch: 1
 Matrix: Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/20/13 21:21	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes	[]	[-]	[D]	,,,==	
1,4-Difluorobenzene	0.0254	0.0300	85	80-120	
4-Bromofluorobenzene	0.0260	0.0300	87	80-120	

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/20/13 21:37	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0270	0.0300	90	80-120	
4-Bromofluorobenzene	0.0285	0.0300	95	80-120	

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/21/13 01:33	SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes			[D]			
1-Chlorooctane	97.5	99.7	98	70-135		
o-Terphenyl	50.5	49.9	101	70-135		

Units: mg/kg Date Analyzed: 03/21/13 02:01	SURROGATE RECOVERY STUDY				
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	102	99.6	102	70-135	
o-Terphenyl	51.3	49.8	103	70-135	

Lab Batch #: 909459 Sample: 635403-1-BLK / BLK Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/20/13 20:49	SU	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0249	0.0300	83	80-120	
4-Bromofluorobenzene	0.0276	0.0300	92	80-120	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



## Form 2 - Surrogate Recoveries

Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Orders: 459605, Project ID:

Lab Batch #: 909470 Sample: 635407-1-BLK / BLK Batch: 1 Matrix: Solid

Unite: mg/kg Date Analyzed: 03/20/13 23:40 SURROGATE RECOVERY STUDY

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/20/13 23:40	SURROGATE RECOVERT STUDY				
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	103	99.9	103	70-135	
o-Terphenyl	51.9	50.0	104	70-135	

Lab Batch #: 909459 Sample: 635403-1-BKS / BKS Batch: 1 Matrix: Solid

SURROGATE RECOVERY STUDY Units: mg/kg Date Analyzed: 03/20/13 20:16 Amount True Control BTEX by EPA 8021B Found Amount Recovery Limits **Flags** [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0344 0.0300 115 80-120 4-Bromofluorobenzene 0.0325 0.0300 108 80-120

Lab Batch #: 909470 Sample: 635407-1-BKS / BKS Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/20/13 22:44	Inits: mg/kg Date Analyzed: 03/20/13 22:44 SURROGATE RECOVERY STUDY								
TPH By SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
1-Chlorooctane	94.5	99.7	95	70-135					
o-Terphenyl	57.6	49.9	115	70-135					

Lab Batch #: 909459 Sample: 635403-1-BSD / BSD Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/20/13 20:32	SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Analytes			[D]				
1,4-Difluorobenzene	0.0283	0.0300	94	80-120			
4-Bromofluorobenzene	0.0292	0.0300	97	80-120			

Lab Batch #: 909470 Sample: 635407-1-BSD / BSD Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 03/20/13 23:	12 <b>SU</b>	SURROGATE RECOVERY STUDY						
TPH By SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooctane	100	99.6	100	70-135				
o-Terphenyl	53.5	49.8	107	70-135				

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



## Form 2 - Surrogate Recoveries

Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Orders: 459605, Project ID:

 Lab Batch #: 909459
 Sample: 459606-001 S / MS
 Batch: 1 Matrix: Soil

 Units: mg/kg
 Date Analyzed: 03/20/13 21:54
 SURROGATE RECOVERY STUDY

Units: hig/kg Date Analyzeu: 05/20/15 21.34				31021	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0311	0.0300	104	80-120	
4-Bromofluorobenzene	0.0304	0.0300	101	80-120	

SURROGATE RECOVERY STUDY Units: mg/kg Date Analyzed: 03/21/13 00:36 Control Amount True TPH By SW8015 Mod Recovery Found Amount Limits Flags [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 99.4 99.6 100 70-135 o-Terphenyl 55.4 49.8 111 70-135

Units: mg/kg Date Analyzed: 03/20/13 22:10 SURROGATE RECOVERY STUDY								
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
1,4-Difluorobenzene	0.0266	0.0300	89	80-120				
4-Bromofluorobenzene	0.0327	0.0300	109	80-120				

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/21/13 01:04	SU	RROGATE RI	ECOVERY S	STUDY	
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	98.7	99.8	99	70-135	
o-Terphenyl	51.2	49.9	103	70-135	

Surrogate Recovery [D] = 100 \* A / B

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

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



## **BS / BSD Recoveries**



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Order #: 459605

**Lab Batch ID:** 909459

**Date Prepared:** 03/20/2013

**Project ID: Date Analyzed:** 03/20/2013

Analyst: KEB

Matrix: Solid

Sample: 635403-1-BKS **Batch #:** 1

Units: mg/kg

## BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.000992	0.0992	0.106	107	0.0998	0.0841	84	23	70-130	35	
Toluene	< 0.00198	0.0992	0.102	103	0.0998	0.0831	83	20	70-130	35	
Ethylbenzene	< 0.000992	0.0992	0.103	104	0.0998	0.0775	78	28	71-129	35	
m_p-Xylenes	<0.00198	0.198	0.196	99	0.200	0.148	74	28	70-135	35	
o-Xylene	<0.000992	0.0992	0.101	102	0.0998	0.0769	77	27	71-133	35	

**Date Analyzed:** 03/21/2013 Analyst: AMB **Date Prepared:** 03/20/2013

Matrix: Solid **Lab Batch ID:** 909477 **Batch #:** 1 **Sample:** 635411-1-BKS

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Units: mg/kg Blk. Spk Blank Spike Blank Blank Blank Control Control **Inorganic Anions by EPA 300/300.1** Spike Sample Result Added Spike Spike Spike Dup. RPD Limits Limits Flag Added [A] Result %R Duplicate %R % %R %RPD Result [F] [B] [C] [D] [G] [E] **Analytes** Chloride < 2.00 50.0 50.8 102 50.0 51.9 104 2 80-120 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



## **BS / BSD Recoveries**



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

**Work Order #:** 459605

Project ID:

Analyst: KEB

**Date Prepared:** 03/20/2013

**Date Analyzed:** 03/20/2013

**Lab Batch ID:** 909470

**Sample:** 635407-1-BKS **Batch #:** 1

Matrix: Solid

Units: mg/kg

BLANK/BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Units: mg/kg											
TPH By SW8015 Mod	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
C6-C12 Gasoline Range Hydrocarbons	<15.0	997	936	94	996	993	100	6	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.0	997	984	99	996	1040	104	6	70-135	35	



## Form 3 - MS Recoveries



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

**Work Order #:** 459605 **Lab Batch #:** 909477

Chloride

**Date Prepared:** 03/20/2013

13.6

1

Batch #:

Project ID:
Analyst: AMB

80-120

**Date Analyzed:** 03/21/2013 **QC- Sample ID:** 459439-001 S

Matrix: Soil

76.7

]	Reporting Units: mg/kg	MATI	RIX / MA	TRIX SPIKE	RECO	VERY STU	DY
	Inorganic Anions by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
l	Analytes	[A]	[B]				

 $\label{eq:matrix_pike_percent_policy} \begin{tabular}{ll} 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 \\ \end{tabular}$ 

BRL - Below Reporting Limit



## Form 3 - MS / MSD Recoveries



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Order #: 459605 Project ID:

**Lab Batch ID:** 909459 **QC- Sample ID:** 459606-001 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
BTEX by EPA 8021B	Parent Sample	Spike	Spiked Sample Result	Sample	-	Duplicate Spiked Sample	-	RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Benzene	< 0.00106	0.106	0.0864	82	0.106	0.0993	94	14	70-130	35	
Toluene	< 0.00211	0.106	0.0798	75	0.106	0.0913	86	13	70-130	35	
Ethylbenzene	< 0.00106	0.106	0.0758	72	0.106	0.0917	87	19	71-129	35	
m_p-Xylenes	< 0.00211	0.211	0.148	70	0.212	0.174	82	16	70-135	35	
o-Xylene	< 0.00106	0.106	0.0755	71	0.106	0.0907	86	18	71-133	35	

**Lab Batch ID:** 909470 **QC- Sample ID:** 459606-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/21/2013 Date Prepared: 03/20/2013 Analyst: KEB

Reporting Units: mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
TPH By SW8015 Mod	Parent Sample Result	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
C6-C12 Gasoline Range Hydrocarbons	<15.8	1060	1010	95	1060	1010	95	0	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.8	1060	1090	103	1060	1080	102	1	70-135	35	



# **Sample Duplicate Recovery**



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

**Work Order #:** 459605

 Lab Batch #:
 909473
 Project ID:

 Date Analyzed:
 03/20/2013 17:00
 Date Prepared:
 03/20/2013
 Analyst:
 WRU

 QC- Sample ID:
 459605-001 D
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: %	SAMPLE / SAMPLE DUPLICATE RECOVERY						
	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag		
Analyte		[2]					
Percent Moisture	7.26	7.31	1	20			

Relinguished by:

Millia Duerr Special Instructions: (lab use only) ORDER #: 459(005 The Environmental Lab of Texas Relinquished by: Relinquished by: Xenco Laboratories LAB # (lab use only) Sampler Signature: Telephone No: City/State/Zip: Company Address: 2057 Commerce Company Name Project Manager: SP Baseline RP Baseline FIELD CODE Becky Haskell 432.520.7720 Midland, TX 79703 Nova Safety and Environmental Mille Gran 3/20 Date 7/*\O* Beginning Depth me Ime Ending Depth Received by ELOT Received by: Received by: 3/19/2013 3/19/2013 **Date Sampled** 1330 1300 Time Sampled Fax No: e-mail: Field Filtered Total #. of Containers 432.520.7701 Odessa, Texas 79765 12600 West I-20 East × × Ice rhaskell@novatraining.cc curt.stanley@sug.com ngreen@novatraining.cc нио₃ HCI H₂SO₄ CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST NaOH  $Na_2S_2O_3$ Date Other (Specify) Date Soil Report Format: Standard 7.50 Project Name: SUG 4 inch Lateral (2/18/13) 1RP-02-13-2904 Project Loc: Time **6**015M 8015B Project #: × 418,1 TX 1005 TX 1006 PO #: TPH: Custody seals on cooler(s)
Sample Hand Delivered
by Sampler/Client Rep. ?
by Courier? UPS DHL Temperature Upon Receipt: Labels on container(s)
Custody seals on container(s) Sample Containers Intact? Cations (Ca, Mg, Na, K) VOCs Free of Headspace? Laboratory Comments: Anions (CI, SO4, Alkalinity) SAR / ESP / CEC Phone: 432-563-1800 Fax: 432-563-1713 Metals: As Ag Ba Cd Cr Pb Hg Se Analyze Volatiles Lea County, NM BTEX 8021B/9030 or BTEX 8260 ☐ TRRP × RCI N.O.R.M. Chlorides E 300.1 1.0°C NPDES 24) 48, 72 hrs RUSH TAT (Pre-Sch Standard TAT



## **XENCO Laboratories**



## Prelogin/Nonconformance Report- Sample Log-In

Client: Nova Safety & Environmental

Date/ Time Received: 03/20/2013 09:14:00 AM

Checklist reviewed by:

**Temperature Measuring device used:** Work Order #: 459605

Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient

	Sample Receipt Che	cklist	Comments
#1 *Temperature of cooler(s)?		1	
#2 *Shipping container in good conditi	on?	Yes	
#3 *Samples received on ice?		Yes	
#4 *Custody Seals intact on shipping	container/ cooler?	Yes	
#5 Custody Seals intact on sample bo	ttles?	Yes	
#6 *Custody Seals Signed and dated?		Yes	
#7 *Chain of Custody present?		Yes	
#8 Sample instructions complete on C	hain of Custody?	Yes	
#9 Any missing/extra samples?		No	
#10 Chain of Custody signed when rel	inquished/ received?	Yes	
#11 Chain of Custody agrees with san	nple label(s)?	Yes	
#12 Container label(s) legible and inta	ct?	Yes	
#13 Sample matrix/ properties agree v	vith Chain of Custody?	Yes	
#14 Samples in proper container/ bottl	e?	Yes	
#15 Samples properly preserved?		Yes	
#16 Sample container(s) intact?		Yes	
#17 Sufficient sample amount for indic	eated test(s)?	Yes	
#18 All samples received within hold ti	me?	Yes	
#19 Subcontract of sample(s)?		Yes	
#20 VOC samples have zero headspa	ce (less than 1/4 inch bubble)	)? Yes	
#21 <2 for all samples preserved with	HNO3,HCL, H2SO4?	Yes	
#22 >10 for all samples preserved with	n NaAsO2+NaOH, ZnAc+NaC	OH? Yes	
Must be completed for after-hours d		placing in the refriger	ator
Analyst: PH D	evice/Lot#:		
Checklist completed by:		Date:	

Date:

# **Analytical Report 459844**

## for Southern Union Gas Services- Monahans

Project Manager: Becky Haskell SUG 4"Lateral (2/18/13)

29-MAR-13

Collected By: Client





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

Xenco-Houston (EPA Lab code: TX00122):

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

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

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Xenco-Lakeland: Florida (E84098)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX) Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

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

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

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





29-MAR-13

Project Manager: Becky Haskell

**Southern Union Gas Services- Monahans** 

801 South Loop 464 Monahans, TX 79756

Reference: XENCO Report No(s): 459844

SUG 4"Lateral (2/18/13)

Project Address: Lea County, NM

#### **Becky Haskell:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 459844. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 459844 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Nicholas Straccione** 

Project Manager

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# Sample Cross Reference 459844



## Southern Union Gas Services- Monahans, Monahans, TX

SUG 4"Lateral (2/18/13)

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
RP-1 @ 8'	S	03-21-13 15:00		459844-001
RP-2 @ 10'	S	03-21-13 15:05		459844-002
RP-3 @ 15'	S	03-21-13 15:10		459844-003

#### CASE NARRATIVE



Client Name: Southern Union Gas Services- Monahans

Project Name: SUG 4"Lateral (2/18/13)



Project ID: Report Date: 29-MAR-13 Work Order Number(s): 459844 Date Received: 03/22/2013

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-910129 BTEX by EPA 8021B

SW8021BM

Batch 910129, Ethylbenzene, m\_p-Xylenes recovered below QC limits in the Matrix Spike Duplicate. Samples affected are: 459844-001.

The Laboratory Control Sample for Ethylbenzene, m\_p-Xylenes is within laboratory Control Limits

Page 4 of 16



## **Certificate of Analysis Summary 459844**

### Southern Union Gas Services- Monahans, Monahans, TX



Project Id:

Project Location: Lea County, NM

Contact: Becky Haskell

Project Name: SUG 4"Lateral (2/18/13)

Date Received in Lab: Fri Mar-22-13 03:58 pm

**Report Date:** 29-MAR-13

Project Manager: Nicholas Straccione

							1 Toject Manager.	Tricholas Straccione	
Lab Id:	459844-0	001	459844-0	02	459844-0	03			
Field Id:	RP-1 @	8'	RP-2 @ 1	10'	RP-3 @ 1	15'			
Depth:									
Matrix:	SOIL		SOIL		SOIL				
Sampled:	Mar-21-13	15:00	Mar-21-13 1	5:05	Mar-21-13 1	15:10			
Extracted:	Mar-28-13	15:10							
Analyzed:	Mar-28-13	16:49							
Units/RL:	mg/kg	RL							
	ND	0.00108							
	ND	0.00216							
	ND	0.00108							
	ND	0.00216							
	ND	0.00108							
	ND								
	ND	0.00108							
Extracted:	Mar-27-13	10:00	Mar-27-13 1	0:00	Mar-27-13 1	10:00			
Analyzed:	Mar-27-13	18:59	Mar-27-13 1	9:42	Mar-27-13 2	20:04			
Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL			
	663	20.0	775	20.0	4840	200			
Extracted:									
Analyzed:	Mar-26-13	17:00	Mar-26-13 1	7:00	Mar-26-13 1	17:00			
Units/RL:	%	RL	%	RL	%	RL			
	7.07	1.00	3.48	1.00	7.94	1.00			
Extracted:	Mar-27-13	08:00							
Analyzed:	Mar-27-13 12:18								
Units/RL:	mg/kg	RL							
	ND								
	ND					-			
	ND	16.1							
	Field Id: Depth: Matrix: Sampled: Extracted: Analyzed: Units/RL:  Extracted: Analyzed: Units/RL:  Extracted: Analyzed: Units/RL:  Extracted: Analyzed: Analyzed: Analyzed:	Field Id:         RP-1 @           Depth:         Matrix:         SOIL           Sampled:         Mar-21-13           Extracted:         Mar-28-13           Analyzed:         Mar-28-13           Units/RL:         mg/kg           ND         ND           ND         ND           ND         ND           Extracted:         Mar-27-13           Analyzed:         Mar-27-13           Units/RL:         %           Extracted:         Mar-26-13           Units/RL:         %           Extracted:         Mar-27-13           Analyzed:         Mar-27-13           Units/RL:         mg/kg           ND         ND           ND         ND	Field Id:         RP-1 @ 8'           Depth:         Matrix:         SOIL           Sampled:         Mar-21-13 15:00           Extracted:         Mar-28-13 15:10           Analyzed:         Mar-28-13 16:49           Units/RL:         mg/kg         RL           ND 0.00108         ND 0.00108           ND 0.0018         ND 0.00108           ND 0.00108         ND 0.00108           Extracted:         Mar-27-13 10:00           Analyzed:         Mar-27-13 18:59           Units/RL:         mg/kg         RL           7.07         1.00           Extracted:         Mar-27-13 12:18           Units/RL:         mg/kg         RL           7.07         1.00           Extracted:         Mar-27-13 12:18           Units/RL:         mg/kg         RL           ND 16.1         ND 16.1         ND 16.1	Field Id:         RP-1 @ 8'         RP-2 @ 1           Depth:         Matrix:         SOIL         SOIL           Sampled:         Mar-21-13 15:00         Mar-21-13 1           Extracted:         Mar-28-13 15:10         Mar-21-13 1           Analyzed:         Mar-28-13 16:49         Mar-28-13 16:49           Units/RL:         mg/kg         RL           ND         0.00108         ND         0.00216           ND         0.00108         ND         0.00108           Extracted:         Mar-27-13 10:00         Mar-27-13 1           Analyzed:         Mar-27-13 18:59         Mar-27-13 1           Units/RL:         mg/kg         RL         mg/kg           Extracted:         Analyzed:         Mar-26-13 17:00         Mar-26-13 1           Units/RL:         %         RL         %           Extracted:         Mar-27-13 08:00         Analyzed:         Mar-27-13 12:18           Units/RL:         mg/kg         RL         ND         16.1           ND         16.1         ND         16.1           ND         16.1         ND         16.1	Field Id:         RP-1 @ 8'         RP-2 @ 10'           Depth:         Matrix:         SOIL         SOIL           Sampled:         Mar-21-13 15:00         Mar-21-13 15:05           Extracted:         Mar-28-13 15:10         Mar-21-13 15:05           Extracted:         Mar-28-13 16:49         Mar-28-13 16:49           Units/RL:         mg/kg         RL           ND         0.00108         ND           ND         0.00216         ND           ND         0.00108         ND           Extracted:         Mar-27-13 10:00         Mar-27-13 10:00           Analyzed:         Mar-27-13 18:59         Mar-27-13 19:42         mg/kg         RL           Units/RL:         mg/kg         RL         mg/kg         RL           Analyzed:         Mar-26-13 17:00         Mar-26-13 17:00         Mar-26-13 17:00           Extracted:         Analyzed:         Mar-27-13 08:00         Analyzed:         Mar-27-13 12:18           Units/RL:         mg/kg         RL         %         RL           ND         16.1         ND         16.1           ND         16.1         ND         16.1	Field Id:         RP-1 @ 8'         RP-2 @ 10'         RP-3 @ 10'           Depth:         Matrix:         SOIL         SOIL         SOIL           Sampled:         Mar-21-13 15:00         Mar-21-13 15:05         Mar-21-13 15:05           Extracted:         Mar-28-13 15:10         Mar-21-13 15:05         Mar-21-13 15:05           Analyzed:         Mar-28-13 16:49         Mar-28-13 16:49         Mar-28-13 16:49         Mar-28-13 16:49           Units/RL:         mg/kg         RL         ND         0.00108           ND         0.00216         ND         0.00108           ND         0.00108         ND         0.00108           Extracted:         Mar-27-13 10:00         Mar-27-13 10:00         Mar-27-13 19:42         Mar-27-13 19:42         Mar-27-13 19:42         Mar-27-13 20:00         4840           Extracted:         Mar-26-13 17:00         Mar-27-13 12:18         Mar-27-13 12:18 <th>Field Id:       RP-1 @ 8'       RP-2 @ 10'       RP-3 @ 15'         Matrix:       SOIL       SOIL       SOIL         SOIL       SOIL         SOIL       SOIL         SOIL       SOIL         SOIL       SOIL         SOIL       SOIL         Mar-21-13 15:00       Mar-21-13 15:10         Mar-28-13 16:49       Units/RL:       Mp/kg       RL         ND       0.00108         Extracted:       Mar-27-13 10:00       Mar-27-13 10:00       Mar-27-13 10:00       Mar-27-13 10:00       Mar-27-13 20:04         Mar-27-13 18:59       Mar-27-13 19:42       Mar-27-13 20:04       mg/kg       RL       mg/kg       RL       mg/kg       RL       mg/kg       RL       Mar-27-13 10:00       Mar-27-13 10:00       Mar-27-13 10:00       Mar-27-13 10:00       Mar-26-13 17:00       Mar-26-13 17:00       Mar-26</th> <th>  Lab Id:</th> <th>  Field Id:</th>	Field Id:       RP-1 @ 8'       RP-2 @ 10'       RP-3 @ 15'         Matrix:       SOIL       SOIL       SOIL         SOIL       SOIL         SOIL       SOIL         SOIL       SOIL         SOIL       SOIL         SOIL       SOIL         Mar-21-13 15:00       Mar-21-13 15:10         Mar-28-13 16:49       Units/RL:       Mp/kg       RL         ND       0.00108         Extracted:       Mar-27-13 10:00       Mar-27-13 10:00       Mar-27-13 10:00       Mar-27-13 10:00       Mar-27-13 20:04         Mar-27-13 18:59       Mar-27-13 19:42       Mar-27-13 20:04       mg/kg       RL       mg/kg       RL       mg/kg       RL       mg/kg       RL       Mar-27-13 10:00       Mar-27-13 10:00       Mar-27-13 10:00       Mar-27-13 10:00       Mar-26-13 17:00       Mar-26-13 17:00       Mar-26	Lab Id:	Field Id:

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

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Nicholas Straccione Project Manager



## **Flagging Criteria**

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

**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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Page 6 of 16

Final 1.001

<sup>\*</sup> Surrogate recovered outside laboratory control limit.



o-Terphenyl

## Form 2 - Surrogate Recoveries

Project Name: SUG 4"Lateral (2/18/13)

 Work Orders: 459844,
 Project ID:

 Lab Batch #: 909973
 Sample: 459844-001 / SMP
 Batch: 1 Matrix: Soil

SURROGATE RECOVERY STUDY Units: mg/kg Date Analyzed: 03/27/13 12:18 Amount True Control TPH By SW8015 Mod **Found** Amount Recovery Limits **Flags** %R [A] [B] %R [D] **Analytes** 1-Chlorooctane 98.0 99.6 98 70-135

51.9

49.8

104

70-135

SURROGATE RECOVERY STUDY Units: mg/kg Date Analyzed: 03/28/13 16:49 Amount True Control BTEX by EPA 8021B **Found** Amount Recovery Limits **Flags** [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0270 0.0300 90 80-120 4-Bromofluorobenzene 0.0275 0.0300 92 80-120

Lab Batch #: 909973 Sample: 635722-1-BLK / BLK Batch: 1 Matrix: Solid

SURROGATE RECOVERY STUDY **Date Analyzed:** 03/27/13 09:43 Units: mg/kg Amount True Control TPH By SW8015 Mod Limits **Found** Amount Recovery Flags %R %R [A] [B] [D] **Analytes** 1-Chlorooctane 104 104 70-135 99.8 o-Terphenyl 55.9 49.9 112 70-135

Lab Batch #: 910129 Sample: 635830-1-BLK / BLK Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 03/28/13 15:44 SURROGATE RECOVERY STUDY							
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Analytes			[D]				
1,4-Difluorobenzene	0.0285	0.0300	95	80-120			
4-Bromofluorobenzene	0.0297	0.0300	99	80-120			

Lab Batch #: 909973 Sample: 635722-1-BKS / BKS Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/27/13 08:46	SURROGATE RECOVERY STUDY						
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Analytes			[D]				
1-Chlorooctane	96.2	99.8	96	70-135			
o-Terphenyl	56.6	49.9	113	70-135			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: SUG 4"Lateral (2/18/13)

Work Orders: 459844,

Lab Batch #: 910129

Sample: 635830-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 03/28/13 14:38 SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes			[D]			
1,4-Difluorobenzene	0.0285	0.0300	95	80-120		
4-Bromofluorobenzene	0.0322	0.0300	107	80-120		

Lab Batch #: 909973 Sample: 635722-1-BSD / BSD Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 03/27/13 09:16	SURROGATE RECOVERY STUDY						
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
Analytes			[D]				
1-Chlorooctane	103	99.0	104	70-135			
o-Terphenyl	57.5	49.5	116	70-135			

Lab Batch #: 910129 Sample: 635830-1-BSD / BSD Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 03/28/13 14:55	SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Analytes			[D]				
1,4-Difluorobenzene	0.0323	0.0300	108	80-120			
4-Bromofluorobenzene	0.0300	0.0300	100	80-120			

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/27/13 12:43	SURROGATE RECOVERY STUDY						
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Analytes			[D]				
1-Chlorooctane	97.7	100	98	70-135			
o-Terphenyl	61.1	50.1	122	70-135			

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/28/13 19:01	SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Analytes			[D]				
1,4-Difluorobenzene	0.0298	0.0300	99	80-120			
4-Bromofluorobenzene	0.0333	0.0300	111	80-120			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: SUG 4"Lateral (2/18/13)

 Work Orders: 459844,
 Project ID:

 Lab Batch #: 909973
 Sample: 459844-001 SD / MSD
 Batch: 1 Matrix: Soil

SURROGATE RECOVERY STUDY Units: mg/kg **Date Analyzed:** 03/27/13 13:09 True Control Amount TPH By SW8015 Mod **Found** Amount Recovery Limits Flags %R [A] [B] %R [D] **Analytes** 1-Chlorooctane 97.1 99.9 97 70-135 o-Terphenyl 50.0 123 70-135 61.3

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/28/13 19:17	SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
•	0.0000	0.0000	100	00.420			
1,4-Difluorobenzene	0.0323	0.0300	108	80-120			
4-Bromofluorobenzene	0.0330	0.0300	110	80-120			

Surrogate Recovery [D] = 100 \* A / B

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



## **BS / BSD Recoveries**



Project Name: SUG 4"Lateral (2/18/13)

**Work Order #:** 459844

Analyst: KEB Lab Batch ID: 910129 **Date Prepared:** 03/28/2013

Project ID:

**Date Analyzed:** 03/28/2013

**Sample:** 635830-1-BKS **Batch #:** 1

Matrix: Solid

Units: mg/kg

## BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.000994	0.0994	0.0899	90	0.101	0.0950	94	6	70-130	35	
Toluene	< 0.00199	0.0994	0.0840	85	0.101	0.0939	93	11	70-130	35	
Ethylbenzene	< 0.000994	0.0994	0.0804	81	0.101	0.0873	86	8	71-129	35	
m_p-Xylenes	< 0.00199	0.199	0.163	82	0.201	0.176	88	8	70-135	35	
o-Xylene	< 0.000994	0.0994	0.0877	88	0.101	0.0975	97	11	71-133	35	

**Analyst:** AMB **Date Prepared:** 03/27/2013 **Date Analyzed:** 03/27/2013

Lab Batch ID: 910042 Sample: 635789-1-BKS Batch #: 1 Matrix: Solid

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Units: mg/kg Blk. Spk Blank Spike Blank Blank Blank Control Control **Inorganic Anions by EPA 300/300.1** Spike Sample Result Added Spike Spike Spike Dup. RPD Limits Limits Flag Added [A] Result %R Duplicate %R % %R %RPD Result [F] [B] [C] [D] [G] [E] **Analytes** Chloride < 2.00 50.0 52.4 105 50.0 52.8 106 1 80-120 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



## **BS / BSD Recoveries**



Project Name: SUG 4"Lateral (2/18/13)

**Work Order #:** 459844

**Project ID:** 

Analyst: KEB

**Date Prepared:** 03/27/2013

**Date Analyzed:** 03/27/2013

**Lab Batch ID:** 909973

**Sample:** 635722-1-BKS **Batch #:** 1

Matrix: Solid

Units: 1	mg/kg
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## BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Cinto: C C											
TPH By SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Gasoline Range Hydrocarbons	<15.0	998	931	93	990	978	99	5	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.0	998	1000	100	990	1080	109	8	70-135	35	

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



## Form 3 - MS Recoveries



Project Name: SUG 4"Lateral (2/18/13)

**Work Order #:** 459844

Lab Batch #: 910042 Project ID:

QC- Sample ID: 459790-001 S

Reporting Units: mg/kg

Batch #: 1

MATRIX SPIKE RECOVERY STUDY

Kepol ting Omts: mg/kg	MATRIA / MATRIA SITRE RECOVERT STUDI					<b>D1</b>	
Inorganic Anions by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	%R	%R Limits [D] %R		
Analytes	[A]	[B]		. ,			
Chloride	<4.02	100	107	107	80-120		

**Lab Batch #:** 910042

Date Analyzed: 03/27/2013 Date Prepared: 03/27/2013 Analyst: AMB

**QC- Sample ID:** 459844-001 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg	MATRIX / MATRIX SPIKE RECOVERY STUDY							
Inorganic Anions by EPA 300  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag		
Chloride	663	500	1220	111	80-120			

Matrix Spike Percent Recovery [D] = 100\*(C-A)/BRelative 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: SUG 4"Lateral (2/18/13)

Work Order #: 459844 Project ID:

**Lab Batch ID:** 910129 **QC- Sample ID:** 459879-003 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/28/2013 Date Prepared: 03/28/2013 KEB

Reporting Units: mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY											
BTEX by EPA 8021B	Parent Sample	Spike	Spiked Sample Result	Sample	•	Duplicate Spiked Sample	-	RPD	Control Limits	Control Limits	Flag	
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD		
Benzene	< 0.00110	0.110	0.0860	78	0.109	0.0852	78	1	70-130	35		
Toluene	< 0.00220	0.110	0.0869	79	0.109	0.0821	75	6	70-130	35		
Ethylbenzene	< 0.00110	0.110	0.0777	71	0.109	0.0719	66	8	71-129	35	X	
m_p-Xylenes	< 0.00220	0.220	0.154	70	0.219	0.146	67	5	70-135	35	X	
o-Xylene	< 0.00110	0.110	0.0868	79	0.109	0.0806	74	7	71-133	35		

**Lab Batch ID:** 909973 **QC- Sample ID:** 459844-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/27/2013 Date Prepared: 03/27/2013 KEB

Reporting Units: mg/kg		MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY											
TPH By SW8015 Mod	Parent Sample	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag		
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD			
C6-C12 Gasoline Range Hydrocarbons	<16.2	1080	1000	93	1080	1020	94	2	70-135	35			
C12-C28 Diesel Range Hydrocarbons	<16.2	1080	1120	104	1080	1130	105	1	70-135	35			

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



## **Sample Duplicate Recovery**



Project Name: SUG 4"Lateral (2/18/13)

**Work Order #:** 459844

 Lab Batch #:
 909946
 Project ID:

 Date Analyzed:
 03/26/2013 17:00
 Date Prepared:
 03/26/2013
 Analyst:
 WRU

 QC- Sample ID:
 459854-001 D
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: %	SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
Percent Moisture  Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	9.72	9.04	7	20	
i ercent worsture	9.12	7.04	/	20	

## **Xenco Laboratories**

The Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST Phone: 432-563-1800

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## **XENCO Laboratories**



## Prelogin/Nonconformance Report- Sample Log-In

Client: Southern Union Gas Services- Monahan

Date/ Time Received: 03/22/2013 03:58:00 PM

Work Order #: 459844

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

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

## **Analytical Report 459913**

## for

## Southern Union Gas Services- Monahans

Project Manager: Becky Haskell SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

01-APR-13

Collected By: Client





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

Xenco-Houston (EPA Lab code: TX00122):

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

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

> Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900) Xenco-Lakeland: Florida (E84098)

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

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

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

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

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





01-APR-13

Project Manager: Becky Haskell

Southern Union Gas Services- Monahans

801 South Loop 464 Monahans, TX 79756

Reference: XENCO Report No(s): 459913

SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Project Address: Lea County, NM

## Becky Haskell:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 459913. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 459913 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Nicholas Straccione** 

Project Manager

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

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

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



## **Sample Cross Reference 459913**



## Southern Union Gas Services- Monahans, Monahans, TX

SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
WW-1 @14'	S	03-20-13 14:00		459913-001

## CASE NARRATIVE



Client Name: Southern Union Gas Services- Monahans Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904



Project ID:

Work Order Number(s):

459913

Report Date: 01-APR-13

Date Received: 03/25/2013

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-909979 BTEX by EPA 8021B

SW8021BM

Batch 909979, Ethylbenzene, Toluene, m p-Xylenes, o-Xylene recovered below QC limits in the Matrix

Spike and Matrix Spike Duplicate. Samples affected are: 459913-001.

The Laboratory Control Sample for Toluene, Ethylbenzene, m p-Xylenes, o-Xylene is within laboratory

**Control Limits** 

Batch: LBA-910294 Inorganic Anions by EPA 300/300.1

E300

Batch 910294, Chloride recovered above QC limits in the Matrix Spike.

Samples affected are: 459913-001.

The Laboratory Control Sample for Chloride is within laboratory Control Limits



Project Location: Lea County, NM Contact: Becky Haskell

Project Id:

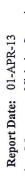
## Certificate of Analysis Summary 429913

Southern Union Gas Services-Monahans, Monahans, TX

Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Date Received in Lab: Mon Mar-25-13 04:30 pm

Project Manager: Nicholas Straccione



	Lab Id:	459913-001	
Analysis Ronnostad	Field Id:	WW-1 @14'	
marcanhau rechmers	Depth:		
	Matrix:	SOIL	37 35
	Sampled:	Mar-20-13 14:00	
BTEX by EPA 8021B	Extracted:	Mar-27-13 12:15	
	Analyzed:	Mar-27-13 15:04	
	Units/RL:	mg/kg RL	
Benzene		- 3	
Toluene		ND 0.00206	
Ethylbenzene		ND 0.00103	
m_p-Xylenes		ND 0.00206	
o-Xylene		ND 0.00103	
Total Xylenes		ND 0.00103	
Total BTEX		ND 0.00103	
Inorganic Anions by EPA 300/300.1	Extracted:	Mar-29-13 00:00	
	Analyzed:	Mar-29-13 17:07	
	Units/RL:	mg/kg RL	
Chloride		193 10.0	
Percent Moisture	Extracted:		
	Analyzed:	Mar-27-13 17:00	
	Units/RL:	% RL	
Percent Moisture		3.73 1.00	
TPH by Texas1005	Extracted:	Mar-27-13 08:00	
	Analyzed:	Mar-27-13 15:43	
	Units/RL:	mg/kg RL	
C6-C12 Gasoline Range Hydrocarbons		ND 25.9	
C12-C28 Diesel Range Hydrocarbons		ND 25.9	
C28-C35 Oil Range Hydrocarbons		ND 25.9	
Total TPH 1005		ND 25.9	
	-		

Nicholas Straccione Project Manager

Page 5 of 16

Final 1.000

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

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



## Flagging Criteria

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

BRL Below Reporting Limit.

**RL** Reporting Limit

MDL Method Detection Limit

SDL Sample Detection Limit

LOD Limit of Detection

PQL Practical Quantitation Limit

MQL Method Quantitation Limit

LOQ Limit of Quantitation

**DL** Method Detection Limit

NC Non-Calculable

- + NELAC certification not offered for this compound.
- \* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Orders: 459913,

**Project ID:** 

Lab	Batch	#:	909979

Sample: 459913-001 / SMP

Matrix: Soil Batch: 1

Units: mg/kg Date Analyzed: 03/27/13 15:04	Su	RROGATE R	ECOVERY	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]	,	
1,4-Difluorobenzene	0.0304	0.0300	101	80-120	
4-Bromofluorobenzene	0.0296	0.0300	99	80-120	

Lab Batch #: 909973

Sample: 459913-001 / SMP

Batch:

Matrix: Soil

Units: mg/kg

Date Analyzed: 03/27/13 15:43

SURROGATE RECOVERY STUDY TPH by Texas1005 Amount True Control Found Amount Limits Recovery Flags [A] [B] %R %R [D] **Analytes** 102 99.8 102 70-135

Lab Batch #: 909973

1-Chlorooctane

o-Terphenyl

Sample: 635722-1-BLK / BLK

Batch:

53.0

Matrix: Solid

106

70-130

49.9

1

Units: mg/kg Date Analyzed: 03/27/13 09:43	SU	RROGATE RI	ECOVERY	STUDY	
TPH by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes	90.0		[D]		
1-Chlorooctane	104	99.8	104	70-135	,
o-Terphenyl	55.9	49.9	112	70-130	

Lab Batch #: 909979

Sample: 635736-1-BLK / BLK

Batch: 1

Matrix: Solid

Units: mg/kg	<b>Date Analyzed:</b> 03/27/13 12:36	SU	RROGATE RE	ECOVERY S	STUDY	×
ВТЕХ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1,4-Difluorobenzene	*	0.0275	0.0300	92	80-120	
4-Bromofluorobenzene		0.0259	0.0300	86	80-120	

Lab Batch #: 909973

Sample: 635722-1-BKS / BKS

Batch: 1

Matrix: Solid

Units: mg/kg	<b>Date Analyzed:</b> 03/27/13 08:46	SU	RROGATE RE	ECOVERY	STUDY	
TPH	I by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	Service V response	96.2	99.8	96	70-135	-
o-Terphenyl		56.6	49.9	113	70-130	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Orders: 459913,

Project ID:

Lab Batch #: 909979

Sample: 635736-1-BKS / BKS

Batch:

Matrix: Solid

Units: mg/kg Date Analyzed: 03/27/13 12:04	SU	RROGATE R	ECOVERY S	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes		) (NC	[D]		
1,4-Difluorobenzene	0.0314	0.0300	105	80-120	
4-Bromofluorobenzene	0.0343	0.0300	114	80-120	

Lab Batch #: 909973

Sample: 635722-1-BSD / BSD

Batch:

Matrix: Solid

Units: mg/kg	Date Analyzed: 03/27/13 09:16	SU	RROGATE RI	ECOVERY	STUDY	
ТРН	by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1-Chlorooctane		103	99.0	104	70-135	
o-Terphenyl		57.5	49.5	116	70-130	

Lab Batch #: 909979

Sample: 635736-1-BSD / BSD

Batch:

Matrix: Solid

Units: mg/kg Date Analyzed: 03/27/13 12:	20 S	URROGATE R	ECOVERY	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0298	0.0300	99 ·	80-120	
4-Bromofluorobenzene	0.0284	0.0300	95	80-120	

Lab Batch #: 909973

Sample: 459844-001 S/MS

Batch:

Matrix: Soil

Units: mg/kg Date Analyzed: 03/27/13 12:43	SU	RROGATE RI	ECOVERY	STUDY	
TPH by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	97.7	100	98	70-135	
o-Terphenyl	61.1	50.1	122	70-130	

Lab Batch #: 909979

Sample: 459790-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 03/27/13 13:26	SU	RROGATE RI	ECOVERY S	STUDY	
BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0301	0.0300	100	80-120	
4-Bromofluorobenzene	0.0333	0.0300	111	80-120	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Orders: 459913,

**Project ID:** 

Lab Batch #: 909973

Sample: 459844-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 03/27/13 13:09	SU	RROGATE RI	ECOVERY S	STUDY	
TPH by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	97.1	99.9	97	70-135	
o-Terphenyl	61.3	50.0	123	70-130	

Lab Batch #: 909979

Sample: 459790-001 SD / MSD

Batch: 1

Matrix: Soil

Units: mg/kg	Date Analyzed: 03/27/13 13:42	SU	RROGATE RI	ECOVERY	STUDY	
BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1,4-Difluorobenzene		0.0255	0.0300	85	80-120	
4-Bromofluorobenzene		0.0271	0.0300	90	80-120	

Surrogate Recovery [D] = 100 \* A / B

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



## BS / BSD Recoveries



# Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Order #: 459913

Analyst: KEB

Lab Batch ID: 909979

Date Prepared: 03/27/2013

Date Analyzed: 03/27/2013 Project ID:

> Batch #: 1 Sample: 635736-1-BKS

Matrix: Solid

Units: mg/kg		BLAN	BLANK/BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY	PIKE / B	LANKS	PIKE DUPL	ICATE 1	RECOVE	RY STUD	Y	
BTEX by EPA 8021B	Blank Sample Result [A]	S A	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[ <u>]</u>	<u>@</u>	<u> </u>	Result [F]	<u>5</u>				
Benzene	<0.00100	0.100	0.100	100	0.100	0.0946	95	9	70-130	35	
Toluene	<0.00200	0.100	0.100	100	0.100	0.0889	68	12	70-130	35	
Ethylbenzene	<0.00100	0.100	0.0963	96	0.100	0.0870	87	10	71-129	35	
m_p-Xylenes	<0.00200	0.200	0.181	91	0.201	0.163	81	10	70-135	35	
o-Xylene	<0.00100	0.100	0.0937	94	0.100	0.0880	88	9	71-133	35	

Analyst: AMB

Sample: 635946-1-BKS

Lab Batch ID: 910294

Date Prepared: 03/29/2013

Batch #: 1

Matrix: Solid

Date Analyzed: 03/29/2013

Flag Control Limits %RPD 20 BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Control Limits %R 80-120 RPD % 0 Blk. Spk Dup. %R [G] 106 Blank Spike Duplicate Result [F] 52.8 Spike Added 50.0  $\Xi$ Blank Spike %R [D] 105 Blank Spike Result [C] 52.7 Spike Added 50.0 [B] Blank Sample Result <2.00 <u> Y</u> Inorganic Anions by EPA 300/300.1 Units: mg/kg Analytes Chloride

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

Final 1.000



## BS / BSD Recoveries



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Order #: 459913

Analyst: KEB

Date Prepared: 03/27/2013

Date Analyzed: 03/27/2013 Project ID:

Sample: 635722-1-BKS

BLANK/BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Matrix: Solid Batch #: 1 Lab Batch ID: 909973 Units: mg/kg

Ouits: 228 25										•	
TPH by Texas1005	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[0]	Œ	Result [F]	[6]		Accompany of the Control of the Cont		
C6-C12 Gasoline Range Hydrocarbons	<25.0	866	931	93	066	876	66	5	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<25.0	866	1000	100	066	1080	109	8	70-135	35	

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

Final 1.000



## Form 3 - MS Recoveries

Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904



Work Order #: 459913

Lab Batch #: 910294

Date Analyzed: 03/29/2013

D . D . 00/00/001

**Project ID:** 

Date Prepared: 03/29/2013 Anal

Analyst: AMB

QC-Sample ID: 459899-001 S

Batch #:

Matrix: Soil

Reporting Units: mg/kg	MATE	RIX / MA	TRIX SPIKE	RECO	VERY STU	DY
Inorganic Anions by EPA 300  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	2240	2500	5770	141	80-120	х

:atrix Spike Percent Recovery [D] = 100\*(C-A)/B elative Percent Difference [E] = 200\*(C-A)/(C+B) ll Results are based on MDL and Validated for QC Purposes

RL - Below Reporting Limit



## Form 3 - MS / MSD Recoveries

# Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904



Work Order #: 459913

Lab Batch ID: 909979

Date Analyzed: 03/27/2013

Reporting Units: mg/kg

QC-Sample ID: 459790-001 S

KEB

Matrix: Soil Batch #: Analyst:

Project ID:

Date Prepared: 03/27/2013

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

								-	1001		
BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.000999	0.0999	0.0739	74	0.100	0.0727	73	2	70-130	35	
Toluene	<0.00200	0.0999	0.0579	58	0.100	0.0623	62	7	70-130	35	×
Ethylbenzene	<0.000999	0.0999	0.0456	46	0.100	0.0528	53	15.	71-129	35	×
m_p-Xylenes	<0.00200	0.200	0.0804	40	0.201	0.0893	44	10	70-135	35	×
o-Xylene	<0.000999	0.0999	0.0446	45	0.100	0.0514	51	14	71-133	35	×

QC-Sample ID: 459844-001 S Date Prepared: 03/27/2013

Date Analyzed: 03/27/2013

Lab Batch ID: 909973

Analyst: KEB Batch #:

Matrix: Soil

Reporting Units: mg/kg		M	ATRIX SPIKI	MAT.	RIX SPIF	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY	E REC	VERY S	STUDY		
TPH by Texas1005	Parent Sample	Spike	Spiked Sample Result S	Spiked Sample		Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	<u>D</u>	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	6
C6-C12 Gasoline Range Hydrocarbons	<26.9	1080	1000	93	1080	1020	94	2	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<26.9	1080	1120	104	1080	1130	105	1	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

Final 1.000



## Sample Duplicate Recovery



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Order #: 459913

Lab Batch #: 910039

**Project ID:** 

Date Prepared: 03/27/2013

Analyst: WRU

**QC-Sample ID:** 459879-001 D

Date Analyzed: 03/27/2013 17:00

Batch #: 1

Matrix: Soil

Reporting Units: %	SAMPLE	SAMPLE	DUPLIC	ATE REC	OVERY
Percent Moisture  Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	8.09	7.64	6	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

The Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST
12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1713

Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904  Nova Safety and Environmental  Project Loc:  I sa County NM  Project Loc:  I sa County NM	Company Addre	Company Name	Project Manager:	•
ject Name: SUG 4 Inch Lateral i Project #:	v Address: 2057 Commerce	y and Environ	Becky Haskell	
ject Name: SUG 4 Inch Lateral i Project #:				
ject Name: SUG 4 Inch Lateral i Project #:				
ject Name: SUG 4 Inch Lateral i Project #:				
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ject Name: SUG 4 Inch Lateral i Project #:				•
SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904	Project Loc:		Project Name:	
13) 1RP-02-13-2904	ea		SUG 4 Inch Lateral (2/18/	
4	NM		13) 1RP-02-13-2904	

	Relinquished by:	Green	Relinquished by: Hall 3/25/13	9 1	Special Instructions:						ww-1 @ 14'	Company Address: 2057 Commerce City/State/Zip: Midland, TX 79703 Telephone No: 432.520.7720 Sampler Signature: While Occupant Address: Address of the Company Address: 2057 Commerce  Midland, TX 79703  A32.520.7720  Corder #: 432.520.7720  Corder #: 432.520.7720  FIELD CODE  FIELD CODE	Company Name Nova Safety and Environmental
	i ime	16.30 June	Time 1) / O									Beginning Depth	Iciliai
The was	MANAMA	Rece	Received by:				 manima is a confirmation of a manima	1			3/19/2013 14	Ending Depth  Date Sampled	
	Car		ens				 				1400	Time Sampled	
	mitho										×	Total #. of Containers	
11/10	3/23/3/	Date	3/2 g								Soil	NaOH  Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> None  Other ( Specify)  DW=Drinking Water SL=Sludge GW = Groundwater S=Soil/Solid NP=Non-Potable Specify Other	
	Temperatu		Time Labels on Custody se	Sample Co VOCs Free	Laboraton						×	TPH: 418.1 8015M 8015B  TPH: TX 1005 TX 1006  Cattons (Ca, Mg, Na, K)  Anions (Cl, SO4, Alkalinity)	Project #:
	Temperature Upon Receipt:	Sample Hand Delivered by Sampler/Client Rep. ? by Courier? UPS DI	Labels on container(s) Custody seals on container(s) Custody seals on cooler(s)	Sample Containers Intact? VOCs Free of Headspace?	laboratory Comments:						×	Metals: As Ag Ba Cd Cr Pb Hg Se  Volatiles  Semivolatiles  BTEX 8021B/5030 or BTEX 8260	
	04	⊩ FedEx ι	~ ~~~	<b>~</b> ~			. 1 			· · ·	×	RCI N.O.R.M. Chlorides E 300.1	
	ဂိ	N N One Star	zzz	zz		1						RUSH TAT (Pre-Schedule) 24, 48, 72 hrs  Standard TAT  e 15 of 16  Final 1.000	



## **XENCO Laboratories**

## Prelogin/Nonconformance Report- Sample Log-In



Client: Southern Union Gas Services- Monahan

Date/ Time Received: 03/25/2013 04:30:00 PM

Work Order #: 459913

Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used:

Sample Receipt C	Checklist Comments
#1 *Temperature of cooler(s)?	4
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Sample instructions complete on Chain of Custody?	Yes
#9 Any missing/extra samples?	No
#10 Chain of Custody signed when relinquished/ received?	Yes
#11 Chain of Custody agrees with sample label(s)?	Yes
#12 Container label(s) legible and intact?	Yes
#13 Sample matrix/ properties agree with Chain of Custody?	Yes
#14 Samples in proper container/ bottle?	Yes
#15 Samples properly preserved?	Yes
#16 Sample container(s) intact?	Yes
#17 Sufficient sample amount for indicated test(s)?	Yes
#18 All samples received within hold time?	Yes
#19 Subcontract of sample(s)?	Yes
#20 VOC samples have zero headspace (less than 1/4 inch bubl	ble)? Yes
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	Yes
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+N	laOH? Yes
Must be completed for after-hours delivery of samples prior t	to placing in the refrigerator
Analyst: PH Device/Lot#:	-
Checklist completed by:	
Official completed by.	Date:
Chacklist ravioused by:	
Checklist reviewed by:	Date:

## **Analytical Report 459989**

## for Southern Union Gas Services- Monahans

Project Manager: Becky Haskell SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

03-APR-13

Collected By: Client





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

Xenco-Houston (EPA Lab code: TX00122):

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

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





03-APR-13

Project Manager: Becky Haskell

**Southern Union Gas Services- Monahans** 

801 South Loop 464 Monahans, TX 79756

Reference: XENCO Report No(s): 459989

SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Project Address: Lea County, NM

### **Becky Haskell:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 459989. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 459989 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully

**Nicholas Straccione** 

Project Manager

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## **Sample Cross Reference 459989**



## Southern Union Gas Services- Monahans, Monahans, TX

SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
WW-1 @3'	S	03-22-13 13:30		459989-001
WW-1A @3'	S	03-22-13 14:30		459989-002
WW-1B @3'	S	03-22-13 15:00		459989-003
WW-1C @3'	S	03-25-13 11:00		459989-004
WW-1D @3'	S	03-25-13 16:30		459989-005

## CASE NARRATIVE



Client Name: Southern Union Gas Services- Monahans Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904



Project ID: Report Date: 03-APR-13 Work Order Number(s): 459989 Date Received: 03/26/2013

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-909979 BTEX by EPA 8021B

SW8021BM

Batch 909979, Ethylbenzene, Toluene, m\_p-Xylenes, o-Xylene recovered below QC limits in the Matrix

Spike and Matrix Spike Duplicate.

Samples affected are: 459989-005, -003, -004, -001, -002.

The Laboratory Control Sample for Toluene, Ethylbenzene, m\_p-Xylenes , o-Xylene is within laboratory

**Control Limits** 



## **Certificate of Analysis Summary 459989**

## Southern Union Gas Services- Monahans, Monahans, TX

Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904



**Project Id:** 

Contact: Becky Haskell

**Date Received in Lab:** Tue Mar-26-13 04:45 pm **Report Date:** 03-APR-13

Project Location: Lea County, NM

Project Manager: Nicholas Straccione

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Lab Id:	459989-0	01	459989-0	02	459989-0	003	459989-0	004	459989-0	005	
Field Id:	WW-1 @	93'	WW-1A @	æ3'	WW-1B	@3'	WW-1C	@3'	WW-1D	@3'	
Depth:											
Matrix:	SOIL		SOIL		SOIL	,	SOIL	,	SOIL	,	
Sampled:	Mar-22-13	13:30	Mar-22-13 1	14:30	Mar-22-13	15:00	Mar-25-13	11:00	Mar-25-13	16:30	
Extracted:	Mar-27-13	12:15	Mar-27-13 1	12:15	Mar-27-13	12:15	Mar-27-13	12:15	Mar-27-13	12:15	
Analyzed:	Mar-27-13	15:37	Mar-27-13 1	15:53	Mar-27-13	16:43	Mar-27-13	16:59	Mar-27-13	17:15	
Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	
	ND	0.00110	ND	0.00111	ND	0.00108	ND	0.00111	ND	0.00104	
	ND	0.00220	ND	0.00223	ND	0.00217	ND	0.00222	ND	0.00207	
	ND	0.00110	ND	0.00111	ND	0.00108	ND	0.00111	ND	0.00104	
	ND	0.00220	ND	0.00223	ND	0.00217	ND	0.00222	ND	0.00207	
	ND	0.00110	ND	0.00111	ND	0.00108	ND	0.00111	ND	0.00104	
	ND	0.00110	ND	0.00111	ND	0.00108	ND	0.00111	ND	0.00104	
	ND	0.00110	ND	0.00111	ND	0.00108	ND	0.00111	ND	0.00104	
Extracted:	Apr-01-13	10:00	Apr-01-13 1	0:00	Apr-01-13	10:00	Apr-01-13	10:00	Apr-01-13	10:00	
Analyzed:	Apr-01-13	22:11	Apr-01-13 2	22:55	Apr-01-13	23:16	Apr-01-13	23:38	Apr-02-13	00:00	
Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	
	437	10.0	1320	20.0	856	20.0	679	20.0	73.6	10.0	
Extracted:											
Analyzed:	Mar-27-13	17:00	Mar-27-13 1	17:00	Mar-27-13	17:00	Mar-27-13	17:00	Mar-27-13	17:00	
Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	
	9.08	1.00	10.6	1.00	7.73	1.00	10.2	1.00	3.87	1.00	
Extracted:	Mar-28-13	08:20	Mar-28-13 (	)8:20	Mar-28-13	08:20	Mar-28-13	08:20	Mar-28-13	08:20	
Analyzed:	Mar-28-13	15:55	Mar-28-13 1	16:20	Mar-28-13	16:45	Mar-28-13	17:12	Mar-28-13	17:37	
Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	
	ND	16.5	ND	16.8	ND	16.3	ND	16.6	ND	15.6	
	ND	16.5	ND	16.8	ND	16.3	ND	16.6	ND	15.6	
	ND	16.5	ND	16.8	ND	16.3	ND	16.6	ND	15.6	
	Field Id: Depth: Matrix: Sampled: Extracted: Analyzed: Units/RL:  Extracted: Analyzed: Units/RL:  Extracted: Analyzed: Units/RL:  Extracted: Analyzed: Analyzed: Analyzed:	Field Id:     Depth:     Matrix:    SOIL     Sampled:    Mar-22-13    Mar-27-13     Analyzed:    Mar-27-13     Units/RL:    mg/kg	Field Id:         WW-1 @ 3'           Depth:         Matrix:         SOIL           Sampled:         Mar-22-13 13:30           Extracted:         Mar-27-13 12:15           Analyzed:         Mar-27-13 15:37           Units/RL:         mg/kg         RL           ND         0.00110           ND         0.00220           ND         0.00110           ND         0.00110           ND         0.00110           ND         0.00110           ND         0.00110           Extracted:         Apr-01-13 10:00           Analyzed:         Mar-01-13 22:11           Units/RL:         mg/kg         RL           9.08         1.00           Extracted:         Mar-28-13 17:00           Extracted:         Mar-28-13 08:20           Analyzed:         Mar-28-13 15:55           Units/RL:         mg/kg         RL           ND         16.5           ND         16.5           ND         16.5           ND         16.5	Field Id:         WW-1 @3'         WW-1A @ @3'           Depth:         Matrix:         SOIL         SOIL           Sampled:         Mar-22-13 13:30         Mar-22-13 1           Extracted:         Mar-27-13 12:15         Mar-27-13 1           Analyzed:         Mar-27-13 15:37         Mar-27-13 1           Units/RL:         mg/kg         RL         mg/kg           ND         0.00110         ND           ND         0.00220         ND           ND         0.00110         ND           ND         0.00110         ND           ND         0.00110         ND           ND         0.00110         ND           Extracted:         Apr-01-13 10:00         Apr-01-13 2           Units/RL:         mg/kg         RL         mg/kg           Extracted:         Mar-27-13 17:00         Mar-27-13 1           Extracted:         Mar-28-13 17:00         Mar-28-13 1           Extracted:         Mar-28-13 15:55         Mar-28-13 1           Analyzed:         Mar-28-13 15:55         Mar-28-13 1           Units/RL:         mg/kg         RL         mg/kg           ND         16.5         ND           ND         1	Field Id:         WW-1 @ 3'         WW-1A @ 3'           Depth:         Matrix:         SOIL         SOIL           Sampled:         Mar-22-13 13:30         Mar-22-13 14:30           Extracted:         Mar-27-13 12:15         Mar-27-13 12:15           Analyzed:         Mar-27-13 15:37         Mar-27-13 15:53           Units/RL:         mg/kg         RL         mg/kg         RL           ND         0.00110         ND         0.00111           ND         0.00220         ND         0.00223           ND         0.00110         ND         0.00111           Extracted:         Apr-01-13 10:00         Apr-01-13 22:55           Units/RL:         mg/kg         RL         mg/kg         RL           Mar-27-13 17:00         Mar-27-13 17:00         Mar-27-13 17:00         Mar-27-13 17:00           Extracted:         Mar-28-13 08:20         Mar-28-13 08:20         Mar-28-13 16:20           Maryzed:         Mar-28-13 1	Field Id:         WW-1 @3'         WW-1A @3'         WW-1B           Depth:         Matrix:         SOIL         SOIL         SOIL           Sampled:         Mar-22-13 13:30         Mar-22-13 14:30         Mar-22-13           Extracted:         Mar-27-13 12:15         Mar-27-13 12:15         Mar-27-13           Analyzed:         Mar-27-13 15:37         Mar-27-13 15:53         Mar-27-13           Units/RL:         mg/kg         RL         mg/kg         RL         mg/kg           ND         0.00110         ND         0.00111         ND           ND         0.00220         ND         0.00223         ND           ND         0.00110         ND         0.00111         ND           Extracted:         Apr-01-13 10:00         Apr-01-13 10:00         Apr-01-13 22:55         Apr-01-13           Units/RL:         mg/kg         RL         mg/kg         RL         mg/kg           Extracted:         Analyzed:         Mar-27-13 17:00         Mar-2	Field Id:         WW-1 @ 3'         WW-1A @ 3'         WW-1B @ 3'           Depth:           Matrix:         SOIL         SOIL         SOIL           Sampled:         Mar-22-13 13:30         Mar-22-13 14:30         Mar-22-13 15:00           Extracted:         Mar-27-13 12:15         Mar-27-13 12:15         Mar-27-13 16:43           Units/RL:         mg/kg         RL         ND         0.00223         ND         0.00217           ND         0.00223         ND         0.00217           ND         0.00217         ND         0.00211         ND <td>Lab Id:         459989-001         459989-002         459989-003         459989-04           Field Id:         WW-1 @ 3'         WW-1A @ 3'         WW-1B @ 3'         WW-1C           Depth:         Matrix:         SOIL         SOIL</td> <td>Lab Id:         459989-001         459989-002         459989-003         459989-004           Field Id:         WW-1 @3'         WW-1A @3'         WW-1B @3'         WW-1C @3'           Depth:         Mar-2r-13         WW-1B @3'         WW-1C @3'           Marrix:         SOIL         SOIL         SOIL         SOIL           Sampled:         Mar-22-13 13:30         Mar-22-13 14:30         Mar-22-13 15:00         Mar-27-13 12:15           Analyzed:         Mar-27-13 15:37         Mar-27-13 15:53         Mar-27-13 16:43         Mar-27-13 16:59           Units/RL:         mg/kg         RL         mg/kg         RL         mg/kg         RL           ND         0.0010         ND         0.00111         ND         0.00108         ND         0.00111           ND         0.00220         ND         0.00223         ND         0.00217         ND         0.00222           ND         0.00110         ND         0.00111         ND         0.00108         ND         0.00212           ND         0.00110         ND         0.00111         ND         0.00108         ND         0.00111           ND         0.00110         ND         0.00111         ND         0.00108         &lt;</td> <td>Field Id:         WW-1 @3'         WW-1A @3'         WW-1B @3'         WW-1C @3'         WW-1D B Q3'           Depth:         Matrix:         SOIL         Mar-25-13         Mar-25-13         Mar-25-13         Mar-27-13         Mar-28-13         Mar-28-13</td> <td>  Lab Id:</td>	Lab Id:         459989-001         459989-002         459989-003         459989-04           Field Id:         WW-1 @ 3'         WW-1A @ 3'         WW-1B @ 3'         WW-1C           Depth:         Matrix:         SOIL         SOIL	Lab Id:         459989-001         459989-002         459989-003         459989-004           Field Id:         WW-1 @3'         WW-1A @3'         WW-1B @3'         WW-1C @3'           Depth:         Mar-2r-13         WW-1B @3'         WW-1C @3'           Marrix:         SOIL         SOIL         SOIL         SOIL           Sampled:         Mar-22-13 13:30         Mar-22-13 14:30         Mar-22-13 15:00         Mar-27-13 12:15           Analyzed:         Mar-27-13 15:37         Mar-27-13 15:53         Mar-27-13 16:43         Mar-27-13 16:59           Units/RL:         mg/kg         RL         mg/kg         RL         mg/kg         RL           ND         0.0010         ND         0.00111         ND         0.00108         ND         0.00111           ND         0.00220         ND         0.00223         ND         0.00217         ND         0.00222           ND         0.00110         ND         0.00111         ND         0.00108         ND         0.00212           ND         0.00110         ND         0.00111         ND         0.00108         ND         0.00111           ND         0.00110         ND         0.00111         ND         0.00108         <	Field Id:         WW-1 @3'         WW-1A @3'         WW-1B @3'         WW-1C @3'         WW-1D B Q3'           Depth:         Matrix:         SOIL         Mar-25-13         Mar-25-13         Mar-25-13         Mar-27-13         Mar-28-13         Mar-28-13	Lab Id:

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

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Nicholas Straccione Project Manager



## **Flagging Criteria**

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

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

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

DL Method Detection Limit

NC Non-Calculable

- + NELAC certification not offered for this compound.
- \* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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Page 6 of 17

Final 1.000



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Orders: 459989, Project ID:

Lab Batch #: 909979 Sample: 459989-001 / SMP Batch: 1 Matrix: Soil

SUPPOGATE PECOVERY STUDY

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/27/13 15:37	SU	RROGATE RI	ECOVERY	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0280	0.0300	93	80-120	
4-Bromofluorobenzene	0.0305	0.0300	102	80-120	

Units: mg/kg Date Analyzed: 03/27/13 15:53	SU	RROGATE RI	ECOVERY S	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0277	0.0300	92	80-120	
4-Bromofluorobenzene	0.0250	0.0300	83	80-120	

Units: mg/kg Date Analyzed: 03/27/13 16:43	SU	RROGATE RI	ECOVERY S	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0281	0.0300	94	80-120	
4-Bromofluorobenzene	0.0267	0.0300	89	80-120	

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/27/13 16:59	Su	RROGATE RI	ECOVERY	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0254	0.0300	85	80-120	
4-Bromofluorobenzene	0.0280	0.0300	93	80-120	

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/27/13 17:15	SU	RROGATE RI	ECOVERY S	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0266	0.0300	89	80-120	
4-Bromofluorobenzene	0.0265	0.0300	88	80-120	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

**Work Orders:** 459989. **Project ID:** 

Sample: 459989-001 / SMP Lab Batch #: 910131 Batch: Matrix: Soil SUPPOCATE DECOVERY STUDY

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/28/13 15:55	SURROGATE RECOVERY STUDY				
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	99.0	99.9	99	70-135	
o-Terphenyl	52.7	50.0	105	70-135	

**Sample:** 459989-002 / SMP Lab Batch #: 910131 Matrix: Soil Batch: 1

SURROGATE RECOVERY STUDY Units: mg/kg Date Analyzed: 03/28/13 16:20 Amount True Control TPH By SW8015 Mod Recovery Found Amount Limits **Flags** [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 99.6 100 100 70-135 o-Terphenyl 53.3 50.1 106 70-135

**Lab Batch #:** 910131 Sample: 459989-003 / SMP Matrix: Soil Batch: 1

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/28/13 16:45	SURROGATE RECOVERY STUDY				
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	97.1	100	97	70-135	
o-Terphenyl	51.5	50.1	103	70-135	

Lab Batch #: 910131 **Sample:** 459989-004 / SMP Matrix: Soil Batch:

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/28/13 17:12	SURROGATE RECOVERY STUDY				
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	95.4	99.7	96	70-135	
o-Terphenyl	50.6	49.9	101	70-135	

Lab Batch #: 910131 Sample: 459989-005 / SMP Batch: 1 Matrix: Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/28/13 17:37	SURROGATE RECOVERY STUDY				
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	96.7	100	97	70-135	
o-Terphenyl	51.2	50.1	102	70-135	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Orders: 459989,

Lab Batch #: 909979

Sample: 635736-1-BLK / BLK

Batch: 1 Matrix: Solid

SURROGATE RECOVERY STUDY Units: mg/kg Date Analyzed: 03/27/13 12:36 True Control BTEX by EPA 8021B Amount **Found** Amount Recovery Limits **Flags** %R [A] [B] %R [D] **Analytes** 1,4-Difluorobenzene 0.0275 0.0300 92 80-120 0.0300 4-Bromofluorobenzene 0.0259 86 80-120

Lab Batch #: 910131 Sample: 635832-1-BLK / BLK Batch: 1 Matrix: Solid

SURROGATE RECOVERY STUDY Units: mg/kg Date Analyzed: 03/28/13 09:50 Amount True Control TPH By SW8015 Mod **Found** Amount Recovery Limits **Flags** [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 98.3 99.9 98 70-135 o-Terphenyl 52.2 50.0 104 70-135

Lab Batch #: 909979 Sample: 635736-1-BKS / BKS Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/27/13 12:04	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0314	0.0300	105	80-120	
4-Bromofluorobenzene	0.0343	0.0300	114	80-120	

Lab Batch #: 910131 Sample: 635832-1-BKS / BKS Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/28/13 08:59	SURROGATE RECOVERY STUDY				
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	102	99.9	102	70-135	
o-Terphenyl	58.3	50.0	117	70-135	

Lab Batch #: 909979 Sample: 635736-1-BSD / BSD Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/27/13 12:20	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0298	0.0300	99	80-120	
4-Bromofluorobenzene	0.0284	0.0300	95	80-120	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Orders: 459989,

Lab Batch #: 910131

Sample: 635832-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg	<b>Date Analyzed:</b> 03/28/13 09:25	SU	RROGATE RE	ECOVERY S	STUDY	
	SW8015 Mod nalytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane		101	100	101	70-135	
o-Ternhenyl		58.3	50.1	116	70-135	

**Lab Batch #:** 909979 **Sample:** 459790-001 S / MS **Batch:** 1 **Matrix:** Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/27/13 13:26	SU	RROGATE RI	ECOVERY	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0301	0.0300	100	80-120	
4-Bromofluorobenzene	0.0333	0.0300	111	80-120	

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/28/13 19:40	SU	RROGATE RI	ECOVERY S	STUDY	
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	94.9	100	95	70-135	
o-Terphenyl	53.9	50.1	108	70-135	

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/27/13 13:42	SU	RROGATE RI	ECOVERY	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0255	0.0300	85	80-120	
4-Bromofluorobenzene	0.0271	0.0300	90	80-120	

**Lab Batch #:** 910131 **Sample:** 459989-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg Date Analyzed: 03/28/13 20:06	SU	RROGATE RI	ECOVERY S	STUDY	
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	95.0	99.8	95	70-135	
o-Terphenyl	57.7	49.9	116	70-135	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



#### **BS / BSD Recoveries**



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Order #: 459989 Analyst: KEB

**Project ID:** 

DI ANK /DI ANK CDIKE / DI ANK CDIKE DUDI ICATE DECOVEDY CTUDY

0.0880

**Date Prepared:** 03/27/2013

< 0.00100

**Date Analyzed:** 03/27/2013

6

71-133

35

Matrix: Solid

**Lab Batch ID:** 909979

o-Xylene

Sample: 635736-1-BKS

**Batch #:** 1

Units: mg/kg		BLAN	K/BLANK S	PIKE / B	SLANK S	PIKE DUPL	ICATE I	RECOVE	LKY STUD	Y	
BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Benzene	< 0.00100	0.100	0.100	100	0.100	0.0946	95	6	70-130	35	
Toluene	< 0.00200	0.100	0.100	100	0.100	0.0889	89	12	70-130	35	
Ethylbenzene	< 0.00100	0.100	0.0963	96	0.100	0.0870	87	10	71-129	35	
m_p-Xylenes	< 0.00200	0.200	0.181	91	0.201	0.163	81	10	70-135	35	

94

0.100

**Date Prepared:** 04/01/2013 **Date Analyzed:** 04/01/2013 Analyst: AMB

0.0937

Matrix: Solid **Lab Batch ID:** 910455 **Batch #:** 1 **Sample:** 636033-1-BKS

0.100

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Units: mg/kg Blank Spike Blank Blank Blank Blk. Spk Control Control **Inorganic Anions by EPA 300/300.1** Spike Sample Result Added Spike Spike Spike Dup. RPD Limits Limits Flag Added [A] Result %R Duplicate %R % %R %RPD [B] [C] [D] Result [F] [G] [E] **Analytes** Chloride < 2.00 50.0 49.0 50.0 49.1 98 0 80-120 98 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



# **BS / BSD Recoveries**



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Order #: 459989 Analyst: KEB

0000

**Date Prepared:** 03/28/2013

**Batch #:** 1

**Project ID: Date Analyzed:** 03/28/2013

**Lab Batch ID:** 910131

**Sample:** 635832-1-BKS

Matrix: Solid

Units: mg/kg		BLAN	K/BLANK S	SPIKE / E	BLANK S	SPIKE DUPI	ICATE 1	RECOVI	ERY STUD	Y	
TPH By SW8015 Mod	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
C6-C12 Gasoline Range Hydrocarbons	<15.0	999	949	95	1000	988	99	4	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.0	999	1030	103	1000	1080	108	5	70-135	35	

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



#### Form 3 - MS Recoveries



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

**Work Order #:** 459989

 Lab Batch #: 910455
 Project ID:

 Date Analyzed: 04/01/2013
 Date Prepared: 04/01/2013
 Analyst: AMB

**QC- Sample ID:** 459989-001 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg MATRIX SPIKE RECOVERY STUDY

Reporting Omes. mg/kg	MATE	CIA / WIA	I KIX 51 IKE	RECO	EKIBIO	<u> </u>
Inorganic Anions by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes	[A]	[B]		. ,		
Chloride	437	250	689	101	80-120	

**Lab Batch #:** 910455

 Date Analyzed:
 04/02/2013
 Date Prepared:
 04/01/2013
 Analyst:
 AMB

**QC- Sample ID:** 460076-006 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg	MATE	RIX / MA	TRIX SPIKE	RECOV	VERY STU	DY
Inorganic Anions by EPA 300  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	736	1010	1730	98	80-120	

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

BRL - Below Reporting Limit

Page 13 of 17

Final 1.000



#### Form 3 - MS / MSD Recoveries



#### Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Order #: 459989 Project ID:

**Lab Batch ID:** 909979 **QC- Sample ID:** 459790-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/27/2013 Date Prepared: 03/27/2013 Analyst: KEB

Reporting Units: mg/kg		M	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA'	TE REC	OVERY	STUDY		
BTEX by EPA 8021B	Parent Sample	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Benzene	<0.000999	0.0999	0.0739	74	0.100	0.0727	73	2	70-130	35	
Toluene	< 0.00200	0.0999	0.0579	58	0.100	0.0623	62	7	70-130	35	X
Ethylbenzene	< 0.000999	0.0999	0.0456	46	0.100	0.0528	53	15	71-129	35	X
m_p-Xylenes	< 0.00200	0.200	0.0804	40	0.201	0.0893	44	10	70-135	35	X
o-Xylene	< 0.000999	0.0999	0.0446	45	0.100	0.0514	51	14	71-133	35	X

**Lab Batch ID:** 910131 **QC- Sample ID:** 459989-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/28/2013 Date Prepared: 03/28/2013 KEB

Reporting Units: mg/kg		M	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY S	STUDY		
TPH By SW8015 Mod	Parent Sample	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
C6-C12 Gasoline Range Hydrocarbons	<16.5	1100	1010	92	1100	1070	97	6	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<16.5	1100	1130	103	1100	1180	107	4	70-135	35	



# **Sample Duplicate Recovery**



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

**Work Order #:** 459989

 Lab Batch #:
 910039
 Project ID:

 Date Analyzed:
 03/27/2013 17:00
 Date Prepared:
 03/27/2013
 Analyst:
 WRU

 QC- Sample ID:
 459879-001 D
 Batch #:
 1
 Matrix:
 Soil

SAMPLE / SAMPLE DUPLICATE RECOVERY **Reporting Units:** % Sample Control **Percent Moisture** Parent Sample Duplicate RPD Limits Result Flag Result %RPD [A] [B] Analyte Percent Moisture 8.09 7.64 20

# Xenco Laboratories

The Environmental Lab of Texas

12600 West I-20 East CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST Phone: 432-563-1800

	Telephone No: 432.520.7701   Report Formal	Telephone No:   432 220 7700   Report Formal   Telephone No:   432 220 7701   Telephone	Project   Proj	Project Name   Proj	Tedex	]	eipt:	Lemperature Upon-Receipt:	Dpor	ure	y Co perat	emp	<u> </u>	Time	1		Date	1	igspace	<b>/</b>	7/		3	ΥÇ	XX	100		VELOT:	Received by ELOT:	me	Time	Date				Relinquished by:	Reling
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WW-1A @ 3   Beginning Depth	### Prince Signature: #### ### ### #######################	### Preservation & ### Analyze Fr.   Ww1A @ 3**    Ww1A @	### Project ###   Project ###	Project Name   Nova Safety and Environmental   Project Name:   Project Name:	×	<u> </u> ×	1.		$\vdash$	<del> </del>	ļ	<u> </u>	1	×	≝	တ္ထ	_	<u> </u>						-			1500	သံ 	3/22/20				@ 3:	WW-1B		~	0
Beginning Depth  Ending Depth  Ending Depth  Date Sampled  Time Sampled  Field Filtered  Total #. of Containers  Ice  HNO3  HCI  H <sub>2</sub> SO <sub>4</sub> NaOH  Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> None  Other (Specify)  Other (Specify)  DW=Drinking Water SL=Studge  GW = Groundwater S=Soil/Solid NP=Non-Potable Specify Other  X TPH: 418.1 8015M 88  TPH: TX 1005 TX 1006  Cations (Ca, Mg, Na, K)  Anions (CI, SO4, Alkalinity)  SAR / ESP / CEC  Metals: As Ag Ba Cd Cr Pb He Volatiles  Semivolatiles	### Property Signature: ### Preservation & ### Containers    WW-1@3'   Beginning Depth   Ending Depth   Ending Depth	ephone No: 432.520.7720    Baginning Depth   Ending Depth   Ending Depth   Ending Depth   Date Sampled   Time S	Project   Proj	Project Name	×	×	1.		-		-		ļ	×	Ľ	ပြွ	1				T	$\vdash$	H	┾	-		1430	13	3/22/20				@ 3'	WW-1A		ر ا	03
Beginning Depth  Ending Depth  Date Sampled  Time Sampled  Time Sampled  Field Filtered  Total # of Containers Ice  HNO <sub>3</sub> HCI  H <sub>2</sub> SO <sub>4</sub> NaOH  Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> None  Other ( Specify)  DW=Drinking Water SL=Sludge GW = Groundwater S=soil/Solid NP=Non-Potable Specify Other  TPH: 418.1 8015M 8i  TPH: TX 1005 TX 1006  Cations (Ca, Mg, Na, K)  Anions (CI, SO4, Alkalinity)  SAR / ESP / CEC  Metals: As Ag Ba Cd Cr Pb He Volatiles Semivolatiles	### Property Code   Preservation   P	Piehone No: 432.520.7720  Beginning Depth  Ending Depth  Date Sampled  Time Sampled  Total #. of Containers  Ice  HNO3  HCI  H2SO4  Na0H  Na2S2O3  None  Other (Specify)  DW-Drinking Water SL=Sludge GW = Groundwater S=Soil/Soilid NP=Non-Potable Specify Other  TPH: TX 1005  TX 1006  Cations (Ca, Mg, Na, K)  Anions (Cl, SO4, Alkalinity)  SAR / ESP / CEC  Metals: As Ag Ba Cd Cr Pb Hg Se  Volatilles  Semivolatiles	### Project Loc:	Project Name	×	]×	1		-		-		ļ	×	<u>≅</u>	SC					1.		1.	+	-	-	1330	3	3/22/20				@ 3'	WW-1			0
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ACCOO ngreen@novatraining.cc TOTAL:	432.520.7720 Fax No: 432.520.7701 Report Format:	Midland, TX 79703  PO #:	e         Nova Safety and Environmental         Project #:           ess: 2057 Commerce         Project Loc:           Midland, TX 79703         PO #:           432.520.7720         Fax No: 432.520.7701         Report Format: Standard	e         Nova Safety and Environmental         Project Name:           ess:         2057 Commerce         Project Loc:           Midland, TX 79703         PO #:           432.520.7720         Fax No:         432.520.7701         Report Format:		1	1				[	1		1			8	ning	trail	SVOI	<u>[</u>	ske!	That		1.	<u>ai</u>	e-m		M.	R	the	45 3	Mell	nature: 🏒	ıpler Sigr	San	
mpler Signature: MMM + HMMULL e-mail: rhaskell@novatraining.cc curt.stanley@sug.com rclp:		Midland, TX 79703	Nova Safety and Environmental       Project #:         ress: 2057 Commerce       Project Loc:         Midland, TX 79703       PO #:	ler:       Becky Haskell       Project Name:         ne       Nova Safety and Environmental       Project #:         ress:       2057 Commerce       Project Loc:         Midland, TX 79703       PO #:	TRRP				ard	tand	7	2	mat:	For	pod	짒						701	20.7	32.5	4	o. N	Fax		7		Ī		2.520.7720		phone N	Tele	
mpany Address: 2057 Commerce    Project Loc:	2057 Commerce Project Loc:			Becky Haskell Project Name:			1					* 	ject	Pro																	nental	ınd Environn	va Safety a		npany Na	Con	

Page 16 of 17

Final 1.000



#### **XENCO Laboratories**



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

Client: Southern Union Gas Services- Monahan

Date/ Time Received: 03/26/2013 04:45:00 PM

Work Order #: 459989

Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

	Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?		0
#2 *Shipping container in good	condition?	Yes
#3 *Samples received on ice?		Yes
#4 *Custody Seals intact on ship	oping container/ cooler?	Yes
#5 Custody Seals intact on sam	ple bottles?	Yes
#6 *Custody Seals Signed and of	dated?	Yes
#7 *Chain of Custody present?		Yes
#8 Sample instructions complete	e on Chain of Custody?	Yes
#9 Any missing/extra samples?		No
#10 Chain of Custody signed wh	nen relinquished/ received?	Yes
#11 Chain of Custody agrees wi	th sample label(s)?	Yes
#12 Container label(s) legible ar	nd intact?	Yes
#13 Sample matrix/ properties a	gree with Chain of Custody?	Yes
#14 Samples in proper containe	r/ bottle?	Yes
#15 Samples properly preserved	d?	Yes
#16 Sample container(s) intact?		Yes
#17 Sufficient sample amount for	or indicated test(s)?	Yes
#18 All samples received within	hold time?	Yes
#19 Subcontract of sample(s)?		Yes
#20 VOC samples have zero he	adspace (less than 1/4 inch bubble)?	Yes
#21 <2 for all samples preserve	d with HNO3,HCL, H2SO4?	Yes
#22 >10 for all samples preserv	ed with NaAsO2+NaOH, ZnAc+NaOH?	Yes
Must be completed for after-he	ours delivery of samples prior to placin	g in the refrigerator
Analyst:	PH Device/Lot#:	
Checklist complete	d by:	Date:
Checklist reviewed	d by:	Date:

# **Analytical Report 460525**

# for

#### **Southern Union Gas Services- Monahans**

Project Manager: Becky Haskell SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

#### 11-APR-13

Collected By: Client





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

Xenco-Houston (EPA Lab code: TX00122):

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

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

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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)





11-APR-13

Project Manager: Becky Haskell

**Southern Union Gas Services- Monahans** 

801 South Loop 464 Monahans, TX 79756

Reference: XENCO Report No(s): 460525

SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Project Address: Lea County, NM

#### **Becky Haskell:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 460525. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 460525 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully

**Nicholas Straccione** 

Project Manager

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# **Sample Cross Reference 460525**



#### Southern Union Gas Services- Monahans, Monahans, TX

SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
SW-1 @ 3'	S	04-02-13 09:00		460525-001
SW-1 @ 15'	S	04-02-13 10:00		460525-002
SW-1A @ 3'	S	04-02-13 11:00		460525-003
SW-1A @ 15'	S	04-02-13 14:20		460525-004
SW-1B @ 3'	S	04-02-13 15:15		460525-005
SW-1B @ 15'	S	04-02-13 16:40		460525-006

#### **CASE NARRATIVE**



Client Name: Southern Union Gas Services- Monahans Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904



Project ID: Report Date: 11-APR-13 Work Order Number(s): 460525 Date Received: 04/03/2013

Sample receipt non conformances and comments: None	
Sample receipt non conformances and comments per sample:	_

None



# **Certificate of Analysis Summary 460525**

#### Southern Union Gas Services- Monahans, Monahans, TX

Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904



Project Id:

Project Location: Lea County, NM

Contact: Becky Haskell

Date Received in Lab: Wed Apr-03-13 04:55 pm

**Report Date:** 11-APR-13

Project Manager: Nicholas Straccione

								- 10,000 Ma		1 tienoids birde			
	Lab Id:	460525-0	001	460525-0	02	460525-0	03	460525-0	004	460525-0	05	460525-0	06
Analysis Paguested	Field Id:	SW-1 @	3'	SW-1 @	15'	SW-1A @	3'	SW-1A @	15'	SW-1B @	3'	SW-1B @	15'
Analysis Requested	Depth:												
	Matrix:	SOIL	,	SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Apr-02-13	09:00	Apr-02-13	0:00	Apr-02-13 1	11:00	Apr-02-13	14:20	Apr-02-13 1	5:15	Apr-02-13 1	6:40
BTEX by EPA 8021B	Extracted:	Apr-08-13	09:20	Apr-08-13 (	9.20								
	Analyzed:	Apr-08-13		Apr-08-13									
	Units/RL:	mg/kg	RL	mg/kg	RL								
Benzene	Chus/KL.	ND	0.00106		0.00106								
Toluene		ND	0.00213	ND	0.00212								
Ethylbenzene		ND	0.00106	ND	0.00106								
m_p-Xylenes		ND	0.00213	ND	0.00212								
o-Xylene		ND	0.00106	ND	0.00106								
Total Xylenes		ND	0.00106	ND	0.00106								
Total BTEX		ND	0.00106	ND	0.00106								
Inorganic Anions by EPA 300/300.1	Extracted:	Apr-05-13	10:05	Apr-05-13	0:05	Apr-05-13 1	10:05	Apr-05-13	10:05	Apr-08-13 1	0:00	Apr-05-13 1	0:05
	Analyzed:	Apr-06-13	12:06	Apr-06-13	2:49	Apr-06-13 1	13:11	Apr-06-13	13:33	Apr-08-13 1	7:17	Apr-06-13 1	13:54
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		441	10.0	340	10.0	154	4.00	393	10.0	236	10.0	119	4.00
Percent Moisture	Extracted:												
	Analyzed:	Apr-04-13	17:00	Apr-04-13	7:00	Apr-04-13 1	17:00	Apr-04-13	17:00	Apr-04-13 1	7:00	Apr-04-13 1	7:00
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		5.60	1.00	6.59	1.00	5.05	1.00	5.47	1.00	4.02	1.00	4.53	1.00
TPH By SW8015 Mod	Extracted:	Apr-04-13	11:40	Apr-04-13	1:40								
	Analyzed:	Apr-05-13	08:36	Apr-04-13	9:14								
	Units/RL:	mg/kg	RL	mg/kg	RL								
C6-C12 Gasoline Range Hydrocarbons	1	ND	15.9	ND	16.1								
C12-C28 Diesel Range Hydrocarbons		ND	15.9	ND	16.1								
C28-C35 Oil Range Hydrocarbons		ND	15.9	ND	16.1								
Total TPH		ND	15.9	ND	16.1								

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

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Nicholas Straccione Project Manager



#### **Flagging Criteria**

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

**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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Page 6 of 16 Final 1.001

<sup>\*</sup> Surrogate recovered outside laboratory control limit.



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

**Work Orders**: 460525, 460525 **Project ID**:

Units: mg/kg Date Ar	nalyzed: 04/04/13 19:14	SURROGATE RECOVERY STUDY				
TPH By SW801  Analytes	5 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane		96.5	100	97	70-135	
o-Terphenyl		50.1	50.0	100	70-135	

SURROGATE RECOVERY STUDY Units: mg/kg Date Analyzed: 04/05/13 08:36 Amount True Control TPH By SW8015 Mod Recovery Found Amount Limits **Flags** [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 100 100 100 70-135 o-Terphenyl 51.1 50.0 102 70-135

Lab Batch #: 910870 Sample: 460525-001 / SMP Batch: 1 Matrix: Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/08/13 14:28	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0281	0.0300	94	80-120	
4-Bromofluorobenzene	0.0270	0.0300	90	80-120	

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/08/13 14:44	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0314	0.0300	105	80-120	
4-Bromofluorobenzene	0.0304	0.0300	101	80-120	

Lab Batch #: 910671 Sample: 636178-1-BLK / BLK Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/04/13 15:20	SURROGATE RECOVERY STUDY				
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	96.0	100	96	70-135	
o-Terphenyl	49.5	50.1	99	70-135	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Orders: 460525, 460525

Lab Batch #: 910870

Sample: 636306-1-BLK / BLK

Batch: 1 Matrix: Solid

SURROGATE RECOVERY STUDY Units: mg/kg **Date Analyzed:** 04/08/13 11:11 True Amount Control BTEX by EPA 8021B Amount Limits Flags **Found** Recovery %R [A] [B] %R [D] **Analytes** 1,4-Difluorobenzene 0.0258 0.0300 86 80-120 4-Bromofluorobenzene 0.0324 0.0300 108 80-120

Lab Batch #: 910671 Sample: 636178-1-BKS / BKS Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/04/13 14:20	SU	SURROGATE RECOVERY STUDY			
TPH By SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	90.4	99.7	91	70-135	
o-Terphenyl	55.2	49.9	111	70-135	

Lab Batch #: 910870 Sample: 636306-1-BKS / BKS Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 04/08/13 10:22	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0324	0.0300	108	80-120	
4-Bromofluorobenzene	0.0312	0.0300	104	80-120	

Lab Batch #: 910671 Sample: 636178-1-BSD / BSD Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/04/13 14:52	SURROGATE RECOVERY STUDY				
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	89.9	100	90	70-135	
o-Terphenyl	55.6	50.0	111	70-135	

Lab Batch #: 910870 Sample: 636306-1-BSD / BSD Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 04/08/13 10:55	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0305	0.0300	102	80-120	
4-Bromofluorobenzene	0.0328	0.0300	109	80-120	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904** 

Work Orders: 460525, 460525 Project ID:

Lab Batch #: 910671 Sample: 460525-001 S/MS Batch: 1 Matrix: Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/05/13 01:43	SU	RROGATE RI	ECOVERY S	STUDY	
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	87.5	99.7	88	70-135	
o-Terphenyl	53.2	49.9	107	70-135	

**Lab Batch #:** 910870 **Sample:** 460525-001 S / MS **Batch:** 1 **Matrix:** Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/08/13 16:06	SU	RROGATE RI	ECOVERY S	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0320	0.0300	107	80-120	
4-Bromofluorobenzene	0.0313	0.0300	104	80-120	

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/05/13 02:14	SU	RROGATE RI	ECOVERY S	STUDY	
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	88.4	100	88	70-135	
o-Terphenyl	55.1	50.0	110	70-135	

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/08/13 16:23	SU	RROGATE RI	ECOVERY	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0322	0.0300	107	80-120	
4-Bromofluorobenzene	0.0279	0.0300	93	80-120	

Surrogate Recovery [D] = 100 \* A / B

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



#### **BS / BSD Recoveries**



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Order #: 460525, 460525

**Project ID:** 

Analyst: KEB

**Date Prepared:** 04/08/2013

**Date Analyzed:** 04/08/2013

**Lab Batch ID:** 910870

Sample: 636306-1-BKS

Matrix: Solid

**Batch #:** 1

Units: mg/kg		BLAN	K/BLANK S	SPIKE / B	SLANK S	SPIKE DUPL	ICATE 1	RECOVE	RY STUD	<u>Y</u>	
DEEX L EDA 0021D	Dlouk	Cuileo	Dlonk	Dlonk	G. T	Dlank	Dile Cole		Control	Control	Г

BTEX by EPA 8021B  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00100	0.100	0.0923	92	0.0992	0.0953	96	3	70-130	35	
Toluene	< 0.00200	0.100	0.0946	95	0.0992	0.0962	97	2	70-130	35	
Ethylbenzene	< 0.00100	0.100	0.0820	82	0.0992	0.0844	85	3	71-129	35	
m_p-Xylenes	< 0.00200	0.200	0.170	85	0.198	0.174	88	2	70-135	35	
o-Xylene	< 0.00100	0.100	0.0938	94	0.0992	0.0951	96	1	71-133	35	

**Date Analyzed:** 04/06/2013 Analyst: AMB **Date Prepared:** 04/05/2013

Matrix: Solid **Lab Batch ID:** 911028 **Batch #:** 1 **Sample:** 636376-1-BKS

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Units: mg/kg Blk. Spk Blank Spike Blank Blank Blank Control Control **Inorganic Anions by EPA 300/300.1** Spike Sample Result Added Spike Spike Spike Dup. RPD Limits Limits Flag Added [A] Result %R Duplicate %R % %R %RPD [B] [C] [D] Result [F] [G] [E] **Analytes** Chloride < 2.00 50.0 47.7 95 50.0 48.8 98 2 80-120 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



#### **BS / BSD Recoveries**



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

**Work Order #:** 460525, 460525

**Batch #:** 1

Project ID:

Analyst: AMB

**Date Prepared:** 04/08/2013

**Date Analyzed:** 04/08/2013

**Lab Batch ID:** 911048

Sample: 636424-1-BKS

Matrix: Solid

Units: mg/kg	BLAN	K/BLANK S	SPIKE / B	SLANK S	PIKE DUPL	ICATE	RECOVE	ERY STUD	Y	
										Ē

Inorganic Anions by EPA 300/300.1  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
111141 y COS											
Chloride	<2.00	50.0	49.3	99	50.0	49.2	98	0	80-120	20	

**Analyst:** KEB **Date Prepared:** 04/04/2013 **Date Analyzed:** 04/04/2013

Lab Batch ID: 910671 Sample: 636178-1-BKS Batch #: 1 Matrix: Solid

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Units: mg/kg Blank Blank Control TPH By SW8015 Mod Blank Spike Blank Blk. Spk Control Spike Sample Result Added Spike Dup. **RPD** Limits Limits Flag Spike Spike Added %R **Duplicate** %R % %R %RPD [A] Result Result [F] [B] [C] [D] [E] [G] **Analytes** C6-C12 Gasoline Range Hydrocarbons <15.0 997 906 91 1000 893 89 1 70-135 35 C12-C28 Diesel Range Hydrocarbons 3 <15.0 997 999 100 1000 974 97 70-135 35

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



#### Form 3 - MS Recoveries



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Order #: 460525 **Lab Batch #:** 911028

**Date Analyzed:** 04/06/2013

**Project ID:** 

**Date Prepared:** 04/05/2013

Analyst: AMB

**QC- Sample ID:** 460525-001 S

Batch #: 1 Matrix: Soil

Reporting Units: mg/kg	MATE	KIX / MA	TRIX SPIKE	RECOV	VERY STU	րչ
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes		[2]				
Chloride	441	250	682	96	80-120	

**Lab Batch #:** 911048

**Date Prepared:** 04/08/2013 Analyst: AMB **Date Analyzed:** 04/08/2013 **QC- Sample ID:** 460525-005 S Batch #:

Matrix: Soil Reporting Units: mg/kg MATRIX / MATRIX SPIKE RECOVERY STUDY

Reporting Omes. mg/kg	MAII	WATRIA / WATRIA STIKE RECOVERT STODI							
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag			
Analytes	[]	[10]							
Chloride	236	250	484	99	80-120				

**Lab Batch #:** 911048

**Date Prepared:** 04/08/2013 Analyst: AMB **Date Analyzed:** 04/08/2013

**QC- Sample ID:** 460712-010 S Batch #: 1 Matrix: Soil

Reporting Units: mg/kg	MATE	RIX / MA'	TRIX SPIKE	RECOV	VERY STU	DY
Inorganic Anions by EPA 300  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	165	500	658	99	80-120	

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

BRL - Below Reporting Limit

Page 12 of 16

Final 1.001



#### Form 3 - MS / MSD Recoveries



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Order #: 460525

**Lab Batch ID:** 910870 **QC- Sample ID:** 460525-001 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg		M	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY								
BTEX by EPA 8021B	Parent Sample	Spike	Spiked Sample Result	Sample	•	Duplicate Spiked Sample	-	RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Benzene	< 0.00106	0.106	0.0958	90	0.106	0.0863	81	10	70-130	35	
Toluene	< 0.00212	0.106	0.0984	93	0.106	0.0827	78	17	70-130	35	
Ethylbenzene	< 0.00106	0.106	0.0884	83	0.106	0.0749	71	17	71-129	35	
m_p-Xylenes	< 0.00212	0.212	0.184	87	0.211	0.153	73	18	70-135	35	
o-Xylene	< 0.00106	0.106	0.0971	92	0.106	0.0787	74	21	71-133	35	

**Lab Batch ID:** 910671 **QC- Sample ID:** 460525-001 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY												
TPH By SW8015 Mod	Parent Sample	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag		
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD			
C6-C12 Gasoline Range Hydrocarbons	<15.8	1060	935	88	1060	955	90	2	70-135	35			
C12-C28 Diesel Range Hydrocarbons	<15.8	1060	1020	96	1060	1030	97	1	70-135	35			

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



# **Sample Duplicate Recovery**



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

**Work Order #:** 460525

 Lab Batch #:
 910654
 Project ID:

 Date Analyzed:
 04/04/2013 17:00
 Date Prepared:
 04/04/2013
 Analyst:
 WRU

 QC- Sample ID:
 460525-001 D
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: %	SAMPLE / SAMPLE DUPLICATE RECOVER										
Percent Moisture  Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag						
Percent Moisture	5.60	5.95	6	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 The Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Phone: 432-563-1800

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#### **XENCO Laboratories**



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

Client: Southern Union Gas Services- Monahan

Date/ Time Received: 04/03/2013 04:55:00 PM

Work Order #: 460525

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

**Temperature Measuring device used:** 

	Sample Receipt Checklis	t Comments
#1 *Temperature of cooler(s)?		1
#2 *Shipping container in goo	d condition?	Yes
#3 *Samples received on ice?	?	Yes
#4 *Custody Seals intact on s	hipping container/ cooler?	Yes
#5 Custody Seals intact on sa	ample bottles?	Yes
#6 *Custody Seals Signed an	d dated?	Yes
#7 *Chain of Custody present	?	Yes
#8 Sample instructions compl	lete on Chain of Custody?	Yes
#9 Any missing/extra samples		No
#10 Chain of Custody signed		Yes
#11 Chain of Custody agrees	•	Yes
#12 Container label(s) legible		Yes
· · · · ·	s agree with Chain of Custody?	Yes
#14 Samples in proper contai	ner/ bottle?	Yes
#15 Samples properly preserv	ved?	Yes
#16 Sample container(s) intac	ct?	Yes
#17 Sufficient sample amount	t for indicated test(s)?	Yes
#18 All samples received with	nin hold time?	Yes
#19 Subcontract of sample(s)	?	Yes
#20 VOC samples have zero	headspace (less than 1/4 inch bubble)?	Yes
#21 <2 for all samples preser	ved with HNO3,HCL, H2SO4?	Yes
#22 >10 for all samples prese	erved with NaAsO2+NaOH, ZnAc+NaOH?	Yes
Must be completed for after	-hours delivery of samples prior to placin	g in the refrigerator
Analyst:	PH Device/Lot#:	
Checklist comple	eted by:	- Doto:
Checklist review	· 	Date:

# **Analytical Report 460712**

#### for

#### **Southern Union Gas Services- Monahans**

Project Manager: Becky Haskell SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

#### 11-APR-13

Collected By: Client





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

Xenco-Houston (EPA Lab code: TX00122):

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

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

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

Xenco-Lakeland: Florida (E84098)

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

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

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

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

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





11-APR-13

Project Manager: Becky Haskell

**Southern Union Gas Services- Monahans** 

801 South Loop 464 Monahans, TX 79756

Reference: XENCO Report No(s): **460712** 

SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Project Address: Lea County, NM

#### **Becky Haskell:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 460712. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 460712 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully

**Nicholas Straccione** 

Project Manager

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

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

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



# **Sample Cross Reference 460712**



#### Southern Union Gas Services- Monahans, Monahans, TX

SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
NWW-1 @ 3'	S	04-03-13 09:30		460712-001
NWW-1 @ 15'	S	04-03-13 10:00		460712-002
NWW-1A @ 15'	S	04-03-13 11:45		460712-003
NWW-1B @ 3'	S	04-03-13 13:30		460712-004
NWW-1C @ 3'	S	04-03-13 14:30		460712-005
EW-1 @ 3'	S	04-03-13 15:00		460712-006
EW-1 @ 15'	S	04-03-13 15:20		460712-007
EW-1A @ 15'	S	04-03-13 16:00		460712-008
EW-1B @ 3'	S	04-03-13 16:30		460712-009
EW-1B @ 15'	S	04-03-13 18:00		460712-010

#### **CASE NARRATIVE**



Client Name: Southern Union Gas Services- Monahans Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904



Project ID: Report Date: 11-APR-13
Work Order Number(s): 460712 Date Received: 04/05/2013

Sample receipt non conformances and comments:
None
Sample receipt non conformances and comments per sample:

None



# Certificate of Analysis Summary 460712

#### Southern Union Gas Services- Monahans, Monahans, TX

Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Project Id:

Contact: Becky Haskell

Project Location: Lea County, NM

Date Received in Lab: Fri Apr-05-13 02:20 pm **Report Date:** 11-APR-13

Project Manager: Nicholas Straccione

								= = 5,500 11200					
	Lab Id:	460712-	001	460712-0	002	460712-0	003	460712-0	004	460712-0	005	460712-	006
Anglysis Paguastad	Field Id:	NWW-1	@ 3'	NWW-1 @	15'	NWW-1A	@ 15'	NWW-1B	@ 3'	NWW-1C	@ 3'	EW-1 @	@ 3'
Analysis Requested	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	,	SOII	_
	Sampled:	Apr-03-13	09:30	Apr-03-13	10:00	Apr-03-13	11:45	Apr-03-13	13:30	Apr-03-13	14:30	Apr-03-13	15:00
BTEX by EPA 8021B	Extracted:	Apr-08-13	09:20	Apr-08-13 (	09:20							Apr-08-13	09:20
	Analyzed:	Apr-08-13	15:01	Apr-08-13	15:17							Apr-08-13	15:34
	Units/RL:	mg/kg	RL	mg/kg	RL							mg/kg	RL
Benzene	'	ND	0.00106	ND	0.00104							ND	0.00110
Toluene		ND	0.00212	ND	0.00209							ND	0.00221
Ethylbenzene		ND	0.00106	ND	0.00104							ND	0.00110
m_p-Xylenes		ND	0.00212	ND	0.00209							ND	0.00221
o-Xylene		ND	0.00106	ND	0.00104							ND	0.00110
Total Xylenes		ND	0.00106	ND	0.00104							ND	0.00110
Total BTEX		ND	0.00106	ND	0.00104							ND	0.00110
Inorganic Anions by EPA 300/300.1	Extracted:	Apr-08-13	10:00	Apr-08-13	10:00	Apr-08-13	10:00	Apr-08-13	10:00	Apr-08-13	10:00	Apr-08-13	10:00
	Analyzed:	Apr-08-13	18:00	Apr-08-13	18:22	Apr-08-13	18:43	Apr-08-13	19:05	Apr-08-13	19:27	Apr-08-13	20:32
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		120	4.00	760	20.0	97.0	4.00	1220	20.0	13.1	4.00	3910	100
Percent Moisture	Extracted:												
	Analyzed:	Apr-08-13	09:30	Apr-08-13 (	09:30	Apr-08-13 (	09:30	Apr-08-13	09:30	Apr-08-13	09:30	Apr-08-13	09:30
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		5.69	1.00	4.91	1.00	2.83	1.00	8.57	1.00	5.80	1.00	9.92	1.00
TPH By SW8015 Mod	Extracted:	Apr-08-13	13:40	Apr-08-13	13:40							Apr-08-13	13:40
	Analyzed:	Apr-08-13	20:41	Apr-08-13	21:06							Apr-08-13	21:58
	Units/RL:	mg/kg	RL	mg/kg	RL							mg/kg	RL
C6-C12 Gasoline Range Hydrocarbons		ND	15.8	ND	15.7							ND	16.6
C12-C28 Diesel Range Hydrocarbons		ND	15.8	ND	15.7							ND	16.6
C28-C35 Oil Range Hydrocarbons		ND	15.8	ND	15.7							ND	16.6
Total TPH		ND	15.8	ND	15.7							ND	16.6

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

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

Nicholas Straccione Project Manager



# **Certificate of Analysis Summary 460712**

#### $Southern\ Union\ Gas\ Services\mbox{-}\ Monahans,\ Monahans,\ TX$

Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904



**Project Id:** 

**Contact:** Becky Haskell

Project Location: Lea County, NM

**Date Received in Lab:** Fri Apr-05-13 02:20 pm

**Report Date:** 11-APR-13

Project Manager: Nicholas Straccione

									1 tienotas Butacetone	
Lab Id:	460712-0	07	460712-0	08	460712-0	09	460712-0	10		
Field Id:	EW-1 @	15'	EW-1A @	15'	EW-1B @	3'	EW-1B @	15'		
Depth:										
Matrix:	SOIL		SOIL		SOIL		SOIL			
Sampled:	Apr-03-13 1	5:20	Apr-03-13 1	6:00	Apr-03-13 1	6:30	Apr-03-13 1	8:00		
Extracted:	Apr-08-13 (	9:20								
Analyzed:	Apr-08-13	15:50								
Units/RL:	mg/kg	RL								
		0.00102								
	ND	0.00204								
	ND	0.00102								
	ND	0.00204								
	ND	0.00102								
	ND	0.00102								
	ND	0.00102								
Extracted:	Apr-08-13	10:00	Apr-08-13 1	0:00	Apr-08-13 1	0:00	Apr-08-13 1	0:00		
Analyzed:	Apr-08-13 2	20:54	Apr-08-13 2	1:15	Apr-08-13 2	21:37	Apr-08-13 2	1:59		
Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
	1150	20.0	1070	20.0	221	10.0	165	20.0		
Extracted:										
Analyzed:	Apr-08-13 (	9:30	Apr-08-13 0	9:30	Apr-08-13 (	9:30	Apr-08-13 0	9:30		
Units/RL:	%	RL	%	RL	%	RL	%	RL		
	3.06	1.00	2.43	1.00	3.95	1.00	2.63	1.00		
Extracted:	Apr-08-13	13:40								
Analyzed:	Apr-08-13 2	22:22								
Units/RL:	mg/kg	RL								
	ND	15.5								
	MD	15.5								
	ND	13.3								
	ND ND	15.5								
	Field Id: Depth: Matrix: Sampled: Extracted: Analyzed: Units/RL: Extracted: Analyzed: Units/RL: Extracted: Analyzed: Units/RL: Extracted: Analyzed: Units/RL:	## Field Id: Depth:    Matrix: SOIL	Field Id: Depth:  Matrix: SOIL  Sampled: Apr-03-13 15:20  Extracted: Apr-08-13 09:20  Analyzed: Apr-08-13 15:50  Units/RL: mg/kg RL  ND 0.00102  ND 0.00204  ND 0.00102  ND 0.00102  ND 0.00102  ND 0.00102  ND 0.00102  Apr-08-13 10:00  Analyzed: Apr-08-13 20:54  Units/RL: mg/kg RL  1150 20.0  Extracted: Apr-08-13 09:30  Units/RL: % RL  3.06 1.00  Extracted: Apr-08-13 13:40  Analyzed: Apr-08-13 22:22  Units/RL: mg/kg RL	## Field Id: Depth:   Matrix: SOIL	## Field Id: Depth:   Matrix: SOIL	## Field Id:	Field Id:         EW-1 @ 15'         EW-1A @ 15'         EW-1B @ 3'           Depth:         Matrix:         SOIL         SOIL         SOIL           Sampled:         Apr-03-13 15:20         Apr-03-13 16:00         Apr-03-13 16:30           Extracted:         Apr-08-13 09:20         Apr-08-13 15:50         Apr-08-13 16:30           Units/RL:         mg/kg         RL         ND         0.00102           ND         0.00102         ND         0.00204           ND         0.00102         ND         0.00102           Extracted:         Apr-08-13 10:00         Apr-08-13 10:00         Apr-08-13 10:00         Apr-08-13 21:37           Units/RL:         mg/kg         RL         mg/kg         RL         mg/kg         RL           Analyzed:         Apr-08-13 09:30         Apr-08-13 09:30         Apr-08-13 09:30         Apr-08-13 09:30         Apr-08-13 09:30           Units/RL:         %         RL         %         RL         %         RL           Analyzed:         Apr-08-13 13:40         Apr-08-13 22:22         Manalyzed:         Apr-08-13 22:22         Manalyzed:         Apr-08-13 22:22           Units/RL:         mg/kg         RL         Manalyzed:         Apr-08-13 22:22         Manalyzed:	## Field Id:	Field Id:	Field Id:

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

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

Nicholas Straccione Project Manager



#### **Flagging Criteria**

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

**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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Page 7 of 18 Final 1.001

<sup>\*</sup> Surrogate recovered outside laboratory control limit.



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Orders: 460712, 460712 Project ID:

**Lab Batch #:** 910870 **Sample:** 460712-001 / SMP **Batch:** 1 **Matrix:** Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/08/13 15:01	SURROGATE RECOVERY STUDY										
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags						
Analytes			[D]								
1,4-Difluorobenzene	0.0290	0.0300	97	80-120							
4-Bromofluorobenzene	0.0272	0.0300	91	80-120							

SURROGATE RECOVERY STUDY Units: mg/kg Date Analyzed: 04/08/13 15:17 Amount True Control BTEX by EPA 8021B Found Amount Recovery Limits **Flags** [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0324 0.0300 108 80-120 4-Bromofluorobenzene 0.0280 0.0300 93 80-120

Lab Batch #: 910870 Sample: 460712-006 / SMP Batch: 1 Matrix: Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/08/13 15:34	SURROGATE RECOVERY STUDY										
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags						
Analytes			[D]								
1,4-Difluorobenzene	0.0303	0.0300	101	80-120							
4-Bromofluorobenzene	0.0278	0.0300	93	80-120							

**Lab Batch #:** 910870 **Sample:** 460712-007 / SMP **Batch:** 1 **Matrix:** Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/08/13 15:50	SU	RROGATE RI	ECOVERY S	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0298	0.0300	99	80-120	
4-Bromofluorobenzene	0.0311	0.0300	104	80-120	

**Lab Batch #:** 910882 **Sample:** 460712-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg Date Analyzed: 04/08/13 20:41	SURROGATE RECOVERY STUDY									
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags					
Analytes			[D]							
1-Chlorooctane	100	99.5	101	70-135						
o-Terphenyl	52.3	49.8	105	70-135						

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

**Work Orders**: 460712, 460712 **Project ID**:

**Lab Batch #:** 910882 **Sample:** 460712-002 / SMP **Batch:** 1 **Matrix:** Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/08/13 21:06	SURROGATE RECOVERY STUDY				
TPH By SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	101	99.8	101	70-135	
o-Terphenyl	52.6	49.9	105	70-135	

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/08/13 21:58	SURROGATE RECOVERY STUDY				
TPH By SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
•	00.2	00.0	00	70.125	
1-Chlorooctane	99.3	99.8	99	70-135	
o-Terphenyl	53.1	49.9	106	70-135	

**Lab Batch #:** 910882 **Sample:** 460712-007 / SMP **Batch:** 1 **Matrix:** Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/08/13 22:22	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	52.3	50.0	105	70-135	

Lab Batch #: 910870 Sample: 636306-1-BLK / BLK Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/08/13 11:11	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0258	0.0300	86	80-120	
4-Bromofluorobenzene	0.0324	0.0300	108	80-120	

Lab Batch #: 910882 Sample: 636320-1-BLK / BLK Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/08/13 16:55	SURROGATE RECOVERY STUDY				
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	99.6	99.9	100	70-135	
o-Terphenyl	53.3	50.0	107	70-135	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

 Work Orders:
 460712, 460712
 Project ID:

 Lab Batch #:
 910870
 Sample:
 636306-1-BKS / BKS
 Batch:
 1
 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/08/13 10:22	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0324	0.0300	108	80-120	
4-Bromofluorobenzene	0.0312	0.0300	104	80-120	

Lab Batch #: 910882 Sample: 636320-1-BKS / BKS Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 04/08/13 16:04	SURROGATE RECOVERY STUDY				
TPH By SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes			. ,		
1-Chlorooctane	95.8	100	96	70-135	
o-Terphenyl	59.7	50.0	119	70-135	

Lab Batch #: 910870 Sample: 636306-1-BSD / BSD Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 04/08/13 10:55	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0305	0.0300	102	80-120	
4-Bromofluorobenzene	0.0328	0.0300	109	80-120	

Lab Batch #: 910882 Sample: 636320-1-BSD / BSD Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/08/13 16:30	SURROGATE RECOVERY STUDY				
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	96.9	100	97	70-135	
o-Terphenyl	60.1	50.1	120	70-135	

Units: mg/kg Date Analyzed: 04/08/13 16:06	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0320	0.0300	107	80-120	
4-Bromofluorobenzene	0.0313	0.0300	104	80-120	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904** 

**Work Orders**: 460712, 460712 **Project ID**:

**Lab Batch #:** 910882 **Sample:** 460785-001 S / MS **Batch:** 1 **Matrix:** Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/09/13 02:08	SURROGATE RECOVERY STUDY				
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	102	100	102	70-135	
o-Terphenyl	57.6	50.1	115	70-135	

**Lab Batch #:** 910870 **Sample:** 460525-001 SD / MSD **Batch:** 1 **Matrix:** Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/08/13 16:23	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0322	0.0300	107	80-120	
4-Bromofluorobenzene	0.0279	0.0300	93	80-120	

**Lab Batch #:** 910882 **Sample:** 460785-001 SD / MSD **Batch:** 1 **Matrix:** Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/09/13 02:33	SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes			[D]			
1-Chlorooctane	101	100	101	70-135		
o-Terphenyl	58.3	50.1	116	70-135		

Surrogate Recovery [D] = 100 \* A / B

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



#### **BS / BSD Recoveries**



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

**Work Order #:** 460712, 460712

**Project ID:** 

Analyst: KEB

Units: mg/kg

**Date Prepared:** 04/08/2013 **Batch #:** 1

**Date Analyzed:** 04/08/2013

**Lab Batch ID:** 910870

**Sample:** 636306-1-BKS

Matrix: Solid

BLANK /BLANK SPIKE / BLANK SPIKE D	DUPLICATE RECOVERY STUDY
------------------------------------	--------------------------

BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]	[C]	[D]	[E]	Result [F]	[G]	70	/0K	70KFD	
Benzene	< 0.00100	0.100	0.0923	92	0.0992	0.0953	96	3	70-130	35	
Toluene	< 0.00200	0.100	0.0946	95	0.0992	0.0962	97	2	70-130	35	
Ethylbenzene	< 0.00100	0.100	0.0820	82	0.0992	0.0844	85	3	71-129	35	
m_p-Xylenes	< 0.00200	0.200	0.170	85	0.198	0.174	88	2	70-135	35	
o-Xylene	< 0.00100	0.100	0.0938	94	0.0992	0.0951	96	1	71-133	35	

Analyst: AMB Date Prepared: 04/08/2013 Date Analyzed: 04/08/2013

Lab Batch ID: 911048 Sample: 636424-1-BKS Batch #: 1 Matrix: Solid

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Units: mg/kg Blk. Spk Blank Spike Blank Blank Blank Control Control **Inorganic Anions by EPA 300/300.1** Spike Sample Result Added Spike Spike Spike Dup. RPD Limits Limits Flag Added [A] Result %R Duplicate %R % %R %RPD [B] [C] [D] Result [F] [G] [E] **Analytes** Chloride < 2.00 50.0 49.3 99 50.0 49.2 98 0 80-120 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



# **BS / BSD Recoveries**

99



35

Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

1000

**Work Order #:** 460712, 460712

**Project ID:** 

98

Analyst: KEB

**Date Prepared:** 04/08/2013

994

1000

**Date Analyzed:** 04/08/2013

1

70-135

**Lab Batch ID:** 910882

**Analytes** 

**Sample:** 636320-1-BKS **Batch #:** 1

<15.0

Matrix: Solid

Units: mg/kg	
--------------	--

C6-C12 Gasoline Range Hydrocarbons

C12-C28 Diesel Range Hydrocarbons

TPH By SW8015 Mod

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
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	
<15.0	1000	942	94	1000	944	94	0	70-135	35		

981

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



## Form 3 - MS Recoveries



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

**Work Order #:** 460712 **Lab Batch #:** 911048

**Date Analyzed:** 04/08/2013

**Project ID:** 

**Date Prepared:** 04/08/2013

Analyst: AMB

**QC- Sample ID:** 460525-005 S

Batch #: Matrix: Soil

Reporting Units: mg/kg	MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag	
Chloride	236	250	484	99	80-120		

**Lab Batch #:** 911048

**Date Prepared:** 04/08/2013 Analyst: AMB **Date Analyzed:** 04/08/2013

**QC- Sample ID:** 460712-010 S Batch #: Matrix: Soil

Reporting Units: mg/kg	MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag	
Chloride	165	500	658	99	80-120		

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

BRL - Below Reporting Limit



## Form 3 - MS / MSD Recoveries



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Order #: 460712 Project ID:

**Lab Batch ID:** 910870 **QC- Sample ID:** 460525-001 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg		M	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	RECOVERY STUDY									
BTEX by EPA 8021B	Parent Sample	Spike	Spiked Sample Result	Sample	-	Duplicate Spiked Sample	-	RPD	Control Limits	Control Limits	Flag						
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD							
Benzene	< 0.00106	0.106	0.0958	90	0.106	0.0863	81	10	70-130	35							
Toluene	< 0.00212	0.106	0.0984	93	0.106	0.0827	78	17	70-130	35							
Ethylbenzene	< 0.00106	0.106	0.0884	83	0.106	0.0749	71	17	71-129	35							
m_p-Xylenes	< 0.00212	0.212	0.184	87	0.211	0.153	73	18	70-135	35							
o-Xylene	< 0.00106	0.106	0.0971	92	0.106	0.0787	74	21	71-133	35							

**Lab Batch ID:** 910882 **QC- Sample ID:** 460785-001 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
TPH By SW8015 Mod	Parent Sample	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
C6-C12 Gasoline Range Hydrocarbons	<16.9	1130	1110	98	1120	1070	96	4	70-135	35	
C12-C28 Diesel Range Hydrocarbons	57.4	1130	1160	98	1120	1130	96	3	70-135	35	

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



# **Sample Duplicate Recovery**



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

**Work Order #:** 460712

 Lab Batch #: 910789
 Project ID:

 Date Analyzed: 04/08/2013 09:30
 Date Prepared: 04/08/2013
 Analyst: WRU

 QC- Sample ID: 460679-007 D
 Batch #: 1
 Matrix: Soil

Reporting Units: %	SAMPLE A	SAMPLE / SAMPLE DUPLICATE RECOVERY								
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result	RPD	Control Limits %RPD	Flag					
Analyte		[B]								
Percent Moisture	2.28	2.24	2	20						

#### (lab use only) Special Instructions: Relinquished by Relinquished by: ORDER #: 03 The Environmental Lab of Texas Xenco Laboratories 2 LAB # (lab use only) Sampler Signature: Telephone No: City/State/Zip: Company Name Project Manager: Company Address: 2057 Commerce Kenna NWW-1A @ 15 NWW- 1C @ 3 NWW-1B @ 3' NWW-1 @ 15' EW-1B @ 15' EW-1A @ 15 NWW-1 @ 3 EW-1B @ 3' EW-1 @ 15' EW-1 @ 3' FIELD CODE Becky Haskell Midland, TX 79703 Nova Safety and Environmental 432,520,7720 4/5/13 5/13 **Beginning Depth** 350 Time **Ending Depth** Received by ELOT Received by: Received by 4/3/2013 4/4/2013 4/4/2013 4/4/2013 4/4/2013 4/4/2013 4/3/2013 4/3/2013 4/3/2013 4/3/2013 **Date Sampled** 10:00 18:00 16:30 16:00 15:20 15:00 14:30 13:30 11:45 9:30 Fax No: Time Sampled Ø e-mail: 5.70 Field Filtered Total #. of Containers 432.520.7701 Odessa, Texas 79765 12600 West I-20 East rhaskell@novatraining.cc ngreen@novatraining.cc HNO<sub>3</sub> Rose.Slade@sug.com HCI H<sub>2</sub>SO<sub>4</sub> CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST NaOH Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> None 4/5/13 Date Other (Specify) DW=Drinking Water SL=Sludge Soil Soil Soil Soil Soil Soil <u>Soi</u> Soil Soil Soil Report Format: Project Name: \_\_\_ 14.20 Temperature Upon Receipt: 13:50 **Project Loc:** Time 8015M 8015E 418.1 × Project #: TX 1005 TX 1006 PO #: Labels on container(s) Custody seals on container(s) Custody seals on cooler(s) Sample Hand Delivered VOCs Free of Headspace? Sample Containers Intact? **Laboratory Comments:** Cations (Ca, Mg, Na, K) by Sampler/Client Rep. ? by Courier? UPS X Standard Anions (CI, SO4, Alkalinity) TOTAL: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904 SAR / ESP / CEC Phone: 432-563-1800 Metals: As Ag Ba Cd Cr Pb Hg Se Analyze For: 432-563-1713 Lea County, NM BTEX 8021By5030 or BTEX 8260 × TRRP × N.O.R.M. Chlorides E 300.1 $\times$ $\times$ × × × × × $\times$ Lone Star **NPDES** റ് RUSH TAT (Pre-Schedule) 24, 48, 72 hrs Standard TAT Page 17 of 18 Final 1.001



## **XENCO Laboratories**



# Prelogin/Nonconformance Report- Sample Log-In

Client: Southern Union Gas Services- Monahan

Date/ Time Received: 04/05/2013 02:20:00 PM

Work Order #: 460712

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

	Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?		0
#2 *Shipping container in good	condition?	Yes
#3 *Samples received on ice?		Yes
#4 *Custody Seals intact on shi	pping container/ cooler?	Yes
#5 Custody Seals intact on san	nple bottles?	Yes
#6 *Custody Seals Signed and	dated?	Yes
#7 *Chain of Custody present?		Yes
#8 Sample instructions complete	te on Chain of Custody?	Yes
#9 Any missing/extra samples?		No
#10 Chain of Custody signed w	hen relinquished/ received?	Yes
#11 Chain of Custody agrees w	vith sample label(s)?	Yes
#12 Container label(s) legible a	nd intact?	Yes
#13 Sample matrix/ properties a	agree with Chain of Custody?	Yes
#14 Samples in proper contained	er/ bottle?	Yes
#15 Samples properly preserve	d?	Yes
#16 Sample container(s) intact	?	Yes
#17 Sufficient sample amount f	or indicated test(s)?	Yes
#18 All samples received within	hold time?	Yes
#19 Subcontract of sample(s)?		Yes
#20 VOC samples have zero he	eadspace (less than 1/4 inch bubble)?	Yes
#21 <2 for all samples preserve	ed with HNO3,HCL, H2SO4?	Yes
#22 >10 for all samples preserv	ved with NaAsO2+NaOH, ZnAc+NaOH?	Yes
Must be completed for after-h	ours delivery of samples prior to placing	in the refrigerator
Analyst:	PH Device/Lot#:	
Checklist complete	ed by:	Date:
Checklist reviewe	d by:	Date:

# **Analytical Report 460955**

# for

**Southern Union Gas Services- Monahans** 

Project Manager: Becky Haskell SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

17-APR-13

Collected By: Client





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

Xenco-Houston (EPA Lab code: TX00122):

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

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

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

Xenco-Lakeland: Florida (E84098)

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

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX) Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)

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

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





17-APR-13

Project Manager: Becky Haskell

**Southern Union Gas Services- Monahans** 

801 South Loop 464 Monahans, TX 79756

Reference: XENCO Report No(s): 460955

SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Project Address: Lea County, NM

#### **Becky Haskell:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 460955. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 460955 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully.

**Nicholas Straccione** 

Project Manager

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# **Sample Cross Reference 460955**



# Southern Union Gas Services- Monahans, Monahans, TX

SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
EW-2 @ 3'	S	04-05-13 13:21		460955-001
EW-2A @ 3'	S	04-09-13 11:32		460955-002
EW-2 @ 15'	S	04-05-13 13:40		460955-003
EW-2A @ 15'	S	04-09-13 11:50		460955-004

#### CASE NARRATIVE



Client Name: Southern Union Gas Services- Monahans Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904



Project ID: Report Date: 17-APR-13
Work Order Number(s): 460955
Date Received: 04/10/2013

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

**Analytical non conformances and comments:** 

Batch: LBA-911503 TPH By SW8015 Mod

SW8015MOD\_NM

Batch 911503, C12-C28 Diesel Range Hydrocarbons, C6-C12 Gasoline Range Hydrocarbons recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate.

Samples affected are: 460955-003.

The Laboratory Control Sample for C12-C28 Diesel Range Hydrocarbons, C6-C12 Gasoline Range Hydrocarbons is within laboratory Control Limits



## Southern Union Gas Services- Monahans, Monahans, TX

Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904



**Project Id:** 

**Contact:** Becky Haskell

**Date Received in Lab:** Wed Apr-10-13 12:53 pm **Report Date:** 17-APR-13

Project Location: Lea County, NM

Project Manager: Nicholas Straccione

Lab Id:	460955-0	001	460955-0	02	460955-0	003	460955-0	04		
Field Id:	EW-2 @	3'	EW-2A @	3'	EW-2 @	15'	EW-2A @	15'		
Depth:										
Matrix:	SOIL		SOIL		SOIL		SOIL			
Sampled:	Apr-05-13	13:21	Apr-09-13 1	1:32	Apr-05-13	13:40	Apr-09-13 1	1:50		
Extracted:	Apr-12-13	09:20			Apr-12-13 09:20					
Analyzed:	Apr-12-13	11:51			Apr-12-13 10:12					
Units/RL:	mg/kg	RL			mg/kg	RL				
	ND	0.00107				0.00109				
	ND	0.00214			ND	0.00218				
	ND	0.00107			ND	0.00109				
	ND	0.00214			ND					
	ND	0.00107			ND					
	ND	0.00107			ND					
	ND	0.00107			ND	0.00109				
Extracted:	Apr-17-13	10:00	Apr-17-13 1	0:00	Apr-17-13	10:00	Apr-17-13 1	0:00		
Analyzed:	Apr-17-13	13:31	Apr-17-13 1	4:14	Apr-17-13	14:36	Apr-17-13 15:41			
Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
	2800	100	163	10.0	4110	200	ND	20.0		
Extracted:										
Analyzed:	Apr-10-13	17:05	Apr-10-13 1	7:05	Apr-10-13	17:05	Apr-10-13 1	7:05		
Units/RL:	%	RL	%	RL	%	RL	%	RL		
	6.14	1.00	5.10	1.00	7.87	1.00	3.09	1.00		
Extracted:	Apr-16-13	15:15			Apr-16-13	15:15				
Analyzed: Apr-17-13 01:25		01:25			Apr-17-13	01:57				
Units/RL:	mg/kg	RL			mg/kg	RL				
	ND	15.9			ND	16.2				
	34.5	15.9			ND	16.2				
	ND	15.9			ND	16.2				
	34.5	15.9	-		ND	16.2				
	Field Id: Depth: Matrix: Sampled: Extracted: Analyzed: Units/RL:  Extracted: Analyzed: Units/RL:  Extracted: Analyzed: Units/RL:  Extracted: Analyzed: Analyzed: Analyzed:	Field Id:         EW-2 @           Depth:         Matrix:         SOIL           Sampled:         Apr-05-13         Extracted:         Apr-12-13           Analyzed:         Apr-12-13         Units/RL:         mg/kg           ND         ND         ND           ND         ND         ND           Extracted:         Apr-17-13         Apr-17-13           Units/RL:         mg/kg         2800           Extracted:         Apr-10-13         Units/RL:         %           6.14         Extracted:         Apr-16-13           Analyzed:         Apr-17-13         Units/RL:         mg/kg           ND         34.5         ND	Field Id: Depth: Matrix: SOIL Sampled: Apr-05-13 13:21  Extracted: Apr-12-13 09:20 Analyzed: Apr-12-13 11:51  Mits/RL: MD 0.00107  ND 0.00214  ND 0.00107  ND 0.00107  ND 0.00107  ND 0.00107  ND 0.00107  ND 0.00107  Extracted: Apr-17-13 10:00 Analyzed: Apr-17-13 13:31  Units/RL: Mg/kg RL 2800 100  Extracted: Analyzed: Apr-10-13 17:05  Units/RL: M RL 6.14 1.00  Extracted: Apr-17-13 01:25  Units/RL: Mg/kg RL 1.00  Extracted: Apr-17-13 01:25  Units/RL: Mg/kg RL ND 15.9  34.5 15.9  ND 15.9	Field Id:	Field Id:         EW-2 @ 3'         EW-2A @ 3'           Depth:         Matrix:         SOIL         SOIL           Sampled:         Apr-05-13 13:21         Apr-09-13 11:32           Extracted:         Apr-12-13 09:20         Apr-12-13 11:51           Units/RL:         mg/kg         RL           ND 0.00107         ND 0.00107           ND 0.00107         ND 0.00107           ND 0.00107         ND 0.00107           Extracted:         Apr-17-13 10:00         Apr-17-13 10:00           Analyzed:         Apr-17-13 13:31         Apr-17-13 14:14           Units/RL:         mg/kg         RL         mg/kg         RL           Extracted:         Apr-10-13 17:05         Mpr-10-13 17:05         Apr-10-13 17:05	Field Id:         EW-2 @ 3'         EW-2A @ 3'         EW-2 @           Depth:         Matrix:         SOIL         Apr-05-13         Apr-05-13         Apr-05-13         Apr-05-13         Apr-05-13         Apr-10-13         Apr-12-13         Apr-12-13         Apr-12-13         Apr-12-13         Apr-12-13         Apr-12-13         Apr-12-13         Apr-12-13         Apr-12-13         Mp/kg         MD         ND         Apr-17-13         10:00         Apr-17-13         Apr-17-13         Apr-17-13         Apr-17-13         Apr-17-13         Apr-1	Field Id:         EW-2 @ 3'         EW-2A @ 3'         EW-2 @ 15'           Matrix:         SOIL         SOIL         SOIL           Sampled:         Apr-05-13 13:21         Apr-09-13 11:32         Apr-05-13 13:40           Extracted:         Apr-12-13 09:20         Apr-12-13 09:20         Apr-12-13 10:12           Analyzed:         Apr-12-13 11:51         Apr-12-13 10:12         mg/kg         RL           ND         0.00107         ND         0.00109           ND         0.00214         ND         0.00218           ND         0.00107         ND         0.00109           ND         0.00107         ND         0.00109           ND         0.00107         ND         0.00109           ND         0.00107         ND         0.00109           Extracted:         Apr-17-13 10:00         Apr-17-13 10:00         Apr-17-13 10:00           Analyzed:         Apr-17-13 13:31         Apr-17-13 14:14         Apr-17-13 14:36           Units/RL:         mg/kg         RL         mg/kg         RL           Extracted:         Apr-10-13 17:05         Apr-10-13 17:05         Apr-10-13 17:05           Units/RL:         %         RL         %         RL	Field Id:	Field Id:	Field Id:   EW-2 @ 3'

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

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Nicholas Straccione Project Manager



# **Flagging Criteria**

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

**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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Page 6 of 16 Final 1.000

<sup>\*</sup> Surrogate recovered outside laboratory control limit.



4-Bromofluorobenzene

# Form 2 - Surrogate Recoveries

Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

0.0300

99

80-120

 Work Orders: 460955,
 Project ID:

 Lab Batch #: 911306
 Sample: 460955-003 / SMP
 Batch: 1 Matrix: Soil

SURROGATE RECOVERY STUDY Units: mg/kg Date Analyzed: 04/12/13 10:12 True Control BTEX by EPA 8021B Amount **Found** Amount Recovery Limits **Flags** %R [A] [B] %R [D] **Analytes** 1,4-Difluorobenzene 0.0281 0.0300 94 80-120

0.0297

Lab Batch #: 911306 Sample: 460955-001 / SMP Batch: 1 Matrix: Soil

SURROGATE RECOVERY STUDY Units: mg/kg Date Analyzed: 04/12/13 11:51 Amount True Control BTEX by EPA 8021B **Found** Amount Recovery Limits **Flags** [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0279 0.0300 93 80-120 4-Bromofluorobenzene 0.0282 0.0300 94 80-120

SURROGATE RECOVERY STUDY Date Analyzed: 04/17/13 01:25 Units: mg/kg Amount True Control TPH By SW8015 Mod Limits **Found** Amount Recovery **Flags** %R %R [A] [B] [D] **Analytes** 1-Chlorooctane 93.7 94 99.7 70-135 o-Terphenyl 97 48.4 49.9 70-135

**Lab Batch #:** 911503 **Sample:** 460955-003 / SMP **Batch:** 1 **Matrix:** Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/17/13 01:57	SURROGATE RECOVERY STUDY						
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Analytes			[D]				
1-Chlorooctane	94.4	99.8	95	70-135			
o-Terphenyl	48.6	49.9	97	70-135			

Lab Batch #: 911306 Sample: 636550-1-BLK / BLK Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/12/13 09:39	SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Analytes			[D]				
1,4-Difluorobenzene	0.0258	0.0300	86	80-120			
4-Bromofluorobenzene	0.0321	0.0300	107	80-120			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Orders: 460955,

Lab Batch #: 911503

Sample: 636699-1-BLK / BLK

Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/16/13 22:41	SURROGATE RECOVERY STUDY							
TPH By SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooctane	109	99.6	109	70-135				
o-Terphenyl	57.3	49.8	115	70-135				

Lab Batch #: 911306 Sample: 636550-1-BKS / BKS Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 04/12/13 09:07	SURROGATE RECOVERY STUDY							
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
1,4-Difluorobenzene	0.0329	0.0300	110	80-120				
4-Bromofluorobenzene	0.0323	0.0300	108	80-120				

Lab Batch #: 911503 Sample: 636699-1-BKS / BKS Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/16/13 21:32	SURROGATE RECOVERY STUDY							
TPH By SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
Anarytes			[-]					
1-Chlorooctane	114	99.8	114	70-135				
o-Terphenyl	50.2	49.9	101	70-135				

Lab Batch #: 911306 Sample: 636550-1-BSD / BSD Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/12/13 09:23	SURROGATE RECOVERY STUDY							
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
1,4-Difluorobenzene	0.0307	0.0300	102	80-120				
4-Bromofluorobenzene	0.0301	0.0300	100	80-120				

Lab Batch #: 911503 Sample: 636699-1-BSD / BSD Batch: 1 Matrix: Solid

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/16/13 22:07	SURROGATE RECOVERY STUDY							
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
1-Chlorooctane	113	100	113	70-135				
o-Terphenyl	50.7	50.1	101	70-135				

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

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

CLIDDOCATE DECOVEDY CTUDY

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



4-Bromofluorobenzene

# Form 2 - Surrogate Recoveries

Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

0.0300

101

80-120

 Work Orders: 460955,
 Project ID:

 Lab Batch #: 911306
 Sample: 461087-002 S / MS
 Batch: 1 Matrix: Soil

SURROGATE RECOVERY STUDY Units: mg/kg Date Analyzed: 04/12/13 16:30 True Amount Control BTEX by EPA 8021B Amount Limits Flags **Found** Recovery %R [A] [B] %R [D] **Analytes** 1,4-Difluorobenzene 0.0324 0.0300 108 80-120

0.0302

SURROGATE RECOVERY STUDY Units: mg/kg Date Analyzed: 04/17/13 02:31 Amount True Control TPH By SW8015 Mod Recovery **Found** Amount Limits **Flags** [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 122 100 122 70-135 o-Terphenyl 51.5 50.1 103 70-135

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 04/12/13 16:47	SURROGATE RECOVERY STUDY							
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
1,4-Difluorobenzene	0.0328	0.0300	109	80-120				
4-Bromofluorobenzene	0.0301	0.0300	100	80-120				

**Lab Batch #:** 911503 **Sample:** 460955-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg Date Analyzed: 04/17/13 03:04	SURROGATE RECOVERY STUDY							
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
1-Chlorooctane	111	99.9	111	70-135				
o-Terphenyl	47.6	50.0	95	70-135				

Surrogate Recovery [D] = 100 \* A / B

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



## **BS / BSD Recoveries**



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Order #: 460955

**Date Prepared:** 04/12/2013

**Project ID:** 

Analyst: DYV

**Date Analyzed:** 04/12/2013

**Lab Batch ID:** 911306 Sample: 636550-1-BKS **Batch #:** 1 Matrix: Solid

Units: mg/kg

#### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	< 0.00100	0.100	0.0758	76	0.100	0.0865	87	13	70-130	35	
Toluene	< 0.00200	0.100	0.0761	76	0.100	0.0877	88	14	70-130	35	
Ethylbenzene	< 0.00100	0.100	0.0839	84	0.100	0.0936	94	11	71-129	35	
m_p-Xylenes	< 0.00200	0.200	0.151	76	0.200	0.168	84	11	70-135	35	
o-Xylene	< 0.00100	0.100	0.0745	75	0.100	0.0872	87	16	71-133	35	

**Date Analyzed:** 04/17/2013 Analyst: AMB **Date Prepared:** 04/17/2013

Matrix: Solid **Lab Batch ID:** 911595 **Batch #:** 1 **Sample:** 636746-1-BKS

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Units: mg/kg Blk. Spk Blank Spike Blank Blank Blank Control Control **Inorganic Anions by EPA 300/300.1** Spike Sample Result Added Spike Spike Spike Dup. RPD Limits Limits Flag Added [A] Result %R Duplicate %R % %R %RPD Result [F] [B] [C] [D] [G] [E] **Analytes** Chloride < 2.00 50.0 51.1 102 50.0 50.8 102 1 80-120 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



# **BS / BSD Recoveries**



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Order #: 460955 Analyst: KEB

60055

**Date Prepared:** 04/16/2013

**Batch #:** 1

Project ID:

**Date Analyzed:** 04/16/2013

**Lab Batch ID:** 911503

Sample: 636699-1-BKS

Matrix: Solid

Units: mg/kg	BLAN	K /BLANK S	SPIKE / B	BLANK S	PIKE DUPL	ICATE :	RECOVI	ERY STUD	Y	
			1				1	1	1	

TPH By SW8015 Mod  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Gasoline Range Hydrocarbons	<15.0	998	940	94	1000	941	94	0	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.0	998	1050	105	1000	1060	106	1	70-135	35	



# Form 3 - MS Recoveries



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

**Work Order #:** 460955 **Lab Batch #:** 911595

**Date Analyzed:** 04/17/2013 **Date Prepared:** 04/17/2013

Project ID:
Analyst: AMB

**QC- Sample ID:** 460955-001 S

Batch #: 1 Matrix: Soil

Reporting Units: mg/kg	MATE	RIX / MA	TRIX SPIKE	RECOV	VERY STU	DY
Inorganic Anions by EPA 300	Parent Sample	Cuileo	Spiked Sample	0/ D	Control	Flo

Inorganic Anions by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes	[A]	[B]				
Chloride	2800	2500	5640	114	80-120	

Matrix Spike Percent Recovery [D] = 100\*(C-A)/BRelative 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: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

Work Order #: 460955

**Lab Batch ID:** 911306 **QC- Sample ID:** 461087-002 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 04/12/2013 Date Prepared: 04/12/2013 Analyst: DYY

Reporting Units: mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY													
BTEX by EPA 8021B	Parent Sample	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag			
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD				
Benzene	< 0.00103	0.103	0.0860	83	0.103	0.0848	82	1	70-130	35				
Toluene	< 0.00205	0.103	0.0887	86	0.103	0.0931	90	5	70-130	35				
Ethylbenzene	< 0.00103	0.103	0.0955	93	0.103	0.0982	95	3	71-129	35				
m_p-Xylenes	< 0.00205	0.205	0.173	84	0.207	0.179	86	3	70-135	35				
o-Xylene	< 0.00103	0.103	0.0890	86	0.103	0.0976	95	9	71-133	35				

**Lab Batch ID:** 911503 **QC- Sample ID:** 460955-001 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY												
TPH By SW8015 Mod	Parent Sample	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag		
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD			
C6-C12 Gasoline Range Hydrocarbons	<16.0	1070	1000	93	1060	1030	97	3	70-135	35			
C12-C28 Diesel Range Hydrocarbons	34.5	1070	1160	105	1060	1180	108	2	70-135	35			



# **Sample Duplicate Recovery**



Project Name: SUG 4 Inch Lateral (2/18/13) 1RP-02-13-2904

**Work Order #:** 460955

 Lab Batch #:
 911058
 Project ID:

 Date Analyzed:
 04/10/2013 17:05
 Date Prepared:
 04/10/2013
 Analyst:
 WRU

 QC- Sample ID:
 460897-001 D
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: %	SAMPLE / SAMPLE DUPLICATE RECOVERY										
	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag						
Analyte		1-1									
Percent Moisture	16.6	16.9	2	20							

# Xenco Laboratories

The Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

 12600 West I-20 East
 Phone: 432-563-1800

 Odessa, Texas 79765
 Fax: 432-563-1713

Relinquished by:	Relinquished	Relinquished by:	Special							20	C)	0	0	LAB# (lab use only)	ORDER #		(lab use only)							
ned by:	0	ned by Hoshe	Special Instructions:												(#: !(W)	N S	oniv) /	Campion Oigina	Sampler Signature:	Telephone No:	City/State/Zip:	Company Address:	Company Name	Project Manager:
	spra-	ll								EW-2A @ 15'	EW-2 @ 15'	EW-2A @ 3'	EW-2 @ 3'	FIELD CODE		N N		THE STATE OF THE S	hura: NALO	432.520.7720	Midland, TX 79703	ess: 2057 Commerce		er: Becky Haskell
Date	4/10/13		1															1		)	79703	эгсе	Nova Safety and Environmental	
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Received by ELOI	ea p	Received by:								4/9/2013	4/5/2013	4/9/2013	4/5/2013	Date Sampled										
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4/10/13	Date	H//8//3												DW=Drinking Water SL=Sludge		"		16	,		1			!
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	Sa	55론	Sa La	H		<u> </u>								Cations (Ca, Mg, Na, K)			ı			at:	PO #:	Š	ect #	ame
Temperature Upon Receipt:	Sample Hand Delivered by Sampler/Client Re by Courier? UPS	Labels on container(s) Custody seals on container(s) Custody seals on cooler(s)	Laboratory Comments: Sample Containers Intact? VOCs Free of Headspace?										-	Anions (Cl, SO4, Alkalinity)	o	ᅵᆌ			-	<b>M</b>	[			
atur	Samp	on c y sea	Cor ree											SAR / ESP / CEC		TOTAL:	TCLP:	1.		Sta				SUG
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# **XENCO Laboratories**



# Prelogin/Nonconformance Report- Sample Log-In

Client: Southern Union Gas Services- Monahan

Date/ Time Received: 04/10/2013 12:53:00 PM

Temperature Measuring device used :

Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient

Work Order #: 460955

	Sample Receipt Checklist	t Comments
#1 *Temperature of co	oler(s)?	1.5
#2 *Shipping containe	er in good condition?	Yes
#3 *Samples received	I on ice?	Yes
#4 *Custody Seals inta	act on shipping container/ cooler?	Yes
#5 Custody Seals inta	ct on sample bottles?	Yes
#6 *Custody Seals Sig	gned and dated?	Yes
#7 *Chain of Custody	present?	Yes
#8 Sample instruction	s complete on Chain of Custody?	Yes
#9 Any missing/extra	samples?	No
#10 Chain of Custody	signed when relinquished/ received?	Yes
#11 Chain of Custody	agrees with sample label(s)?	Yes
#12 Container label(s)	) legible and intact?	Yes
#13 Sample matrix/ pr	roperties agree with Chain of Custody?	Yes
#14 Samples in prope	er container/ bottle?	Yes
#15 Samples properly	preserved?	Yes
#16 Sample container	r(s) intact?	Yes
#17 Sufficient sample	amount for indicated test(s)?	Yes
#18 All samples receive	ved within hold time?	Yes
#19 Subcontract of sa	imple(s)?	Yes
#20 VOC samples have	ve zero headspace (less than 1/4 inch bubble)?	Yes
#21 <2 for all samples	s preserved with HNO3,HCL, H2SO4?	Yes
#22 >10 for all sample	es preserved with NaAsO2+NaOH, ZnAc+NaOH?	Yes
Must be completed for	or after-hours delivery of samples prior to placin	g in the refrigerator
Analyst:	PH Device/Lot#:	
		_
Checklist	completed by:	Date:
Checklis	t reviewed by:	-

Date:

# **Analytical Report 479905**

# for Regency Gas

Project Manager: Curt Stanley
4" Lateral 2/18/13

27-FEB-14

Collected By: Client





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

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-14-16-TX), Arizona (AZ0765), Florida (E871002), Louisiana (03054) New Jersey (TX007), North Carolina(681), Oklahoma (9218), Pennsylvania (68-03610)

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

Xenco-Lakeland: Florida (E84098)

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

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

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

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

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





27-FEB-14

Project Manager: Curt Stanley

Regency Gas 801 South Loop 464 Monahans, TX 79756

Reference: XENCO Report No(s): 479905

4" Lateral 2/18/13

Project Address: Lea County, NM

#### **Curt Stanley:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 479905. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 479905 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, Hoah

**Kelsey Brooks** 

Project Manager

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

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

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



# **Sample Cross Reference 479905**



# Regency Gas, Monahans, TX

4" Lateral 2/18/13

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
SB-1 @10'	S	02-19-14 10:10	- 10 ft	479905-001
SB-1 @15'	S	02-19-14 10:20	- 15 ft	479905-002
SB-1 @20'	S	02-19-14 10:30	- 20 ft	479905-003
SB-1 @25'	S	02-19-14 10:45	- 25 ft	479905-004
SB-1 @30'	S	02-19-14 11:00	- 30 ft	479905-005
SB-1 @35'	S	02-19-14 11:15	- 35 ft	479905-006
SB-2 @10'	S	02-19-14 11:55	- 10 ft	479905-007
SB-2 @15'	S	02-19-14 12:05	- 15 ft	479905-008
SB-2 @20'	S	02-19-14 12:15	- 20 ft	479905-009
SB-2 @25'	S	02-19-14 12:25	- 25 ft	479905-010
SB-2 @30'	S	02-19-14 12:35	- 30 ft	479905-011
SB-2 @35'	S	02-19-14 12:45	- 35 ft	479905-012
SB-2 @40'	S	02-19-14 12:55	- 40 ft	479905-013
SB-3 @5'	S	02-19-14 13:00	- 5 ft	479905-014
SB-3 @10'	S	02-19-14 13:10	- 10 ft	479905-015
SB-3 @20'	S	02-19-14 13:30	- 20 ft	479905-016
SB-3 @30	S	02-19-14 13:50	- 30 ft	479905-017
SB-3 @35'	S	02-19-14 14:10	- 35 ft	479905-018



## **CASE NARRATIVE**



Client Name: Regency Gas Project Name: 4" Lateral 2/18/13

Project ID: Report Date: 27-FEB-14
Work Order Number(s): 479905
Date Received: 02/24/2014

	Sample receipt non conformances and comments:
-	Sample receipt non conformances and comments per sample:
	None



Regency Gas, Monahans, TX Project Name: 4" Lateral 2/18/13 TNI Lysonatori

**Project Id:** 

Contact: Curt Stanley

Project Location: Lea County, NM

**Date Received in Lab:** Mon Feb-24-14 09:10 am

**Report Date:** 27-FEB-14

**Project Manager:** Kelsey Brooks

								r roject Ma	nager: r	Kelsey Brook	S		
	Lab Id:	479905-0	001	479905-0	002	479905-0	003	479905-0	004	479905-0	005	479905-	006
Analysis Requested	Field Id:	SB-1 @	10'	SB-1 @1	15'	SB-1 @	20'	SB-1 @	25'	SB-1 @3	30'	SB-1 @	35'
Anaiysis Kequesieu	Depth:	10 ft		15 ft		20 ft		25 ft		30 ft		35 ft	
	Matrix:	SOIL		SOIL		SOIL	,	SOIL	,	SOIL		SOIL	_
	Sampled:	Feb-19-14	10:10	Feb-19-14	10:20	Feb-19-14	10:30	Feb-19-14	10:45	Feb-19-14	11:00	Feb-19-14	11:15
BTEX by EPA 8021B	Extracted:	Feb-25-14	14:00	Feb-25-14	14:00	Feb-25-14	14:00	Feb-25-14 14:00		Feb-25-14	14:00	Feb-25-14	14:00
	Analyzed:	Feb-25-14	19:56	Feb-25-14 2	20:12	Feb-25-14	20:28	Feb-25-14	20:44	Feb-25-14	21:00	Feb-25-14	21:16
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		ND	0.00104	ND	0.00104	ND	0.00102	ND	0.00104	ND	0.00104	ND	0.00103
Toluene		ND	0.00209	ND	0.00208	ND	0.00205	ND	0.00207	ND	0.00207	ND	0.00206
Ethylbenzene		ND	0.00104	ND	0.00104	ND	0.00102	ND	0.00104	ND	0.00104	ND	0.00103
m_p-Xylenes		ND	0.00209	ND	0.00208	ND	0.00205	ND	0.00207	ND	0.00207	ND	0.00206
o-Xylene		ND	0.00104	ND	0.00104	ND	0.00102	ND	0.00104	ND	0.00104	ND	0.00103
Total Xylenes		ND	0.00104		0.00104	ND	0.00102	ND	0.00104	ND	0.00104	ND	0.00103
Total BTEX		ND	0.00104	ND 0.00104		ND	0.00102	ND	0.00104	ND 0.00104		ND	0.00103
Inorganic Anions by EPA 300/300.1	Extracted:	Feb-25-14	09:00	Feb-25-14 (	09:00	Feb-25-14	09:00	Feb-25-14	09:00	Feb-25-14	09:00	Feb-25-14	09:00
	Analyzed:	Feb-25-14	13:01	Feb-25-14	13:46	Feb-25-14	14:09	Feb-25-14	14:32	Feb-25-14	14:54	Feb-25-14	15:17
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		1190	42.0	1900	41.7	1840	41.0	596	20.9	127	10.4	68.8	4.13
Percent Moisture	Extracted:												
	Analyzed:	Feb-25-14	10:34	Feb-25-14	10:34	Feb-25-14	10:34	Feb-25-14	10:34	Feb-25-14	10:34	Feb-25-14	10:34
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		4.74	1.00	4.15	1.00	2.51	1.00	4.35	1.00	3.85	1.00	3.13	1.00
TPH By SW8015 Mod	Extracted:	Feb-24-14	16:00	Feb-24-14	16:00	Feb-24-14	16:00	Feb-24-14	16:00	Feb-24-14	16:00	Feb-24-14	16:00
	Analyzed:	Feb-26-14	10:58	Feb-26-14	12:17	Feb-26-14	12:44	Feb-26-14	13:11	Feb-26-14	13:37	Feb-26-14	14:05
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
C6-C12 Gasoline Range Hydrocarbons		ND	15.7	ND	15.6	ND	15.4	ND	15.7	ND	15.6	ND	15.5
C12-C28 Diesel Range Hydrocarbons		ND	15.7	ND	15.6	ND	15.4	ND	15.7	ND	15.6	ND	15.5
C28-C35 Oil Range Hydrocarbons		ND	15.7	ND	15.6	ND	15.4	ND	15.7	ND	15.6	ND	15.5
Total TPH		ND	15.7	ND	15.6	ND	15.4	ND	15.7	ND	15.6	ND	15.5

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

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

Kelsey Brooks Project Manager



Regency Gas, Monahans, TX Project Name: 4" Lateral 2/18/13 ENP ACCREDING

**Project Id:** 

Contact: Curt Stanley

Project Location: Lea County, NM

**Date Received in Lab:** Mon Feb-24-14 09:10 am

Report Date: 27-FEB-14

Project Manager: Kelsey Brooks

								Project Ma	nager:	Kelsey Brook	s		
	Lab Id:	479905-0	007	479905-0	08	479905-0	009	479905-	010	479905-0	)11	479905-	012
Analysis Requested	Field Id:	SB-2 @	10'	SB-2 @ 1	.5'	SB-2 @	20'	SB-2 @	25'	SB-2 @3	30'	SB-2 @	35'
Anaiysis Requesieu	Depth:	10 ft		15 ft		20 ft		25 ft		30 ft		35 ft	
	Matrix:	SOIL	,	SOIL		SOIL	,	SOIL	,	SOIL		SOII	_
	Sampled:	Feb-19-14	11:55	Feb-19-14	12:05	Feb-19-14	12:15	Feb-19-14 12:25		Feb-19-14 12:35		Feb-19-14	12:45
BTEX by EPA 8021B	Extracted:	Feb-25-14	14:00	Feb-25-14	Feb-25-14 14:00		Feb-25-14 14:00		14:00	Feb-25-14	14:00	Feb-25-14	14:00
	Analyzed:	Feb-25-14 21:31		Feb-25-14 2	21:47	Feb-25-14 22:03		Feb-25-14	22:19	Feb-25-14	23:06	Feb-25-14	23:22
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		ND	0.00105	ND	0.00103	ND	0.00108	ND	0.00104	ND	0.00105	ND	0.00110
Toluene		ND	0.00210	ND	0.00207	ND	0.00216	ND	0.00207	ND	0.00211	ND	0.00220
Ethylbenzene		ND	0.00105	ND	0.00103	ND	0.00108	ND	0.00104	ND	0.00105	ND	0.00110
m_p-Xylenes		ND	0.00210	ND	0.00207	ND		ND	0.00207	ND	0.00211	ND	0.00220
o-Xylene		ND	0.00105	ND	0.00103	ND	0.00108	ND	0.00104	ND	0.00105	ND	0.00110
Total Xylenes		ND	0.00105	ND	0.00103	ND	0.00108	ND	0.00104	ND	0.00105	ND	0.00110
Total BTEX		ND	0.00105	ND	0.00103	ND	0.00108	ND	0.00104	ND	0.00105	ND	0.00110
Inorganic Anions by EPA 300/300.1	Extracted:	Feb-25-14	09:00	Feb-25-14 (	9:00	Feb-25-14	09:00	Feb-25-14	09:00	Feb-25-14	09:00	Feb-25-14	09:00
	Analyzed:	Feb-25-14	16:25	Feb-25-14	16:48	Feb-25-14	17:10	Feb-25-14	17:33	Feb-25-14	17:56	Feb-25-14	18:41
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		4740	105	1720	41.5	824	21.8	840	20.7	268	10.6	420	11.0
Percent Moisture	Extracted:												
	Analyzed:	Feb-25-14	10:34	Feb-25-14	10:34	Feb-25-14	10:34	Feb-25-14	10:34	Feb-25-14	10:34	Feb-25-14	10:34
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		4.81	1.00	3.71	1.00	8.25	1.00	3.42	1.00	5.25	1.00	9.09	1.00
TPH By SW8015 Mod	Extracted:	Feb-24-14	16:00	Feb-24-14	16:00	Feb-24-14	16:00	Feb-24-14	16:00	Feb-24-14	16:00	Feb-24-14	16:00
	Analyzed:	Feb-26-14	14:34	Feb-26-14	14:59	Feb-26-14	15:24	Feb-26-14	15:49	Feb-26-14	17:11	Feb-27-14	09:26
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
C6-C12 Gasoline Range Hydrocarbons		ND	15.7	ND	15.6	ND	16.3	ND	15.5	ND	15.8	ND	16.5
C12-C28 Diesel Range Hydrocarbons		ND	15.7	ND	15.6	ND	16.3	ND	15.5	ND	15.8	ND	16.5
C28-C35 Oil Range Hydrocarbons		ND	15.7	ND	15.6	ND	16.3	ND	15.5	ND	15.8	ND ND	16.5
Total TPH		ND	15.7	ND	15.6	ND	16.3	ND	15.5	ND	ND 15.8		16.5

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

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Kelsey Brooks Project Manager



Regency Gas, Monahans, TX Project Name: 4" Lateral 2/18/13



**Project Id:** 

Contact: Curt Stanley

Project Location: Lea County, NM

**Date Received in Lab:** Mon Feb-24-14 09:10 am

**Report Date:** 27-FEB-14

**Project Manager:** Kelsey Brooks

								I Toject Ma	nager. 1	xeisey brook	3		
	Lab Id:	479905-0	013	479905-0	14	479905-0	)15	479905-0	)16	479905-0	)17	479905-	018
Analysis Basyastad	Field Id:	SB-2 @4	10'	SB-3 @5	5'	SB-3 @	10'	SB-3 @	20'	SB-3 @:	30	SB-3 @	35'
Analysis Requested	Depth:	40 ft		5 ft		10 ft		20 ft		30 ft		35 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-19-14	12:55	Feb-19-14 1	3:00	Feb-19-14	13:10	Feb-19-14	13:30	Feb-19-14	13:50	Feb-19-14	14:10
BTEX by EPA 8021B	Extracted:	Feb-25-14	14:00	Feb-25-14 1	4:00	Feb-25-14	14:00	Feb-25-14	14:00	Feb-25-14	14:00	Feb-25-14	14:00
	Analyzed:	Feb-25-14	23:37	Feb-25-14 2	23:53	Feb-26-14	00:09	Feb-26-14	00:25	Feb-26-14	00:41	Feb-26-14	00:57
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		ND	0.00121	ND	0.00104	ND	0.00104	ND	0.00104	ND	0.00102	ND	0.00113
Toluene		ND	0.00243	ND	0.00208	ND	0.00208	ND	0.00208	ND	0.00204	ND	0.00225
Ethylbenzene		ND	0.00121	ND	0.00104	ND	0.00104	ND	0.00104	ND	0.00102	ND	0.00113
m_p-Xylenes		ND	0.00243	ND	0.00208	ND	0.00208	ND	0.00208	ND	0.00204	ND	0.00225
o-Xylene		ND	0.00121	ND	0.00104	ND	0.00104	ND	0.00104	ND	0.00102	ND	0.00113
Total Xylenes		ND	0.00121	ND	0.00104	ND	0.00104	ND	0.00104	ND	0.00102	ND	0.00113
Total BTEX		ND	0.00121	ND	0.00104	ND	0.00104	ND	0.00104	ND	0.00102	ND	0.00113
Inorganic Anions by EPA 300/300.1	Extracted:	Feb-25-14	09:00	Feb-25-14 09:00		Feb-25-14	09:00	Feb-25-14	09:00	Feb-25-14	09:00	Feb-25-14	09:00
	Analyzed:	Feb-25-14	19:04	Feb-25-14 1	9:26	Feb-25-14	19:49	Feb-25-14	20:57	Feb-25-14	21:19	Feb-25-14	21:42
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		85.6	4.87	25.0	2.09	152	20.9	204	10.4	14.6	2.05	52.6	4.53
Percent Moisture	Extracted:												
	Analyzed:	Feb-25-14	10:34	Feb-25-14 1	0:34	Feb-25-14	10:34	Feb-25-14	10:34	Feb-25-14	10:34	Feb-25-14	10:34
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		17.8	1.00	4.33	1.00	4.10	1.00	4.28	1.00	2.55	1.00	11.6	1.00
TPH By SW8015 Mod	Extracted:	Feb-24-14	16:00	Feb-24-14 1	6:00	Feb-24-14	16:00	Feb-24-14	16:00	Feb-24-14	16:00	Feb-24-14	16:00
	Analyzed:	Feb-27-14	09:50	Feb-26-14 1	8:30	Feb-26-14	18:55	Feb-26-14	19:21	Feb-26-14	19:46	Feb-27-14	10:14
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
C6-C12 Gasoline Range Hydrocarbons		ND	18.2	ND	15.7	ND	15.6	ND	15.7	ND	15.4	ND	16.9
C12-C28 Diesel Range Hydrocarbons		ND	18.2	ND	15.7	ND	15.6	ND	15.7	7 ND 15.4		ND	16.9
C28-C35 Oil Range Hydrocarbons		ND	18.2	ND	15.7	ND	15.6	ND	15.7	ND	15.4	ND	16.9
Total TPH		ND	18.2	ND	15.7	ND	15.6	ND	15.7	ND	15.4	ND	16.9

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Kelsey Brooks Project Manager



# **Flagging Criteria**



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

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

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

**DL** Method Detection Limit

NC Non-Calculable

- + NELAC certification not offered for this compound.
- \* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
2505 North Falkenburg Rd, Tampa, FL 33619	(813) 620-2000	(813) 620-2033
12600 West I-20 East, Odessa, TX 79765	(432) 563-1800	(432) 563-1713
6017 Financial Drive, Norcross, GA 30071	(770) 449-8800	(770) 449-5477
3725 E. Atlanta Ave, Phoenix, AZ 85040	(602) 437-0330	



Project Name: 4" Lateral 2/18/13

 Work Orders: 479905,
 Project ID:

 Lab Batch #: 934876
 Sample: 479905-001 / SMP
 Batch: 1 Matrix: Soil

Units: mg/kg	<b>Date Analyzed:</b> 02/25/14 19:56	SURROGATE RECOVERY STUDY										
BTEX by	EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags						
An	alytes			[D]								
1,4-Difluorobenzene		0.0274	0.0300	91	80-120							
4-Bromofluorobenzene		0.0258	0.0300	86	80-120							

**Units:** mg/kg **Date Analyzed:** 02/25/14 20:12 SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Limits Flags Amount Recovery [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0281 0.0300 94 80-120 4-Bromofluorobenzene 0.0258 0.0300 80-120 86

Units: mg/kg Date Analyzed: 02/25/14 20:28 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0273	0.0300	91	80-120	
4-Bromofluorobenzene	0.0267	0.0300	89	80-120	

Units:	mg/kg	<b>Date Analyzed:</b> 02/25/14 20:44	SU	RROGATE RI	ECOVERY S	STUDY	
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluorobenzene			0.0274	0.0300	91	80-120	
4-Bromoflu	uorobenzene		0.0258	0.0300	86	80-120	

Lab Batch #:934876Sample:479905-005 / SMPBatch:1Matrix:Soil

Units:	mg/kg	<b>Date Analyzed:</b> 02/25/14 21:00	SURROGATE RECOVERY STUDY					
	ВТЕ	X by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1,4-Difluoro	benzene	Amary to	0.0275	0.0300	92	80-120		
4-Bromofluo	orobenzene		0.0262	0.0300	87	80-120		

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: 4" Lateral 2/18/13

 Work Orders: 479905,
 Project ID:

 Lab Batch #: 934876
 Sample: 479905-006 / SMP
 Batch: 1 Matrix: Soil

Units: mg/k	<b>Date Analyzed:</b> 02/25/14 21:16	SU	RROGATE RI	ECOVERY S	STUDY	
	BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1,4-Difluorobenzene		0.0276	0.0300	92	80-120	
4-Bromofluorobenze	ne	0.0264	0.0300	88	80-120	

**Units:** mg/kg Date Analyzed: 02/25/14 21:31 SURROGATE RECOVERY STUDY BTEX by EPA 8021B **Amount** True Control Found Limits Flags Amount Recovery [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0280 0.0300 93 80-120 4-Bromofluorobenzene 0.0257 0.0300 80-120 86

Units: mg/kg Date Analyzed: 02/25/14 21:47 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	0.0263	0.0300	88	80-120	

Units: mg/kg Date Analyzed: 02/25/14 2	2:03 SU	RROGATE R	ECOVERY S	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0276	0.0300	92	80-120	
4-Bromofluorobenzene	0.0265	0.0300	88	80-120	

Lab Batch #: 934876 Sample: 479905-010 / SMP Batch: 1 Matrix: Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 02/25/14 22:19	SURROGATE RECOVERY STUDY					
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes			[D]			
1,4-Difluorobenzene	0.0272	0.0300	91	80-120		
4-Bromofluorobenzene	0.0259	0.0300	86	80-120		

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: 4" Lateral 2/18/13

Work Orders: 479905, **Project ID: Lab Batch #:** 934876 Matrix: Soil Sample: 479905-011 / SMP Batch:

Units:	Inits: mg/kg Date Analyzed: 02/25/14 23:06 SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluorobenzene			0.0277	0.0300	92	80-120	
4-Bromofluorobenzene			0.0255	0.0300	85	80-120	

Lab Batch #: 934876 Sample: 479905-012 / SMP Batch: 1 Matrix: Soil

**Units:** mg/kg **Date Analyzed:** 02/25/14 23:22 SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Limits Amount Recovery Flags [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0280 0.0300 93 80-120 4-Bromofluorobenzene 0.0261 0.0300 80-120 87

Lab Batch #: 934876 Sample: 479905-013 / SMP Matrix: Soil Batch:

**Units:** mg/kg Date Analyzed: 02/25/14 23:37 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0280	0.0300	93	80-120	
4-Bromofluorobenzene	0.0256	0.0300	85	80-120	

Sample: 479905-014 / SMP **Lab Batch #:** 934876 Batch: Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 02/25/14 23:53	SURROGATE RECOVERY STUDY					
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
		Analytes		1				
1,4-Difluor	robenzene		0.0279	0.0300	93	80-120		
4-Bromoflu	uorobenzene		0.0260	0.0300	87	80-120		

Lab Batch #: 934876 **Sample:** 479905-015 / SMP Batch: Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 02/26/14 00:09	SURROGATE RECOVERY STUDY					
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1,4-Difluor	robenzene		0.0275	0.0300	92	80-120		
4-Bromoflu	ıorobenzene		0.0260	0.0300	87	80-120		

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: 4" Lateral 2/18/13

 Work Orders: 479905,
 Project ID:

 Lab Batch #: 934876
 Sample: 479905-016 / SMP
 Batch: 1 Matrix: Soil

Units: mg	g/kg <b>Date Analyzed:</b> 02/26/14 00:25	SU	RROGATE RI	ECOVERY S	STUDY	
	BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1,4-Difluorobenze	ne	0.0276	0.0300	92	80-120	
4-Bromofluoroben	zene	0.0258	0.0300	86	80-120	

Lab Batch #: 934876Sample: 479905-017 / SMPBatch: 1Matrix: Soil

**Units:** mg/kg Date Analyzed: 02/26/14 00:41 SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Limits Flags Amount Recovery [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0278 0.0300 93 80-120 4-Bromofluorobenzene 0.0263 0.0300 80-120 88

Units: mg/kg Date Analyzed: 02/26/14 00:57 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0278	0.0300	93	80-120	
4-Bromofluorobenzene	0.0265	0.0300	88	80-120	

**Lab Batch #:** 934993 **Sample:** 479905-001 / SMP **Batch:** 1 **Matrix:** Soil

Units:	mg/kg	<b>Date Analyzed:</b> 02/26/14 10:58	SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod  Analytes			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1-Chlorooc	ctane		108	99.7	108	70-135		
o-Terpheny	yl		52.4	49.9	105	70-135		

Units:	mg/kg	<b>Date Analyzed:</b> 02/26/14 12:17	SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod  Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooct	tane		75.7	99.6	76	70-135		
o-Terpheny	1		36.9	49.8	74	70-135		

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: 4" Lateral 2/18/13

 Work Orders: 479905,
 Project ID:

 Lab Batch #: 934993
 Sample: 479905-003 / SMP
 Batch: 1 Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 02/26/14 12:44	SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod			Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes					[D]			
1-Chlorooc	ctane		81.8	99.9	82	70-135		
o-Terpheny	yl		39.0	50.0	78	70-135		

**Units:** mg/kg Date Analyzed: 02/26/14 13:11 SURROGATE RECOVERY STUDY **Amount** True Control TPH By SW8015 Mod Found Limits Flags Amount Recovery [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 87.4 99.9 87 70-135 o-Terphenyl 70-135 42.6 50.0 85

Units: mg/kg Date Analyzed: 02/26/14 13:37 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	99.8	88	70-135	
o-Terphenyl	42.6	49.9	85	70-135	

Units:	mg/kg	<b>Date Analyzed:</b> 02/26/14 14:05	SURROGATE RECOVERY STUDY						
TPH By SW8015 Mod  Analytes			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooc	ctane	•	82.5	100	83	70-135			
o-Terpheny	yl		39.8	50.0	80	70-135			

<b>Units:</b>	mg/kg	<b>Date Analyzed:</b> 02/26/14 14:34	SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod  Analytes			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1-Chlorooc	tane		78.4	99.8	79	70-135		
o-Terpheny	1		37.4	49.9	75	70-135		

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: 4" Lateral 2/18/13

 Work Orders: 479905,
 Project ID:

 Lab Batch #: 934993
 Sample: 479905-008 / SMP
 Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 02/26/14 14:59 SURROGATE RECOVERY STUDY							
TPH By SW8015 Mod  Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
		Analytes					
1-Chlorooct	ane		83.0	99.9	83	70-135	
o-Terphenyl	1		39.3	50.0	79	70-135	

Lab Batch #: 934993Sample: 479905-009 / SMPBatch: 1Matrix: Soil

**Date Analyzed:** 02/26/14 15:24 **Units:** mg/kg SURROGATE RECOVERY STUDY **Amount** True Control TPH By SW8015 Mod Found Limits Flags Amount Recovery [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 97.3 99.6 98 70-135 o-Terphenyl 46.4 49.8 70-135 93

Units: mg/kg Date Analyzed: 02/26/14 15:49 SURROGATE RECOVERY STUDY

TPH By SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	93.9	99.7	94	70-135	
o-Terphenyl	45.6	49.9	91	70-135	

Lab Batch #: 934993Sample: 479905-011 / SMPBatch: 1Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 02/26/14 17:11	SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod  Analytes			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1-Chlorooct	ane		79.0	99.7	79	70-135		
o-Terpheny	1		36.3	49.9	73	70-135		

<b>Units:</b>	mg/kg	<b>Date Analyzed:</b> 02/26/14 18:30	SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod  Analytes			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1-Chlorooc	ctane		88.7	99.9	89	70-135		
o-Terpheny	yl		40.9	50.0	82	70-135		

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: 4" Lateral 2/18/13

 Work Orders: 479905,
 Project ID:

 Lab Batch #: 934993
 Sample: 479905-015 / SMP
 Batch: 1 Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 02/26/14 18:55	SURROGATE RECOVERY STUDY							
TPH By SW8015 Mod  Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
		Analytes			[12]					
1-Chlorooct	ane		82.3	99.8	82	70-135				
o-Terphenyl			38.1	49.9	76	70-135				

**Units:** mg/kg Date Analyzed: 02/26/14 19:21 SURROGATE RECOVERY STUDY **Amount** True Control TPH By SW8015 Mod Found Limits Flags Amount Recovery [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 79.0 99.9 79 70-135 o-Terphenyl 37.5 75 70-135 50.0

Units: mg/kg Date Analyzed: 02/26/14 19:46 SURROGATE RECOVERY STUDY

TPH By SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	83.5	99.9	84	70-135	
o-Terphenyl	39.2	50.0	78	70-135	

Units:	TPH By SW8015 Mod  Analytes  hlorooctane	SURROGATE RECOVERY STUDY							
		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[D]				
1-Chlorooc	tane		98.5	99.8	99	70-135			
o-Terpheny	1		47.7	49.9	96	70-135			

Units:	mg/kg	<b>Date Analyzed:</b> 02/27/14 09:50	SURROGATE RECOVERY STUDY							
	ТРН	By SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooc	tane		95.1	99.6	95	70-135				
o-Terpheny	<i>i</i> 1		47.5	49.8	95	70-135				

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: 4" Lateral 2/18/13

 Work Orders: 479905,
 Project ID:

 Lab Batch #: 934993
 Sample: 479905-018 / SMP
 Batch: 1 Matrix: Soil

Units:	TPH By SW8015 Mod  Analytes	SURROGATE RECOVERY STUDY							
	ТРН	•	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1-Chloroocta	ane		93.2	99.8	93	70-135			
o-Terphenyl			44.1	49.9	88	70-135			

Lab Batch #: 934876 Sample: 651606-1-BLK / BLK Batch: 1 Matrix: Solid

**Units:** mg/kg Date Analyzed: 02/25/14 18:20 SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Flags Found Limits Amount Recovery [A] [B] %R %R **Analytes** [D] 1,4-Difluorobenzene 0.0279 0.0300 93 80-120 4-Bromofluorobenzene 0.0252 0.0300 80-120 84

Lab Batch #: 934993 Sample: 651498-1-BLK / BLK Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 02/26/14 09:42 SURROGATE RECOVERY STUDY

TPH By SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.7	100	99	70-135	
o-Terphenyl	48.5	50.0	97	70-135	

Lab Batch #: 934876 Sample: 651606-1-BKS / BKS Batch: 1 Matrix: Solid

**Units:** Date Analyzed: 02/25/14 18:36 mg/kg SURROGATE RECOVERY STUDY Amount True Control BTEX by EPA 8021B Found Amount Recovery Limits **Flags** [B] %R %R [A] [D] **Analytes** 1,4-Difluorobenzene 0.0305 0.0300 102 80-120 4-Bromofluorobenzene 0.0293 0.0300 98 80-120

Lab Batch #: 934993 Sample: 651498-1-BKS / BKS Batch: 1 Matrix: Solid

Units:	mg/kg	<b>Date Analyzed:</b> 02/26/14 10:07	SURROGATE RECOVERY STUDY							
	TPH	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[D]					
1-Chloroocta	ane		104	100	104	70-135				
o-Terphenyl			58.9	50.0	118	70-135				

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: 4" Lateral 2/18/13

Work Orders: 479905,
Lab Batch #: 934876
Sample: 651606-1-BSD / BSD
Batch: 1 Matrix: Solid

Units: Date Analyzed: 02/25/14 18:52 mg/kg SURROGATE RECOVERY STUDY True Control Amount BTEX by EPA 8021B **Found** Amount Recovery Limits Flags [A] [B] %R %R [D]**Analytes** 1,4-Difluorobenzene 0.0307 0.0300 102 80-120 4-Bromofluorobenzene 0.0301 0.0300 100 80-120

Lab Batch #: 934993Sample: 651498-1-BSD / BSDBatch: 1Matrix: Solid

**Units:** mg/kg **Date Analyzed:** 02/26/14 10:32 SURROGATE RECOVERY STUDY **Amount** True Control TPH By SW8015 Mod Found Limits Flags Amount Recovery [A] [B] %R %R **Analytes** [D] 1-Chlorooctane 111 100 111 70-135 o-Terphenyl 64.0 50.0 128 70-135

Units: mg/kg Date Analyzed: 02/25/14 19:08 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0303	0.0300	101	80-120	
4-Bromofluorobenzene	0.0301	0.0300	100	80-120	

Units:	mg/kg	<b>Date Analyzed:</b> 02/26/14 11:24	SURROGATE RECOVERY STUDY								
	ТРН	By SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
1-Chlorooc	etane		120	99.8	120	70-135					
o-Terpheny	yl		63.6	49.9	127	70-135					

 Lab Batch #: 934876
 Sample: 479905-001 SD / MSD
 Batch: 1
 Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 02/25/14 19:24	SURROGATE RECOVERY STUDY							
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[D]					
1,4-Difluoro	benzene		0.0306	0.0300	102	80-120				
4-Bromofluo	orobenzene		0.0303	0.0300	101	80-120				

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: 4" Lateral 2/18/13

 Work Orders: 479905,
 Project ID:

 Lab Batch #: 934993
 Sample: 479905-001 SD / MSD
 Batch:
 1
 Matrix: Soil

**Units: Date Analyzed:** 02/26/14 11:50 mg/kg SURROGATE RECOVERY STUDY Amount True Control TPH By SW8015 Mod Recovery Found Amount Limits Flags [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 104 99.8 104 70-135 o-Terphenyl 58.2 49.9 117 70-135

Surrogate Recovery [D] = 100 \* A / B

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



### **BS / BSD Recoveries**



Project Name: 4" Lateral 2/18/13

Work Order #: 479905 Project ID:

Analyst: ARM Date Prepared: 02/25/2014 Date Analyzed: 02/25/2014

Lab Batch ID: 934876Sample: 651606-1-BKSBatch #: 1Matrix: Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[D]	[0]	[D]	[IL]	Kesuit [F]	[0]				
Benzene	< 0.00100	0.100	0.104	104	0.100	0.105	105	1	70-130	35	
Toluene	< 0.00200	0.100	0.107	107	0.100	0.108	108	1	70-130	35	
Ethylbenzene	< 0.00100	0.100	0.107	107	0.100	0.108	108	1	71-129	35	
m_p-Xylenes	< 0.00200	0.200	0.212	106	0.200	0.214	107	1	70-135	35	
o-Xylene	< 0.00100	0.100	0.108	108	0.100	0.110	110	2	71-133	35	

**Analyst:** AMB **Date Prepared:** 02/25/2014 **Date Analyzed:** 02/25/2014

**Lab Batch ID:** 935041 **Sample:** 651664-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank	Spike	Blank	Blank	Spike	Blank	Blk. Spk	DDD	Control	Control	
Analytes	Sample Result [A]	Added [B]	Spike Result [C]	Spike %R [D]	Added [E]	Spike Duplicate Result [F]	Dup. %R [G]	RPD %	Limits %R	Limits %RPD	Flag
Chloride	<2.00	50.0	46.9	94	50.0	47.2	94	1	80-120	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



## **BS / BSD Recoveries**



Project Name: 4" Lateral 2/18/13

Work Order #: 479905 Project ID:

Analyst: ARM Date Prepared: 02/24/2014 Date Analyzed: 02/26/2014

Lab Batch ID: 934993 Sample: 651498-1-BKS Batch #: 1 Matrix: Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Gasoline Range Hydrocarbons	<15.0	1000	907	91	1000	988	99	9	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.0	1000	925	93	1000	1040	104	12	70-135	35	

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



### Form 3 - MS Recoveries

Project Name: 4" Lateral 2/18/13



Work Order #: 479905

Lab Batch #: 935041 Project ID:

 Date Analyzed:
 02/25/2014
 Date Prepared:
 02/25/2014
 Analyst:
 AMB

 QC- Sample ID:
 479905-001 S
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: mg/kg

Reporting Units. mg/kg	MATI	RIX / MA	TRIX SPIKE	RECO	VERY STU	DY
Inorganic Anions by EPA 300  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	1190	1050	2380	113	80-120	

**Lab Batch #:** 935041

 Date Analyzed:
 02/25/2014
 Date Prepared:
 02/25/2014
 Analyst:
 AMB

 QC- Sample ID:
 479905-011 S
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: mg/kg

keporting Units: mg/kg	MATI	RIX / MA	TRIX SPIKE	RECO	VERY STU	DY
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes	[A]	[B]				
Chloride	268	264	553	108	80-120	

Matrix Spike Percent Recovery [D] = 100\*(C-A)/BRelative 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: 4" Lateral 2/18/13

Work Order #: 479905 Project ID:

**Lab Batch ID:** 934876 **QC- Sample ID:** 479905-001 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 02/25/2014 **Date Prepared:** 02/25/2014 **Analyst:** ARM

Reporting Units: mg/kg MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	< 0.00105	0.105	0.102	97	0.104	0.101	97	1	70-130	35	
Toluene	< 0.00209	0.105	0.105	100	0.104	0.103	99	2	70-130	35	
Ethylbenzene	< 0.00105	0.105	0.105	100	0.104	0.103	99	2	71-129	35	
m_p-Xylenes	<0.00209	0.209	0.208	100	0.209	0.204	98	2	70-135	35	
o-Xylene	< 0.00105	0.105	0.105	100	0.104	0.104	100	1	71-133	35	

**Lab Batch ID:** 934993 **QC- Sample ID:** 479905-001 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Gasoline Range Hydrocarbons	<15.7	1050	1020	97	1050	949	90	7	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.7	1050	1060	101	1050	1010	96	5	70-135	35	



# **Sample Duplicate Recovery**



Project Name: 4" Lateral 2/18/13

**Work Order #:** 479905

 Lab Batch #:
 934733
 Project ID:

 Date Analyzed:
 02/25/2014 10:34
 Date Prepared:
 02/25/2014
 Analyst:
 WRU

 QC- Sample ID:
 479816-004 D
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: %	SAMPLE	SAMPLE	DUPLIC	ATE REC	OVERY
Percent Moisture	Parent Sample Result [A]	Duplicate Result	RPD	Control Limits %RPD	Flag
Analyte		[B]			
Percent Moisture	2.65	2.70	2	20	

**Lab Batch #:** 934733

 Date Analyzed:
 02/25/2014 10:34
 Date Prepared:
 02/25/2014
 Analyst:
 WRU

 QC- Sample ID:
 479905-010 D
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: %	SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
Percent Moisture  Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
1 22342 J V V					
Percent Moisture	3.42	3.42	0	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

The Environmental Lab of Texas

12600 West I-20 East CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

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

	Odessa, Texas 79765		Fax: 432-563-1713	
Project Manager:	Curt Stanley	Project Name:	Regency	-
Company Name	Nova Safety and Environmental	Project #:	4" Lateral 2/18/13	

d Environmental			Project #:		4" Lateral 2/18/13	ω	
2			Project Loc:		Lea County, NM		
03			PO #:				0
	Fax No:	Fax No: 432.520.7701	Report Format: Standard	Standard	TRRP	NPDES	al 1.00
ALC.	e-mail:	crystal.calloway@regencygas.com	gencygas.com				Fin

crystal.calloway@regencygas.com cstanley@novatraining.cc

rachel.johnson@regencygas.com

ORDER #: (lab use only)

479905

Sampler Signature:

Telephone No:

32.520.7720

City/State/Zip:

Midland, TX 797

Company Address:

2057 Commerce

LAB # (lab use only)

Beginning Depth

**Ending Depth** 

Date Sampled

Time Sampled

Field Filtered Total #. of Containers

Ice

HNO<sub>3</sub>

H<sub>2</sub>SO<sub>4</sub>

NaOH Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>

None

TPH:

Soil

Other (Specify) DW=Drinking Water SL=Sludge

418.1

SAR / ESP / CEC

Chloride E300

Volatiles Semivolatiles

RCI N.O.R.M.

TX 1005

Cations (Ca, Mg, Na, K)

Anions (CI, SO4, Alkalinity)

Metals: As Ag Ba Cd Cr Pb Hg Se

BTEX 8021B/5030 or BTEX 8260

RUSH TAT (Pre-Schedule) 24, 48, 72 hrs

GW = Groundwater S=Soil/Solid

8015M

TX 1006

8015B

TOTAL: TCLP:

Analyze For:

	-
2	_
	~

Pac	ie i	24	of	26

Standard TAT

Relinquished by:

-24-14

305

Received by ELOT:

6/105

h-n2-2

4310

by Sampler/Client Rep. ? by Courier? UPS

Lone Star റ്

Ime

Temperature Upon Receipt:

2-21-14 Date

1135

Labels on container(s)
Custody seals on container(s)
Custody seals on cooler(s) Sample Hand Delivered

Sample Containers Intact? VOCs Free of Headspace?

Laboratory Comments:

× × × × × ×

> × × ×

Time

Ime

Received by:

Ime

Received by:

Special Instructions:

Bill to Regency

SB-2 @ 25 SB-2 @ 20' SB-2 @ 15' SB-2 @ 10

2/19/2014 2/19/2014 2/19/2014 2/19/2014 2/19/2014

1225

Soil Soil

× ×

1215 1205

× × SB-1 SB-1 SB-1

1 @ 35' @ 30' SB-1 @ 15' SB-1 @ 10 FIELD CODE

SB-1 @ 20

2/19/2014 2/19/2014 2/19/2014

× ×

1020

1010

2/19/2014 2/19/2014

100

× ×

1045 1030

1155

× ×

Soil

 $\times$  $\times$  $\times$ ×

Soil Soil

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> > × × × × × ×

Soil Soil Soil

×

Soil

(8)

25

# Xenco Laboratories

The Environmental Lab of Texas

12600 West I-20 East CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Odessa, Texas 79765

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

Project Name: Project Loc: Project #: PO #: 4" Lateral 2/18/13 ea County, NM Regency

432.520.7701 Report Format: ☐ Standard

rachel.johnson@regencygas.com crystal.calloway@regencygas.com

TCLP:

Analyze

For:

(lab use only) ORDER #:

47990S

Sampler Signature:

Telephone No:

432.520.7720

Fax No:

e-mail:

City/State/Zip:

Midland, TX 79703

Company Address: 2057 Commerce

Company Name

Nova Safety and Environmental

Project Manager:

Camille Bryant

LAB # (lab use only)

FIELD CODE

Beginning Depth

**Ending Depth** 

Date Sampled

Time Sampled

8015B

Field Filtered Total #. of Containers × × × × Ice HNO<sub>3</sub> HCI H<sub>2</sub>SO<sub>4</sub> NaOH Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> None Other (Specify) DW=Drinking Water SL=Sludge Soil Soil Soil Soil Soil Soil GW = Groundwater S=Soil/Solid NP=Non-Potable × × × × TPH: 418.1 8015M TX 1005 TPH: TX 1006 Cations (Ca, Mg, Na, K) Anions (CI, SO4, Alkalinity) TOTAL

The Received by:	Date	Time	Laboratory Comments: Sample Containers Intact? VOCs Free of Headspace? Labels on container(s)
Clerk			Laboratory Comments: Sample Containers Intact?
1			VOCs Free of Headspace?
	Date		Labels on container(s)
35 Mother Ste	2-21-14	1775	Custody seals on container(s)
ne Received by:	Date	Time	Cample Hard Dall cooler(a)
			Calliple Hally Delivered
	}		0

Relinquished by:

crec

14-K

Received by ELOT:

50/100

つっていってん

7-24-14

3:10

by Sampler/Client Rep. ? by Courier? UPS

ZZXXZZ

Date

Ime

Temperature Upon Receipt:

7

700

Special Instructions:

SB-3 @ 35 SB-3 @ 30'

2/19/2014 2/19/2014 2/19/2014 2/19/2014 2/19/2014 2/19/2014 2/19/2014 2/19/2014

1410 1350

Soil Soil

> ×  $\times$ ×  $\times$ × × ×

 $\times$ × ×

1330 1310

SB-3 @ 20' SB-3 @ 10 SB-2 @ 40' SB-2 @ 35 SB-2 @ 30'

> 1245 1235

1255 1300

SB-3 @ 5'

× RUSH TAT (Pre-Schedule) 24, 48, 72 hrs Standard TAT

Metals: As Ag Ba Cd Cr Pb Hg Se

BTEX 8021B/5030 or BTEX 8260

Page 25 of 26

SAR / ESP / CEC

Volatiles

RCI N.O.R.M

 $\times$  $\times$ 

×

Semivolatiles

Final 1.000

☐ TRRP

NPDES



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



Client: Regency Gas

Date/ Time Received: 02/24/2014 09:10:00 AM

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Work Order #: 479905

**Temperature Measuring device used:** 

	Sample Receipt Chec	klist Comments
#1 *Temperature of cod	oler(s)?	
#2 *Shipping container	in good condition?	Yes
\$3 *Samples received of	on ice?	Yes
4 *Custody Seals inta	act on shipping container/ cooler?	N/A
#5 Custody Seals intac	ct on sample bottles?	N/A
#6 *Custody Seals Sigr	ned and dated?	N/A
<sup>‡</sup> 7 *Chain of Custody p	present?	Yes
8 Sample instructions	s complete on Chain of Custody?	Yes
#9 Any missing/extra sa	amples?	No
#10 Chain of Custody s	signed when relinquished/ received?	Yes
#11 Chain of Custody a	agrees with sample label(s)?	Yes
#12 Container label(s)	legible and intact?	Yes
#13 Sample matrix/ pro	operties agree with Chain of Custody?	Yes
#14 Samples in proper	container/ bottle?	Yes
#15 Samples properly រុ	preserved?	Yes
#16 Sample container(	s) intact?	Yes
#17 Sufficient sample a	amount for indicated test(s)?	Yes
#18 All samples receive	ed within hold time?	Yes
#19 Subcontract of san	nple(s)?	Yes
#20 VOC samples have	e zero headspace (less than 1/4 inch bubble)?	N/A
#21 <2 for all samples	preserved with HNO3,HCL, H2SO4?	N/A
#22 >10 for all samples	s preserved with NaAsO2+NaOH, ZnAc+NaOH	? <b>N/A</b>
#21 <2 for all samples	e zero headspace (less than 1/4 inch bubble)? preserved with HNO3,HCL, H2SO4?	N/A N/A
* Must be completed fo	or after-hours delivery of samples prior to pl	acing in the refrigerator
* Must be completed for Analyst:	or after-hours delivery of samples prior to pl	lacing in the refrigerator



# Photographic Documentation

Client: ETC Field Services, LLC
Project Name: 4-Inch Lateral (2/18/13)
Prepared by: TRC Environmental Corp.
Location: Lea County, NM

Photograph No. 1

Date:

March 19, 2013

Description: Looking northeast Excavation activities in progress.



Photograph No. 2

Date:

March 20, 2013

Description: Looking south. Initial response activities in progress.





# Photographic Documentation

Client: ETC Field Services, LLC Prepared by: TRC Environmental Corp. Project Name: 4-Inch Lateral (2/18/13) Location: Lea County, NM

Photograph No. 3

Date:

March 20, 2013

Description: Looking east Excavation activities in progress.



Photograph No. 4

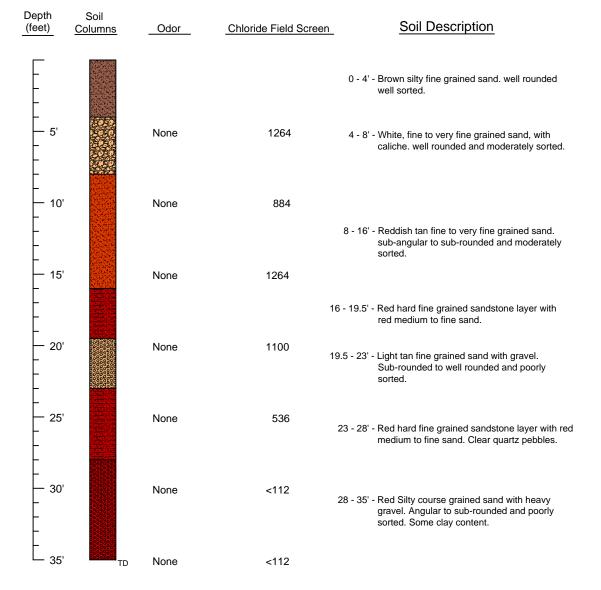
Date:

March 27, 2013

Description: Looking south Delineation trench advancing to south.



### Soil Boring Log SB-1



### Soil Boring Details

Date Drilled	2-18-14
Depth of Exploratory Well	35 ft
Depth to Water	N/A

### **Completion Notes**

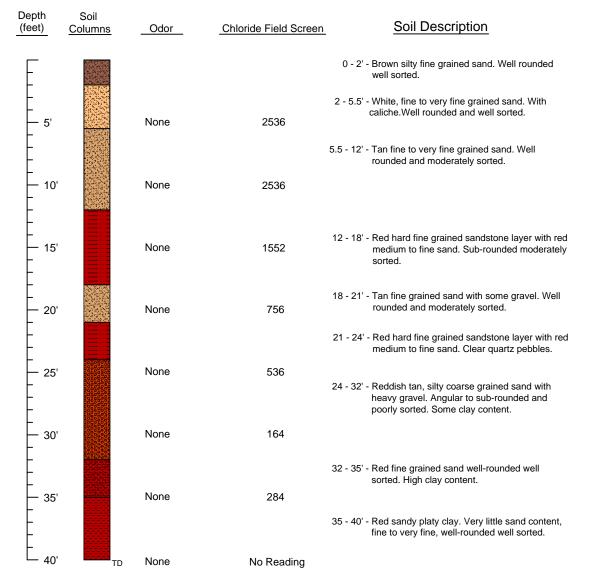
- 1. Soil boring was plugged same day. Using Air Rotary drilling Technique.
- 2. 8 bags of Bentonite and 1 bag of Cement.
- 3. 2' Concrete seal at top.

Soil Boring Log Details
SB - 1
ETC Field Services, LLC
4 Inch Lateral 2/18/13
Lea County, NM

Scale: NTS
CAD By: TA
Checked By: CS
Draft: March 14,2014



### Soil Boring Log SB-2



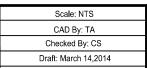
### Soil Boring Details

Date Drilled	2-19-14
Depth of Exploratory Well	40 ft
Depth to Water	N/A

### **Completion Notes**

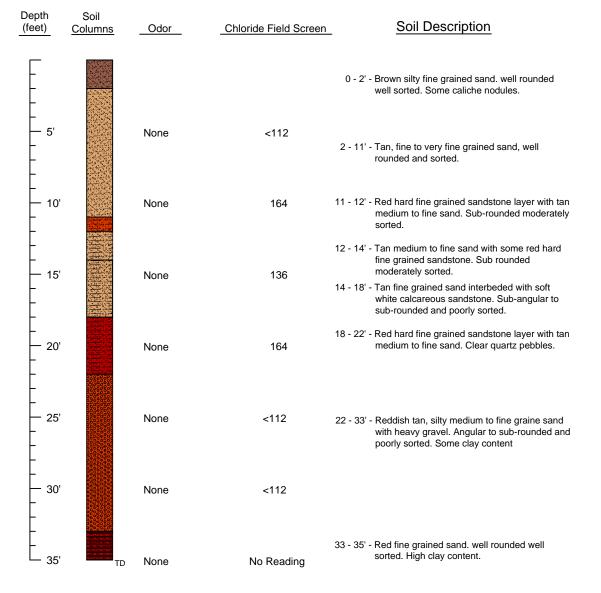
- 1. Soil boring was plugged same day. Using Air Rotary drilling Technique.
- 2. 8 bags of Bentonite and 1 bag of Cement.
- 3. 2' Concrete seal at top.

Soil Boring Log Details
SB - 2
ETC Field Services, LLC
4 Inch Lateral 2/18/13
Lea County, NM





### Soil Boring Log SB-3



### Soil Boring Details

Date Drilled	2-19-14
Depth of Exploratory Well	35 ft
Depth to Water	N/A

### Completion Notes

- 1. Soil boring was plugged same day. Using Air Rotary drilling Technique.
- 2. 8 bags of Bentonite and 1 bag of Cement.
- 3. 2' Concrete seal at top.

Soil Boring Log Details
SB - 3
ETC Field Services, LLC
4 Inch Lateral 2/18/13
Lea County, NM

Scale: NTS
CAD By: TA
Checked By: CS
Draft: March 14,2014



<u>District I</u> 1625 N. French Dr., Hobbs, NM 88240 District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410 1220 S. St. Francis Dr., Santa Fe, NM 87505

### State of New Mexico Energy Minerals and Natural Resources

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

HOBBS OCD

Form C-141 Revised October 10, 2003

FEB 2 6 2013
Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action												
OPERATOR Initial Report Final									Final Repor			
Name of Company Southern Union Gas Services Contact Curt Stanley									- and acopo.			
Address 801 S. Loop 464, Monahans, TX 79756 Telephone No. 575-390-7595												
Facility Name 4 Inch Lateral (2/18/13) Facility Type Natural Gas Pipeline												
Surface Owner Woolworth Trust Lease No. 30-025-38822												
LOCATION OF RELEASE												
Unit Letter F 17 25S 37E Feet from the North/South Line Feet from the East/West Line County Eddy												
Latitude 32 degrees 08.142' North Longitude 103 degrees 10.729' West  NATURE OF RELEASE												
Type of Pale	ne Notur	l Con Caudo	Oil and D		UKE			<del></del>				
Type of Release Natural Gas, Crude Oil and Produced Water Volume of Release 25 bbls Volume Recovered None  Source of Release 4 inch Natural Gas Pipeline Date and Hour of Occurrence Date and Hour of Discovery												
			r ipenne			Unknown	our or occurrence					ırs
Was Immediate Notice Given? If YES, To Whom?												
Yes No Not Required Geoff Leking (NMOCD District 1)												
By Whom? Curt Stanley  Date and Hour February 18, 2013 - 1531 hours  Was a Watercourse Reached?  If YES, Volume Impacting the Watercourse.												
was a watero	ourse Keac	ned?	Yes 🛚	No		If YES, Vo	lume Impacting th	ne Wate	ercourse.			
If a Watercou	rse was Imp	acted, Descri	be Fully.*	.,,								-
Describe Cause of Problem and Remedial Action Taken.*  A four (4)-inch low pressure steel natural gas pipeline developed a leak, resulting in a release of natural gas, crude oil and produced water. During initial response activities the pipeline was clamped to mitigate the release. The affected steel pipeline will be cut and capped and permanently taken out of service.  Describe Area Affected and Cleanup Action Taken.*  An irregular area measuring approximately 60 feet in width and 200 feet in length was impacted by the release. On February 18, 2013, saturated soil was scraped from the ground and stockpiled on 6 mil plastic. The saturated soil was transported to Sundance Services on February 22, 2013. The release will be								at of				
remediated to NMOCD regulatory Standards.												
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other—federal,-state,-or-local-laws-and/or-regulations.												
Signature:						OIL CONSERVATION DIVISION  SOLVE SERVICE  SOLVE SER						
Printed Name	Curt Stan	ey	)			Approved by I	Environmental Sp	ecialist Envi	onment	d Special	st (	<u> </u>
Title: Environ	mental Spec	cialist	1.77.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	54-54-54-54-54-54-54-54-54-54-54-54-54-5		Approval Date	:2126113	F	Expiration I	Date: 4/2	6/1:	3
E-mail Addres	s: curt.stan	ley@sug.com				Conditions of	Approval: SUBY	加丁	FINA2	Attached		
Date: February 22, 2013 Phone: 575-390-7595 C-141 BY 4/26/13 Attached LIRP-02-13-2904.  Attach Additional Sheets If Necessary												