District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources

Form C-141 Revised August 8, 2011

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

			Kele	ease Notific	catio	n and Co	rrective A	ctio	n			
						OPERA	ΓOR		☐ Initia	al Report	\boxtimes	Final Repo
Name of Co	mpany C	hevron (CE	MC)			Contact Lu				report	<u></u>	repo
Address 14				s, 77002			No. (713) 372-	0292				
Facility Nar	ne West l	Lovington U	Init No. 2	0		Facility Typ	e Produced W	ater Ir	jection We	:II		
Surface Ow	ner State	of New Mex	xico	Mineral C)wner	State of Nev	w Mexico		API No	. 30-025-	03884	
				LOCA	TIO	N OF REI	FASE					
Unit Letter	Section	Township	Range	Feet from the		/South Line	Feet from the	Fast/	West Line	County		
1	05	17S	36E					Last		County	Lea	ı
			J	Latitude 32.	86157	3 Longitude	-103.374474					
						OF RELI						
Type of Rele	ase Spill to	Land		IVAL	UKL		Release 36 bbl:	s of	Volume R	Recovered	35 bbls	of Produced
	·					Produced V			Water			
Source of Re	lease Steel	Injection Lin	ie				lour of Occurren	ce		Hour of Di		
Was Immedia	ate Notice C	liven?				If YES, To	d 10:30 a.m. Whom?		1 3/10/13 ai	nd 11:00 a.	m.	
		\boxtimes	Yes [No 🔲 Not Re	equired							
By Whom? D	David Pagan	0				Date and H	lour 5/11/13 and	10:00	a.m.			
Was a Water	course Reac					If YES, Vo	lume Impacting	the Wa	tercourse.			
			Yes 🗵	No								
If a Watercou	irse was Im	pacted, Descr	ibe Fully.	k	-							
N/A												
Describe Cau	se of Proble	em and Reme	dial Actio	n Taken.*								
Underground	steel inject: v 180-feet s	ion line leaked	d. Well wa he well na	as isolated upon d d within the pastu	iscover	y. Release resi	ulted in an appro	ximate	60 x 104 foc	ot pool of fl	uids (no	orth to south)
produced wat	er.	outil cust of th	ne wen pa	a within the pasta	ire and	onto a rease ro	au. A vacuum m	uck was	uispateneu	and recove	160 33 L	1012 01
Describe Are	a Affected a	and Cleanup A	Action Tak	*								
				visually impacted	l soils f	rom approxim	ately 12 to 18-in	ches be	low ground	surface.		
Three soil say	nnlac wara	collected to a	ceace rama	dial avaquation a	ativitia	Those commit	in a seculte in disc			-1-11-1		
shallow soils	at levels of	regulatory co	ncern. In	edial excavation acresponse, a compr	ehensiv	s. These sampi /e soil assessm	ing results indica	atea the ed to co	presence or onfirm the ex	chioride co	oncentra e impac	itions in
							on no perion.				, impac	
				d in the attached re	•							
I hereby certi	fy that the i	nformation gi	ven above	is true and comp	lete to t	he best of my	knowledge and t	ındersta	and that purs	uant to NM	IOCD n	ules and
regulations al	I operators	are required to	o report ar	nd/or file certain re ce of a C-141 repo	elease r	notifications ar	nd perform corre	ctive ac	tions for rele	eases which	n may er	ndanger
should their o	perations h	ave failed to a	acceptant adequately	investigate and re	emedia	te contaminati	on that pose a thi	reat to g	goes not ren	eve the ope . surface w	rator of	man health
or the enviror	nment. In a	ddition, NMC	CD accep	tance of a C-141	report o	loes not reliev	e the operator of	respons	sibility for co	ompliance	with any	y other
federal, state,	or local lav	vs and/or regu	lations.									
Signature:	In	he c	2	al_			OIL CON	SERV	VATION	DIVISI	<u>NC</u>	
Printed Name	: Luke We	lch				Approved by	Environmental S	Specialis	st: Brad	lford	! Bil	llings
Title: Project	Manager					Approval Dat	40/0/00		Expiration I			
E-mail Addre		chevron com	1			Conditions of						
						Conditions Of	Approvai.			Attached	i 🗌	
Date: 11/20/	14		Phon	e· (713) 372-0292								

^{*} Attach Additional Sheets If Necessary





Final Report

SOIL ASSESSMENT AND DELINEATION ACTIVITIES REPORT WEST LOVINGTON UNIT #20 INJECTION LINE RELEASE RP #3296

Unit J, Section 5, Township 17 South, Range 36 East Lea County, New Mexico

Prepared for: Chevron Environmental Management Company

Conestoga-Rovers & Associates

2135 South Loop, 250 West Midland, Texas 79703



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Section 1.0 Introduction

Conestoga-Rovers and Associates (CRA) is pleased to present this Soil Assessment and Delineation Activities Report to Chevron Environmental Management Company (CEMC) for the West Lovington Unit #20 Injection Line Release location (hereafter referred to as the "Site").

This Report also serves as documentation of corrective actions performed by Chevron in association with Remediation Permit No. 3296 (RP #3296); which the New Mexico Oil Conservation Division (NMOCD) District I, Hobbs, New Mexico office assigned to the release in August of 2014.

Section 2.0 Project Information and Background

The Site is located in Unit J, Section 5, Township 17 South, Range 36 East, approximately 6 miles southwest of Lovington, New Mexico, in eastern Lea County (Figure 1 and Figure 2).

CRA understands that Chevron conducted initial field assessment activities at the Site in May 2013. Chevron's assessment included a site visit, soil sample collection, analytical laboratory analyses and preliminary determinations of impacts to environmental media. Following the initial field assessment activities Chevron delegated the continuation of assessment and delineation efforts for the Site to CEMC. In June 2014, CEMC contracted CRA to perform a comprehensive soil assessment at the Site by implementing a soil boring program.

On July 15, 2014, CRA mobilized to the Site to perform a site visit. During the site visit, proposed boring locations were marked, and New Mexico one-call parameters were flagged for utility locating purposes. In addition, the Site was walked to observe site features.

2.1 West Lovington Unit #20 Injection Line Release

Chevron submitted a C-141 Form to the NMOCD dated May 21, 2013, describing a release of 36 barrels (bbls) of produced water from an underground steel injection line. The C-141 reported that approximately 35 bbls of produced water were recovered by a vacuum truck. The release was described as follows:

The release resulted in a 60 by 104-foot pool of fluids about 180-feet southeast of the well pad.

In September of 2013, Chevron collected three (3) surficial soil samples along the release path. These three soil samples were submitted to Cardinal Laboratories, Hobbs, New Mexico for determination of benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8021 B,



total petroleum hydrocarbons (TPH) by Method 8015 (GRO and DRO), and chlorides by EPA Method SM4500Cl-B. The following results were reported:

Sample Point	<u>TPH (GRO + DRO)</u>	<u>Chlorides</u>
SB #1	<10.0 (mg/kg)	<16.0 (mg/kg)
SB #2	<10.0 (mg/kg)	48.0 (mg/kg)
SB #3	GRO: <50.0 (mg/kg)	3080 (mg/kg)
	DRO: 487 (mg/kg)	

Chevron returned to the Site in 2013 to perform remedial excavation activities. Chevron excavated visibly contaminated soils to a depth of approximately 18-inches below ground surface (bgs) (Figure 3). The excavated soils were loaded and transported to an approved disposal facility. The actual volume and final disposition of the excavated soils are unknown.

2.2 Recommended Remediation Action Limits

Information available on the Petroleum Recovery Research Center (PRRC) Mapping Portal, United States Geological Survey (USGS), Current Water Database for the Nation, and current (CRA) managed groundwater site(s) data demonstrate the depth to groundwater at the Site is greater than 100-feet bgs. The nearest private domestic water source is greater than 200-feet from the release site; the nearest public/municipal water source is greater than 1,000-feet from the release site; and the release site lies more than 1,000 horizontal feet from the nearest surface water body. Consequently, the NMOCD total ranking criteria score is zero (0) for the Site. The anticipated site-specific Recommended Remediation Action Levels (RRALs; per 2011 Draft Guidance) to be applied to this location by the NMOCD for TPH (GRO + DRO) at the Site is 500 mg/kg and 1,000 mg/kg for chlorides.

New Mexico Oil Conservation Division Site Assessment	
Ranking Criteria	Score
Depth to Ground Water (>100 feet)	0
Wellhead Protection Area (> 1000 feet from water source, > 200 feet from	
domestic source)	0
Distance to Surface Body Water (>1000 horizontal feet)	0
Ranking Criteria Total Score	0*

^{*}Because the ranking criteria total score is 0, NMOCD established RRALs are 50 mg/kg for benzene, toluene, ethylbenzene, and xylene (BTEX), 500 mg/kg TPH (GRO + DRO), and 1,000 mg/kg for chlorides¹.

¹ NMOCD Draft Guidance for Release Reporting and Corrective Action, September 30, 2011



Section 3.0 Soil Assessment and Delineation Activities

On July 15, 2014, CRA's contracted service provider, Harrison & Cooper, Inc. (HCI) of Lubbock, Texas submitted an initial New Mexico one-call utility locate ticket (2014291459) pertaining to the installation of four soil borings under RP #3296. CRA submitted an MCBU Chevron Dig Plan with appropriate attachments for approval to the Chevron Buckeye Field Management Team. On July 30, 2014, HCI and CRA mobilized to the Site to begin soil boring activities. The soil borings were pre-cleared via air knife techniques to a depth of 5-feet bgs or until refusal. The remainder of each boring was advanced using an air rotary drill rig and split spoon sampling techniques were utilized to collect soil samples. Four soil borings were advanced across the Site. The four soil borings were advanced to a total depth of 35-feet bgs based on field screening for chlorides. A photo log documenting the drilling activities is included as Appendix B. Chloride concentrations in soil were field screened by mixing soil samples with distilled water. The rinsate was then screened using Hach chloride test strips. Soil borings were logged in accordance with the Unified Soil Classification System and recorded. Visual representation of the boring logs can be found in Appendix C. The location of the soil borings are presented on the Site Details and Analytical Results Map (Figure 3).

Soil samples were collected for laboratory analysis from each boring (SB-1, SB-2, SB-3, and SB-4) at varying intervals beginning at 5-feet bgs. Soil samples were packed into laboratory prepared jars and stored in a cooler with ice. The soil samples were sent to Xenco Laboratories (Xenco) in Odessa, Texas for analysis of BTEX by EPA Method 8021B; TPH by EPA Method SW8015 Modified; and for chloride analysis by EPA Method 300/300.1. Soil laboratory analytical results are summarized in Table 1. The soil laboratory analytical report is included as Appendix D. A Site Details and Analytical Results Map is presented as Figure 3.

3.1 Soil Sampling Analytical Results

The soil type observed in soil samples collected during the drilling program consisted of tan, dense caliche from the surface to approximately 15-feet bgs. Tan, very fine grain sandstone was observed from approximately 15-feet bgs to total depth (35-feet). Moisture content observed in the soil samples was dry in all instances.

All soil samples collected (SB-1, SB-2, SB-3, and SB-4) from the Site in 2014 for laboratory analyses exhibited concentrations below laboratory reporting limits and below Site RRALs for BTEX (50 mg/kg) and TPH (GRO + DRO) (500 mg/kg). Soil boring sample (SB-1) collected at 15 feet bgs exceeded the Site RRALs for chloride concentration at 1910 mg/kg. All other soil samples (SB-2, SB-3, and SB-4) collected from the Site in 2014 for laboratory analysis exhibited chloride concentrations in soil below Site RRALs (1,000 mg/kg). This data from the soil boring

program demonstrates that the nature and extent of hydrocarbon and chloride impacts from the release incident are minimal and the potential risk to impact groundwater is extremely low.

Section 4.0 Conclusions

A thorough subsurface investigation was implemented at the Site. Evaluation of the analytical data obtained from soil assessment and delineation activities performed in July of 2014 indicates that vertical and horizontal delineation of BTEX, TPH (GRO + DRO), and chloride impacts have been achieved. Based on data provided in this report, no further delineation or remedial efforts are warranted. CRA recommends closure of the release associated with RP #3296.

If you have any questions or comments with regards to this Soil Assessment and Delineation Activities Report, please do not hesitate to contact our Midland office at (432) 686-0086. Your timely response to this correspondence is appreciated.

All of Which is Respectfully Submitted,

CONESTOGA ROVERS & ASSOCIATES

Thomas Clayon

Thomas C. Larson

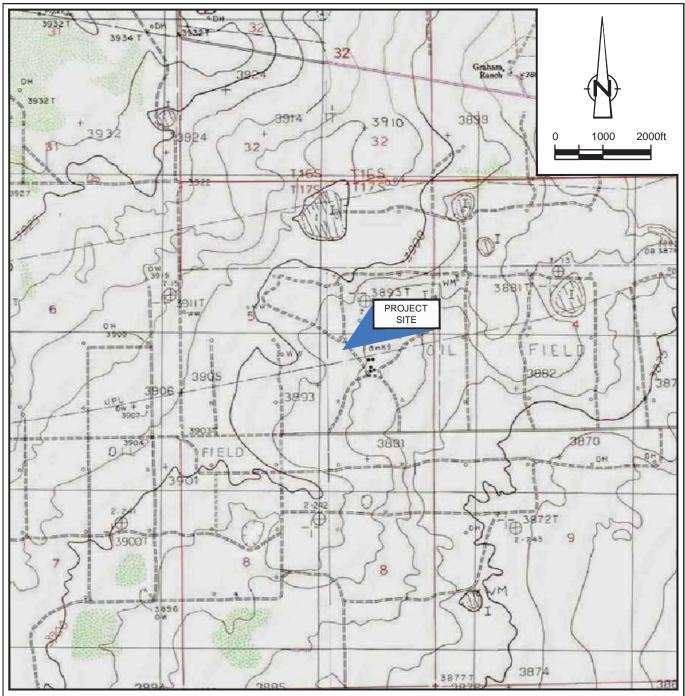
Principal, Midland Operations Manager

Jake L. Ferenz Project Manager

Jake Jung

Figures





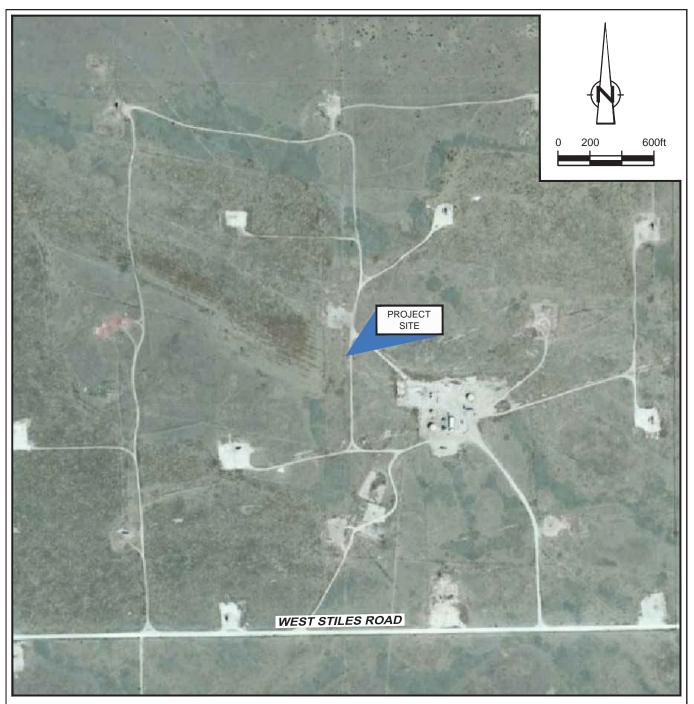
SOURCE: USGS 7.5 MINUTE QUAD "LOVINGTON SE AND LOVINGTON SW, NEW MEXICO"

LAT/LONG: 32.8615° NORTH, 103.3745° WEST COORDINATE: NAD83 DATUM, U.S. FOOT STATE PLANE ZONE - NEW MEXICO EAST

figure 1

SITE LOCATION MAP WEST LOVINGTON UNIT #20 LEA COUNTY, NEW MEXICO Chevron Environmental Management Company





LAT/LONG: 32.8615° NORTH, 103.3745° WEST COORDINATE: NAD83 DATUM, U.S. FOOT STATE PLANE ZONE - NEW MEXICO EAST

figure 2

SITE AERIAL MAP WEST LOVINGTON UNIT #20 LEA COUNTY, NEW MEXICO Chevron Environmental Management Company



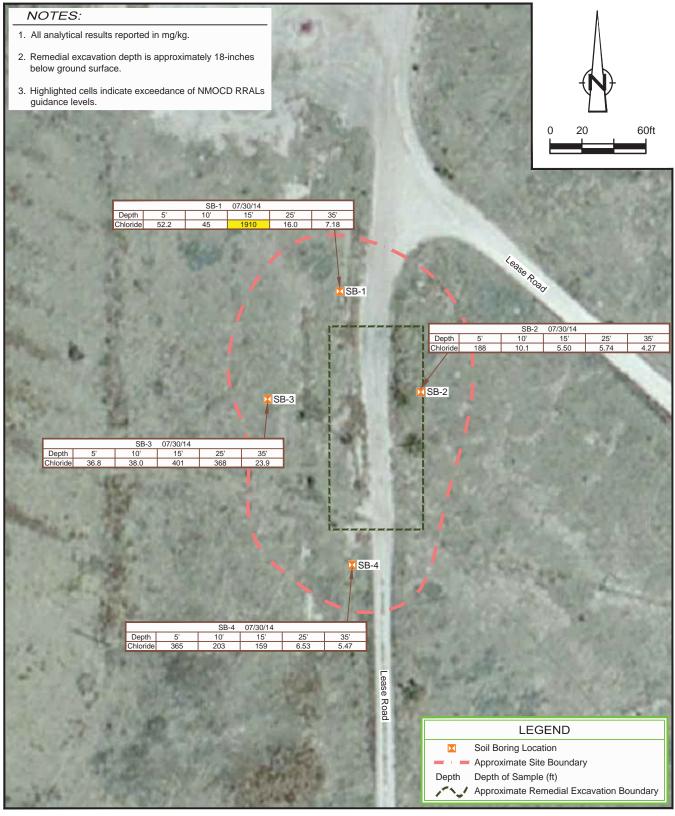


figure 3

SITE DETAILS AND ANALYTICAL RESULTS MAP WEST LOVINGTON UNIT #20 LEA COUNTY, NEW MEXICO Chevron Environmental Management Company



Tables



TABLE 1

SOIL ANALYTICAL SUMMARY WEST LOVINGTON UNIT #20 INJECTION LINE LEA COUNTY, NEW MEXICO

	Donath				Ethvl-		Total			TPH (SW	' 8015 Mod	fied)		
Sample ID	Depth (bgs)	Sample Date	Benzene	Toluene	Benzene	Xylenes	Total BTEX	C6-C10	>C10-C28	C6-C12	C12-C28	C28-C35	Total TPH C6-C35	Chlorides
	ommended Action Level	Remediation	0.2				50		500	500	500		2,500	1,000
	ACTION LEVE		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
SB #1	Surface	9/23/13	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0					<16.0
SB #2	Surface	9/23/13	<0.050	<0.050	<0.050	<0.150	< 0.300	<10.0	<10.0					48.0
SB #3	Surface	9/23/13	< 0.050	< 0.050	< 0.050	< 0.150	< 0.300	<50.0	487	-		-		3080
SB-1	5'	7/30/14	<0.00105	<0.00210	<0.00105	0.00272	0.00272			<15.7	<15.7	<15.7	<15.7	52.2
SB-1	10'	7/30/14	<0.00103	<0.00205	< 0.00103	0.00255	0.00255	-		<15.4	<15.4	<15.4	<15.4	45
SB-1	15'	7/30/14	<0.00117	< 0.00234	< 0.00117	0.00374	0.00374	-		<17.6	<17.6	<17.6	<17.6	1910
SB-1	25'	7/30/14	<0.00128	<0.00255	<0.00128	0.00510	0.00510			<19.1	<19.1	<19.1	<19.1	16.0
SB-1	35'	7/30/14	<0.00104	<0.00209	0.00126	0.00489	0.00615			<15.7	<15.7	<15.7	<15.7	7.18
SB-2	5'	7/30/14	<0.00102	<0.00204	<0.00102	0.00501	0.00501			<15.4	<15.4	<15.4	<15.4	188
SB-2	10'	7/30/14	<0.00102	<0.00205	<0.00102	0.00376	0.00376	-		<15.4	<15.4	<15.4	<15.4	10.1
SB-2	15'	7/30/14	<0.00103	<0.00206	<0.00103	0.00356	0.00356			<15.4	<15.4	<15.4	<15.4	5.50
SB-2	25'	7/30/14	<0.00102	<0.00204	<0.00102	0.00407	0.00407	-		<15.4	<15.4	<15.4	<15.4	5.74
SB-2	35'	7/30/14	<0.00105	<0.00210	<0.00105	0.00249	0.00249	-		<15.8	<15.8	<15.8	<15.8	4.27
SB-3	5'	7/30/14	<0.00102	<0.00205	<0.00102	0.00383	0.00383			<15.4	<15.4	<15.4	<15.4	36.8
SB-3	10'	7/30/14	<0.00133	<0.00266	0.00150	0.00883	0.0103	-		<20.0	<20.0	<20.0	<20.0	38.0
SB-3	15'	7/30/14	<0.00105	<0.00210	< 0.00105	0.00331	0.00331			<15.8	<15.8	<15.8	<15.8	401
SB-3	25'	7/30/14	<0.00129	<0.00259	<0.00129	0.00332	0.00332			<19.4	<19.4	<19.4	<19.4	368
SB-3	35'	7/30/14	<0.00123	<0.00246	<0.00123	0.00639	0.00639	-		<18.6	<18.6	<18.6	<18.6	23.9
SB-4	5'	7/30/14	<0.00105	<0.00209	<0.00105	0.00545	0.00545	-		<15.7	<15.7	<15.7	<15.7	365
SB-4	10'	7/30/14	<0.00107	<0.00214	<0.00107	0.00247	0.00247			<16.2	<16.2	<16.2	<16.2	203
SB-4	15'	7/30/14	<0.00104	<0.00208	<0.00104	<0.00104	<0.00104			<15.7	<15.7	<15.7	<15.7	159
SB-4	25'	7/30/14	<0.00106	<0.00213	<0.00106	<0.00106	<0.00106			<16.0	<16.0	<16.0	<16.0	6.53
SB-4	35'	7/30/14	<0.00105	<0.00211	<0.00105	< 0.00105	<0.00105			<15.8	<15.8	<15.8	<15.8	5.47

SB-4 Notes:

- 1. All analytical results reported in (mg/kg) milligrams per kilogram
- 2. 2013 Chloride analyses by Method EPA SM4500Cl-B; 2014 Chloride analyses by Method EPA 300/300.1
- 3. BTEX analysis by Method EPA 8021 B
- 4. TPH analysis by Method SW 8015 Modified
- 5. Highlighted cells indicate concentrations exceeding guidance RRALs
- 6. RRALs from NMOCD (September 2011 Draft) Release Guidance Document
- 7. bgs below ground surface
- 8. < indicates below laboratory Reporting Limit (RL)
- 9. (SB) indicates Soil Borings; (SS) indicates Soil Sample
- 10. "--" indicates not analyzed

Appendices



Appendix A

Original Form C-141



MDistrict I 1625 N. French Dr., Hobbs, NM 88240 District II 811 S. First St., Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources

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

Form C-141

Revised August 8, 2011

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

Attached

Release Notification and Corrective Action OPERATOR ☐ Initial Report Final Report Name of Company **CHEVRON** Contact David Pagano Address HCR 60, BOX 423 – Lovington, NM 88260 Telephone No. Office: 575-396-4414 ext 275 Cellular: 505-787-9816 Physical: 56 Texas Camp Road, Lovington NM 88260 Facility Name: West Lovington Unit #20 Facility Type: Produced Water Injection Well Surface Owner: State of New Mexico API No. 30-025-03884 Mineral Owner State of New Mexico LOCATION OF RELEASE Longitude: 32.861662 ° Latitude: -103.374497 ° North/South Line Feet from the Unit Letter Range Feet from the East/West Line County Section Township Lea 05 17.0S 36E NATURE OF RELEASE Volume of Release 36bbls of Type of Release Spill to Land Volume Recovered 35 bbls of Produced Water Produced Water Date and Hour of Occurrence Date and Hour of Discovery Source of Release Free Water Knock Out (FWKO) 5/10/13 10:30AM 5/10/13 11:00AM If YES, To Whom? Was Immediate Notice Given? Geoffrey Leking Date and Hour 5/11/13 10:00AM By Whom? David Pagano Was a Watercourse Reached? If YES, Volume Impacting the Watercourse. ☐ Yes 🛛 No If a Watercourse was Impacted, Describe Fully.* Describe Cause of Problem and Remedial Action Taken.* Underground Steel Injection line leaked. Field Specialist isolated well and contacted vacuum truck who recovered 35bbls of fluids. Describe Area Affected and Cleanup Action Taken. * Release resulted in 60 by 104 foot pool of fluids about 180ft SE of the well pad. Hyrdo Vac truck vacuumed up standing fluids and recovered 5 bbls of oil. Next step is to excavate visibly contaminated soil up to 18" and haul off to disposal facility. Contamination beyond 18" will be remediated by Chevron EMC. I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. OIL CONSERVATION DIVISION Signature: Printed Name: David Pagano Approved by District Supervisor: Approval Date: **Expiration Date:** Title: Health & Environmental Specialist

Conditions of Approval:

Phone: 505-787-9816

Date: 5/21/13

^{*} Attach Additional Sheets If Necessary

Appendix B

Photograph Log





PHOTO 1: View of soil boring (SB-1) installation activities facing west



PHOTO 2: View of soil boring (SB-3) installation activities facing south west



PHOTOGRAPH LOG West Lovington Unit #20 Lea County, New Mexico Chevron Environmental Management Company

Appendix CSoil Boring Logs



SOIL BORING LOG

WLU #20 Project:

Lea County, NM

File No.: 086498 SB-1 No.

Client: CEMC Date: 07/30/2014
Drilling Co.: HCl
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary

	020										Logged by: Jake Ferenz
	LABO	DRATORY	TEST DAT	ΓΑ		FIE	LD E	DATA			BORING DATA
Benzene			red in mg/kg səuəl XX		Chlorides	Photo- lonization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: 2:25 pm Finish Time: 2:38
-	F	E P	×	F ()	0			-15 -20 -25		8	Caliche: White, very well cemented, consolidated Caliche: Tan, consolidated, weathered Sand: Tan, very fine grain, unconsolidated, interbedded with we cemented very fine grain sandstone in matrix
-							\boxtimes	-35 -40 -			TD = 35-Feet







Analyzed Sample



Analyzed Sample

SOIL BORING LOG

Project: WLU #20

Lea County, NM

File No.: 086498
Date: 07/30/2014
No. SB-2 Drilling Co.: HCl

Client: CEMC

Supervisor: Kenny Cooper Type Rig: Air/Mud Rotary Logged by: Jake Ferenz

											Logged by: Jake Ferenz	
			TEST DAT			FIE	LD [DATA			BORING DATA	
Benzene	Resi Loluene	Ethyl- benzene	ed in mg/kg Xylenes	Total TPH (C6-C35)	Chlorides	Photo- Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: 2:54 pm Finish Time: 3:00	
		Et De	×	D)	10		\bowtie	-10		98	Sand: Tan, very fine grain, unconsolidated, interbedded with well cemented very fine grain sandstone in matrix TD = 35-Feet	
	Sampling	Interval		l	S	Stratification is Ir	nferre ased	d And May No on Visual-Mar	t be E	Exact	t. \frac{\sum_{=}}{=} \text{Water First Notec} \text{Analyzed Sample}	

SOIL BORING LOG

Project: WLU #20

Lea County, NM

File No.: 086498 Date: 07/30/2014 Drilling Co.: HCI No. SB-3

Client: CEMC Supervisor: Kenny Cooper Type Rig: Air/Mud Rotary Logged by: Jake Ferenz

											Logged by: Jake Ferenz
		DRATORY				FIE	LD [DATA			BORING DATA
Benzene	Res	Ethyl- benzene	ed in mg/k Salenes Xylenes	Total TPH (C6-C35)	Chlorides	Photo- lonization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: 3:05 pm Finish Time: 3:19
<u>m</u>		ШО	×	<u> F & </u>	0					0)	Caliche: White, very well cemented, consolidated
]		
							\boxtimes	-(5)			Caliche: Tan, consolidated, weathered
											Caliche. Tall, consolidated, weathered
							\boxtimes	-(10)			
								-10			
							\boxtimes				
								-(15)			Sand: Tan, very fine grain, unconsolidated, interbedded with w
											cemented very fine grain sandstone in matrix
								– 20 ––			
							\boxtimes	-25			
								40			
								- 30 			
											TD 055
							M	-35)-			TD = 35-Feet
								40 —			t. $\sum_{\overline{}}$ Water First Not

 \triangle





Analyzed Sample



SOIL BORING LOG

Project: WLU #20

Client:

Lea County, NM

Date: 07/30/2014

No. SB-4 Drilling Co.: HCl

CEMC

Supervisor: Kenny Cooper Type Rig: Air/Mud Rotary Logged by: Jake Ferenz

File No.: 086498

											Logged by: Jake Ferenz
	LABO	RATORY	TEST DAT	Ā		FIE	LD [DATA			BORING DATA
Benzene	Resu	Ethyl- benzene benzene	ed in mg/kg seuel X	Total TPH (C6-C35)	Chlorides	Photo- lonization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	
Benze	Toluen	Ethyl- benzei	Xylene	Total T (C6-C3)	Chloric	Reading (ppm)	X X	-10 -15 -20	Wate	Screen	Start Time: 3:23 pm Finish Time: 3:36 Caliche: White, very well cemented, consolidated Caliche: Tan, consolidated, weathered Sand: Tan to brown, very fine grain, unconsolidated, interbedded with well cemented very fine grain sandstone in matrix
S S	Sampling					Stratification is In		- 30	t he F	- -	TD = 35-Feet ∑ Water First Noted



Analyzed Sample



Appendix D

Soil Laboratory Analytical Report



Analytical Report 490523

for Conestoga Rovers & Associates

Project Manager: Jacob Ferenz

WLU #20

086498

11-AUG-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) Texas (T104704477), Louisiana (04176), USDA (P330-07-00105)

Xenco-Lakeland: Florida (E84098)

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

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

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

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

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





11-AUG-14

Project Manager: Jacob Ferenz Conestoga Rovers & Associates 2135 S Loop 250 W Midland, TX 79703

Reference: XENCO Report No(s): 490523

WLU #20

Project Address: Lea County,NM

Jacob Ferenz:

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) 490523. 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. 490523 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

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Sample Cross Reference 490523



Conestoga Rovers & Associates, Midland, TX

WLU #20

086498-SB-4	086498-SB-4	086498-SB-4	086498-SB-4	086498-SB-4	086498-SB-3	086498-SB-3	086498-SB-3	086498-SB-3	086498-SB-3	086498-SB-2	086498-SB-2	086498-SB-2	086498-SB-2	086498-SB-2	086498-SB-1	086498-SB-1	086498-SB-1	086498-SB-1	086498-SB-1	Sample Id
S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	Matrix
07-30-14 15:36	07-30-14 15:32	07-30-14 15:28	07-30-14 15:26	07-30-14 15:24	07-30-14 15:19	07-30-14 15:15	07-30-14 15:11	07-30-14 15:09	07-30-14 15:07	07-30-14 15:03	07-30-14 14:59	07-30-14 14:57	07-30-14 14:55	07-30-14 14:54	07-30-14 14:38	07-30-14 14:34	07-30-14 14:30	07-30-14 14:28	07-30-14 14:26	Date Collected
- 35 ft	- 25 ft	- 15 ft	- 10 ft	- 5 ft	- 35 ft	- 25 ft	- 15 ft	- 10 ft	- 5 ft	- 35 ft	- 25 ft	- 15 ft	- 10 ft	- 5 ft	- 35 ft	- 25 ft	- 15 ft	- 10 ft	- 5 ft	Sample Depth
490523-020	490523-019	490523-018	490523-017	490523-016	490523-015	490523-014	490523-013	490523-012	490523-011	490523-010	490523-009	490523-008	490523-007	490523-006	490523-005	490523-004	490523-003	490523-002	490523-001	Lab Sample Id



CASE NARRATIVE



Client Name: Conestoga Rovers & Associates
Project Name: WLU #20

Project ID: 086498 Work Order Number(s): 490523 Report Date: 11-AUG-14
Date Received: 07/31/2014

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Page 4 of 31

Final 1.000



Conestoga Rovers & Associates, Midland, TX

Project Name: WLU #20



Project Id: 086498

Project Location: Lea County,NM

Contact: Jacob Ferenz

Date Received in Lab: Thu Jul-31-14 04:15 pm

Report Date: 11-AUG-14

Project Manager: Kelsey Brooks

								1 Toject Ma	mager.	IXCISCY DIOUR			
	Lab Id:	490523-0	001	490523-0	002	490523-0	003	490523-0	004	490523-	005	490523-	006
Analysis Pagyastad	Field Id:	086498-S	B-1	086498-S	B-1	086498-S	SB-1	086498-S	SB-1	086498-S	SB-1	086498-S	SB-2
Analysis Requested	Depth:	5 ft		10 ft		15 ft		25 ft		35 ft		5 ft	
	Matrix:	SOIL	,	SOIL		SOIL	,	SOIL	,	SOIL	,	SOIL	,
	Sampled:	Jul-30-14	14:26	Jul-30-14	4:28	Jul-30-14	14:30	Jul-30-14	14:34	Jul-30-14	14:38	Jul-30-14	14:54
BTEX by EPA 8021B	Extracted:	Aug-05-14	10:00	Aug-05-14	10:00	Aug-05-14	10:00	Aug-05-14	10:00	Aug-05-14	10:00	Aug-05-14	10:00
	Analyzed:	Aug-05-14	12:57	Aug-05-14	16:46	Aug-05-14	17:55	Aug-05-14	18:11	Aug-05-14	18:45	Aug-05-14	19:01
	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	0.00117	ND	0.00128	ND	0.00104	ND	0.00102
Toluene		ND	0.00210	ND	0.00205	ND	0.00234	ND	0.00255	ND	0.00209	ND	0.00204
Ethylbenzene		ND	0.00105	ND	0.00103	ND	0.00117	ND	0.00128	0.00126	0.00104	ND	0.00102
m,p-Xylenes		0.00272	0.00210	0.00255	0.00205	0.00374	0.00234	0.00510	0.00255	0.00489	0.00209	0.00501	0.00204
o-Xylene		ND	0.00105	ND	0.00103	ND	0.00117	ND	0.00128	ND	0.00104	ND	0.00102
Total Xylenes		0.00272	0.00105	0.00255	0.00103	0.00374	0.00117	0.00510	0.00128	0.00489	0.00104	0.00501	0.00102
Total BTEX		0.00272	0.00105	0.00255	0.00103	0.00374	0.00117	0.00510	0.00128	0.00615	0.00104	0.00501	0.00102
Inorganic Anions by EPA 300/300.1	Extracted:	Aug-01-14	12:30	Aug-01-14	12:30	Aug-01-14	12:30	Aug-01-14	12:30	Aug-01-14	12:30	Aug-04-14	10:00
	Analyzed:	Aug-01-14	21:23	Aug-01-14	22:08	Aug-01-14	22:30	Aug-01-14	22:53	Aug-01-14	23:16	Aug-04-14	14:38
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		52.2	10.5	45.0	10.3	1910	117	16.0	2.56	7.18	2.10	188	10.3
Percent Moisture	Extracted:												
	Analyzed:	Aug-04-14	00:00	Aug-04-14	00:00	Aug-04-14	00:00	Aug-04-14	00:00	Aug-04-14	00:00	Aug-04-14	00:00
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		4.75	1.00	3.20	1.00	14.8	1.00	21.9	1.00	4.66	1.00	2.91	1.00
TPH By SW8015 Mod	Extracted:	Aug-01-14	18:00	Aug-01-14	18:00	Aug-01-14	18:00	Aug-01-14	18:00	Aug-01-14	18:00	Aug-01-14	18:00
	Analyzed:	Aug-02-14	05:22	Aug-02-14	05:50	Aug-02-14	06:15	Aug-02-14	06:40	Aug-02-14	07:59	Aug-02-14	08:26
	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	15.4	ND	17.6	ND	19.1	ND	15.7	ND	15.4
C12-C28 Diesel Range Hydrocarbons		ND	15.7	ND	15.4	ND	17.6	ND	19.1	ND	15.7	ND	15.4
C28-C35 Oil Range Hydrocarbons		ND	15.7	ND	15.4	ND	17.6	ND	19.1	ND	15.7	ND	15.4
al TPH		ND	15.7	ND	15.4	ND	17.6	ND	19.1	ND	15.7	ND	15.4

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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Conestoga Rovers & Associates, Midland, TX

Project Name: WLU #20



Project Id: 086498

Project Location: Lea County, NM

Contact: Jacob Ferenz

Date Received in Lab: Thu Jul-31-14 04:15 pm

Report Date: 11-AUG-14

Project Manager: Kelsey Brooks

								1 Toject Ma	nager. 1	xeisey brook	.5		
	Lab Id:	490523-0	07	490523-0	800	490523-0	009	490523-0	010	490523-0	011	490523-	012
Analysis Paguested	Field Id:	086498-S	B-2	086498-S	B-2	086498-S	B-2	086498-S	B-2	086498-S	B-3	086498-5	SB-3
Analysis Requested	Depth:	10 ft		15 ft		25 ft		35 ft		5 ft		10 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	,	SOIL	
	Sampled:	Jul-30-14 1	4:55	Jul-30-14 1	4:57	Jul-30-14	14:59	Jul-30-14	15:03	Jul-30-14	15:07	Jul-30-14	15:09
BTEX by EPA 8021B	Extracted:	Aug-05-14	10:00	Aug-05-14	10:00	Aug-05-14	10:00	Aug-05-14	10:00	Aug-05-14	10:00	Aug-05-14	10:00
	Analyzed:	Aug-05-14	19:18	Aug-05-14	19:35	Aug-05-14	20:23	Aug-05-14	20:40	Aug-05-14	20:56	Aug-05-14	21:13
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		ND	0.00102	ND	0.00103	ND	0.00102	ND	0.00105	ND	0.00102	ND	0.00133
Toluene		ND	0.00205	ND	0.00206	ND	0.00204	ND	0.00210	ND	0.00205	ND	0.00266
Ethylbenzene		ND	0.00102	ND	0.00103	ND	0.00102	ND	0.00105	ND	0.00102	0.00150	0.00133
m,p-Xylenes		0.00376	0.00205	0.00356	0.00206	0.00407	0.00204	0.00249	0.00210	0.00383	0.00205	0.00727	0.00266
o-Xylene		ND	0.00102	ND	0.00103	ND	0.00102	ND	0.00105	ND	0.00102	0.00156	0.00133
Total Xylenes		0.00376	0.00102	0.00356	0.00103	0.00407	0.00102	0.00249	0.00105	0.00383	0.00102	0.00883	0.00133
Total BTEX		0.00376	0.00102	0.00356	0.00103	0.00407	0.00102	0.00249	0.00105	0.00383	0.00102	0.0103	0.00133
Inorganic Anions by EPA 300/300.1	Extracted:	Aug-04-14	10:00	Aug-04-14	10:00	Aug-04-14	10:00	Aug-04-14	10:00	Aug-04-14	10:00	Aug-04-14	10:00
	Analyzed:	Aug-04-14	15:23	Aug-04-14	15:46	Aug-04-14	16:13	Aug-04-14	16:36	Aug-04-14	16:58	Aug-04-14	18:07
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		10.1	2.05	5.50	2.06	5.74	2.06	4.27	2.11	36.8	10.3	38.0	13.3
Percent Moisture	Extracted:												
	Analyzed:	Aug-04-14	00:00	Aug-04-14	00:00	Aug-04-14	00:00	Aug-04-14	00:00	Aug-04-14	00:00	Aug-04-14	00:00
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		2.61	1.00	3.13	1.00	2.77	1.00	5.23	1.00	2.52	1.00	24.9	1.00
TPH By SW8015 Mod	Extracted:	Aug-04-14	17:00	Aug-04-14	17:00	Aug-04-14	17:00	Aug-04-14	17:00	Aug-04-14	17:00	Aug-04-14	17:00
	Analyzed:	Aug-04-14	20:33	Aug-04-14	21:51	Aug-04-14	22:16	Aug-04-14	22:40	Aug-04-14	23:08	Aug-04-14	23:36
	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	15.4	ND	15.4	ND	15.4	ND	15.8	ND	15.4	ND	20.0
C12-C28 Diesel Range Hydrocarbons		ND	15.4	ND	15.4	ND	15.4	ND	15.8	ND	15.4	ND	20.0
C28-C35 Oil Range Hydrocarbons		ND	15.4	ND	15.4	ND	15.4	ND	15.8	ND	15.4	ND	20.0
Total TPH		ND	15.4	ND	15.4	ND	15.4	ND	15.8	ND	15.4	ND	20.0

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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Conestoga Rovers & Associates, Midland, TX

Project Name: WLU #20



Project Id: 086498

Project Location: Lea County, NM

Contact: Jacob Ferenz

Date Received in Lab: Thu Jul-31-14 04:15 pm

Report Date: 11-AUG-14

Project Manager: Kelsey Brooks

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	Lab Id:	490523-0	013	490523-0	14	490523-0	015	490523-	016	490523-	017	490523-	018
Analysis Paguastad	Field Id:	086498-S	B-3	086498-S	В-3	086498-S	B-3	086498-S	SB-4	086498-8	B-4	086498-5	SB-4
Analysis Requested	Depth:	15 ft		25 ft		35 ft		5 ft		10 ft		15 ft	
	Matrix:	SOIL	,	SOIL		SOIL	,	SOIL		SOIL	,	SOIL	
	Sampled:	Jul-30-14	15:11	Jul-30-14 1	5:15	Jul-30-14	15:19	Jul-30-14	15:24	Jul-30-14	15:26	Jul-30-14	15:28
BTEX by EPA 8021B	Extracted:	Aug-05-14	10:00	Aug-05-14	10:00	Aug-05-14	10:00	Aug-05-14	10:00	Aug-05-14	10:00	Aug-05-14	10:00
	Analyzed:	Aug-05-14	21:30	Aug-05-14	21:46	Aug-05-14	22:03	Aug-05-14	22:19	Aug-05-14	22:36	Aug-05-14	22:52
	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	0.00129	ND	0.00123	ND	0.00105	ND	0.00107	ND	0.00104
Toluene		ND	0.00210	ND	0.00259	ND	0.00246	ND	0.00209	ND	0.00214	ND	0.00208
Ethylbenzene		ND	0.00105	ND	0.00129	ND	0.00123	ND	0.00105	ND	0.00107	ND	0.00104
m,p-Xylenes		0.00331	0.00210	0.00332	0.00259	0.00515	0.00246	0.00438	0.00209	0.00247	0.00214	ND	0.00208
o-Xylene		ND	0.00105	ND	0.00129	0.00124	0.00123	0.00107	0.00105	ND	0.00107	ND	0.00104
Total Xylenes		0.00331	0.00105	0.00332	0.00129	0.00639	0.00123	0.00545	0.00105	0.00247	0.00107	ND	0.00104
Total BTEX		0.00331	0.00105	0.00332	0.00129	0.00639	0.00123	0.00545	0.00105	0.00247	0.00107	ND	0.00104
Inorganic Anions by EPA 300/300.1	Extracted:	Aug-04-14	10:00	Aug-04-14	10:00	Aug-04-14	10:00	Aug-04-14	10:00	Aug-04-14	10:00	Aug-04-14	10:00
	Analyzed:	Aug-04-14	18:29	Aug-04-14	18:52	Aug-04-14	19:14	Aug-04-14	19:37	Aug-04-14	20:22	Aug-04-14	20:45
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		401	42.2	368	26.0	23.9	2.48	365	21.0	203	10.8	159	10.4
Percent Moisture	Extracted:												
	Analyzed:	Aug-04-14	00:00	Aug-04-14	00:00	Aug-04-14	00:00	Aug-04-14	00:00	Aug-04-14	00:00	Aug-04-14	00:00
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		5.32	1.00	23.0	1.00	19.3	1.00	4.76	1.00	7.49	1.00	4.25	1.00
TPH By SW8015 Mod	Extracted:	Aug-04-14	17:00	Aug-04-14	17:00	Aug-04-14	17:00	Aug-04-14	17:00	Aug-04-14	17:00	Aug-04-14	17:00
	Analyzed:	Aug-05-14	00:01	Aug-05-14	00:25	Aug-05-14	00:52	Aug-05-14	01:20	Aug-05-14	02:13	Aug-05-14	02:38
	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	15.8	ND	19.4	ND	18.6	ND	15.7	ND	16.2	ND	15.7
C12-C28 Diesel Range Hydrocarbons		ND	15.8	ND	19.4	ND	18.6	ND	15.7	ND	16.2	ND	15.7
C28-C35 Oil Range Hydrocarbons		ND	15.8	ND	19.4	ND	18.6	ND	15.7	ND	16.2	ND	15.7
Total TPH		ND	15.8	ND	19.4	ND	18.6	ND	15.7	ND	16.2	ND	15.7

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



Conestoga Rovers & Associates, Midland, TX

Project Name: WLU #20



Project Id: 086498

Project Location: Lea County,NM

Contact: Jacob Ferenz

Date Received in Lab: Thu Jul-31-14 04:15 pm

Report Date: 11-AUG-14

Project Manager: Kelsey Brooks

						Froject Manager:	Keisey Blooks	
Lab Id:	490523-0)19	490523-0	20				
Field Id:	086498-S	B-4	086498-SI	B-4				
Depth:	25 ft		35 ft					
Matrix:	SOIL		SOIL					
Sampled:	Jul-30-14	5:32	Jul-30-14 1	5:36				
Extracted:	Aug-06-14	17:00	Aug-06-14	17:00				
Analyzed:	Aug-06-14	22:53	Aug-06-14 2	23:09				
Units/RL:	mg/kg	RL	mg/kg	RL				
	ND	0.00106	ND	0.00105				
	ND	0.00213	ND	0.00211				
	ND	0.00106	ND	0.00105				
	ND	0.00213						
	ND	0.00106						
	ND	0.00106						
	ND	0.00106	ND	0.00105				
Extracted:	Aug-04-14	10:00	Aug-04-14	10:00				
Analyzed:	Aug-04-14	21:08	Aug-04-14 2	21:30				
Units/RL:	mg/kg	RL	mg/kg	RL				
	6.53	2.13	5.47	2.12				
Extracted:								
Analyzed:	Aug-04-14	00:00	Aug-04-14 (00:00				
Units/RL:	%	RL	%	RL				
	6.29	1.00	5.59	1.00				
Extracted:	Aug-04-14	17:00	Aug-04-14	17:00				
Analyzed:	Aug-05-14	03:03	Aug-05-14 (03:28				
Units/RL:	mg/kg	RL	mg/kg	RL				
	ND	16.0	ND	15.8				
	ND	16.0	ND	15.8				
	ND	16.0	ND	15.8				
	ND	16.0	ND	15.8				
	Field Id: Depth: Matrix: Sampled: Extracted: Analyzed: Units/RL: Extracted: Analyzed: Units/RL: Extracted: Analyzed: Units/RL: Extracted: Analyzed: Analyzed: Analyzed:	Field Id: 086498-S Depth: 25 ft Matrix: SOIL Sampled: Jul-30-14 lt Extracted: Aug-06-14 Analyzed: Aug-06-14 MD ND ND ND ND ND ND ND ND ND Extracted: Aug-04-14 Analyzed: Aug-04-14 Units/RL: % Extracted: Aug-04-14 Analyzed: Aug-04-14 Analyzed: Aug-05-14 Units/RL: mg/kg ND ND ND ND	Field Id: 086498-SB-4 Depth: 25 ft Matrix: SOIL Sampled: Jul-30-14 15:32 Extracted: Aug-06-14 17:00 Analyzed: Aug-06-14 22:53 Units/RL: mg/kg RL ND 0.00106 ND 0.00213 ND 0.00106 ND 0.00106 ND 0.00106 ND 0.00106 Extracted: Aug-04-14 10:00 Analyzed: Aug-04-14 21:08 Units/RL: mg/kg RL 6.53 2.13 Extracted: Aug-04-14 00:00 Units/RL: % RL 6.29 1.00 Extracted: Aug-04-14 17:00 Analyzed: Aug-05-14 03:03 Units/RL: mg/kg RL ND 16.0 ND 16.0 ND 16.0 ND 16.0	Field Id: 086498-SB-4 086498-SI Depth: 25 ft 35 ft Matrix: SOIL SOIL Sampled: Jul-30-14 15:32 Jul-30-14 1 Extracted: Aug-06-14 17:00 Aug-06-14 1 Analyzed: Aug-06-14 22:53 Aug-06-14 2 Units/RL: mg/kg RL mg/kg ND 0.00106 ND ND 0.00213 ND ND 0.00106 ND Extracted: Aug-04-14 10:00 Aug-04-14 2 Analyzed: Aug-04-14 21:08 Aug-04-14 2 Extracted: Aug-04-14 00:00 Aug-04-14 0 Units/RL: % RL % Extracted: Aug-04-14 17:00 Aug-04-14 0 Aug-05-14 03:	Field Id: 086498-SB-4 086498-SB-4 Depth: 25 ft 35 ft Matrix: SOIL SOIL Sampled: Jul-30-14 15:32 Jul-30-14 15:36 Extracted: Aug-06-14 17:00 Aug-06-14 17:00 Analyzed: Aug-06-14 22:53 Aug-06-14 23:09 Units/RL: mg/kg RL ND 0.00106 ND 0.00105 ND 0.00213 ND 0.00211 ND 0.00106 ND 0.00105 Extracted: Aug-04-14 10:00 Aug-04-14 10:00 Aug-04-14 21:30 Mg/kg RL Mg/kg RL Extracted: Aug-04-14 00:00 Aug-04-14 00:00	Field Id: 086498-SB-4 086498-SB-4 35 ft Matrix: SOIL SOIL SOIL Sampled: Jul-30-14 15:32 Jul-30-14 15:36 Extracted: Aug-06-14 17:00 Aug-06-14 23:09 Units/RL: mg/kg RL mg/kg RL ND 0.00106 ND 0.00105 ND 0.00213 ND 0.00211 ND 0.00106 ND 0.00105 Extracted: Aug-04-14 10:00 Aug-04-14 10:00 Aug-04-14 21:30 Units/RL: mg/kg RL RL </th <th> Lab Id:</th> <th> Field Id:</th>	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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Flagging Criteria



- × In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough
- \mathbb{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.
- \pm The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated
- F RPD exceeded lab control limits.
- The target analyte was positively identified below the quantitation limit and above the detection limit.
- U Analyte was not detected.
- 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.
- numerical value may not be consistent with the amount actually present in the environmental sample A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated
- ** 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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Form 2 - Surrogate Recoveries

Project Name: WLU #20

Work Orders: 490523, Lab Batch #: 947169

Sample: 490523-001 / SMP

Batch: Project ID: 086498 Matrix: Soil

Units: mg/kg Date Analyzed: 08/02/14 05:22 SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found	True Amount	Recovery	Control Limits	Flags
Analytes	Þ	[B]	%R [D]	%R	
1-Chlorooctane	97.4	99.6	98	70-135	
o-Terphenyl	45.3	49.8	91	70-135	
Lab Batch #: 947169 Sample: 490523-002 / SMP	Batch:	Batch: 1 Matrix: Soil	Soil		

Units: mg/kg Date Analyzed: 08/02/14 05:50

Survey training training to the state of the	30	SUNNOGATE NECOVERT STO	COVERT	IUDI	
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	87.9	99.7	88	70-135	
o-Terphenyl	41.1	49.9	82	70-135	

Lab Batch #: 947169 Sample: 490523-003 / SMP Batch: _ Matrix: Soil

Units: 1-Chlorooctane mg/kg TPH By SW8015 Mod Analytes Date Analyzed: 08/02/14 06:15 Amount Found 92.1 ≥ SURROGATE RECOVERY STUDY Amount [B] True 99.9 Recovery %R [D] 92 70-135 Control Limits %R Flags

Units: Lab Batch #: 947169 mg/kg Sample: 490523-004 / SMP Batch: Matrix: Soil

43.0

50.0

86

70-135

o-Terphenyl

Date Analyzed: 08/02/14 06:40 SURROGATE RECOVERY STUDY

				(
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes			[0]		
1-Chlorooctane	106	99.6	106	70-135	
o-Terphenyl	51.1	49.8	103	70-135	
The state of the color of the state of the s	D-4-1	D-4-1. 1 M-4-2. C-31	C ~ :1		

Lab Batch #: 947169 **Sample:** 490523-005 / SMP Batch: Matrix: Soil

Units: mg/kg	Date Analyzed: 08/02/14 07:59	US	SURROGATE RECOVERY STUDY	ECOVERY S	TUDY	
ТРН	TPH By SW8015 Mod	Amount Found	True Amount	Recovery	Control Limits	Flags
	Analytes	Ā	Б	[D]	% K	
1-Chlorooctane		86.5	99.8	87	70-135	
o-Terphenyl		40.5	49.9	81	70-135	

Surrogate Recovery [D] = 100 * A / B All results are based on MDL and validated for QC purposes.

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Form 2 - Surrogate Recoveries

Project Name: WLU #20

Work Orders: 490523, Lab Batch #: 947169

Sample: 490523-006 / SMP

Project ID: 086498

mg/kg Date Analyzed: 08/02/14 08:26

Batch: Matrix: Soil

CHR3. Hg/ng Pate Maryzeu, 00/02/14 00:20		SURRUGALE RECOVERY SIG	COVERY	YUUI	
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	86.0	99.8	86	70-135	
o-Terphenyl	39.0	49.9	78	70-135	
Lab Batch #: 947341 Sample: 490523-007 / SMP		Batch: 1 Matrix: Soil	Soil		

Units: mg/kø **Date Analyzed:** 08/04/14 20:33

Cillis. Highes Pate Malyzed: Volver 17 20:55	20	SURRUGALE RECOVERY SILV	COVERY	YUUI	
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
	100	0000	100	70 125	
1-Chlorooctane	109	99.8	109	70-135	
o-Terphenyl	53.5	49.9	107	70-135	

Lab Batch #: 947341 Sample: 490523-008 / SMP Batch: _ Matrix: Soil

Units: o-Terphenyl 1-Chlorooctane mg/kg TPH By SW8015 Mod Analytes **Date Analyzed:** 08/04/14 21:51 Amount Found 103 ≥ SURROGATE RECOVERY STUDY Amount [B] True 99.6 Recovery %R [D] 102 103 70-135 Control Limits %R 70-135 Flags

Units: Lab Batch #: 947341 mg/kg Date Analyzed: 08/04/14 22:16 Sample: 490523-009 / SMP Batch: SURROGATE RECOVERY STUDY Matrix: Soil

50.7

49.8

	i			(
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	97.7	7.66	98	70-135	
o-Terphenyl	48.1	49.9	96	70-135	
1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1	ו-י-ם	D-1-1- 1 M-1-1- C-1	C - :1		

Lab Batch #: 947341 Sample: 490523-010 / SMP Batch: _ Matrix: Soil

Units: mg/kg	Date Analyzed: 08/04/14 22:40	US	SURROGATE RECOVERY STUDY	ECOVERY S	TUDY	
TPH	TPH By SW8015 Mod	Amount Found	True Amount	Recovery	Control Limits	Flags
	Analytes	A	[B]	%R [D]	%R	
1-Chlorooctane		103	99.9	103	70-135	
o-Terphenyl		47.5	50.0	95	70-135	

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B All results are based on MDL and validated for QC purposes.

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: WLU #20

Lab Batch #: 947341 Work Orders: 490523,

Sample: 490523-011 / SMP

Batch: Project ID: 086498 Matrix: Soil

Units: mg/kg Date Analyzed: 08/04/14 23:08

Units: n	mg/kg	Date Analyzed: 08/04/14 23:08	SUI	SURROGATE RECOVERY STUDY	COVERY S	TUDY	
	TPH B	TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	1	Analytes			[D]		
1-Chlorooctane			129	99.9	129	70-135	
o-Terphenyl			61.7	50.0	123	70-135	

Lab Batch #: 947341 Sample: 490523-012 / SMP Batch: _ Matrix: Soil

Units: 1-Chlorooctane mg/kg TPH By SW8015 Mod Analytes Date Analyzed: 08/04/14 23:36 Found [A] Amount 117 SURROGATE True Amount [B] 100 RECOVERY STUDY Recovery %R 117 $\overline{\exists}$ 70-135 Control Limits %R Flags

Lab Batch #: 947341 o-Terphenyl Sample: 490523-013 / SMP 58.8 Batch: 50.0 Matrix: Soil 118

70-135

o-Terphenyl 1-Chlorooctane mg/kg TPH By SW8015 Mod Analytes Date Analyzed: 08/05/14 00:01 Amount Found 62.4 124 ≥ SURROGATE RECOVERY STUDY Amount [B] True 49.9 99.7 Recovery %R 125 124 \equiv Control Limits %R 70-135 70-135 Flags

Units: Lab Batch #: 947341 mg/kg **Sample:** 490523-014 / SMP Batch: Matrix: Soil

Date Analyzed: 08/05/14 00:25 SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	112	99.8	112	70-135	
o-Terphenyl	56.1	49.9	112	70-135	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7	T 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	G :1		

Lab Batch #: 947341 Sample: 490523-015 / SMP Batch: Matrix: Soil

Units: mg/kg	kg Date Analyzed: 08/05/14 00:52		SURROGATE RECOVERY STUDY	ECOVERY S	TUDY	
	TPH By SW8015 Mod	Amount Found	True Amount	Recovery	Control Limits	Flags
	Analytes	5		[D]		
1-Chlorooctane		116	99.8	116	70-135	
o-Terphenyl		58.2	49.9	117	70-135	

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Project Name: WLU #20

Lab Batch #: 947341 Work Orders: 490523,

Sample: 490523-016 / SMP

Project ID: 086498

Date **Analyzed:** 08/05/14 01:20

> Batch: Matrix: Soil

Units: mg/kg	Date Analyzea: 08/05/14 01:20	SU	SURROGATE RECOVERY ST	ECOVERY S	TUDY	
TPI	TPH By SW8015 Mod	Amount Found	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes	-	3	[D]	Ì	
1-Chlorooctane		102	99.7	102	70-135	
o-Terphenyl		50.6	49.9	101	70-135	
Lab Batch #: 947341	Sample: 490523-017 / SMP	Batch	Batch: 1 Matrix: Soil	Soil	-	

Units: mg/kg Date Analyzed: 08/05/14 02:13 SURROGATE RECOVERY STUDY

•		COMMODATE NECOVERT STORT			
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes	A	В	[D] %	%R	
1-Chlorooctane	107	99.9	107	70-135	
o-Terphenyl	53.3	50.0	107	70-135	

Lab Batch #: 947341 **Sample:** 490523-018 / SMP Batch: _ Matrix: Soil

Units: o-Terphenyl 1-Chlorooctane mg/kg TPH By SW8015 Mod Analytes **Date Analyzed:** 08/05/14 02:38 Amount Found 50.7 102 ≥ SURROGATE RECOVERY STUDY Amount [B] True 50.0 99.9 Recovery %R [D] 101 102 Control Limits %R 70-135 70-135 Flags

Units: Lab Batch #: 947341 mg/kg Sample: 490523-019 / SMP Batch: Matrix: Soil

Date Analyzed: 08/05/14 03:03 SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	106	99.7	106	70-135	
o-Terphenyl	53.2	49.9	107	70-135	
1 100500 000 (5)			G .:		

Lab Batch #: 947341 **Sample:** 490523-020 / SMP Batch: _ Matrix: Soil

Units: mg/kg TPH By SW8015 Mod **Analytes** Date Analyzed: 08/05/14 03:28 Amount Found ≥ SURROGATE RECOVERY STUDY Amount [B] True Recovery %R $\overline{\Xi}$ Control Limits %R Flags

o-Terphenyl 1-Chlorooctane

58.8

49.9 99.7

118 117

70-135 70-135

117

Surrogate Recovery [D] = 100 * A/B All results are based on MDL and validated for QC purposes.

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: WLU #20

Lab Batch #: 947343 Work Orders: 490523,

Sample: 490523-001 / SMP

Project ID: 086498

J 08/05/14 13:57

Batch: Matrix: Soil

Units: mg/kg	Date Analyzed: 08/05/14 12:57	SUI	SURROGATE RECOVERY STI	COVERY S	TUDY	
втех	BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
1	Analytes			[D]		
1,4-Difluorobenzene		0.0307	0.0300	102	80-120	
4-Bromofluorobenzene		0.0305	0.0300	102	80-120	
Lab Batch #: 947343	Sample: 490523-002 / SMP	Batch:	: 1 Matrix: Soil	Soil		

Units: mg/kg Date Analyzed: 08/05/14 16:46 SURROGATE RECOVERY STUDY

	90	SURROGATE NECOVERT STO	COVENI	IUDI	
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	0.0307	0.0300	102	80-120	

Lab Batch #: 947343 Sample: 490523-003 / SMP Batch: _ Matrix: Soil

Units: mg/kg Date Analyzed: 08/05/14 17:55 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	8021B	Amount Found	True Amount	Recovery	Control Limits	Flags
Analytes		A	[<u>B</u>]	[D] %R	%R	
1,4-Difluorobenzene		0.0296	0.0300	99	80-120	
4-Bromofluorobenzene		0.0315	0.0300	105	80-120	
I ah Ratch #. 047343	Sample: 490523_004 / SMD	Ratch:	. 1 Matrice Soil	Soil		

Lab Batch # 94/343 **Sample:** 490523-004 / SIMI Baten: Matrix: Soil

Units: 1,4-Difluorobenzene mg/kg BTEX by EPA 8021B Analytes Date Analyzed: 08/05/14 18:11 0.0304Amount Found lacksquareSURROGATE Amount [B] 0.0300True RECOVERY STUDY Recovery %R 101 \equiv 80-120 Control Limits %R Flags

Lab Batch #: 947343 Sample: 490523-005 / SMP Batch: Matrix: Soil

0.0295

0.0300

98

80-120

4-Bromofluorobenzene

Units: mg/kg	Date Analyzed: 08/05/14 18:45	SU	SURROGATE RECOVERY STUDY	ECOVERY S	TUDY	
ВТЕХ	BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1,4-Difluorobenzene		0.0294	0.0300	98	80-120	
4-Bromofluorobenzene		0.0289	0.0300	96	80-120	

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Project Name: WLU #20

Work Orders: 490523, Lab Batch #: 947343

Sample: 490523-006 / SMP

Batch: Project ID: 086498 Matrix: Soil

Units: mg/kg **Date Analyzed:** 08/05/14 19:01

Units: mg/kg	Date Analyzed: 08/05/14 19:01	SU	SURROGATE RECOVERY STUDY	COVERY S	YUUT	
ВТЕ	BTEX by EPA 8021B	Amount Found	True Amount [B]	Recovery	Control Limits	Flags
	Analytes			[D]		
1,4-Difluorobenzene		0.0302	0.0300	101	80-120	
4-Bromofluorobenzene		0.0319	0.0300	106	80-120	
I ah Batch #. 0/73/3	Sample: 100573_007 / SMD	Batch	Batch: 1 Matrix: Soil	Soil		

Lab Batch #: 947343 Sample: 490523-007 / SMP Batch: Matrix: Soil

Units: mg/kg	Date Analyzed: 08/05/14 19:18	SU	SURROGATE RECOVERY STU	COVERY S	TUDY	
втех	BTEX by EPA 8021B	Amount Found	True Amount	Recovery	Control Limits	Flags
	Analytes			[D]		
1,4-Difluorobenzene		0.0307	0.0300	102	80-120	
4-Bromofluorobenzene		0.0304	0.0300	101	80-120	

Lab Batch #: 947343 Sample: 490523-008 / SMP Batch: _ Matrix: Soil

Units: mg/kg	Date Analyzed: 08/05/14 19:35	SU	SURROGATE RECOVERY STUDY	ECOVERY S	TUDY	
ВТЕ	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		0.0305	0.0300	102	80-120	

Lab Batch #: 947343 Sample: 490523-009 / SMP Batch: Matrix: Soil

Units: mg/kg	'kg	Date Analyzed: 08/05/14 20:23	SUI	SURROGATE RECOVERY STUDY	COVERY S	TUDY	
	BTEX b	BTEX by EPA 8021B	Amount Found	True Amount [R]	Recovery %R	Control Limits %R	Flags
	A	Analytes	3	3	[D]	Ì	
1,4-Difluorobenzene	0		0.0304	0.0300	101	80-120	
4-Bromofluorobenzene	ene		0.0302	0.0300	101	80-120	
		~ 100522 212 / 23	1		:		

Lab Batch #: 947343 Sample: 490523-010 / SMP Batch: _ Matrix: Soil

Units: mg/kg Date Analyzed	Date Analyzed: 08/05/14 20:40	SUI	SURROGATE RECOVERY STUDY	COVERY S	TUDY	
BTEX by EPA 8021B		Amount Found	True Amount IRI	Recovery	Control Limits %R	Flags
Analytes				[D]		
1,4-Difluorobenzene		0.0303	0.0300	101	80-120	

^{*} Surrogate outside of Laboratory QC limits

4-Bromofluorobenzene

0.0309

0.0300

103

80-120

*** Poor recoveries due to dilution Surrogate Recovery [D] = 100 * A/B All results are based on MDL and validated for QC purposes.

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis



Project Name: WLU #20

Work Orders: 490523, Lab Batch #: 947343

Sample: 490523-011 / SMP

Batch: Project ID: 086498 Matrix: Soil

Units: mg/kg Date Analyzed: 08/05/14 20:56

4-Bromofluorobenzene 1,4-Difluorobenzene BTEX by EPA 8021B **Analytes** 0.0306Amount Found [A] 0.0299SURROGATE RECOVERY STUDY Amount [B] 0.03000.0300True Recovery %R [D] 102 100 80-120 80-120 Control Limits %R Flags

Lab Batch #: 947343 Sample: 490523-012 / SMP Batch: Matrix: Soil

5 08/05/1/ 31

Units: mg/kg	Date Analyzed: 08/05/14 21:13	SU	SURROGATE RECOVERY STUDY	COVERY S	TUDY	
ВТЕХ	BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
7	Analytes			[D]		
1,4-Difluorobenzene		0.0304	0.0300	101	80-120	
4-Bromofluorobenzene		0.0292	0.0300	97	80-120	

Lab Batch #: 947343 Sample: 490523-013 / SMP Batch: _ Matrix: Soil

4-Bromofluorobenzene 1,4-Difluorobenzene mg/kg BTEX by EPA 8021B Analytes Date Analyzed: 08/05/14 21:30 0.0310Amount Found 0.0293 ≥ SURROGATE RECOVERY STUDY Amount [B] 0.03000.0300True Recovery %R \Box 103 98 80-120 Control Limits %R 80-120 Flags

Units: Lab Batch #: 947343 **Sample:** 490523-014 / SMP Batch: Matrix: Soil

Date Analyzed: 08/05/14 21:46 SURROGATE RECOVERY STUDY

Units: mg/kg	Date Analyzed: 08/05/14 21:46	SU	SURROGATE RECOVERY STUDY	ECOVERY S	YUUT	
ВТІ	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		0.0320	0.0300	107	80-120	
I at Datat #: 0/72/2	SI-: 100522 015 / SMD	n atal	Databa 1 Matrice Cail	C 2:1		

Lab Batch #: 947343 Sample: 490523-015 / SMP Batch: Matrix: Soil

Units: mg/kg	Date Analyzed: 08/05/14 22:03	US	SURROGATE RECOVERY STUDY	COVERY S	TUDY	
ВТЕХ	BTEX by EPA 8021B	Amount Found	True Amount	Recovery	Control Limits	Flags
	Analytes	[A]	<u>B</u>	[D]	%R	
1,4-Difluorobenzene		80000	0.0300	103	80-120	
4-Bromofluorobenzene		0.0297	0.0300	99	80-120	

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: WLU #20

Work Orders: 490523, Lab Batch #: 947343

Sample: 490523-016 / SMP

Batch: Project ID: 086498 Matrix: Soil

Units: mg/kg **Date Analyzed:** 08/05/14 22:19

4-Bromofluorobenzene 1,4-Difluorobenzene BTEX by EPA 8021B **Analytes** 0.0307 0.0296Amount Found [A] SURROGATE RECOVERY STUDY Amount [B] 0.03000.0300True Recovery %R 102 \Box 99 80-120 80-120 Control Limits %R Flags

Lab Batch #: 947343 Sample: 490523-017 / SMP Batch: Matrix: Soil

Units: mg/kg BTEX by EPA 8021B Analytes Date Analyzed: 08/05/14 22:36 Found [A] Amount SURROGATE True Amount [B] RECOVERY STUDY Recovery %R [D] Control Limits %R Flags

Lab Batch #: 947343 4-Bromofluorobenzene Sample: 490523-018 / SMP 0.0286 Batch: 0.0300Matrix: Soil 95

0.0304

0.0300

101

80-120 80-120

1,4-Difluorobenzene

mg/kg Date Analyzed: 08/05/14 22:52 SURROGATE RECOVERY STUDY

втех ьу	BTEX by EPA 8021B	Amount Found	True Amount	Recovery	Control Limits	Flags
An	Analytes	[A]	[B]	%R [D]	%R	
1,4-Difluorobenzene		0.0312	0.0300	104	80-120	
4-Bromofluorobenzene		0.0293	0.0300	98	80-120	
I ah Ratch #: 047588	Sample: 490523-019 / SMP	Ratch:	. 1 Matrix Soil	Soil		

Lab Baten Sample: 49032

Units:

mg/kg

Date Analyzed: 08/06/14 22:53 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0305	0.0300	102	80-120	
4-Bromofluorobenzene	0.0306	0.0300	102	80-120	
			:		

Lab Batch #: 947588 Sample: 490523-020 / SMP Batch: _ Matrix: Soil

Units: mg/kg	Date Analyzed: 08/06/14 23:09	SU	SURROGATE RECOVERY STUDY	ECOVERY S	TUDY	
ВТЕХ	BTEX by EPA 8021B	Amount Found	True Amount	Recovery	Control Limits	Flags
	Analytes	Ā	В	[D]	%R	
1,4-Difluorobenzene		0.0298	0.0300	99	80-120	
4-Bromofluorobenzene		0.0302	0.0300	101	80-120	

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B All results are based on MDL and validated for QC purposes.

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: WLU #20

Work Orders: 490523, Lab Batch #: 947169

Sample: 659330-1-BLK / BLK

Batch: Project ID: 086498 Matrix: Solid

Date Analyzed: 08/02/14 00:34

SURROGATE RECOVERY STUDY

Units: mg/kg	Date Analyzed: 08/02/14 00:34	SU	SURROGATE RECOVERY STI	COVERY S	TUDY	
ПРП	TPH By SW8015 Mod	Amount Found	True Amount	Recovery	Control Limits	Flags
	Analytes]]	[D]		
1-Chlorooctane		99.2	100	99	70-135	
o-Terphenyl		48.2	50.0	96	70-135	
Lab Batch #: 947341	Sample: 659453-1-BLK / BLK		Batch: 1 Matrix: Solid	Solid		

Units: mg/kg Date Analyzed: 08/04/14 19:17

Cilius. Highes Pate Malyzed. Voloti 17:11	20	SURRUGALE RECOVERY SILV	COVERY	YUUI	
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	111	100	111	70-135	
o-Terphenyl	56.7	50.0	113	70-135	

Lab Batch #: 947343 Sample: 659455-1-BLK / BLK Batch: _ Matrix: Solid

Units: mg/kg Date Analyzed: 08/05/14 11:18 SURROGATE RECOVERY STUDY

DTEX I FINA COAIN	A mount	True		Control	
BIEX by EPA 8021B	Found	Amount	Recovery	Limits %R	Flags
Analytes	Ā	Б	[D]	%X	
1,4-Difluorobenzene	0.0291	0.0300	97	80-120	
4-Bromofluorobenzene	0.0269	0.0300	90	80-120	
Tab Ratch #: 047588 Sample: 659617_1_RI V / RI V	K Ratch.	· 1 Matrix Colid	Solid		

Lab Baten 94/388 Sample: 03901/-1-BLK

Units: mg/kg Date Analyzed: 08/06/14 21:15 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0292	0.0300	97	80-120	
4-Bromofluorobenzene	0.0274	0.0300	91	80-120	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		D 1 1 NT 1 9 11 1	α_1:1		

Lab Batch #: 947169 Sample: 659330-1-BKS / BKS Batch: Matrix: Solid

Units:	mg/kg	Date Analyzed: 08/02/14 01:00	SU	SURROGATE RECOVERY STUDY	COVERY S	TUDY	
	ТРН В	TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctane	ne		97.9	100	98	70-135	
o-Terphenyl			48.2	50.0	96	70-135	

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B All results are based on MDL and validated for QC purposes.

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: WLU #20

Work Orders: 490523, Lab Batch #: 947341

Sample: 659453-1-BKS / BKS

Batch: Project ID: 086498 Matrix: Solid

mg/kg Date Analyzed: 08/04/14 19:41

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes	3	3	[D]	,	
1-Chlorooctane	128	100	128	70-135	
o-Terphenyl	64.5	50.0	129	70-135	

Lab Batch #: 947343 **Sample:** 659455-1-BKS / BKS Batch: _ Matrix: Solid

Units: mg/kg	Date Analyzed: 08/05/14 11:35	SU	SURROGATE RECOVERY STU	COVERY S	TUDY	
ВТЕХ	BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1,4-Difluorobenzene		0.0295	0.0300	98	80-120	
4-Bromofluorobenzene		0.0308	0.0300	103	80-120	

Lab Batch #: 947588 Sample: 659617-1-BKS / BKS Batch: Matrix: Solid

Units: mg/kg Date Analyzed: 08/06/14 21:31 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found	True Amount	Recovery	Control Limits	Flags
Analytes	Δ	<u> </u>	[D]	%X	
1,4-Difluorobenzene	0.0300	0.0300	100	80-120	
4-Bromofluorobenzene	0.0320	0.0300	107	80-120	
1 -1 n -1 1 017170 S 1 750330 1 ngn / ngn		D-1-1- 1 M-1-1- C-1:1	C -1: 1		

Lab Batch #: 947169 Sample: 659330-1-BSD / BSD Batch: Matrix: Solid

Units: mg/kg Date Analyzed: 08/02/14 01:29 SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	91.8	100	92	70-135	
o-Terphenyl	45.7	50.0	91	70-135	

Lab Batch #: 947341 **Sample:** 659453-1-BSD / BSD Batch: _ Matrix: Solid

		,	TP	Units: mg/kg
Analytes			TPH By SW8015 Mod	Date Analyzed: 08/04/14 20:07
	[A]	Found	Amount	SU
	[B]	Amount	True	RROGATE RECOVERY STUDY
Ð	%R	Recovery		ECOVERY S
	%R	Limits	Control	STUDY
		Flags		

o-Terphenyl 1-Chlorooctane

64.9124

50.0 100

130 124

70-135 70-135

*** Poor recoveries due to dilution Surrogate Recovery [D] = 100 * A/B All results are based on MDL and validated for QC purposes.

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis



Project Name: WLU #20

Lab Batch #: 947343 Work Orders: 490523,

Sample: 659455-1-BSD / BSD

Batch: Project ID: 086498 Matrix: Solid

Date Analyzed: 08/05/14 11:52

Omus: mg/kg	Date Allalyzed: 08/03/14 11:32	S.C.R	SURROGATE RECOVERY ST	ECOVERY	YUUT	
ВТЕ	BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1,4-Difluorobenzene		0.0294	0.0300	98	80-120	
4-Bromofluorobenzene		0.0307	0.0300	102	80-120	
Lab Batch #: 947588	Sample: 659617-1-BSD / BSD		Batch: 1 Matrix: Solid	Solid		

Units: mg/kg BTEX by EPA 8021B Date Analyzed: 08/06/14 21:48 Amount SURROGATE RECOVERY STUDY True Control

4-Bromofluorobenzene 1,4-Difluorobenzene Analytes 0.02950.0307 Found [A] Amount [B] 0.0300 0.0300Recovery %R [D] 102 98 80-120 80-120 Limits %R Flags

Lab Batch #: 947169 Sample: 490501-004 S / MS Batch: Matrix: Soil

1-Chlorooctane mg/kg TPH By SW8015 Mod Analytes Date Analyzed: 08/02/14 03:40 Amount Found 103 ≥ SURROGATE RECOVERY STUDY Amount [B] True 99.9 Recovery %R 103 \equiv Control Limits %R 70-135 Flags

Units: Lab Batch #: 947341 Date Analyzed: 08/04/14 20:57 Sample: 490523-007 S / MS Batch: Matrix: Soil

48.0

50.0

96

70-135

o-Terphenyl

Units: mg	mg/kg	Date Analyzed: 08/04/14 20:57	SUI	SURROGATE RECOVERY STUDY	COVERY S	TUDY	
	ТРН В	TPH By SW8015 Mod	Amount Found	True Amount	Recovery	Control Limits	Flags
		Analytes	<u> </u>	<u> </u>	[D]	Ì	
1-Chlorooctane			124	99.8	124	70-135	
o-Terphenyl			62.0	49.9	124	70-135	
I ah Datah #: 0/73/3	72/1	Sample: 100523 001 S / MS		Datah. 1 Matrix: Sail	Co.i		

Lab Batch #: 947343 Sample: 490523-001 S / MS Batch: Matrix: Soil

Units: mg/kg	kg	Date Analyzed: 08/05/14 12:08	SUI	SURROGATE RECOVERY STUDY	COVERY S	TUDY	
	BTEX	BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	4	Analytes			[D]		
1,4-Difluorobenzene	O		0.0308	0.0300	103	80-120	
4-Bromofluorobenzene	ene		0.0329	0.0300	110	80-120	

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: WLU #20

Work Orders: 490523, Lab Batch #: 947588

Sample: 490654-003 S / MS

Batch: Project ID: 086498 Matrix: Soil

Units: mg/kg Date Analyzed: 08/06/14 22:04

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

Lab Batch #: 947169 4-Bromofluorobenzene Sample: 490501-004 SD / MSD 0.0319Batch: 0.0300Matrix: Soil 106

0.0297

0.0300

99

80-120 80-120

1,4-Difluorobenzene

Analytes

Units: mg/kg	ξg	Date Analyzed: 08/02/14 04:05	SU	SURROGATE RECOVERY STU	COVERY S	TUDY	
	ТРН В	TPH By SW8015 Mod	Amount Found	True Amount	Recovery	Control Limits	Flags
		Analytes	[A]	[B]	%R [D]	%R	
1-Chlorooctane			96.9	99.9	97	70-135	
o-Terphenyl			50.1	50.0	100	70-135	

Lab Batch #: 947341 Sample: 490523-007 SD / MSD Batch: _ Matrix: Soil

1-Chlorooctane mg/kg TPH By SW8015 Mod Analytes Date Analyzed: 08/04/14 21:24 Amount Found 128 ≥ SURROGATE RECOVERY STUDY Amount [B] True 99.9 Recovery %R \Box 128 Control Limits %R 70-135 Flags

Lab Batch #: 947343 Sample: 490523-001 SD / MSD Batch: Matrix: Soil

62.3

50.0

125

70-135

o-Terphenyl

Units:	mg/kg	Date Analyzed: 08/05/14 12:25	SUI	SURROGATE RECOVERY STUDY	COVERY S	TUDY	
	BTEX	BTEX by EPA 8021B	Amount Found	True Amount	Recovery	Control Limits	Flags
	A	Analytes	A	[5]	Ð	% X	
1,4-Difluorobenzene	ene		0.0306	0.0300	102	80-120	
4-Bromofluorobenzene	nzene		0.0338	0.0300	113	80-120	
1 1 1 1 047500	17500	G 1 1000/5/ 000 CD /1/CD		1 1 No. 10-11	Ω		

Lab Batch #: 947588 **Sample:** 490654-003 SD / MSD Batch: $\overline{}$ Matrix: Soil

Units: mg/kg D	Date Analyzed: 08/06/14 22:20	SU	SURROGATE RECOVERY STUDY	COVERY S	TUDY	
BTEX by EPA 8021E Analytes	EPA 8021B Lytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes	lytes			[D]		
1,4-Difluorobenzene		0.0300	0.0300	100	80-120	
4-Bromofluorobenzene		0.0345	0.0300	115	80-120	

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B All results are based on MDL and validated for QC purposes.

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



BS / BSD Recoveries



Project Name: WLU #20

Work Order #: 490523 Project ID: 086498

Analyst: ARM Date Prepared: 08/05/2014 Date Analyzed: 08/05/2014

Lab Batch ID: 947343 Sample: 659455-1-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	0.0970	97	0.100	0.0984	98	1	70-130	35	
Toluene	< 0.00200	0.100	0.101	101	0.100	0.102	102	1	70-130	35	
Ethylbenzene	< 0.00100	0.100	0.104	104	0.100	0.105	105	1	71-129	35	
m,p-Xylenes	< 0.00200	0.200	0.209	105	0.200	0.212	106	1	70-135	35	
o-Xylene	< 0.00100	0.100	0.100	100	0.100	0.101	101	1	71-133	35	

Analyst: ARM Date Prepared: 08/06/2014 Date Analyzed: 08/06/2014

Lab Batch ID: 947588 Sample: 659617-1-BKS Batch #: 1 Matrix: Solid

Units: mg/kg 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	0.0956	96	0.100	0.0928	93	3	70-130	35	
Toluene	< 0.00200	0.100	0.0982	98	0.100	0.0959	96	2	70-130	35	
Ethylbenzene	< 0.00100	0.100	0.101	101	0.100	0.0984	98	3	71-129	35	
m,p-Xylenes	< 0.00200	0.200	0.202	101	0.200	0.198	99	2	70-135	35	
o-Xylene	< 0.00100	0.100	0.0985	99	0.100	0.0962	96	2	71-133	35	

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



BS / BSD Recoveries



Project Name: WLU #20

Work Order #: 490523 Project ID: 086498

Analyst: JUM Date Prepared: 08/01/2014 Date Analyzed: 08/01/2014

Lab Batch ID: 947150 Sample: 659315-1-BKS Batch #: 1 Matrix: Solid

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

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
Chloride	<2.00	50.0	52.6	105	50.0	46.2	92	13	80-120	20	

Analyst: JUM **Date Prepared:** 08/04/2014 **Date Analyzed:** 08/04/2014

Lab Batch ID: 947522 Sample: 659375-1-BKS Batch #: 1 Matrix: Solid

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

Inorganic Anions by EPA 300/300.1	Blank 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]				
Chloride	<2.00	50.0	49.1	98	50.0	48.3	97	2	80-120	20	

Analyst: JUM Date Prepared: 08/01/2014 Date Analyzed: 08/02/2014

Lab Batch ID: 947169 Sample: 659330-1-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	825	83	1000	801	80	3	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.0	1000	867	87	1000	821	82	5	70-135	35	

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



BS / BSD Recoveries



Project Name: WLU #20

Work Order #: 490523 Project ID: 086498

 Analyst:
 ARM
 Date Prepared: 08/04/2014
 08/04/2014
 Date Analyzed: 08/04/2014

Lab Batch ID: 947341 Sample: 659453-1-BKS Batch #: 1 Matrix: Solid

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

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	1000	866	87	1000	880	88	2	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.0	1000	1070	107	1000	1080	108	1	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: WLU #20

Work Order #: 490523 947150

Date Analyzed: Lab Batch #: 08/01/2014 **Date Prepared:** 08/01/2014

QC- Sample ID: 490523-001 S

Batch #: Matrix: Soil

Project ID: 086498

Analyst: JUM

Reporting Units: mg/kg Inorganic Anions by EPA 300 Analytes Sample Result **Parent** 52.2 $\overline{\geq}$ MATRIX / MATRIX SPIKE Spike Added [B] 262 Spiked Sample Result 309 $\overline{\mathbb{C}}$ RECOVERY STUDY <u>D</u> % 98 Control Limits 80-120 %R Flag

Lab Batch #: 947150

QC- Sample ID: Date Analyzed: 490563-001 S 08/01/2014 Date Prepared: 08/01/2014 Batch #: Analyst: JUM

Matrix: Soil

Reporting Units: mg/kg Chloride Inorganic Anions by EPA 300 Analytes Sample Result [A] 73400 Parent MATRIX / MATRIX SPIKE RECOVERY STUDY 100000 Spike Added [B] Spiked Sample 181000 Result $\overline{\mathbf{C}}$ <u>D</u> % 108 Control 80-120 Limits Flag

Lab Batch #: 947522

QC- Sample ID: Date Analyzed: 490523-006 S 08/04/2014 **Date Prepared:** 08/04/2014 Batch #: Analyst: JUM Matrix: Soil

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

Chloride Inorganic Anions by EPA 300 **Analytes** Sample Result 188 ⅀ Spike Added [B] 257 Spiked Sample Result 423 $\overline{\mathbb{C}}$ <u>D</u> 91 Control Limits %R 80-120 Flag

Lab Batch #: 947522

QC- Sample ID: Date Analyzed: 490523-016 S 08/04/2014

Reporting Units: mg/kg

Date Prepared: 08/04/2014

Batch #:

Analyst: JUM

Matrix: Soil

MATRIX / MATRIX SPIKE RECOVERY STUDY

Chloride Inorganic Anions by EPA 300 Analytes Sample Result [A] Parent 365 Spike Added [B] 525 Spiked Sample Result 868 $\overline{\mathbb{C}}$ ⊒ % 96 Control Limits %R 80-120 Flag

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

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Form 3 - MS / MSD Recoveries



Project Name: WLU #20

Work Order #: 490523 Project ID: 086498

Lab Batch ID: 947343 **QC- Sample ID:** 490523-001 S **Batch #:** 1 **Matrix:** Soil

 Date Analyzed:
 08/05/2014
 Date Prepared:
 08/05/2014
 Analyst:
 ARM

Reporting Units: mg/kg 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	0.103	98	0.105	0.104	99	1	70-130	35	
Toluene	< 0.00210	0.105	0.107	102	0.105	0.108	103	1	70-130	35	
Ethylbenzene	< 0.00105	0.105	0.111	106	0.105	0.112	107	1	71-129	35	
m,p-Xylenes	0.00272	0.210	0.222	104	0.210	0.226	106	2	70-135	35	
o-Xylene	< 0.00105	0.105	0.107	102	0.105	0.110	105	3	71-133	35	

Lab Batch ID: 947588 **QC- Sample ID:** 490654-003 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg 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	<0.00111	0.111	0.0918	83	0.111	0.0915	82	0	70-130	35	
Toluene	< 0.00222	0.111	0.0932	84	0.111	0.0945	85	1	70-130	35	
Ethylbenzene	< 0.00111	0.111	0.0925	83	0.111	0.0960	86	4	71-129	35	
m,p-Xylenes	< 0.00222	0.222	0.184	83	0.221	0.192	87	4	70-135	35	
o-Xylene	< 0.00111	0.111	0.0896	81	0.111	0.0928	84	4	71-133	35	



Form 3 - MS / MSD Recoveries



Project Name: WLU #20

Work Order #: 490523 Project ID: 086498

Lab Batch ID: 947169 **QC- Sample ID:** 490501-004 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/02/2014 Date Prepared: 08/01/2014 Analyst: JUM

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	<16.0	1060	854	81	1060	864	82	1	70-135	35	
C12-C28 Diesel Range Hydrocarbons	361	1060	1370	95	1060	1260	85	8	70-135	35	

Lab Batch ID: 947341 **QC- Sample ID:** 490523-007 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/04/2014 Date Prepared: 08/04/2014 Analyst: ARM

Reporting Units: mg/kg MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Gasoline Range Hydrocarbons	<15.4	1020	912	89	1030	1080	105	17	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.4	1020	1100	108	1030	1140	111	4	70-135	35	



Sample Duplicate Recovery



Project Name: WLU #20

Work Order #: 490523

Date Analyzed: 08/04/2014 00:00 **Lab Batch #:** 947213

QC- Sample ID: 490523-001 D

Date Prepared: 08/04/2014

Batch #: Analyst: WRU Matrix: Soil

Project ID: 086498

Percent Moisture Reporting Units: % **Percent Moisture** Analyte Parent Sample Result SAMPLE / SAMPLE DUPLICATE RECOVERY 4.75 lacksquareSample Duplicate Result [B] 3.94 RPD 19 Control Limits %RPD 20 Flag

Lab Batch #: 947213

QC- Sample ID: 490523-011 D Date Analyzed: 08/04/2014 00:00

Date Prepared: 08/04/2014

Analyst: WRU

Batch #:

Matrix: Soil

Reporting Units: %	SAMPLE	SAMPLE / SAMPLE DUPLICATE RECOVERY	JUPLICA	ALE KECC	JVEKY
Percent Moisture Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	2.52	2.50	1	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

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Setting the Standard since 1990

Stafford, Texas (281-240-4200)

Analytical Information # dol oonex # etouD coneX Tampa, Florida (813-620-2000) Norcross, Georgia (770-449-8800) Lakeland, Florida (863-646-8526) Odessa, Texas (432-563-1800)

usceived By:

Date Time: 11/18/4 Relinquished by Sampler: seceived By: Date Time: Relinquished By: Date Time: SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY FED-EX / UPS: Tracking # TAT Starts Day received by Lab, if received by 3:00 pm 3 Day EMERGENCY TRRP Checklist TAT fontract TAT S Day EMERGENCY UST/RG-411 Level 3 (CLP Forms) VI level 9AAT TAT VSO T Next Day EMERGENCY Level III Std QC+ Forms Level IV (Full Data Pkg /raw data) Level II Std QC TAT YSG & TAT ysd ems2 :satoN Turnaround Time (Business days) Data Deliverable Information 7-85 50:5 1-55 A ,52 65:2 151 t5:7 55:2 100 1 15 15:2 155 25:2 1-52 12:2 1-815 04:2 82:2 (0) 2:26 Field Comments selltod Matrix эшТ Depth Q 10 # Sample Ma ナイ .oN Field ID / Point of Collection Number of preserved bottles Collection WW= Waste Water GRO Samplers's Name: rdes 1!0 = 0PO Number: 9qiW = WWW= Waste Water SL = Sludge SW = Surface water U Invoice To: P = Product0 DW = Drinking Water GW =Ground Water Company Address: Project Location: bilo2\be2\lio2 = 2 Company Name / Branch: Project Name/Number: ηiΑ =Α Client / Reporting Information Matrix Codes www.xenco.com Service Center - San Antonio, Texas (210-509-3334) Dallas, Texas (214-902-0300)

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	Thermo, Corr. Factor	Cooler Temp.	On Ice	Preserved where applicable	Custody Seal #	Received By:	Date Time:	Relinquished by:

Relinquished By:

H-18-6

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Lakeland, Florida (863-646-8526)

Odessa, Texas (432-563-1800)

Setting the Standard since 1990

Stafford, Texas (281-240-4200)

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orcross, Georgia (770-449-8800) Tampa, Florida (813-620-2000)																			((xas (214-902-0300	Dallas, Te



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



Client: Conestoga Rovers & Associates

Date/ Time Received: 07/31/2014 04:15:00 PM Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient

Work Order #: 490523

Temperature Measuring device used :

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

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

Analyst: PH Device/Lot#:

Checklist completed by: Mmv3 Morah
Kelsey Brooks

Date: 07/31/2014

Checklist reviewed by: Mmy Moah
Kelsey Brooks

Date: 08/01/2014

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