



**CONESTOGA-ROVERS  
& ASSOCIATES**

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[www.CRAworld.com](http://www.CRAworld.com)

May 27, 2015

Reference No. 088210-11

Mr. Zane Kurtz  
Sr. Safety and Environmental Representative  
5509 Champions Dr  
Midland, TX 79706  
VIA E-Mail: [zane\\_kurtz@eogresources.com](mailto:zane_kurtz@eogresources.com)

Dear Mr. Kurtz

Re: Remediation Summary Report  
Elk Wallow 11-8 (API #30-015-39723)  
2RP-2857-0  
EOG Resources  
Site Location: Unit B, Sec. 11, T 25-S, R 29-E  
(Lat 32.1515°, Long -103.9551°)  
Eddy County, New Mexico

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Remediation activities were performed at the Elk Wallow 11-8 site on March 7, 13, and 23, 2015. The Elk Wallow 11-8 site (hereafter referred to as the "Site"), is located within Unit B, Section 11, Township 25 South, Range 29 East, in Eddy County, New Mexico (see **Figure 1**).

The Site consists of an EOG Resources (EOG) tank battery and associated equipment. According to EOG, an estimated 25 barrel release of produced water occurred at the Site due to a broken bottom motor valve on a separator. A vacuum truck was brought to the Site and approximately 15 barrels of fluid were recovered. Additionally, some spray from the release went off-site and onto the adjacent pasture. A C-141 was submitted to the New Mexico Oil Conservation Division (NMOCD) and remediation permit (RP) number 2RP-2857-0 was assigned.

## **1.0 Introduction**

The remediation activities performed at the Site consisted of an initial soil sampling event using a hand auger and two subsequent excavation events accompanied by soil sample analysis. Excavation activities were performed by Watson Construction of Hobbs, New Mexico, and observed by Conestoga-Rovers and Associates (CRA), of Albuquerque, New Mexico. Soil samples were collected by CRA and analyzed by Xenco Laboratories (Xenco) of Odessa, Texas.

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Based on information available from the Petroleum Recovery Research Center Pit Rule Mapping Portal, the depth to groundwater at the Site is indicated to be between 50 and 99 feet below ground surface (bgs). Additionally, the distance to the nearest surface water is greater than 1,000 feet and the nearest private domestic water and public/municipal water sources are greater than 200 feet and 1,000 feet, respectively, from the release Site. Therefore, the preliminary total ranking score is 10 (see table below).

Based on this score, the Site-specific Recommended Remediation Action Limits (RRALs) to be applied by the NMOCD are 10 milligrams per kilogram (mg/kg) for benzene, 50 mg/kg for total benzene, toluene, ethylbenzene, and xylenes (BTEX), 1,000 mg/kg for total petroleum hydrocarbons (TPH), and 250 mg/kg for chlorides.

<b>New Mexico Oil Conservation Division Site Assessment</b>	
Ranking Criteria	Score
Depth to Ground Water (50 - 99 feet bgs)	10
Wellhead Protection Area (< 1000 feet from water source, < 200 feet from domestic source)	0
Distance to Surface Body Water (200 feet - 1000 feet)	0
<b>Ranking Criteria Total Score</b>	<b>10*</b>
*Because the ranking criteria total score is 10, NMOCD established RRALs are 10 ppm for benzene, 50 ppm for total BTEX, 1,000 ppm for TPH, and 250 ppm for chlorides <sup>1</sup> .	

<sup>1</sup> NMOCD Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993

## **2.0 Initial Soil Sampling Event**

CRA conducted an initial soil sampling event on March 7, 2015 to assess for the presence of produced water impacts at the Site. Two soil samples were collected from the area of concern using a hand auger and were field screened for chloride and submitted to Xenco for laboratory analysis. The soil samples were analyzed for BTEX by EPA Method 8021B, TPH gasoline range organics (TPH-GRO), diesel range organics (TPH-DRO), and oil range organics (TPH-ORO) by EPA Modified Method SW8015B, and chloride by EPA Method 300.



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Laboratory results from this event indicated BTEX and TPH concentrations below laboratory detection limits. The soil samples returned analytical results for chloride below the NMOCD RRAL (see **Appendix A** and **Table 1**). Based on the laboratory and field screening results from the initial soil sampling event, the vertical extent of impacts appeared to be approximately two feet bgs. It was determined that additional excavation and soil sampling was necessary to further delineate the vertical and horizontal extents of the impacts.

### **3.0 Initial Excavation Event**

The first excavation event occurred on March 13, 2015. Field screening of soils for chloride was performed to guide excavation activities. Once field screening indicated soil concentrations were below the RRALs, soil samples were collected and submitted to Xenco for laboratory analysis. The soil samples were analyzed for BTEX, TPH-GRO, TPH-DRO, TPH-ORO, and chloride by the methods listed above.

Laboratory results from the excavation event indicate that BTEX, TPH, and chloride concentrations are below the RRALs, with one exception being soil sample SO-088210-031315-SP-05 (see **Table 1**). This soil sample was taken from the eastern side of the excavation at a depth of approximately 11 feet bgs and returned an analytical result of 426 mg/kg for chloride, which exceeds the NMOCD RRAL of 250 mg/kg. However, since the depth to groundwater is in excess of 50 feet bgs, CRA believes that the impact is highly unlikely to reach the groundwater table.

Additionally, field screening of soil samples from the western side of the excavation indicated elevated chloride concentrations to a depth of four feet bgs. During excavation, there appeared to be liner material at a depth of approximately six feet bgs. The eastern edge of the liner appeared to be located to the east of the flow line. At the time of the excavation, it was unclear if a liner was present or if the excavation encountered buried trash. Based on the laboratory and field screening results from the initial excavation event, a second excavation event was necessary to further delineate and remove chloride-impacted soils.



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## **4.0 Secondary Excavation Event**

The second excavation event occurred on March 23, 2015. The excavation was expanded horizontally and vertically until field screening of soil for chloride indicated concentrations below the RRALs. Soil samples were collected and submitted to Xenco for analysis of BTEX, TPH-GRO, TPH-DRO, TPH-ORO, and chloride. Laboratory results indicate that BTEX, TPH, and chloride concentrations are below the RRALs in the portion of the excavation east of the above ground flow line (see **Figure 2**).

In order to assess the presence of liner material at the western end of the Site, a small area west of the above ground flow line was excavated to a depth of approximately five feet bgs. The liner material was observed in this excavation at a depth of approximately two ft bgs. Field screening of soils below the liner indicated chloride concentrations exceeding 2,400 mg/kg. Soil sample SO-088210-032315-SP-02 was collected for laboratory analysis and returned an analytical result of 11,000 mg/kg for chloride. Based on this, it appears that the area west of the flow line may be a former pit. It appears that a liner covers the former at a depth of approximately four to six feet bgs.

Following this discovery, the liner was repaired and backfilled to a depth of two feet bgs. Soil was excavated to a depth of two feet bgs on the western half of the release area so as not to disturb the liner (see **Figure 2**).

Confirmatory soil samples were collected for analysis of BTEX, TPH-GRO, TPH-DRO, TPH-ORO, and chloride within the release area. Laboratory results indicate that BTEX, TPH, and chloride concentrations are below the RRALs except for soil sample SO-088210-032315-SP-09 which returned an analytical result of 398 mg/kg for chloride. However, this sample was collected at the maximum depth for the reason discussed above.

Impacted soil that was removed is stockpiled on Site. Pending NMOCD approval, the soil will be transported to Sundance Services, Inc. of Eunice, New Mexico, for disposal and the excavation will be backfilled with clean soil.



**CONESTOGA-ROVERS  
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## **5.0 Summary and Recommendations**

Impacted soils at the Elk Wallow 11-8 site were excavated to depths ranging from two to 16.5 feet bgs. Confirmatory soil samples were collected from 16 locations throughout the excavation (see **Figure 2**) for laboratory analysis. Based on the analytical results, soil concentrations appear to be below RRALs to the north, south, and east sides of the excavation as well as at depth. The presence of a liner located at the west side of the release prevented additional excavation in that direction. One soil sample (SO-088210-032315-SP-09, see Figure 2) was above the RRAL for chlorides. However, this sample is located over the liner and not anticipated to impact groundwater.

Based on this data, CRA requests permission to backfill the excavation and that no further action status be granted for the Site.

Should you have any questions, or require additional information regarding this submittal, please feel free to contact Bernie Bockisch at (505) 884-0672 or [bbockisch@craworld.com](mailto:bbockisch@craworld.com).

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

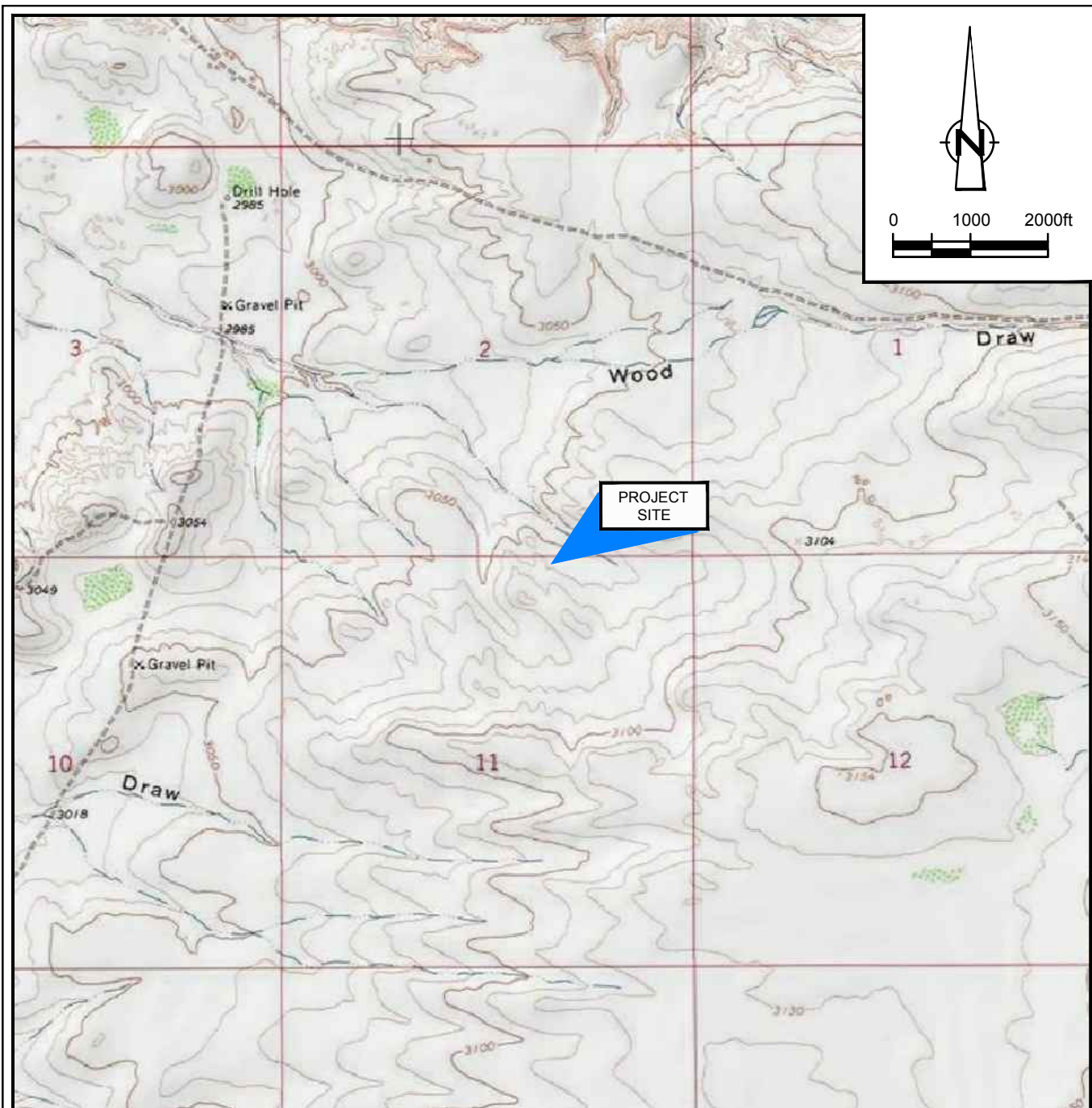
Cale Kanack  
Staff Scientist

Bernard Bockisch  
Senior Project Manager

CK/mc/2  
Encl.

Figure 1 – Site Location Map  
Figure 2 – Site Detail Map  
Table 1 – Soil Analytical Results Summary  
Appendix A – Laboratory Analytical Reports

## Figures



SOURCE: USGS 7.5 MINUTE QUAD  
"PIERCE CANYON, NEW MEXICO"

LAT/LONG: 32.1517° NORTH, 103.9525° WEST  
COORDINATE: NAD83 DATUM, U.S. FOOT  
STATE PLANE ZONE - NEW MEXICO EAST

Figure 1  
SITE LOCATION MAP  
ELK WALLOW 11 #8  
EDDY COUNTY, NEW MEXICO  
*EOG Resources*



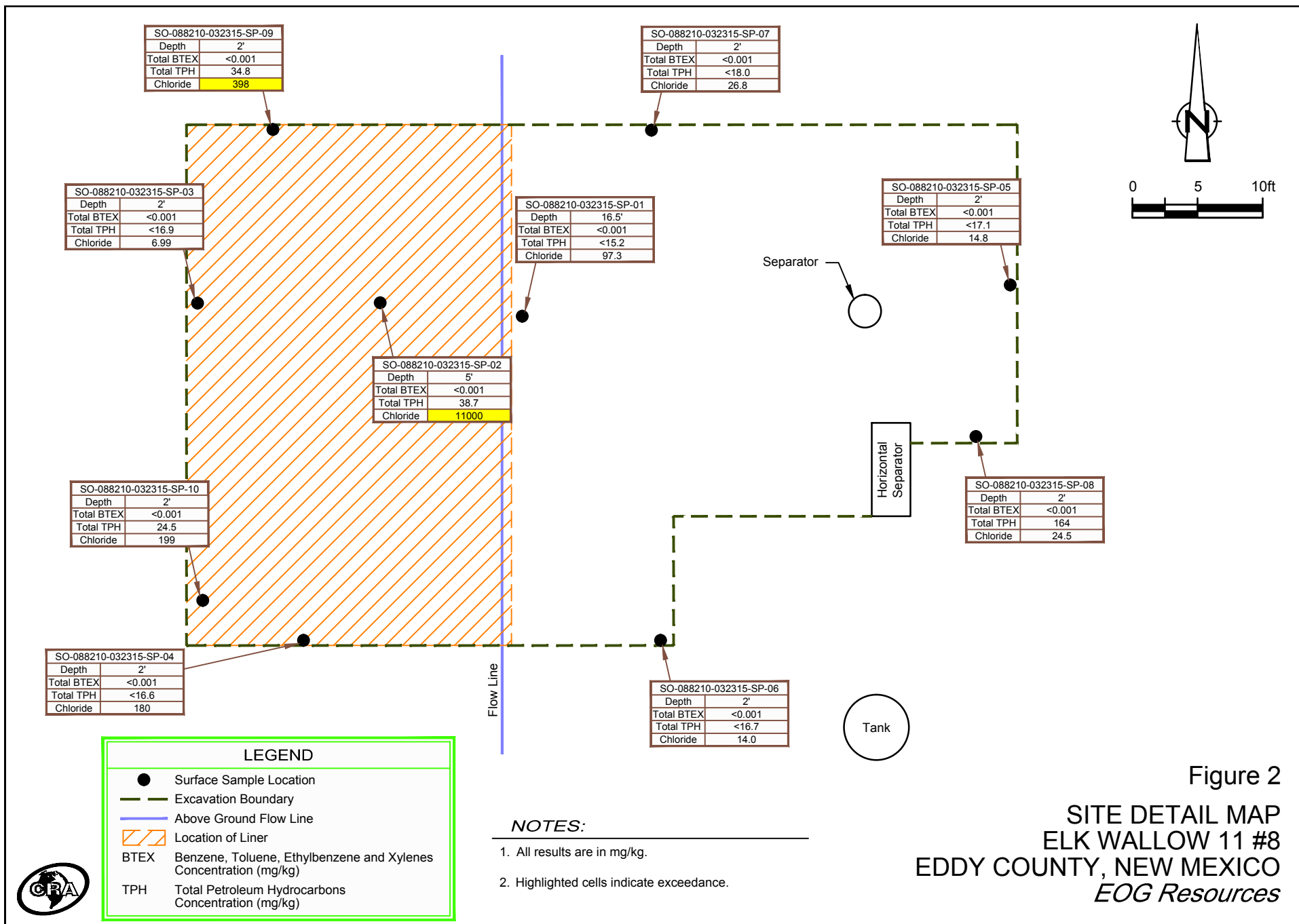


Figure 2  
 SITE DETAIL MAP  
 ELK WALLOW 11 #8  
 EDDY COUNTY, NEW MEXICO  
 EOG Resources





## Tables

<i>Sample ID</i>	<i>Depth (bgs)</i>	<i>Total BTEX (mg/kg)</i>	<i>Total TPH (mg/kg)</i>	<i>Chlorides (mg/kg)</i>
SO-088210-032315-SP-01	16.5'	< 0.001	< 15.2	97.3
SO-088210-032315-SP-02	5'	< 0.001	38.7	<b>11000</b>
SO-088210-032315-SP-03	2'	< 0.001	< 16.9	6.99
SO-088210-032315-SP-04	2'	< 0.001	< 16.6	180
SO-088210-032315-SP-05	2'	< 0.001	< 17.1	14.8
SO-088210-032315-SP-06	2'	< 0.001	< 16.7	14.0
SO-088210-032315-SP-07	2'	< 0.001	< 18.0	26.8
SO-088210-032315-SP-08	2'	< 0.001	164	24.5
SO-088210-032315-SP-09	2'	< 0.001	34.8	<b>398</b>
SO-088210-032315-SP-10	2'	< 0.001	24.5	199

# **Appendix A**

## **Laboratory Analytical Reports**

**Analytical Report 503651**  
**for**  
**Conestoga-Rovers & Associates-Albuquerque, NM**

**Project Manager: Bernie Bockisch**

**EOG Resources- Elk Wallow 11-8**

**088210**

**12-MAR-15**

Collected By: Client



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

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-14-18), 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)



12-MAR-15

Project Manager: **Bernie Bockisch**  
**Conestoga-Rovers & Associates-Albuquerque, NM**  
6121 Indian School Rd. NE Suite 200

Albuquerque, NM 87110

Reference: XENCO Report No(s): **503651**  
**EOG Resources- Elk Wallow 11-8**  
Project Address: NM

**Bernie Bockisch:**

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) 503651. 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. 503651 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

---

**Kelsey Brooks**  
Project Manager

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*Certified and approved by numerous States and Agencies.*  
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## Sample Cross Reference 503651



Conestoga-Rovers & Associates-Albuquerque, NM, Albuquerque

EOG Resources- Elk Wallow 11-8

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SO-088210-030715-SP-01	S	03-07-15 14:00		503651-001
SO-088210-030715-SP-02	S	03-07-15 13:45		503651-002



## CASE NARRATIVE



**Client Name:** *Conestoga-Rovers & Associates-Albuquerque, NM*

**Project Name:** *EOG Resources- Elk Wallow 11-8*

Project ID: 088210

Work Order Number(s): 503651

Report Date: 12-MAR-15

Date Received: 03/10/2015

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**Sample receipt non conformances and comments:**

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

None

# Certificate of Analysis Summary 503651

## Conestoga-Rovers & Associates-Albuquerque, NM, Albuquerque, NM



**Project Id:** 088210  
**Contact:** Bernie Bockisch  
**Project Location:** NM

**Project Name:** EOG Resources- Elk Wallow 11-8

**Date Received in Lab:** Tue Mar-10-15 12:25 pm

**Report Date:** 12-MAR-15

**Project Manager:** Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	503651-001	503651-002				
	<b>Field Id:</b>	SO-088210-030715-SP-01	SO-088210-030715-SP-02				
	<b>Depth:</b>						
	<b>Matrix:</b>	SOIL	SOIL				
	<b>Sampled:</b>	Mar-07-15 14:00	Mar-07-15 13:45				
<b>BTEX by EPA 8021B</b>	<b>Extracted:</b>	Mar-11-15 08:00	Mar-11-15 08:00				
	<b>Analyzed:</b>	Mar-11-15 14:54	Mar-11-15 15:10				
	<b>Units/RL:</b>	mg/kg RL	mg/kg RL				
Benzene		ND 0.00111	ND 0.00119				
Toluene		ND 0.00222	ND 0.00237				
Ethylbenzene		ND 0.00111	ND 0.00119				
m,p-Xylenes		ND 0.00222	ND 0.00237				
o-Xylene		ND 0.00111	ND 0.00119				
Total Xylenes		ND 0.00111	ND 0.00119				
Total BTEX		ND 0.00111	ND 0.00119				
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Mar-11-15 14:00	Mar-11-15 14:00				
	<b>Analyzed:</b>	Mar-11-15 15:51	Mar-11-15 16:37				
	<b>Units/RL:</b>	mg/kg RL	mg/kg RL				
Chloride		ND 11.1	15.2 11.9				
<b>Percent Moisture</b>	<b>Extracted:</b>						
	<b>Analyzed:</b>	Mar-10-15 17:45	Mar-10-15 17:45				
	<b>Units/RL:</b>	% RL	% RL				
Percent Moisture		10.2 1.00	15.8 1.00				
<b>TPH By SW8015 Mod</b>	<b>Extracted:</b>	Mar-11-15 08:00	Mar-11-15 08:00				
	<b>Analyzed:</b>	Mar-11-15 11:07	Mar-11-15 12:17				
	<b>Units/RL:</b>	mg/kg RL	mg/kg RL				
C6-C12 Gasoline Range Hydrocarbons		ND 16.7	ND 17.8				
C12-C28 Diesel Range Hydrocarbons		ND 16.7	ND 17.8				
C28-C35 Oil Range Hydrocarbons		ND 16.7	ND 17.8				
Total TPH		ND 16.7	ND 17.8				

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



- 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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(813) 620-2000	(813) 620-2033
(432) 563-1800	(432) 563-1713
(770) 449-8800	(770) 449-5477
(602) 437-0330	



# Form 2 - Surrogate Recoveries

Project Name: EOG Resources- Elk Wallow 11-8

Work Orders : 503651,

Project ID: 088210

Lab Batch #: 963548

Sample: 503651-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/11/15 11:07

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	109	99.8	109	70-135	
o-Terphenyl	55.1	49.9	110	70-135	

Lab Batch #: 963548

Sample: 503651-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/11/15 12:17

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	80.7	99.8	81	70-135	
o-Terphenyl	40.4	49.9	81	70-135	

Lab Batch #: 963551

Sample: 503651-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/11/15 14:54

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0313	0.0300	104	80-120	
4-Bromofluorobenzene	0.0321	0.0300	107	80-120	

Lab Batch #: 963551

Sample: 503651-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/11/15 15:10

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0318	0.0300	106	80-120	
4-Bromofluorobenzene	0.0340	0.0300	113	80-120	

Lab Batch #: 963548

Sample: 689587-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/11/15 09:56

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	96.8	100	97	70-135	
o-Terphenyl	52.6	50.0	105	70-135	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



# Form 2 - Surrogate Recoveries

Project Name: EOG Resources- Elk Wallow 11-8

Work Orders : 503651,

Project ID: 088210

Lab Batch #: 963551

Sample: 689586-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/11/15 13:14

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0314	0.0300	105	80-120	
4-Bromofluorobenzene	0.0338	0.0300	113	80-120	

Lab Batch #: 963548

Sample: 689587-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/11/15 10:19

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	105	100	105	70-135	
o-Terphenyl	46.2	50.0	92	70-135	

Lab Batch #: 963551

Sample: 689586-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/11/15 13:31

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0356	0.0300	119	80-120	
4-Bromofluorobenzene	0.0310	0.0300	103	80-120	

Lab Batch #: 963548

Sample: 689587-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/11/15 10:43

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	109	100	109	70-135	
o-Terphenyl	47.0	50.0	94	70-135	

Lab Batch #: 963551

Sample: 689586-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/11/15 13:47

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0357	0.0300	119	80-120	
4-Bromofluorobenzene	0.0296	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

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

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



# Form 2 - Surrogate Recoveries

Project Name: EOG Resources- Elk Wallow 11-8

Work Orders : 503651,

Project ID: 088210

Lab Batch #: 963548

Sample: 503651-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/11/15 11:31

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	102	99.6	102	70-135	
o-Terphenyl	44.5	49.8	89	70-135	

Lab Batch #: 963551

Sample: 503651-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/11/15 14:04

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0318	0.0300	106	80-120	
4-Bromofluorobenzene	0.0335	0.0300	112	80-120	

Lab Batch #: 963548

Sample: 503651-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/11/15 11:54

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	116	99.8	116	70-135	
o-Terphenyl	49.1	49.9	98	70-135	

Lab Batch #: 963551

Sample: 503651-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/11/15 14:21

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0318	0.0300	106	80-120	
4-Bromofluorobenzene	0.0333	0.0300	111	80-120	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



# BS / BSD Recoveries



**Project Name: EOG Resources- Elk Wallow 11-8**

**Work Order #: 503651**

**Project ID: 088210**

**Analyst: ARM**

**Date Prepared: 03/11/2015**

**Date Analyzed: 03/11/2015**

**Lab Batch ID: 963551**

**Sample: 689586-1-BKS**

**Batch #: 1**

**Matrix: Solid**

**Units: mg/kg**

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

<b>BTEX by EPA 8021B</b>	<b>Blank Sample Result [A]</b>	<b>Spike Added [B]</b>	<b>Blank Spike Result [C]</b>	<b>Blank Spike %R [D]</b>	<b>Spike Added [E]</b>	<b>Blank Spike Duplicate Result [F]</b>	<b>Blk. Spk Dup. %R [G]</b>	<b>RPD %</b>	<b>Control Limits %R</b>	<b>Control Limits %RPD</b>	<b>Flag</b>
<b>Analytes</b>											
Benzene	<0.00100	0.100	0.100	100	0.100	0.101	101	1	70-130	35	
Toluene	<0.00200	0.100	0.102	102	0.100	0.100	100	2	70-130	35	
Ethylbenzene	<0.00100	0.100	0.108	108	0.100	0.104	104	4	71-129	35	
m,p-Xylenes	<0.00200	0.200	0.212	106	0.200	0.203	102	4	70-135	35	
o-Xylene	<0.00100	0.100	0.107	107	0.100	0.102	102	5	71-133	35	

**Analyst: JUM**

**Date Prepared: 03/11/2015**

**Date Analyzed: 03/11/2015**

**Lab Batch ID: 963582**

**Sample: 689624-1-BKS**

**Batch #: 1**

**Matrix: Solid**

**Units: mg/kg**

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

<b>Inorganic Anions by EPA 300/300.1</b>	<b>Blank Sample Result [A]</b>	<b>Spike Added [B]</b>	<b>Blank Spike Result [C]</b>	<b>Blank Spike %R [D]</b>	<b>Spike Added [E]</b>	<b>Blank Spike Duplicate Result [F]</b>	<b>Blk. Spk Dup. %R [G]</b>	<b>RPD %</b>	<b>Control Limits %R</b>	<b>Control Limits %RPD</b>	<b>Flag</b>
<b>Analytes</b>											
Chloride	<2.00	50.0	54.8	110	50.0	51.3	103	7	90-110	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: EOG Resources- Elk Wallow 11-8**

**Work Order #: 503651**

**Project ID: 088210**

**Analyst: ARM**

**Date Prepared: 03/11/2015**

**Date Analyzed: 03/11/2015**

**Lab Batch ID: 963548**

**Sample: 689587-1-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	818	82	1000	853	85	4	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.0	1000	910	91	1000	933	93	2	70-135	35	

Relative Percent Difference RPD =  $200 * |(C-F)/(C+F)|$

Blank Spike Recovery [D] =  $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes



# Form 3 - MS Recoveries

Project Name: EOG Resources- Elk Wallow 11-8



Work Order #: 503651

Lab Batch #: 963582

Date Analyzed: 03/11/2015

QC- Sample ID: 503651-001 S

Reporting Units: mg/kg

Date Prepared: 03/11/2015

Batch #: 1

Project ID: 088210

Analyst: JUM

Matrix: Soil

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	<11.1	278	306	110	80-120	

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

BRL - Below Reporting Limit



# Form 3 - MS / MSD Recoveries



Project Name: EOG Resources- Elk Wallow 11-8

Work Order #: 503651

Project ID: 088210

Lab Batch ID: 963551

QC- Sample ID: 503651-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 03/11/2015

Date Prepared: 03/11/2015

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	<0.00111	0.111	0.112	101	0.111	0.113	102	1	70-130	35	
Toluene	<0.00222	0.111	0.115	104	0.111	0.115	104	0	70-130	35	
Ethylbenzene	<0.00111	0.111	0.122	110	0.111	0.122	110	0	71-129	35	
m,p-Xylenes	<0.00222	0.222	0.241	109	0.222	0.239	108	1	70-135	35	
o-Xylene	<0.00111	0.111	0.120	108	0.111	0.120	108	0	71-133	35	

Lab Batch ID: 963548

QC- Sample ID: 503651-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 03/11/2015

Date Prepared: 03/11/2015

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	<16.6	1110	893	80	1110	1060	95	17	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<16.6	1110	987	89	1110	1140	103	14	70-135	35	

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

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

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



**Project Name: EOG Resources- Elk Wallow 11-8**

**Work Order #: 503651**

**Lab Batch #: 963473**

**Project ID: 088210**

**Date Analyzed: 03/10/2015 17:45**

**Date Prepared: 03/10/2015**

**Analyst: WRU**

**QC- Sample ID: 503644-001 D**

**Batch #: 1**

**Matrix: Soil**

**Reporting Units: %**

## SAMPLE / SAMPLE DUPLICATE RECOVERY

Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	14.2	14.6	3	20	

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

## Turn-Around Time:

Conestoga Rovers + Associates

6121 Indian School Rd Ste 200

Project #: 088210/11

email or Fax#:

- ☐ Standard
- ☐ Level 4 (Full Validation)

☐ NELAP      ☐ Other

☐ EDD (Type)

Date	Time	Matrix	Sample Request ID
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[illegible][illegible]

3/1/15	1400	50	50-088210-030715-57-0
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3715	1345	So	52-088210-03075-SF-02
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[illegible]


[illegible][illegible]

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Journal of Management Inquiry 22(4) 391-406


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[illegible]

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Date:	Time:	Relinquished by:
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10:20  
Aimee Ryan

Date:	Time:	Relinquished by:

Date \_\_\_\_\_ Time \_\_\_\_\_

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~~X-FACTOR Lab's / Odessa~~  
~~HALL ENVIRONMENTAL~~  
~~ANALYSIS LABORATORY~~

[www.hallenvironmental.com](http://www.hallenvironmental.com)

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

## Analysis Request

BTEX + MTBE + TMB's (8021)
BTEX + MTBE + TPH (Gas only)
TPH 8015B (GRO / DRO / MRO)
TPH (Method 418.1)
EDB (Method 504.1)
PAH's (8310 or 8270 SIMS)
RCRA 8 Metals
Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )
8081 Pesticides / 8082 PCB's
8260B (VOA)
8270 (Semi-VOA)
8021 BTEX
390.0 Chloride
8015 B TPH GRO/PRO
Air Bubbles (Y or N)



# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



**Client:** Conestoga-Rovers & Associates-Albuqu

**Date/ Time Received:** 03/10/2015 12:25:00 PM

**Work Order #:** 503651

**Acceptable Temperature Range:** 0 - 6 degC

**Air and Metal samples Acceptable Range:** Ambient

**Temperature Measuring device used :**

### Sample Receipt Checklist

### Comments

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

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

Analyst:

PH Device/Lot#:

**Checklist completed by:**

Kelsey Brooks  
Kelsey Brooks

Date: 03/10/2015

**Checklist reviewed by:**

Kelsey Brooks  
Kelsey Brooks

Date: 03/10/2015

**Analytical Report 504112**  
**for**  
**Conestoga-Rovers & Associates-Albuquerque, NM**

**Project Manager: Bernie Bockisch**

**EOG Resources- Elk Wallow 11-8**

**088210**

**19-MAR-15**

Collected By: Client



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

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-14-18), 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)



19-MAR-15

Project Manager: **Bernie Bockisch**  
**Conestoga-Rovers & Associates-Albuquerque, NM**  
6121 Indian School Rd. NE Suite 200

Albuquerque, NM 87110

Reference: XENCO Report No(s): **504112**  
**EOG Resources- Elk Wallow 11-8**  
Project Address: Jal,NM

**Bernie Bockisch:**

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) 504112. 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. 504112 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

---

**Kelsey Brooks**

Project Manager

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

*Certified and approved by numerous States and Agencies.*

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

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



## Sample Cross Reference 504112



Conestoga-Rovers & Associates-Albuquerque, NM, Albuquerque

EOG Resources- Elk Wallow 11-8

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SO-088210-031315-SP-01	S	03-13-15 11:10	- 16 In	504112-001
SO-088210-031315-SP-02	S	03-13-15 11:55	- 24 In	504112-002
SO-088210-031315-SP-03	S	03-13-15 13:12	- 23 In	504112-003
SO-088210-031315-SP-04	S	03-13-15 15:36	- 6 ft	504112-004
SO-088210-031315-SP-05	S	03-13-15 15:46	- 11 ft	504112-005
SO-088210-031315-SP-06	S	03-13-15 16:25	- 24 In	504112-006





## CASE NARRATIVE



**Client Name:** *Conestoga-Rovers & Associates-Albuquerque, NM*

**Project Name:** *EOG Resources- Elk Wallow 11-8*

Project ID: 088210

Work Order Number(s): 504112

Report Date: 19-MAR-15

Date Received: 03/17/2015

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**Sample receipt non conformances and comments:**

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

None

# Certificate of Analysis Summary 504112

## Conestoga-Rovers & Associates-Albuquerque, NM, Albuquerque, NM



**Project Id:** 088210  
**Contact:** Bernie Bockisch  
**Project Location:** Jal,NM

**Project Name:** EOG Resources- Elk Wallow 11-8

**Date Received in Lab:** Tue Mar-17-15 10:30 am

**Report Date:** 19-MAR-15

**Project Manager:** Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	504112-001	504112-002	504112-003	504112-004	504112-005	504112-006
	<i>Field Id:</i>	SO-088210-031315-SP-01	SO-088210-031315-SP-02	SO-088210-031315-SP-03	SO-088210-031315-SP-04	SO-088210-031315-SP-05	SO-088210-031315-SP-06
	<i>Depth:</i>	16 In	24 In	23 In	6 ft	11 ft	24 In
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Mar-13-15 11:10	Mar-13-15 11:55	Mar-13-15 13:12	Mar-13-15 15:36	Mar-13-15 15:46	Mar-13-15 16:25
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Mar-19-15 07:00	Mar-19-15 07:00	Mar-19-15 07:00	Mar-19-15 07:00	Mar-19-15 07:00	Mar-19-15 07:00
	<i>Analyzed:</i>	Mar-19-15 11:07	Mar-19-15 11:23	Mar-19-15 11:40	Mar-19-15 11:57	Mar-19-15 12:14	Mar-19-15 12:30
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		ND 0.00110	ND 0.00116	ND 0.00115	ND 0.00113	ND 0.00112	ND 0.00112
Toluene		ND 0.00221	ND 0.00231	ND 0.00231	ND 0.00226	ND 0.00224	ND 0.00224
Ethylbenzene		ND 0.00110	ND 0.00116	ND 0.00115	ND 0.00113	ND 0.00112	ND 0.00112
m,p-Xylenes		ND 0.00221	ND 0.00231	ND 0.00231	ND 0.00226	ND 0.00224	ND 0.00224
o-Xylene		ND 0.00110	ND 0.00116	ND 0.00115	ND 0.00113	ND 0.00112	ND 0.00112
Total Xylenes		ND 0.00110	ND 0.00116	ND 0.00115	ND 0.00113	ND 0.00112	ND 0.00112
Total BTEX		ND 0.00110	ND 0.00116	ND 0.00115	ND 0.00113	ND 0.00112	ND 0.00112
<b>Inorganic Anions by EPA 300/300.1</b>	<i>Extracted:</i>	Mar-18-15 15:00	Mar-18-15 15:00	Mar-18-15 15:00	Mar-18-15 15:00	Mar-18-15 15:00	Mar-18-15 15:00
	<i>Analyzed:</i>	Mar-18-15 22:06	Mar-18-15 22:28	Mar-18-15 22:51	Mar-18-15 23:36	Mar-18-15 23:59	Mar-19-15 00:22
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		2.78 2.22	25.3 11.6	158 23.2	41.4 22.6	426 44.9	14.7 11.2
<b>Percent Moisture</b>	<i>Extracted:</i>						
	<i>Analyzed:</i>	Mar-17-15 17:25	Mar-17-15 17:25	Mar-17-15 17:25	Mar-17-15 17:25	Mar-17-15 17:25	Mar-17-15 17:25
	<i>Units/RL:</i>	% RL	% RL	% RL	% RL	% RL	% RL
Percent Moisture		9.75 1.00	13.5 1.00	13.7 1.00	11.6 1.00	10.9 1.00	10.8 1.00
<b>TPH By SW8015 Mod</b>	<i>Extracted:</i>	Mar-18-15 15:00	Mar-18-15 15:00	Mar-18-15 15:00	Mar-18-15 15:00	Mar-18-15 15:00	Mar-18-15 15:00
	<i>Analyzed:</i>	Mar-18-15 16:28	Mar-19-15 09:25	Mar-18-15 17:52	Mar-18-15 18:13	Mar-18-15 18:34	Mar-18-15 18:55
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
C6-C12 Gasoline Range Hydrocarbons		ND 16.6	ND 17.3	ND 17.3	ND 17.0	ND 16.8	ND 16.8
C12-C28 Diesel Range Hydrocarbons		ND 16.6	ND 17.3	26.7 17.3	ND 17.0	ND 16.8	ND 16.8
C28-C35 Oil Range Hydrocarbons		ND 16.6	ND 17.3	ND 17.3	ND 17.0	ND 16.8	ND 16.8
Total TPH		ND 16.6	ND 17.3	26.7 17.3	ND 17.0	ND 16.8	ND 16.8

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



- 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      **SQL** Sample 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: EOG Resources- Elk Wallow 11-8

Work Orders : 504112,

Lab Batch #: 964084

Sample: 504112-001 / SMP

Project ID: 088210

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/18/15 16:28

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	94.1	99.7	94	70-135	
o-Terphenyl	47.4	49.9	95	70-135	

Lab Batch #: 964084

Sample: 504112-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/18/15 17:52

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	110	99.7	110	70-135	
o-Terphenyl	54.2	49.9	109	70-135	

Lab Batch #: 964084

Sample: 504112-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/18/15 18:13

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	92.0	100	92	70-135	
o-Terphenyl	46.0	50.0	92	70-135	

Lab Batch #: 964084

Sample: 504112-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/18/15 18:34

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	88.4	99.8	89	70-135	
o-Terphenyl	44.0	49.9	88	70-135	

Lab Batch #: 964084

Sample: 504112-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/18/15 18:55

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	88.6	100	89	70-135	
o-Terphenyl	44.2	50.0	88	70-135	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



# Form 2 - Surrogate Recoveries

Project Name: EOG Resources- Elk Wallow 11-8

Work Orders : 504112,

Lab Batch #: 964084

Sample: 504112-002 / SMP

Project ID: 088210

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/19/15 09:25

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	80.7	99.9	81	70-135	
o-Terphenyl	40.7	50.0	81	70-135	

Lab Batch #: 964121

Sample: 504112-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/19/15 11:07

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0311	0.0300	104	80-120	
4-Bromofluorobenzene	0.0344	0.0300	115	80-120	

Lab Batch #: 964121

Sample: 504112-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/19/15 11:23

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0309	0.0300	103	80-120	
4-Bromofluorobenzene	0.0345	0.0300	115	80-120	

Lab Batch #: 964121

Sample: 504112-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/19/15 11:40

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0316	0.0300	105	80-120	
4-Bromofluorobenzene	0.0341	0.0300	114	80-120	

Lab Batch #: 964121

Sample: 504112-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/19/15 11:57

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0310	0.0300	103	80-120	
4-Bromofluorobenzene	0.0352	0.0300	117	80-120	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



# Form 2 - Surrogate Recoveries

Project Name: EOG Resources- Elk Wallow 11-8

Work Orders : 504112,

Lab Batch #: 964121

Sample: 504112-005 / SMP

Project ID: 088210

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/19/15 12:14

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0291	0.0300	97	80-120	
4-Bromofluorobenzene	0.0343	0.0300	114	80-120	

Lab Batch #: 964121

Sample: 504112-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/19/15 12:30

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0308	0.0300	103	80-120	
4-Bromofluorobenzene	0.0348	0.0300	116	80-120	

Lab Batch #: 964084

Sample: 689966-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/18/15 14:38

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	98.3	100	98	70-135	
o-Terphenyl	48.9	50.0	98	70-135	

Lab Batch #: 964121

Sample: 689965-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/19/15 09:27

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0309	0.0300	103	80-120	
4-Bromofluorobenzene	0.0341	0.0300	114	80-120	

Lab Batch #: 964084

Sample: 689966-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/18/15 14:59

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	113	100	113	70-135	
o-Terphenyl	47.9	50.0	96	70-135	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



# Form 2 - Surrogate Recoveries

Project Name: EOG Resources- Elk Wallow 11-8

Work Orders : 504112,

Lab Batch #: 964121

Sample: 689965-1-BKS / BKS

Project ID: 088210

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/19/15 09:43

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0346	0.0300	115	80-120	
4-Bromofluorobenzene	0.0306	0.0300	102	80-120	

Lab Batch #: 964084

Sample: 689965-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/18/15 15:21

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	102	100	102	70-135	
o-Terphenyl	42.9	50.0	86	70-135	

Lab Batch #: 964121

Sample: 689965-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/19/15 10:00

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0344	0.0300	115	80-120	
4-Bromofluorobenzene	0.0331	0.0300	110	80-120	

Lab Batch #: 964084

Sample: 504112-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/18/15 16:49

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	114	99.6	114	70-135	
o-Terphenyl	49.5	49.8	99	70-135	

Lab Batch #: 964121

Sample: 504112-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/19/15 10:17

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0356	0.0300	119	80-120	
4-Bromofluorobenzene	0.0312	0.0300	104	80-120	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



# Form 2 - Surrogate Recoveries

Project Name: EOG Resources- Elk Wallow 11-8

Work Orders : 504112,

Lab Batch #: 964084

Sample: 504112-001 SD / MSD

Project ID: 088210

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/18/15 17:10

## SURROGATE RECOVERY STUDY

TPH By SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	103	99.6	103	70-135	
o-Terphenyl	44.9	49.8	90	70-135	

Lab Batch #: 964121

Sample: 504112-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/19/15 10:33

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0345	0.0300	115	80-120	
4-Bromofluorobenzene	0.0326	0.0300	109	80-120	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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

**Project Name: EOG Resources- Elk Wallow 11-8**

**Work Order #: 504112**

**Project ID: 088210**

**Analyst: ARM**

**Date Prepared: 03/19/2015**

**Date Analyzed: 03/19/2015**

**Lab Batch ID: 964121**

**Sample: 689965-1-BKS**

**Batch #: 1**

**Matrix: Solid**

**Units: mg/kg**

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

<b>BTEX by EPA 8021B</b>	<b>Blank Sample Result [A]</b>	<b>Spike Added [B]</b>	<b>Blank Spike Result [C]</b>	<b>Blank Spike %R [D]</b>	<b>Spike Added [E]</b>	<b>Blank Spike Duplicate Result [F]</b>	<b>Blk. Spk Dup. %R [G]</b>	<b>RPD %</b>	<b>Control Limits %R</b>	<b>Control Limits %RPD</b>	<b>Flag</b>
<b>Analytes</b>											
Benzene	<0.00100	0.100	0.100	100	0.100	0.105	105	5	70-130	35	
Toluene	<0.00200	0.100	0.102	102	0.100	0.108	108	6	70-130	35	
Ethylbenzene	<0.00100	0.100	0.110	110	0.100	0.117	117	6	71-129	35	
m,p-Xylenes	<0.00200	0.200	0.215	108	0.200	0.230	115	7	70-135	35	
o-Xylene	<0.00100	0.100	0.107	107	0.100	0.115	115	7	71-133	35	

**Analyst: JUM**

**Date Prepared: 03/18/2015**

**Date Analyzed: 03/18/2015**

**Lab Batch ID: 964074**

**Sample: 689947-1-BKS**

**Batch #: 1**

**Matrix: Solid**

**Units: mg/kg**

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

<b>Inorganic Anions by EPA 300/300.1</b>	<b>Blank Sample Result [A]</b>	<b>Spike Added [B]</b>	<b>Blank Spike Result [C]</b>	<b>Blank Spike %R [D]</b>	<b>Spike Added [E]</b>	<b>Blank Spike Duplicate Result [F]</b>	<b>Blk. Spk Dup. %R [G]</b>	<b>RPD %</b>	<b>Control Limits %R</b>	<b>Control Limits %RPD</b>	<b>Flag</b>
<b>Analytes</b>											
Chloride	<2.00	50.0	50.0	100	50.0	49.7	99	1	90-110	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: EOG Resources- Elk Wallow 11-8**

**Work Order #: 504112**

**Project ID: 088210**

**Analyst: ARM**

**Date Prepared: 03/18/2015**

**Date Analyzed: 03/18/2015**

**Lab Batch ID: 964084**

**Sample: 689966-1-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	947	95	1000	831	83	13	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.0	1000	1000	100	1000	907	91	10	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: EOG Resources- Elk Wallow 11-8



Work Order #: 504112

Lab Batch #: 964074

Date Analyzed: 03/18/2015

QC- Sample ID: 503920-001 S

Reporting Units: mg/kg

Project ID: 088210

Date Prepared: 03/18/2015

Batch #: 1

Analyst: JUM

Matrix: Soil

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	219	574	849	110	80-120	

Lab Batch #: 964074

Date Analyzed: 03/18/2015

QC- Sample ID: 504112-003 S

Reporting Units: mg/kg

Date Prepared: 03/18/2015

Batch #: 1

Analyst: JUM

Matrix: Soil

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	158	579	723	98	80-120	

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

BRL - Below Reporting Limit

**Project Name: EOG Resources- Elk Wallow 11-8**

**Work Order # :** 504112

**Project ID:** 088210

**Lab Batch ID:** 964121

**QC- Sample ID:** 504112-001 S

**Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 03/19/2015

**Date Prepared:** 03/19/2015

**Analyst:** ARM

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

<b>BTEX by EPA 8021B</b>	<b>Parent Sample Result [A]</b>	<b>Spike Added [B]</b>	<b>Spiked Sample Result [C]</b>	<b>Spiked Sample %R [D]</b>	<b>Spike Added [E]</b>	<b>Duplicate Spiked Sample Result [F]</b>	<b>Spiked Dup. %R [G]</b>	<b>RPD %</b>	<b>Control Limits %R</b>	<b>Control Limits %RPD</b>	<b>Flag</b>
<b>Analytes</b>											
Benzene	<0.00111	0.111	0.112	101	0.111	0.112	101	0	70-130	35	
Toluene	<0.00221	0.111	0.114	103	0.111	0.116	105	2	70-130	35	
Ethylbenzene	<0.00111	0.111	0.124	112	0.111	0.125	113	1	71-129	35	
m,p-Xylenes	<0.00221	0.221	0.243	110	0.221	0.250	113	3	70-135	35	
o-Xylene	<0.00111	0.111	0.122	110	0.111	0.124	112	2	71-133	35	

**Lab Batch ID:** 964084

**QC- Sample ID:** 504112-001 S

**Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 03/18/2015

**Date Prepared:** 03/18/2015

**Analyst:** ARM

**Reporting Units:** mg/kg

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY**

<b>TPH By SW8015 Mod</b>	<b>Parent Sample Result [A]</b>	<b>Spike Added [B]</b>	<b>Spiked Sample Result [C]</b>	<b>Spiked Sample %R [D]</b>	<b>Spike Added [E]</b>	<b>Duplicate Spiked Sample Result [F]</b>	<b>Spiked Dup. %R [G]</b>	<b>RPD %</b>	<b>Control Limits %R</b>	<b>Control Limits %RPD</b>	<b>Flag</b>
<b>Analytes</b>											
C6-C12 Gasoline Range Hydrocarbons	<16.6	1100	1050	95	1100	965	88	8	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<16.6	1100	1170	106	1100	1060	96	10	70-135	35	

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

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

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

**Project Name: EOG Resources- Elk Wallow 11-8**

**Work Order #: 504112**

**Lab Batch #: 963989**

**Project ID: 088210**

**Date Analyzed: 03/17/2015 17:25**

**Date Prepared: 03/17/2015**

**Analyst: WRU**

**QC- Sample ID: 504112-001 D**

**Batch #: 1**

**Matrix: Soil**

**Reporting Units: %**

## SAMPLE / SAMPLE DUPLICATE RECOVERY

Percent Moisture  Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	9.75	9.56	2	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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## Client / Reporting Information

Company Name / Branch:

Company Address:

6121 Indian School Rd Ste 200 Albuquerque, NM 87109

Project Name/Number: Lab 11-8 / 088210  
Project Location: Elk Hollow 11-8 / 088210  
Invoice To: Clear dal, NM (Lea County)

Email: bbachisch@crandall.com

Phone No:

Project Contact: Bernie Bachisch (505) 280-0572

Samplers Name: Steve Perez sperez@crandall.com

PO Number:

## Project Information

Matrix Codes

A = Air  
S = Soil/Sed/Solid  
GW = Ground Water  
DW = Drinking Water  
P = Product  
SW = Surface water  
SL = Sludge  
WW = Waste Water  
W = Wipe  
O = Oil  
WW = Waste Water

## No. Field ID / Point of Collection

1 50-088210-031315-SF-01

Sample Depth: 16" Date: 3/13/15 Time: 11:05

Matrix: SF

# of bottles: 1

HCl

NaOH/Zn Acetate

HNO3

H2SO4

NaOH

NaHSO4

MeOH

NONE

Chloride 300.0

BTEX 8021

TPH 8015 B GAD/PRO

X

X

X

X

X

X

X

X

X

X

X

X

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X

X

X

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X

X

X

X

X

X

X

X

2 50-088210-031315-SF-02

24" 3/13/15 11:55

SF

1

HCl

NaOH/Zn Acetate

HNO3

H2SO4

NaOH

NaHSO4

MeOH

NONE

Chloride 300.0

BTEX 8021

TPH 8015 B GAD/PRO

X

X

X

X

X

X

X

X

X

X

X

X

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3 50-088210-031315-SF-03

23" 3/13/15 13:12

SF

1

HCl

NaOH/Zn Acetate

HNO3

H2SO4

NaOH

NaHSO4

MeOH

NONE

Chloride 300.0

BTEX 8021

TPH 8015 B GAD/PRO

X

X

X

X

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4 50-088210-031315-SF-04

6" 3/13/15 15:36

SF

1

HCl

NaOH/Zn Acetate

HNO3

H2SO4

NaOH

NaHSO4

MeOH

NONE

Chloride 300.0

BTEX 8021

TPH 8015 B GAD/PRO

X

X

X

X

X

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5 50-088210-031315-SF-05

11" 3/13/15 15:46

SF

1

HCl

NaOH/Zn Acetate

HNO3

H2SO4

NaOH

NaHSO4

MeOH

NONE

Chloride 300.0

BTEX 8021

TPH 8015 B GAD/PRO

X

X

X

X

X

X

X

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6 50-088210-031315-SF-06

24" 3/13/15 16:25

SF

1

HCl

NaOH/Zn Acetate

HNO3

H2SO4

NaOH

NaHSO4

MeOH

NONE

Chloride 300.0

BTEX 8021

TPH 8015 B GAD/PRO

X

X

X

X

X

X

X

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X

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X

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X

X

X



# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



**Client:** Conestoga-Rovers & Associates-Albuqu

**Date/ Time Received:** 03/17/2015 10:30:00 AM

**Work Order #:** 504112

**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 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)?	No
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	No
#21 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts.	No
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	No

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

Analyst:

PH Device/Lot#:

**Checklist completed by:**

Kelsey Brooks  
Kelsey Brooks

Date: 03/17/2015

**Checklist reviewed by:**

Kelsey Brooks  
Kelsey Brooks

Date: 03/17/2015



**Analytical Report 504622**  
**for**  
**Conestoga-Rovers & Associates-Albuquerque, NM**

**Project Manager: Bernie Bockisch**

**Elk Wallow 11-8**

**088210-11**

**27-MAR-15**

Collected By: Client



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

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-14-18), 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)



27-MAR-15

Project Manager: **Bernie Bockisch**  
**Conestoga-Rovers & Associates-Albuquerque, NM**  
6121 Indian School Rd. NE Suite 200

Albuquerque, NM 87110

Reference: XENCO Report No(s): **504622**  
**Elk Wallow 11-8**  
Project Address: Eddy County, NM

**Bernie Bockisch:**

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) 504622. 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. 504622 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,  


---

**Kelsey Brooks**  
Project Manager

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## Conestoga-Rovers & Associates-Albuquerque, NM, Albuquerque

Elk Wallow 11-8

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SO-088210-0322315-SP-01	S	03-23-15 11:55	- 16.5 ft	504622-001
SO-088210-0322315-SP-02	S	03-23-15 14:21	- 5 ft	504622-002
SO-088210-0322315-SP-03	S	03-23-15 14:26	- 2 ft	504622-003
SO-088210-0322315-SP-04	S	03-23-15 15:49	- 2 ft	504622-004
SO-088210-0322315-SP-05	S	03-23-15 16:43	- 2 ft	504622-005
SO-088210-0322315-SP-06	S	03-23-15 17:00	- 2 ft	504622-006
SO-088210-0322315-SP-07	S	03-23-15 17:22	- 2 ft	504622-007
SO-088210-0322315-SP-08	S	03-23-15 17:40	- 2 ft	504622-008
SO-088210-0322315-SP-09	S	03-23-15 18:05	- 2 ft	504622-009
SO-088210-0322315-SP-10	S	03-23-15 18:16	- 2 ft	504622-010





## CASE NARRATIVE



***Client Name: Conestoga-Rovers & Associates-Albuquerque, NM***

***Project Name: Elk Wallow 11-8***

Project ID: 088210-11

Work Order Number(s): 504622

Report Date: 27-MAR-15

Date Received: 03/25/2015

---

**Sample receipt non conformances and comments:**

---

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

None

# Certificate of Analysis Summary 504622

## Conestoga-Rovers & Associates-Albuquerque, NM, Albuquerque, NM



**Project Id:** 088210-11  
**Contact:** Bernie Bockisch  
**Project Location:** Eddy County,NM

**Project Name:** Elk Wallow 11-8

**Date Received in Lab:** Wed Mar-25-15 11:15 am

**Report Date:** 27-MAR-15

**Project Manager:** Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	504622-001	504622-002	504622-003	504622-004	504622-005	504622-006
	<i>Field Id:</i>	SO-088210-0322315-SP-01	SO-088210-0322315-SP-02	SO-088210-0322315-SP-03	SO-088210-0322315-SP-04	SO-088210-0322315-SP-05	SO-088210-0322315-SP-06
	<i>Depth:</i>	16.5 ft	5 ft	2 ft	2 ft	2 ft	2 ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Mar-23-15 11:55	Mar-23-15 14:21	Mar-23-15 14:26	Mar-23-15 15:49	Mar-23-15 16:43	Mar-23-15 17:00
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Mar-25-15 14:00	Mar-25-15 14:00	Mar-25-15 14:00	Mar-25-15 14:00	Mar-25-15 14:00	Mar-25-15 14:00
	<i>Analyzed:</i>	Mar-25-15 20:44	Mar-25-15 21:01	Mar-25-15 21:18	Mar-25-15 21:34	Mar-25-15 21:51	Mar-25-15 22:08
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		ND 0.00101	ND 0.00112	ND 0.00112	ND 0.00111	ND 0.00114	ND 0.00111
Toluene		ND 0.00202	ND 0.00224	ND 0.00225	ND 0.00222	ND 0.00227	ND 0.00222
Ethylbenzene		ND 0.00101	ND 0.00112	ND 0.00112	ND 0.00111	ND 0.00114	ND 0.00111
m,p-Xylenes		ND 0.00202	ND 0.00224	ND 0.00225	ND 0.00222	ND 0.00227	ND 0.00222
o-Xylene		ND 0.00101	ND 0.00112	ND 0.00112	ND 0.00111	ND 0.00114	ND 0.00111
Total Xylenes		ND 0.00101	ND 0.00112	ND 0.00112	ND 0.00111	ND 0.00114	ND 0.00111
Total BTEX		ND 0.00101	ND 0.00112	ND 0.00112	ND 0.00111	ND 0.00114	ND 0.00111
<b>Inorganic Anions by EPA 300/300.1</b>	<i>Extracted:</i>	Mar-25-15 15:00	Mar-25-15 15:00	Mar-25-15 15:00	Mar-25-15 15:00	Mar-25-15 15:00	Mar-25-15 15:00
	<i>Analyzed:</i>	Mar-26-15 06:54	Mar-26-15 07:17	Mar-26-15 07:40	Mar-26-15 08:48	Mar-26-15 09:11	Mar-26-15 09:34
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		97.3 10.1	11000 451	6.99 2.26	180 22.2	14.8 11.4	14.0 11.2
<b>Percent Moisture</b>	<i>Extracted:</i>						
	<i>Analyzed:</i>	Mar-26-15 17:10	Mar-26-15 17:10	Mar-26-15 17:10	Mar-26-15 17:10	Mar-26-15 17:10	Mar-26-15 17:10
	<i>Units/RL:</i>	% RL	% RL	% RL	% RL	% RL	% RL
Percent Moisture		1.21 1.00	11.4 1.00	11.6 1.00	10.0 1.00	12.6 1.00	10.6 1.00
<b>TPH By SW8015 Mod</b>	<i>Extracted:</i>	Mar-26-15 11:00	Mar-26-15 11:00	Mar-26-15 11:00	Mar-26-15 11:00	Mar-26-15 11:00	Mar-26-15 11:00
	<i>Analyzed:</i>	Mar-26-15 15:02	Mar-26-15 16:08	Mar-26-15 16:30	Mar-26-15 16:51	Mar-26-15 17:12	Mar-26-15 17:33
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
C6-C12 Gasoline Range Hydrocarbons		ND 15.2	ND 16.9	ND 16.9	ND 16.6	ND 17.1	ND 16.7
C12-C28 Diesel Range Hydrocarbons		ND 15.2	38.7 16.9	ND 16.9	ND 16.6	ND 17.1	ND 16.7
C28-C35 Oil Range Hydrocarbons		ND 15.2	ND 16.9	ND 16.9	ND 16.6	ND 17.1	ND 16.7
Total TPH		ND 15.2	38.7 16.9	ND 16.9	ND 16.6	ND 17.1	ND 16.7

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The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories.  
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Kelsey Brooks  
Project Manager

# Certificate of Analysis Summary 504622

## Conestoga-Rovers & Associates-Albuquerque, NM, Albuquerque, NM



**Project Id:** 088210-11  
**Contact:** Bernie Bockisch  
**Project Location:** Eddy County,NM

**Project Name:** Elk Wallow 11-8

**Date Received in Lab:** Wed Mar-25-15 11:15 am

**Report Date:** 27-MAR-15

**Project Manager:** Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	504622-007	504622-008	504622-009	504622-010		
	<i>Field Id:</i>	SO-088210-0322315-SP-07	SO-088210-0322315-SP-08	SO-088210-0322315-SP-09	SO-088210-0322315-SP-10		
	<i>Depth:</i>	2 ft	2 ft	2 ft	2 ft		
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL		
	<i>Sampled:</i>	Mar-23-15 17:22	Mar-23-15 17:40	Mar-23-15 18:05	Mar-23-15 18:16		
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Mar-25-15 14:00	Mar-25-15 14:00	Mar-25-15 14:00	Mar-25-15 14:00		
	<i>Analyzed:</i>	Mar-25-15 22:24	Mar-25-15 22:41	Mar-25-15 22:57	Mar-25-15 23:14		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Benzene		ND 0.00120	ND 0.00111	ND 0.00116	ND 0.00111		
Toluene		ND 0.00240	ND 0.00221	ND 0.00232	ND 0.00222		
Ethylbenzene		ND 0.00120	ND 0.00111	ND 0.00116	ND 0.00111		
m,p-Xylenes		ND 0.00240	ND 0.00221	ND 0.00232	ND 0.00222		
o-Xylene		ND 0.00120	ND 0.00111	ND 0.00116	ND 0.00111		
Total Xylenes		ND 0.00120	ND 0.00111	ND 0.00116	ND 0.00111		
Total BTEX		ND 0.00120	ND 0.00111	ND 0.00116	ND 0.00111		
<b>Inorganic Anions by EPA 300/300.1</b>	<i>Extracted:</i>	Mar-25-15 15:00	Mar-25-15 15:00	Mar-25-15 15:00	Mar-25-15 15:00		
	<i>Analyzed:</i>	Mar-26-15 09:57	Mar-26-15 10:19	Mar-26-15 11:05	Mar-26-15 11:28		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Chloride		26.8 2.40	24.5 11.1	398 23.3	199 22.3		
<b>Percent Moisture</b>	<i>Extracted:</i>						
	<i>Analyzed:</i>	Mar-26-15 17:10	Mar-26-15 17:10	Mar-26-15 17:10	Mar-26-15 17:10		
	<i>Units/RL:</i>	% RL	% RL	% RL	% RL		
Percent Moisture		16.5 1.00	9.92 1.00	14.1 1.00	10.2 1.00		
<b>TPH By SW8015 Mod</b>	<i>Extracted:</i>	Mar-26-15 11:00	Mar-26-15 11:00	Mar-26-15 11:00	Mar-26-15 11:00		
	<i>Analyzed:</i>	Mar-26-15 17:55	Mar-26-15 18:16	Mar-26-15 18:37	Mar-26-15 18:58		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
C6-C12 Gasoline Range Hydrocarbons		ND 18.0	ND 16.6	ND 17.4	ND 16.7		
C12-C28 Diesel Range Hydrocarbons		ND 18.0	164 16.6	34.8 17.4	24.5 16.7		
C28-C35 Oil Range Hydrocarbons		ND 18.0	ND 16.6	ND 17.4	ND 16.7		
Total TPH		ND 18.0	164 16.6	34.8 17.4	24.5 16.7		

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use.  
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Kelsey Brooks  
Project Manager

- 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      **SQL** 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  
 2505 North Falkenburg Rd, Tampa, FL 33619  
 12600 West I-20 East, Odessa, TX 79765  
 6017 Financial Drive, Norcross, GA 30071  
 3725 E. Atlanta Ave, Phoenix, AZ 85040

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(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(432) 563-1800	(432) 563-1713
(770) 449-8800	(770) 449-5477
(602) 437-0330	



## Form 2 - Surrogate Recoveries

Project Name: Elk Wallow 11-8

Work Orders : 504622, 504622

Project ID: 088210-11

Lab Batch #: 964576

Sample: 504622-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/25/15 20:44

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0311	0.0300	104	80-120	
4-Bromofluorobenzene	0.0344	0.0300	115	80-120	

Lab Batch #: 964576

Sample: 504622-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/25/15 21:01

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0293	0.0300	98	80-120	
4-Bromofluorobenzene	0.0355	0.0300	118	80-120	

Lab Batch #: 964576

Sample: 504622-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/25/15 21:18

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0311	0.0300	104	80-120	
4-Bromofluorobenzene	0.0339	0.0300	113	80-120	

Lab Batch #: 964576

Sample: 504622-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/25/15 21:34

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0308	0.0300	103	80-120	
4-Bromofluorobenzene	0.0338	0.0300	113	80-120	

Lab Batch #: 964576

Sample: 504622-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/25/15 21:51

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0317	0.0300	106	80-120	
4-Bromofluorobenzene	0.0340	0.0300	113	80-120	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



## Form 2 - Surrogate Recoveries

Project Name: Elk Wallow 11-8

Work Orders : 504622, 504622

Project ID: 088210-11

Lab Batch #: 964576

Sample: 504622-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/25/15 22:08

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0314	0.0300	105	80-120	
4-Bromofluorobenzene	0.0344	0.0300	115	80-120	

Lab Batch #: 964576

Sample: 504622-007 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/25/15 22:24

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0315	0.0300	105	80-120	
4-Bromofluorobenzene	0.0343	0.0300	114	80-120	

Lab Batch #: 964576

Sample: 504622-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/25/15 22:41

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0311	0.0300	104	80-120	
4-Bromofluorobenzene	0.0333	0.0300	111	80-120	

Lab Batch #: 964576

Sample: 504622-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/25/15 22:57

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0317	0.0300	106	80-120	
4-Bromofluorobenzene	0.0345	0.0300	115	80-120	

Lab Batch #: 964576

Sample: 504622-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/25/15 23:14

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0320	0.0300	107	80-120	
4-Bromofluorobenzene	0.0348	0.0300	116	80-120	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



## Form 2 - Surrogate Recoveries

Project Name: Elk Wallow 11-8

Work Orders : 504622, 504622

Project ID: 088210-11

Lab Batch #: 964678

Sample: 504622-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/26/15 15:02

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.1	99.8	98	70-135	
o-Terphenyl	45.7	49.9	92	70-135	

Lab Batch #: 964678

Sample: 504622-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/26/15 16:08

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	112	99.7	112	70-135	
o-Terphenyl	55.1	49.9	110	70-135	

Lab Batch #: 964678

Sample: 504622-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/26/15 16:30

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	95.0	99.7	95	70-135	
o-Terphenyl	46.7	49.9	94	70-135	

Lab Batch #: 964678

Sample: 504622-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/26/15 16:51

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	96.7	99.8	97	70-135	
o-Terphenyl	47.6	49.9	95	70-135	

Lab Batch #: 964678

Sample: 504622-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/26/15 17:12

### 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	99.6	99	70-135	
o-Terphenyl	48.3	49.8	97	70-135	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



## Form 2 - Surrogate Recoveries

Project Name: Elk Wallow 11-8

Work Orders : 504622, 504622

Project ID: 088210-11

Lab Batch #: 964678

Sample: 504622-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/26/15 17:33

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	106	99.8	106	70-135	
o-Terphenyl	51.7	49.9	104	70-135	

Lab Batch #: 964678

Sample: 504622-007 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/26/15 17:55

### 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	49.5	50.0	99	70-135	

Lab Batch #: 964678

Sample: 504622-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/26/15 18:16

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	107	99.7	107	70-135	
o-Terphenyl	52.9	49.9	106	70-135	

Lab Batch #: 964678

Sample: 504622-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/26/15 18:37

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	111	99.9	111	70-135	
o-Terphenyl	55.2	50.0	110	70-135	

Lab Batch #: 964678

Sample: 504622-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 03/26/15 18:58

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	115	99.8	115	70-135	
o-Terphenyl	57.3	49.9	115	70-135	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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





## Form 2 - Surrogate Recoveries

Project Name: Elk Wallow 11-8

Work Orders : 504622, 504622

Project ID: 088210-11

Lab Batch #: 964576

Sample: 690313-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/25/15 19:05

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0314	0.0300	105	80-120	
4-Bromofluorobenzene	0.0325	0.0300	108	80-120	

Lab Batch #: 964678

Sample: 690377-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/26/15 13:57

### 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	100	94	70-135	
o-Terphenyl	46.5	50.0	93	70-135	

Lab Batch #: 964576

Sample: 690313-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/25/15 19:22

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0339	0.0300	113	80-120	
4-Bromofluorobenzene	0.0301	0.0300	100	80-120	

Lab Batch #: 964678

Sample: 690377-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/26/15 14:18

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	107	100	107	70-135	
o-Terphenyl	47.3	50.0	95	70-135	

Lab Batch #: 964576

Sample: 690313-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 03/25/15 19:38

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0337	0.0300	112	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

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

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



## Form 2 - Surrogate Recoveries

Project Name: Elk Wallow 11-8

Work Orders : 504622, 504622

Project ID: 088210-11

Lab Batch #: 964678

Sample: 690377-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 03/26/15 14:40

SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	106	100	106	70-135	
o-Terphenyl	46.6	50.0	93	70-135	

Lab Batch #: 964576

Sample: 504622-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 03/25/15 19:55

SURROGATE RECOVERY STUDY					
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0337	0.0300	112	80-120	
4-Bromofluorobenzene	0.0311	0.0300	104	80-120	

Lab Batch #: 964678

Sample: 504622-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 03/26/15 15:24

SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	113	99.9	113	70-135	
o-Terphenyl	44.8	50.0	90	70-135	

Lab Batch #: 964576

Sample: 504622-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 03/25/15 20:11

SURROGATE RECOVERY STUDY					
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0340	0.0300	113	80-120	
4-Bromofluorobenzene	0.0317	0.0300	106	80-120	

Lab Batch #: 964678

Sample: 504622-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 03/26/15 15:46

SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	115	99.9	115	70-135	
o-Terphenyl	49.4	50.0	99	70-135	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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

**Project Name: Elk Wallow 11-8**

**Work Order #:** 504622, 504622

**Project ID:** 088210-11

**Analyst:** ARM

**Date Prepared:** 03/25/2015

**Date Analyzed:** 03/25/2015

**Lab Batch ID:** 964576

**Sample:** 690313-1-BKS

**Batch #:** 1

**Matrix:** Solid

**Units:** mg/kg

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

<b>BTEX by EPA 8021B</b>	<b>Blank Sample Result [A]</b>	<b>Spike Added [B]</b>	<b>Blank Spike Result [C]</b>	<b>Blank Spike %R [D]</b>	<b>Spike Added [E]</b>	<b>Blank Spike Duplicate Result [F]</b>	<b>Blk. Spk Dup. %R [G]</b>	<b>RPD %</b>	<b>Control Limits %R</b>	<b>Control Limits %RPD</b>	<b>Flag</b>
<b>Analytes</b>											
Benzene	<0.00100	0.100	0.104	104	0.100	0.103	103	1	70-130	35	
Toluene	<0.00200	0.100	0.105	105	0.100	0.104	104	1	70-130	35	
Ethylbenzene	<0.00100	0.100	0.110	110	0.100	0.110	110	0	71-129	35	
m,p-Xylenes	<0.00200	0.200	0.215	108	0.200	0.215	108	0	70-135	35	
o-Xylene	<0.00100	0.100	0.107	107	0.100	0.107	107	0	71-133	35	

**Analyst:** JUM

**Date Prepared:** 03/25/2015

**Date Analyzed:** 03/26/2015

**Lab Batch ID:** 964645

**Sample:** 690291-1-BKS

**Batch #:** 1

**Matrix:** Solid

**Units:** mg/kg

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

<b>Inorganic Anions by EPA 300/300.1</b>	<b>Blank Sample Result [A]</b>	<b>Spike Added [B]</b>	<b>Blank Spike Result [C]</b>	<b>Blank Spike %R [D]</b>	<b>Spike Added [E]</b>	<b>Blank Spike Duplicate Result [F]</b>	<b>Blk. Spk Dup. %R [G]</b>	<b>RPD %</b>	<b>Control Limits %R</b>	<b>Control Limits %RPD</b>	<b>Flag</b>
<b>Analytes</b>											
Chloride	<2.00	50.0	49.1	98	50.0	50.5	101	3	90-110	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:** Elk Wallow 11-8

**Work Order #:** 504622, 504622

**Project ID:** 088210-11

**Analyst:** ARM

**Date Prepared:** 03/26/2015

**Date Analyzed:** 03/26/2015

**Lab Batch ID:** 964678

**Sample:** 690377-1-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	845	85	1000	876	88	4	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.0	1000	912	91	1000	915	92	0	70-135	35	

Relative Percent Difference RPD =  $200 * |(C-F)/(C+F)|$

Blank Spike Recovery [D] =  $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes



# Form 3 - MS Recoveries

Project Name: Elk Wallow 11-8



Work Order #: 504622

Lab Batch #: 964645

Date Analyzed: 03/26/2015

QC- Sample ID: 504507-010 S

Reporting Units: mg/kg

Date Prepared: 03/25/2015

Batch #: 1

Project ID: 088210-11

Analyst: JUM

Matrix: Soil

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	208	568	743	94	80-120	

Lab Batch #: 964645

Date Analyzed: 03/26/2015

QC- Sample ID: 504622-008 S

Reporting Units: mg/kg

Date Prepared: 03/25/2015

Batch #: 1

Analyst: JUM

Matrix: Soil

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	24.5	278	299	99	80-120	

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

BRL - Below Reporting Limit



# Form 3 - MS / MSD Recoveries



Project Name: Elk Wallow 11-8

Work Order #: 504622

Project ID: 088210-11

Lab Batch ID: 964576

QC- Sample ID: 504622-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 03/25/2015

Date Prepared: 03/25/2015

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	<0.00101	0.101	0.102	101	0.101	0.104	103	2	70-130	35	
Toluene	<0.00201	0.101	0.102	101	0.101	0.105	104	3	70-130	35	
Ethylbenzene	<0.00101	0.101	0.108	107	0.101	0.111	110	3	71-129	35	
m,p-Xylenes	<0.00201	0.201	0.211	105	0.202	0.218	108	3	70-135	35	
o-Xylene	<0.00101	0.101	0.105	104	0.101	0.108	107	3	71-133	35	

Lab Batch ID: 964678

QC- Sample ID: 504622-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 03/26/2015

Date Prepared: 03/26/2015

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	<15.2	1010	910	90	1010	957	95	5	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.2	1010	997	99	1010	1050	104	5	70-135	35	

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

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

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

**Project Name: Elk Wallow 11-8**

**Work Order #: 504622**

**Lab Batch #: 964691**

**Project ID: 088210-11**

**Date Analyzed: 03/26/2015 17:10**

**Date Prepared: 03/26/2015**

**Analyst: WRU**

**QC- Sample ID: 504619-001 D**

**Batch #: 1**

**Matrix: Soil**

**Reporting Units: %**

## SAMPLE / SAMPLE DUPLICATE RECOVERY

Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	7.72	8.14	5	20	

**Lab Batch #: 964691**

**Date Analyzed: 03/26/2015 17:10**

**Date Prepared: 03/26/2015**

**Analyst: WRU**

**QC- Sample ID: 504622-008 D**

**Batch #: 1**

**Matrix: Soil**

**Reporting Units: %**

## SAMPLE / SAMPLE DUPLICATE RECOVERY

Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	9.92	11.5	15	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





Page 1 of 1

**Stafford, Texas (281-240-4200)**

**Service Center - San Antonio, Texas (210-509-3334)**

Norcross, Georgia (770-449-8800)

Tampa, Florida (813-620-2000)

02/07/2020

Client / Reporting Information						Project Information										
Company Name / Branch:						Project Name/Number:										
Company Address:						Project Location:										
						Invoice To:										
Email:						PO Number:										
Phone No:																
Project Contact:																
Samplers's Name:																
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	NaHSO <sub>4</sub>	MeOH	NONE	Analytical Information	Matrix Codes
1	S0-088210-032315-SF-01	16.5'	3/29/15	11:55	So	1									Chloride 300.0 BTEX 8021 TPH 8015B GBQ/DRO	A= Air S = Soil/Sed/Solid GW = Ground Water DW = Drinking Water P = Product SW = Surface water SL = Sludge WW = Waste Water W = Wipe O = Oil  WM = Waste Water
2	S0-088210-032315-SF-02	5'		1421										X		
3	S0-088210-032315-SF-03	2'		1426										X		
4	S0-088210-032315-SF-04	2'		1549										X		
5	S0-088210-032315-SF-05	2'		1643												
6	S0-088210-032315-SF-06	2'		1700												
7	S0-088210-032315-SF-07	2'		1722												
8	S0-088210-032315-SF-08	2'		1740												
9	S0-088210-032315-SF-09	2'		1805												
10	S0-088210-032315-SF-10	2'		1816												
Turnaround Time (Business days)				Data Deliverable Information	Notes:											
Same Day TAT		<input type="checkbox"/> 5 Day TAT		<input type="checkbox"/> Level II Std QC		<input type="checkbox"/> Level IV (Full Data Pkg raw data)										
Next Day EMERGENCY		<input checked="" type="checkbox"/> 7 Day TAT		<input type="checkbox"/> Level III Std QC+ Forms		<input type="checkbox"/> TRRP Level IV										
2 DAY EMERGENCY		<input type="checkbox"/> Contract TAT		<input type="checkbox"/> Level 3 (CLP Forms)		<input type="checkbox"/> UST / RG -411										
3 Day EMERGENCY		<input type="checkbox"/>		<input type="checkbox"/> TRRP Checklist												
TAT Starts Day received by Lab, if received by 3:00 pm																
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																
Relinquished By Sampler:		Date Time:		Received By:		Relinquished By:		Date Time:		Received By:		Preserved Where applicable		On Ice		
Steven Perez		3/24/15 11:55		V.M.Wild		J.P.Rodriguez		3/24/15 11:55		M.L.S.		X		Cooler Temp. Thermo Corr Factor		
Reinquinshed by:		Date Time:		Received By:		Custody Seal #		Date Time:		Received By:						
3				3		4				4						
5				5												





# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



**Client:** Conestoga-Rovers & Associates-Albuqu

**Date/ Time Received:** 03/25/2015 11:15:00 AM

**Work Order #:** 504622

**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 shipping container/ cooler?	No
#5 Custody Seals intact on sample bottles?	No
#6 *Custody Seals Signed and dated?	No
#7 *Chain of Custody present?	Yes
#8 Sample instructions complete on Chain of Custody?	Yes
#9 Any missing/extra samples?	No
#10 Chain of Custody signed when relinquished/ received?	Yes
#11 Chain of Custody agrees with sample label(s)?	Yes
#12 Container label(s) legible and intact?	Yes
#13 Sample matrix/ properties agree with Chain of Custody?	Yes
#14 Samples in proper container/ bottle?	Yes
#15 Samples properly preserved?	Yes
#16 Sample container(s) intact?	Yes
#17 Sufficient sample amount for indicated test(s)?	Yes
#18 All samples received within hold time?	Yes
#19 Subcontract of sample(s)?	No
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	N/A
#21 <2 for all samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts.	N/A
#22 >10 for all samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH?	N/A

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

Analyst:

PH Device/Lot#:

**Checklist completed by:**

Kelsey Brooks  
Kelsey Brooks

Date: 03/25/2015

**Checklist reviewed by:**

Kelsey Brooks  
Kelsey Brooks

Date: 03/25/2015