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APPROVED

By Olivia Yu at 12:08 pm, Feb 20, 2018

NMOCD approves of the proposed additional delineation and remediation for 1RP-4882 & 1RP-4897. See email correspondence for stipulations.

January 22, 2018

Olivia Yu New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division, District 1 1625 French Drive Hobbs, NM 88240

Shelly Tucker Carlsbad Field Office United States Department of the Interior Bureau of Land Management 620 E. Greene Street Carlsbad, New Mexico 88220

Re: Soil Investigation Summary and Proposed Remediation Workplan Lusk Deep Unit A #029H (1RP-4882 & 1RP-4897) GPS: N 32.66675° W 103.79485° Unit Letter "D", Section 17, Township 19 South, Range 32 East Lea County, New Mexico

Dear Ms. Yu and Ms. Tucker,

TRC Environmental Corporation (TRC), on behalf of COG Operating, LLC (COG) has prepared this Soil Investigation Summary and Proposed Remediation Workplan (Workplan) for the Lusk Deep Unit A #029H Release Site (Release Site). The purpose of this Workplan is to propose remediation activities designed to advance the Release Site toward an NMOCD approved Site Closure Status. The legal description of the Release Site is Unit Letter "D", Section 17, Township 19 South, Range 32 East, in Lea County, New Mexico. The GPS coordinates for the site are N 32.66675° W 103.79485°. The subject property is owned by the United States Department of the Interior and administered by the Bureau of Land Management (BLM). A "Site Location Map" and "Site & Sample Location Map" are provided as Figure 1 and Figure 2, respectively.

BACKGROUND

On November 24, 2017, COG discovered a release had occurred at the Lusk Deep Unit A #029H. The release was attributed to the failure of a four (4)-inch (in.) suction line, resulting in the release of approximately twenty (20) barrels (bbls) of produced water and ten (10) bbls of crude oil. During initial response activities, vacuum trucks were utilized to recover approximately ten (10) bbls of produced water

and eight (8) bbls of crude oil. Upon discovering the release, the NMOCD and BLM were notified. The release affected an area measuring approximately eleven thousand (11,000) square feet (sq. ft.) on the caliche well pad along with approximately two thousand (2,000) sq. ft. of pasture on the southeast side of the well pad. Please reference the attached Release Notification and Corrective Action (Form C-141), dated November 28, 2017, for additional details.

On December 16, 2017, a second release had occurred at the Lusk Deep Unit A #029H. The release was attributed to the failure of the H-pump, resulting in the release of approximately fifteen (15) bbls of produced water. During initial response activities, vacuum trucks were utilized to recover approximately ten (10) bbls of produced water. Upon discovering the release, the NMOCD and BLM were notified. The release affected an area indistinguishable from the previous release. Please reference the attached Form C-141, dated December 18, 2017, for additional details.

A groundwater database maintained by The New Mexico Office of the State Engineer (NMOSE) did not identify any registered water wells in Section 17, Township 19 South, Range 32 East. A reference map utilized by the New Mexico Oil Conservation Division (NMOCD) Carlsbad District Office indicates groundwater should be encountered at approximately four hundred and fifty (450) feet (ft.) below ground surface (bgs). Based on the NMOCD site classification system, zero (0) points will be assigned to the subject area ranking as a result of this criterion.

No water wells were observed within one-thousand (1,000) ft. of the Release Site. Based on the NMOCD site classification system, zero (0) points will be assigned to the subject area ranking as a result of this criterion.

No surface water was observed within one-thousand (1,000) ft. of the Release Site. Based on the NMOCD site classification system, zero (0) points will be assigned to the subject area ranking as a result of this criterion.

Based on the NMOCD Site Classification criteria, the Release Site soil remediation levels are 10 milligrams per kilogram (mg/kg) for benzene, 50 mg/kg for benzene, toluene, ethylbenzene and xylenes (BTEX), and five thousand (5,000) mg/kg for total petroleum hydrocarbons (TPH). Per NMOCD request, chloride remediation levels for the Release Site will be 600 mg/kg. Remediation of the November 28 and December 16, 2017, releases will be investigated and remediated simultaneously and closed under one cover.

SUMMARY OF FIELD ACTIVITIES

On December 21, 2017, TRC conducted an initial investigation at the site. During the initial investigation, a series of hand-augered soil bores (SP #1 through SP #5) were advanced within the release margins in an effort to determine the vertical extent of soil impact. During the advancement of the soil bores, sixteen (16) soil samples (SP #1 @ Surf., SP #1 @ 1', SP #1 @ 2', SP #2 @ Surf., SP #2 @ 1', SP #3 @ Surf., SP #3 @ 1', SP #3 @ 2', SP #4 @ Surf., SP #4 @ 1', SP #4 @ 2', SP #5 @ Surf., SP #5 @ 1', SP #5 @ 2' and SP #5 @ 3') were collected and submitted to Xenco Laboratories in Midland, Texas for determination of chloride using Method 300/300.1. (See attached Figure 2 and Table 1 for sample locations and a summary of laboratory analytical results). Laboratory analytical results indicated chloride concentrations ranged from 13,300 mg/kg for soil sample SP #3 @ Surf. to 22.3 mg/kg in soil sample SP #3 @ 2'. Laboratory analytical results indicated soil was not

affected above the NMOCD RRAL for chloride in the area represented by sample point SP #4, beyond one (1) ft. bgs in the area represented by sample points SP #1 and SP #3, and beyond two (2) ft. in the area represented by sample point SP #5. Collection of additional soil samples from deeper intervals in the area characterized by sample point SP #2 was precluded due to the presence of an impenetrable rock layer.

Soil samples SP #1 @ Surf., SP #1 @ 1', SP #1 @ 2', SP #2 @ Surf., SP #2 @ 1', SP #3 @ Surf., SP #3 @ 1', SP #4 @ Surf., SP #4 @ 1', SP #4 @ 2', SP #5 @ Surf., SP #5 @ 1', SP #5 @ 2' and SP #5 @ 3' were also analyzed for concentrations of TPH using Method SW 846-8015M. Laboratory analytical results indicated TPH concentrations ranged from 36,580 mg/kg in soil sample SP #4 @ Surf. to less than the applicable laboratory RL in soil samples SP #1 @ 1', SP #2 @1', and SP #3 @ 1'. Laboratory analytical results indicated soil was not affected above the NMOCD RRAL for TPH in the area represented by sample point SP # 3, beyond one (1) ft. bgs in the area represented by sample points SP #1 and SP #2, beyond two (2) ft. bgs in the area represented by sample point SP #4, and beyond three (3) ft. bgs in the area characterized by sample point SP #5. It should be noted that soil samples SP #4 @ 2' and SP #5 @ 3' were analyzed outside of recommended hold time for TPH.

Soil samples SP #1 @ Surf., SP #1 @ 1' SP #2 @ Surf., SP #2 @1', SP #3 @ Surf., SP #4 @ Surf., SP #4 @ 1'. SP #4 @ 2', SP #5 @ Surf., SP #5 @ 1', SP #5 @ 2', and SP #5 @ 3' were also analyzed for concentrations of BTEX using Method SW 846-8021B. Laboratory analytical results indicated benzene concentrations ranged from 32.5 mg/kg in soil sample SP #5 @ Surf. to less than the applicable laboratory RL in soil samples SP #1 @ 1', SP #2 @ 1', SP #4 @ 1', SP #4 @ 2' and SP #5 @ 3'. Total BTEX concentrations ranged from 1,002.50 mg/kg in soil sample SP #5 @ Surf. to less than the applicable laboratory RL in soil samples SP #1 @ 1', SP #2 @ 1' and SP #4 @ 2'. Laboratory analytical results indicated soil was not affected above the NMOCD RRAL for BTEX in the area represented by sample point SP #3, beyond one (1) ft. bgs in the area represented by sample points SP #1 and SP #2, beyond two (2) ft. in the area represented by sample point SP #5.

In addition, TRC collected eight (8) soil samples (North #1, North #2, East #1, East #2. East #3, West #1, South #1, and South #2) from the edges of the inferred release margins in an effort to determine the horizontal extent of soil impacts. The collected soil samples were submitted to the laboratory for analysis of BTEX, TPH and chloride. Laboratory analytical results indicated benzene, BTEX, TPH, and chloride concentrations were less than the NMOCD RRAL in each of the submitted soil samples with the exception of soil sample South #1, which exhibited a chloride concentration of 743 mg/kg, respectively. Based on laboratory analytical results, additional delineation is required in the area characterize by soil sample South #1.

PROPOSED REMEDIATION STRATEGY

Based on the analytical results from soil samples collected during the initial release assessment on December 21, 2017, COG proposes the following field activities designed to advance the Lusk Deep Unit A #029H Release Site toward an NMOCD- and BLM-approved closure:

• Utilizing a backhoe, excavate impacted soil within the release margins in the areas represented by sample points SP #1 and SP #3 to a depth of approximately one (1) ft. bgs, SP #4 to a depth of

approximately two (2) ft. bgs, SP #5 to a depth of approximately three (3) ft. bgs, SP #2 to a depth of approximately five (5) ft. bgs or until field test results indicated impacted soil affected above the NMOCD RRAL has been removed.

- In the event soil is affected above the NMOCD RRAL for chloride at considerable depth, the affected area will be delineated and a risk-based soil closure strategy may be proposed for NMOCD and BLM consideration.
- Advance the sidewall of the excavation in the area characterized by soil sample South #1 until
 field test results indicate impacted soil affected above the NMOCD RRAL for chloride has been
 removed.
- Affected soil adjacent to and/or beneath active oil and gas equipment impacted above the NMOCD RRAL will be excavated to the maximum extent practicable, as necessary, in an effort to mitigate risks to human health and property.
- Upon excavating impacted soil from within the release margins, confirmation soil samples will be collected from the floor and sidewalls of the excavated areas at approximate fifty (50) ft. increments and submitted to the laboratory for analysis of chloride and/or TPH where applicable.
- Temporarily stockpile excavated soil on-site, atop an impermeable liner, pending final disposition at an NMOCD-approved disposal facility.
- Upon receiving laboratory analytical results from confirmation soil samples, transport the impacted soil to an NMOCD-approved disposal facility and backfill the excavated area with locally-sourced, non-impacted "like" material.
- Upon completion of remediation activities and receipt of laboratory analytical results from confirmation soil samples, TRC will prepare and submit a "Remediation Summary and Site Closure Request" to the NMOCD and BLM detailing remediation activities and laboratory analytical results from confirmation soil samples.
- Upon completion of remediation activities, areas within the affected pasture disturbed by remediation activities will be reseeded with a BLM-approved seed mixture appropriate for the site. Seed may be spread utilizing a broadcaster and/or seed drill dependent on conditions at the site. In the event broadcasting is chosen as the seeding method, the affected area will be raked and/or dragged to inhibit the redisposition of seed.

COG is prepared to begin the activities outlined in this Proposed Remediation Workplan on NMOCD and BLM approval. If you have any questions or need any additional information, please feel free to contact Beck Haskell or myself by phone or email.

Joel Lowry

Senior Project Manager

TRC Environmental Corporation

Senior Project Manager

TRC Environmental Corporation

Attachments:

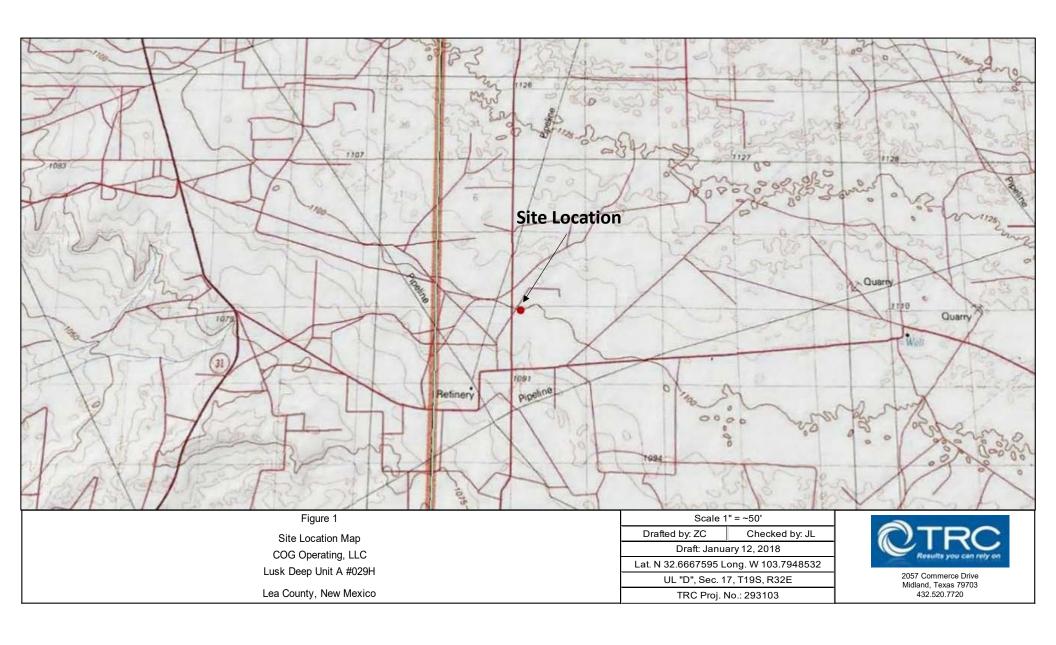
Figure 1 - Site Location Map

Figure 2 - Site & Sample Location Map

Table 1 - Concentrations of Benzene, BTEX, TPH and Chloride in Soil

Laboratory Analytical Results Release Notification and Corrective Actions (Form C-141s)

cc: File



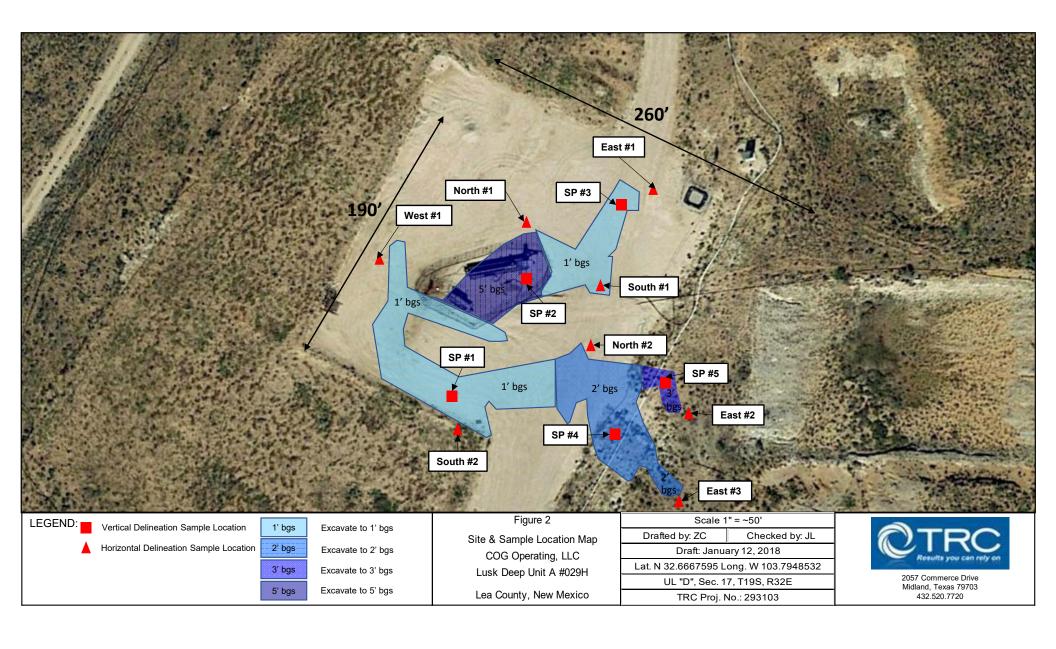


TABLE 1

CONCENTRATIONS OF BENZENE, BTEX, TPH, AND CHLORIDE IN SOIL LUSK DEEP UNIT A #029H COG OPERATING, LLC LEA COUNTY, NM NMOCD REF. No. 1RP-4882

					Methods: E	PA SW 846-8021	IB, 5030		Methods:				Method:
SAMPLE	SAMPLE	SAMPLE	CT A TELE	DENGENE	TOLLENE	ETHYL-	XYLENES,	TOTAL		EPA SW	846-8015M		E300
LOCATION	DATE	DEPTH	STATUS	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	BENZENE (mg/Kg)	TOTAL (mg/Kg)	BTEX (mg/Kg)	GRO (mg/Kg)	DRO (mg/Kg)	ORO (mg/Kg)	TOTAL TPH (mg/Kg)	CHLORIDE (mg/Kg)
SP #1 @ SURF	12/21/2017	Surf.	In-Situ	0.565	14.5	15.1	27.49	57.655	541	7,800	799	9,140	11,900
SP #1 @ 1'	12/21/2017	1'	In-Situ	< 0.000998	< 0.000998	< 0.000998	< 0.000998	< 0.000998	<14.9	<14.9	<14.9	<14.9	57.2
SP #1 @ 2'	12/21/2017	2'	In-Situ	-	-	-	-	-	<14.9	15.0	<14.9	15.0	-
SP #2 @ SURF	12/21/2017	Sf	I. C't.	1.70	26.0	26.0	46.1	111.4	046	8,590	1,460	10,896	12,600
	12/21/2017	Surf. 1'	In-Situ	1.70 <0.00100	36.8	26.8	46.1 <0.001	111.4	846	,			
SP #2 @ 1'	12/21/2017		In-Situ	<0.00100	< 0.00100	< 0.00100		< 0.001	<14.9	<14.9	<14.9	<14.9	3,230
SP #2 @ 4'	12/21/2017	4'	In-Situ	-	-	-	-	-	-	-	-	-	7,510
SP #3 @ SURF	12/21/2017	Surf.	In-Situ	0.00249	0.0392	0.0105	0.01537	0.06756	38.1	1,330	181	1,549	13,300
SP #3 @ 1'	12/21/2017	1'	In-Situ	-	-	-	-	-	<14.9	<14.9	<14.9	<14.9	326
SP #3 @ 2'	12/21/2017	2'	In-Situ	-	-	-	-	-	-	-	-	-	22.3
SP #4 @ SURF	12/21/2017	Surf.	In-Situ	17.0	301	188	318.3	824.3	8,210	24,700	3,670	36,580	36.6
SP #4 @ 1'	12/21/2017	1'	In-Situ	< 0.0248	58.1	73.9	134.7	266.7	2,230	5,060	511	7,801	48.2
SP #4 @ 2'	12/21/2017	2'	In-Situ	< 0.000990	< 0.000990	< 0.000990	<0.00099	< 0.00099	<14.9 ^K	<14.9 ^K	<14.9 ^K	<14.9 ^K	-
SP #5 @ SURF	12/21/2017	Surf.	In-Situ	22.5	334	229	407	1 002 50	8,780	17,100	2,710	20.500	2.000
SP #5 @ 1'	12/21/2017	1'	In-Situ In-Situ	32.5 25.9	291	158	265	1,002.50 740.3	7,030	9,150	921	28,590 17,101	3,800 5,320
SP #5 @ 2'	12/21/2017	2'	In-Situ In-Situ	0.406	36.5	54.3	78.7	169.906	2,160	4,680	565	7,405	51.8
SP #5 @ 3'	12/21/2017	3'	In-Situ In-Situ	<0.0250	0.0472	0.399	2.21	2.6562	96.6 ^K	750 ^K	108 ^K	954.6 ^K	31.6
SF #3 (# 3	12/21/201/	3	III-Situ	<0.0230	0.0472	0.399	2.21	2.0302	96.6	/30	108	934.6	-
North #1	12/21/2017	1'	In-Situ	< 0.000990	0.00144	< 0.000990	< 0.00099	0.00144	<15.0	<15.0	<15.0	<15.0	251
North #2	12/21/2017	1'	In-Situ	< 0.00101	< 0.00101	< 0.00101	< 0.00101	< 0.00101	<15.0	<15.0	<15.0	<15.0	249
		1											
East #1	12/21/2017	1'	In-Situ	< 0.00101	< 0.00101	< 0.00101	< 0.00101	< 0.00101	<15.0	<15.0	<15.0	<15.0	119
East #2	12/21/2017	1'	In-Situ	< 0.000996	< 0.000996	< 0.000996	< 0.000996	< 0.000996	<15.0	17.0	<15.0	17.0	<9.71
East #3	12/21/2017	1'	In-Situ	< 0.000994	< 0.000994	< 0.000994	< 0.000994	< 0.000994	<15.0	<15.0	<15.0	<15.0	<9.78
***	10/01/0015	4.	7 00	0.000004	0.001.45	0.000004	0.000004	0.00145	450	450	150	450	250
West #1	12/21/2017	1'	In-Situ	<0.000994	0.00147	<0.000994	<0.000994	0.00147	<15.0	<15.0	<15.0	<15.0	270
South #1	12/21/2017	1'	In-Situ	< 0.000998	< 0.000998	< 0.000998	< 0.000998	<0.000998	<15.0	<15.0	<15.0	<15.0	743
South #2	12/21/2017	1'	In-Situ	< 0.00101	< 0.00101	< 0.00101	< 0.00101	< 0.00101	<14.9	<14.9	<14.9	<14.9	<9.71
NMO	CD Regulatory	Guideline		10	-	-	-	50	-	-	-	5,000	600

Bold denotes concentraions above NMOCD Regulatory Guidelines

^{- =} Sample not analyzed for constituent.

K = Sample analyzed outside of recommended hold time.

Analytical Report 572221

for TRC Solutions, Inc

Project Manager: Joel Lowry
Lusk Deep Unit A #029H

22-JAN-18

Collected By: Client



6701 Aberdeen, Suite 9 Lubbock, TX 79424

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054) Oklahoma (2017-142)

> Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco-Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)



22-JAN-18

Project Manager: **Joel Lowry TRC Solutions, Inc**2057 Commerce
Midland, TX 79703

Reference: XENCO Report No(s): 572221

Lusk Deep Unit A #029HProject Address: Lea Co. NM

Joel Lowry:

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) 572221. 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. 572221 will be filed for 45 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

Knus Hoah

Project Manager

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

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Sample Cross Reference 572221

$TRC\ Solutions, Inc,\ Midland, TX$

Lusk Deep Unit A #029H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SP #1 @ Surf.	S	12-21-17 10:25	0	572221-001
SP #1 @ 1'	S	12-21-17 10:30	1 ft	572221-002
SP #1 @ 2'	S	12-21-17 10:35	2 ft	572221-003
SP #2 @ Surf.	S	12-21-17 10:40	0	572221-004
SP #2 @ 1'	S	12-21-17 10:45	1 ft	572221-005
SP #2 @ 4'	S	12-21-17 10:55	7 ft	572221-007
SP #3 @ Surf.	S	12-21-17 11:00	0	572221-008
SP #3 @ 1'	S	12-21-17 11:05	1 ft	572221-009
SP #3 @ 2'	S	12-21-17 11:10	2 ft	572221-010
SP #4 @ Surf.	S	12-21-17 11:15	0	572221-011
SP #4 @ 1'	S	12-21-17 11:20	1 ft	572221-012
SP #4 @ 2'	S	12-21-17 11:25	2 ft	572221-013
SP #5 @ Surf.	S	12-21-17 11:30	0	572221-014
SP #5 @ 1'	S	12-21-17 11:35	1 ft	572221-015
SP #5 @ 2'	S	12-21-17 11:40	2 ft	572221-016
SP #5 @ 3'	S	12-21-17 11:43	0	572221-017
North #1	S	12-21-17 11:45	1 ft	572221-018
North #2	S	12-21-17 11:50	1 ft	572221-019
East #1	S	12-21-17 11:55	1 ft	572221-020
East #2	S	12-21-17 12:00	1 ft	572221-021
East #3	S	12-21-17 12:10	1 ft	572221-022
West #1	S	12-21-17 12:15	1 ft	572221-023
South #1	S	12-21-17 12:20	1 ft	572221-024
South #2	S	12-21-17 12:30	1 ft	572221-025
SP #2 @ 2'	S	12-21-17 10:50	2 ft	Not Analyzed

XENCO

CASE NARRATIVE

Client Name: TRC Solutions, Inc Project Name: Lusk Deep Unit A #029H

Project ID: Report Date: 22-JAN-18 Work Order Number(s): 572221 Date Received: 12/27/2017

Sample receipt non conformances and comments:

1.001 1/16/18 8015 DRO-ORO added to samples 013 & 017 per Joel Lowry. OK to run out of hold time.

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3037396 BTEX by SW 8260B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3037445 BTEX by SW 8260B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3037542 BTEX by SW 8260B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



Joel Lowry

Lea Co. NM

Project Id:

Project Location:

Contact:

Certificate of Analysis Summary 572221

TRC Solutions, Inc, Midland, TX

Project Name: Lusk Deep Unit A #029H

Date Received in Lab: Wed Dec-27-17 05:12 pm

Report Date: 22-JAN-18 Project Manager: Kelsey Brooks

	Lab Id:	572221-0	001	572221-0	02	572221-0	03	572221-0	004	572221-0	005	572221-0	007
Analysis Paguested	Field Id:	SP #1 @	Surf.	SP #1 @	1'	SP #1 @	2'	SP #2 @ S	Surf.	SP #2 @	1'	SP #2 @	4'
Analysis Requested	Depth:	0-		1- ft		2- ft		0-		1- ft		7- ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Dec-21-17	10:25	Dec-21-17	10:30	Dec-21-17 1	0:35	Dec-21-17 10:40		Dec-21-17 10:45		Dec-21-17	10:55
BTEX by SW 8260B	Extracted:	Jan-02-18	18:00	Jan-02-18 1	5:45			Jan-02-18 18:00		Jan-02-18 15:45			
SUB: TX104704215-17-23	Analyzed:	Jan-02-18	20:01	Jan-02-18 1	6:51			Jan-02-18	19:44	Jan-02-18	17:32		
	Units/RL:	mg/kg	RL	mg/kg	RL			mg/kg	RL	mg/kg	RL		
Benzene		0.565	0.0996	< 0.000998	0.000998			1.70	0.0998	< 0.00100	0.00100		
Toluene		14.5	0.0996	< 0.000998	0.000998			36.8	0.0998	< 0.00100	0.00100		
Ethylbenzene		15.1	0.0996	< 0.000998	0.000998			26.8	0.0998	< 0.00100	0.00100		
m,p-Xylenes		19.2	0.199	< 0.00200	0.00200			33.0	0.200	< 0.00200	0.00200		
o-Xylene		8.29	0.0996	< 0.000998	0.000998			13.1	0.0998	< 0.00100	0.00100		
Total Xylenes		27.49	0.0996	< 0.000998	0.000998			46.1	0.0998	< 0.001	0.001		
Total BTEX		57.655	0.0996	< 0.000998	0.000998			111.4	0.0998	< 0.001	0.001		
Chloride by EPA 300	Extracted:	Jan-03-18	14:00	Jan-03-18 1	4:00			Jan-03-18	14:00	Jan-03-18	14:00	Jan-03-18 1	4:00
SUB: TX104704215-17-23	Analyzed:	Jan-03-18	17:17	Jan-03-18 1	7:50			Jan-03-18	18:02	Jan-03-18	18:13	Jan-03-18 1	8:46
	Units/RL:	mg/kg	RL	mg/kg	RL			mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		11900	99.0	57.2	9.78			12600	97.1	3230	47.3	7510	48.0
DRO-ORO By SW8015B	Extracted:	Dec-29-17	10:27	Dec-29-17 1	10:30	Dec-29-17 1	0:33	Dec-29-17	10:36	Dec-29-17	10:39		
SUB: TX104704215-17-23	Analyzed:	Dec-30-17	10:15	Dec-30-17 (00:02	Dec-30-17 0	0:22	Dec-30-17	12:00	Dec-30-17	00:44		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Gasoline Range Hydrocarbons (GRO)		541	15.0	<14.9	14.9	<14.9	14.9	846	14.9	<14.9	14.9		
Diesel Range Organics (DRO)		7800 D	150	<14.9	14.9	15.0	14.9	8590 D	149	<14.9	14.9		
Oil Range Hydrocarbons (ORO)		799	15.0	<14.9	14.9	<14.9	14.9	1460 D	149	<14.9	14.9		

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Kelsey Brooks Project Manager

Knis Roah



Certificate of Analysis Summary 572221

TRC Solutions, Inc, Midland, TX

Project Name: Lusk Deep Unit A #029H

Date Received in Lab: Wed Dec-27-17 05:12 pm

Report Date: 22-JAN-18 Project Manager: Kelsey Brooks

Contact: Joel Lowry Lea Co. NM **Project Location:**

Project Id:

	Lab Id:	572221-0	800	572221-0	09	572221-0	010	572221-0	011	572221-0	12	572221-	-013
Analysis Paguested	Field Id:	SP #3 @ S	Surf.	SP #3 @	1'	SP #3 @	2'	SP #4 @ S	Surf.	SP #4 @	1'	SP #4 0	@ 2'
Analysis Requested	Depth:	0-		1- ft		2- ft		0-		1- ft		2- ft	:
	Matrix:	SOIL	,	SOIL		SOIL		SOIL		SOIL		SOII	
	Sampled:	Dec-21-17	11:00	Dec-21-17	11:05	Dec-21-17	11:10	Dec-21-17	11:15	Dec-21-17	11:20	Dec-21-17	11:25
BTEX by SW 8260B	Extracted:	Jan-02-18	18:00					Jan-02-18	18:00	Jan-02-18 1	8:00	Jan-02-18	18:00
SUB: TX104704215-17-23	Analyzed:	Jan-02-18	21:07					Jan-02-18 2	20:17	Jan-02-18 1	9:11	Jan-02-18	23:02
	Units/RL:	mg/kg	RL					mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		0.00249	0.000990					17.0	0.0994	< 0.0248	0.0248	< 0.000990	0.000990
Toluene		0.0392	0.000990					301 D	0.994	58.1 D	0.198	< 0.000990	0.000990
Ethylbenzene		0.0105	0.000990					188 D	0.994	73.9 D	0.198	< 0.000990	0.000990
m,p-Xylenes		0.0105	0.00198					225 D	1.99	98.9 D	0.396	< 0.00198	0.00198
o-Xylene		0.00487	0.000990					93.3 D	0.994	35.8 D	0.198	< 0.000990	0.000990
Total Xylenes		0.01537	0.00099					318.3	0.994	134.7	0.198	< 0.00099	0.00099
Total BTEX		0.06756	0.00099					824.3	0.0994	266.7	0.0248	< 0.00099	0.00099
Chloride by EPA 300	Extracted:	Jan-03-18	14:00	Jan-03-18 1	4:00	Jan-03-18 1	4:00	Jan-03-18	14:00	Jan-03-18 1	4:00		
SUB: TX104704215-17-23	Analyzed:	Jan-03-18	18:58	Jan-03-18 1	9:09	Jan-03-18 1	9:20	Jan-03-18	19:31	Jan-03-18 1	9:42		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Chloride		13300	99.8	326	9.90	22.3	9.71	36.6	9.58	48.2	9.94		
DRO-ORO By SW8015B	Extracted:	Dec-29-17	10:42	Dec-29-17 1	0:45			Dec-29-17	16:18	Dec-29-17	16:21	Jan-18-18	11:54
SUB: TX104704215-17-23	Analyzed:	Jan-02-18	21:12	Dec-30-17 (01:05			Dec-30-17	09:13	Dec-30-17	9:54	Jan-19-18	02:03
	Units/RL:	mg/kg	RL	mg/kg	RL			mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		38.1	14.9	<14.9	14.9			8210	150	2230	15.0	<14.9 K	14.9
Diesel Range Organics (DRO)		1330	14.9	<14.9	14.9			24700	150	5060	15.0	<14.9 K	14.9
Oil Range Hydrocarbons (ORO)		181	14.9	<14.9	14.9			3670	150	511	15.0	<14.9 K	14.9
	I												

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Kelsey Brooks Project Manager

Knus Roah



Lea Co. NM

Project Id:

Project Location:

Contact:

Certificate of Analysis Summary 572221

TRC Solutions, Inc, Midland, TX

Project Name: Lusk Deep Unit A #029H

Joel Lowry

Date Received in Lab: Wed Dec-27-17 05:12 pm

Report Date: 22-JAN-18 **Project Manager:** Kelsey Brooks

Lab Id:	572221-0	014	572221-0)15	572221-0	16	572221-0)17	572221-0	018	572221-	019						
Field Id:	SP #5 @ S	Surf.	SP #5 @	1'	SP #5 @	2'	SP #5 @	3'	North #	# 1	North :	#2						
Depth:	0-		1- ft		2- ft		0-		1- ft		1- ft							
Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	,	SOIL	_						
Sampled:	Dec-21-17	11:30	Dec-21-17	11:35	Dec-21-17	11:40	Dec-21-17	11:43	Dec-21-17	11:45	Dec-21-17	11:50						
Extracted:	Jan-03-18	17:00	Jan-03-18	7:00	Jan-03-18 1	7:00	Jan-04-18 1	3:00	Jan-03-18	14:20	Jan-03-18	14:20						
Analyzed:	Jan-03-18 2	21:58	Jan-03-18 2	22:13	Jan-03-18 2	1:42	Jan-04-18 1	4:03	Jan-03-18	15:27	Jan-03-18	15:44						
Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL						
	32.5	0.100	25.9	0.0996	0.406	0.100	< 0.0250	0.0250	< 0.000990	0.000990	< 0.00101	0.00101						
	334 D	1.00	291 D	0.996	36.5	0.100	0.0472	0.0250	0.00144	0.000990	< 0.00101	0.00101						
	229 D	1.00	158 D	0.996	54.3 D	0.990	0.399	0.0250	< 0.000990	0.000990	< 0.00101	0.00101						
	290 D	2.00	193 D	1.99	52.4	0.200	1.21	0.0499	< 0.00198	0.00198	< 0.00202	0.00202						
	117 D	1.00	72.4 D	0.996	26.3	0.100	1.00	0.0250	< 0.000990	0.000990	< 0.00101	0.00101						
	407	1	265.4	0.996	78.7	0.1	2.21	0.025	< 0.00099	0.00099	< 0.00101	0.00101						
	1002.5	0.1	740.3	0.0996	169.906	0.1	2.6562	0.025	0.00144	0.00099	< 0.00101	0.00101						
Extracted:	Jan-03-18	14:00	Jan-03-18	4:00	Jan-03-18 1	4:00			Jan-03-18	14:00	Jan-03-18	14:00						
Analyzed:	Jan-03-18	19:53	Jan-03-18 2	20:05	Jan-03-18 2	0:16			Jan-03-18	20:27	Jan-03-18	21:23						
Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL			mg/kg	RL	mg/kg	RL						
	3800	49.2	5320	48.3	51.8	9.33			251	9.51	249	9.58						
Extracted:	Dec-29-17	16:24	Dec-29-17	16:27	Jan-03-18 1	0:36	Jan-18-18 1	1:57	Dec-29-17	16:33	Dec-29-17	16:36						
Analyzed:	Dec-30-17	09:34	Dec-30-17	10:35	Jan-09-18 0	4:39	Jan-19-18 (08:40	Dec-30-17 01:27		Dec-30-17	01:48						
Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL						
'	8780	150	7030 D	149	2160	15.0	96.6 K	14.9	<15.0	15.0	<15.0	15.0						
	17100	150	9150 D	149	4680	15.0	750 K	14.9	<15.0	15.0	<15.0	15.0						
	2710	150	921	14.9	565	15.0	108 K	14.9	<15.0	15.0	<15.0	15.0						
	Field Id: Depth: Matrix: Sampled: Extracted: Analyzed: Units/RL: Extracted: Analyzed: Units/RL: Extracted: Analyzed: Analyzed: Analyzed:	Field Id: SP #5 @ S Depth: 0- Matrix: SOIL Sampled: Dec-21-17 Extracted: Jan-03-18 2 Units/RL: mg/kg 32.5 334 D 229 D 290 D 117 D 407 1002.5 Extracted: Jan-03-18 1 Analyzed: Jan-03-18 1 Units/RL: mg/kg Extracted: Jan-03-18 1 Analyzed: Jan-03-18 1 Units/RL: mg/kg 3800 Extracted: Dec-29-17 Analyzed: Dec-30-17 0 Units/RL: mg/kg 8780 17100	Field Id: Depth: Depth: Matrix: SOIL Sampled: Dec-21-17 11:30 Extracted: Jan-03-18 17:00 Analyzed: Jan-03-18 21:58 Units/RL: mg/kg RL 32.5 0.100 334 D 1.00 229 D 1.00 229 D 1.00 290 D 2.00 117 D 1.00 407 1 1002.5 0.1 Extracted: Jan-03-18 14:00 Analyzed: Jan-03-18 19:53 Units/RL: mg/kg RL 3800 49.2 Extracted: Analyzed: Dec-30-17 09:34 Units/RL: mg/kg RL 8780 150 17100 150	Field Id: SP #5 @ Surf. SP #5 @ Depth: 0- 1- ft Matrix: SOIL SOIL Sampled: Dec-21-17 11:30 Dec-21-17 Extracted: Jan-03-18 17:00 Jan-03-18 2 Analyzed: Jan-03-18 21:58 Jan-03-18 2 Units/RL: mg/kg RL mg/kg 32.5 0.100 25.9 334 D 1.00 291 D 229 D 1.00 158 D 290 D 2.00 193 D 117 D 1.00 72.4 D 407 1 265.4 1002.5 0.1 740.3 Extracted: Jan-03-18 14:00 Jan-03-18 1 Analyzed: Jan-03-18 19:53 Jan-03-18 2 Units/RL: mg/kg RL mg/kg Extracted: Dec-29-17 16:24 Dec-29-17 Analyzed: Dec-30-17 09:34 Dec-30-17 Units/RL: mg/kg RL mg/kg R R Mg/kg	Field Id: SP #5 @ Surf. SP #5 @ 1' Depth: 0- 1- ft Matrix: SOIL SOIL Sampled: Dec-21-17 11:30 Dec-21-17 11:35 Extracted: Jan-03-18 17:00 Jan-03-18 17:00 Analyzed: Jan-03-18 21:58 Jan-03-18 22:13 Units/RL: mg/kg RL mg/kg RL 32.5 0.100 25.9 0.0996 229 D 1.00 291 D 0.996 290 D 2.00 193 D 1.99 117 D 1.00 72.4 D 0.996 407 1 265.4 0.996 407 1 265.4 0.996 407 1 265.4 0.996 Extracted: Jan-03-18 14:00 Jan-03-18 14:00 Jan-03-18 20:05 Mg/kg RL mg/kg RL 3800 49.2 5320 48.3 Extracted: Dec-29-17 16:24 Dec-29-17 16:27 Analyzed: Dec-30-17 09:34	Field Id: SP #5 @ Surf. SP #5 @ 1' SP #5 @ Depth: 0- 1- ft 2- ft Matrix: SOIL SOIL SOIL SOIL Sampled: Dec-21-17 11:30 Dec-21-17 11:35 Dec-21-17 11:35 Dec-21-17 11:35 Extracted: Jan-03-18 17:00 Jan-03-18 17:00 Jan-03-18 12:58 Jan-03-18 22:13 Jan-03-18 12 Units/RL: mg/kg RL mg/kg RL mg/kg Units/RL: mg/kg RL mg/kg RL mg/kg 32.5 0.100 25.9 0.0996 0.406 334 D 1.00 25.9 0.0996 36.5 229 D 1.00 158 D 0.996 54.3 D 290 D 2.00 193 D 1.99 52.4 117 D 1.00 72.4 D 0.996 78.7 1002.5 0.1 740.3 0.0996 169.906 Extracted: Jan-03-18 14:00 Jan-03-18 14:00 Jan-03-18 20:05 Jan-03-18 2	Field Id: SP #5 @ Surf. SP #5 @ 1' SP #5 @ 2' Depth: 0- 1- ft 2- ft Matrix: SOIL SOIL SOIL Sampled: Dec-21-17 11:30 Dec-21-17 11:35 Dec-21-17 11:40 Extracted: Jan-03-18 17:00 Jan-03-18 17:00 Jan-03-18 17:00 Analyzed: Jan-03-18 21:58 Jan-03-18 22:13 Jan-03-18 21:42 Units/RL: mg/kg RL mg/kg RL mg/kg RL 32.5 0.100 25.9 0.0996 0.406 0.100 334 D 1.00 291 D 0.996 54.3 D 0.990 229 D 1.00 158 D 0.996 54.3 D 0.990 290 D 2.00 193 D 1.99 52.4 0.200 117 D 1.00 72.4 D 0.996 78.7 0.1 Extracted: Jan-03-18 14:00 Jan-03-18 14:00 Jan-03-18 14:00 Analyzed: Jan-03-18 19:53 Jan-03-18 20:16 mg/kg RL	Field Id: SP #5 @ Surf. SP #5 @ 1' SP #5 @ 2' SP #5 @ 0 Matrix: SOIL SOIL SOIL SOIL SOIL DEC-21-17 11:40 DEC-21-17 Extracted: Jan-03-18 17:00 Jan-03-18 17:00 Jan-03-18 17:00 Jan-03-18 17:00 Jan-03-18 17:00 Jan-03-18 17:00 Jan-03-18 12:42 Jan-03-18 12:42 Jan-04-18 18 Majke RL mg/kg RL mg/kg RL mg/kg RL mg/kg NL mg/kg S2.4 0.20 0.00 0.00 0.00 <th <="" colspan="6" th=""><th>Field Id: SP #5 @ Surf. SP #5 @ 1' SP #5 @ 2' SP #5 @ 3' Depth: 0- 1- ft 2- ft 0- Matrix: SOIL SOIL SOIL SOIL Sampled: Dec-21-17 11:30 Dec-21-17 11:35 Dec-21-17 11:40 Dec-21-17 11:43 Extracted: Jan-03-18 17:00 Jan-03-18 17:00 Jan-03-18 17:00 Jan-04-18 13:00 Analyzed: Jan-03-18 21:58 Jan-03-18 22:13 Jan-03-18 21:42 Jan-04-18 14:03 Units/RL: mg/kg RL mg/kg RL mg/kg RL mg/kg RL 32.5 0.100 25.9 0.0996 0.406 0.100 <0.0250</th> 0.0250 229 D 1.00 158 D 0.996 54.3 D 0.990 0.399 0.0250 290 D 2.00 193 D 1.99 52.4 0.200 1.21 0.0499 117 D 1.00 72.4 D 0.996 78.7 0.1 2.21 0.025 407 1</th> <th>Field Id: SP #5 @ Surf. SP #5 @ I</th> <th>Field Id: SP #5 @ Surf. SP #5 @ 1' SP #5 @ 2' SP #5 @ 3' North #1 Depth: 0- 1- ft 2- ft 0- 1- ft Matrix: SOIL SOIL<th>Field Id: SP #5 @ Surf. SP #5 @ I</th></th>	<th>Field Id: SP #5 @ Surf. SP #5 @ 1' SP #5 @ 2' SP #5 @ 3' Depth: 0- 1- ft 2- ft 0- Matrix: SOIL SOIL SOIL SOIL Sampled: Dec-21-17 11:30 Dec-21-17 11:35 Dec-21-17 11:40 Dec-21-17 11:43 Extracted: Jan-03-18 17:00 Jan-03-18 17:00 Jan-03-18 17:00 Jan-04-18 13:00 Analyzed: Jan-03-18 21:58 Jan-03-18 22:13 Jan-03-18 21:42 Jan-04-18 14:03 Units/RL: mg/kg RL mg/kg RL mg/kg RL mg/kg RL 32.5 0.100 25.9 0.0996 0.406 0.100 <0.0250</th> 0.0250 229 D 1.00 158 D 0.996 54.3 D 0.990 0.399 0.0250 290 D 2.00 193 D 1.99 52.4 0.200 1.21 0.0499 117 D 1.00 72.4 D 0.996 78.7 0.1 2.21 0.025 407 1						Field Id: SP #5 @ Surf. SP #5 @ 1' SP #5 @ 2' SP #5 @ 3' Depth: 0- 1- ft 2- ft 0- Matrix: SOIL SOIL SOIL SOIL Sampled: Dec-21-17 11:30 Dec-21-17 11:35 Dec-21-17 11:40 Dec-21-17 11:43 Extracted: Jan-03-18 17:00 Jan-03-18 17:00 Jan-03-18 17:00 Jan-04-18 13:00 Analyzed: Jan-03-18 21:58 Jan-03-18 22:13 Jan-03-18 21:42 Jan-04-18 14:03 Units/RL: mg/kg RL mg/kg RL mg/kg RL mg/kg RL 32.5 0.100 25.9 0.0996 0.406 0.100 <0.0250	Field Id: SP #5 @ Surf. SP #5 @ I	Field Id: SP #5 @ Surf. SP #5 @ 1' SP #5 @ 2' SP #5 @ 3' North #1 Depth: 0- 1- ft 2- ft 0- 1- ft Matrix: SOIL SOIL <th>Field Id: SP #5 @ Surf. SP #5 @ I</th>	Field Id: SP #5 @ Surf. SP #5 @ I

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Kelsey Brooks Project Manager

Knus Roah



Project Id:

Certificate of Analysis Summary 572221

TRC Solutions, Inc, Midland, TX

Project Name: Lusk Deep Unit A #029H

Date Received in Lab: Wed Dec-27-17 05:12 pm

Report Date: 22-JAN-18 **Project Manager:** Kelsey Brooks

Contact: Joel Lowry

Project Location: Lea Co. NM

	Lab Id:	572221-0	020	572221-0)21	572221-0)22	572221-0)23	572221-0	024	572221-0	025
Analusia Daguastad	Field Id:	East #	1	East #2	2	East #3	3	West #	1	South #	# 1	South #	‡2
Analysis Requested	Depth:	1- ft		1- ft		1- ft		1- ft		1- ft		1- ft	
	Matrix:	SOIL	.	SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Dec-21-17	11:55	Dec-21-17	12:00	Dec-21-17	12:10	Dec-21-17	12:15	Dec-21-17	12:20	Dec-21-17	12:30
BTEX by SW 8260B	Extracted:	Jan-03-18	14:20	Jan-03-18 1	4:20	Jan-03-18 1	17:00	Jan-03-18	17:00	Jan-04-18	15:00	Jan-03-18	17:00
SUB: TX104704215-17-23	Analyzed:	Jan-03-18	16:01	Jan-03-18 1	6:21	Jan-03-18	18:48	Jan-03-18	19:04	Jan-04-18	16:31	Jan-03-18	19:35
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		< 0.00101	0.00101	< 0.000996	0.000996	< 0.000994	0.000994	< 0.000994	0.000994	< 0.000998	0.000998	< 0.00101	0.00101
Toluene		< 0.00101	0.00101	< 0.000996	0.000996	< 0.000994	0.000994	0.00147	0.000994	< 0.000998	0.000998	< 0.00101	0.00101
Ethylbenzene		< 0.00101	0.00101	< 0.000996	0.000996	< 0.000994	0.000994	< 0.000994	0.000994	< 0.000998	0.000998	< 0.00101	0.00101
m,p-Xylenes		< 0.00202	0.00202	< 0.00199	0.00199	< 0.00199	0.00199	< 0.00199	0.00199	< 0.00200	0.00200	< 0.00202	0.00202
o-Xylene		< 0.00101	0.00101	< 0.000996	0.000996	< 0.000994	0.000994	< 0.000994	0.000994	< 0.000998	0.000998	< 0.00101	0.00101
Total Xylenes		< 0.00101	0.00101	< 0.000996	0.000996	< 0.000994	0.000994	< 0.000994	0.000994	< 0.000998	0.000998	< 0.00101	0.00101
Total BTEX		< 0.00101	0.00101	< 0.000996	0.000996	< 0.000994	0.000994	0.00147	0.000994	< 0.000998	0.000998	< 0.00101	0.00101
Chloride by EPA 300	Extracted:	Jan-03-18	14:00	Jan-03-18 1	4:00	Jan-03-18 1	14:00	Jan-03-18 1	14:00	Jan-03-18	14:00	Jan-03-18	14:00
SUB: TX104704215-17-23	Analyzed:	Jan-03-18	21:34	Jan-03-18 2	21:45	Jan-03-18 2	21:56	Jan-03-18 2	22:08	Jan-03-18	23:15	Jan-03-18	23:26
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		119	9.98	<9.71	9.71	<9.78	9.78	270	9.90	743	9.71	<9.71	9.71
DRO-ORO By SW8015B	Extracted:	Dec-29-17	16:39	Dec-29-17	16:42	Dec-29-17	16:45	Dec-29-17	16:48	Dec-29-17	16:51	Jan-03-18	10:39
SUB: TX104704215-17-23	Analyzed:	Dec-30-17	02:09	Dec-30-17 (02:30	Dec-30-17	03:55	Dec-30-17	04:15	Dec-30-17	04:37	Jan-08-18	12:12
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9
Diesel Range Organics (DRO)		<15.0	15.0	17.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9
Oil Range Hydrocarbons (ORO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9
	-												

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Kelsey Brooks Project Manager

Knis Roah



Flagging Criteria

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

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

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

DL Method Detection Limit

NC Non-Calculable

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

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Project Name: Lusk Deep Unit A #029H

 Work Orders:
 572221,
 Project ID:

 Lab Batch #:
 3037271
 Sample:
 572221-002 / SMP
 Batch:
 1
 Matrix:
 Soil

Units:	mg/kg Date Analyzed: 12/30/17 00:02	SU	RROGATE RI	ECOVERY	STUDY	
	DRO-ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1-Chlorooct	tane	77.7	99.2	78	70-135	
o-Terpheny	1	40.6	49.6	82	70-135	

Date Analyzed: 12/30/17 00:22 **Units:** mg/kg SURROGATE RECOVERY STUDY **Amount** True Control DRO-ORO By SW8015B Found Limits Flags Amount Recovery [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 77.9 99.3 78 70-135 o-Terphenyl 49.7 70-135 43.6 88

Units: mg/kg Date Analyzed: 12/30/17 00:44 SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	84.2	99.0	85	70-135	
o-Terphenyl	45.4	49.5	92	70-135	

Units:	mg/kg	Date Analyzed: 12/30/17 01:05	SU	RROGATE RE	ECOVERY S	STUDY	
	DRO-	ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooct	ane		75.2	99.1	76	70-135	
o-Terphenyl	[40.3	49.6	81	70-135	

Units:	mg/kg	Date Analyzed: 12/30/17 01:27	SURROGATE RECOVERY STUDY								
	DRO-	ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
1-Chloroocta	ane		74.2	100	74	70-135					
o-Terphenyl			38.0	50.0	76	70-135					

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

 Work Orders: 572221,
 Project ID:

 Lab Batch #: 3037298
 Sample: 572221-019 / SMP
 Batch: 1 Matrix: Soil

Units:	mg/kg Date Analyzed: 12/30/17 01:48	SU	RROGATE RI	ECOVERY S	STUDY	
	DRO-ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1-Chlorooct	ane	81.5	100	82	70-135	
o-Terpheny	I	43.8	50.0	88	70-135	

Date Analyzed: 12/30/17 02:09 **Units:** mg/kg SURROGATE RECOVERY STUDY **Amount** True Control DRO-ORO By SW8015B Found Limits Flags Amount Recovery [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 82.5 100 83 70-135 o-Terphenyl 48.3 50.0 97 70-135

Units: mg/kg Date Analyzed: 12/30/17 02:30 SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	77.4	100	77	70-135	
o-Terphenyl	42.7	50.0	85	70-135	

Units:	mg/kg	Date Analyzed: 12/30/17 03:55	SURROGATE RECOVERY STUDY					
	DRO-	ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1-Chlorooc	ctane		80.8	100	81	70-135		
o-Terpheny	yl		41.9	50.0	84	70-135		

Units:	mg/kg	Date Analyzed: 12/30/17 04:15	SURROGATE RECOVERY STUDY						
	DRO-	ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooct	ane	-	83.7	100	84	70-135			
o-Terphenyl	[47.1	50.0	94	70-135			

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

Work Orders: 572221,

Lab Batch #: 3037298

Sample: 572221-024 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 12/30/17 04:37 SURROGATE RECOVERY STUDY								
DRO-ORO By SW8015B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
	A	Analytes			[D]			
1-Chloroocta	ane		81.8	100	82	70-135		
o-Terphenyl			43.7	50.0	87	70-135		

Lab Batch #: 3037298Sample: 572221-011 / SMPBatch: 1Matrix: Soil

Units: mg/kg **Date Analyzed:** 12/30/17 09:13 SURROGATE RECOVERY STUDY **Amount** True Control DRO-ORO By SW8015B Found Limits Flags Amount Recovery [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 101 100 101 70-135 o-Terphenyl 42.0 50.0 84 70-135

Units: mg/kg Date Analyzed: 12/30/17 09:34 SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	104	100	104	70-135	
o-Terphenyl	57.7	50.0	115	70-135	

Units:	mg/kg	Date Analyzed: 12/30/17 09:54	SURROGATE RECOVERY STUDY					
	DRO-	ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1-Chlorooc	etane		82.4	100	82	70-135		
o-Terpheny	/l		52.0	50.0	104	70-135		

Units:	mg/kg	Date Analyzed: 12/30/17 10:15	SURROGATE RECOVERY STUDY						
	DRO-	ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1.011		Analytes	01.1	20.0		50.105			
1-Chlorooct	tane		91.1	99.8	91	70-135			
o-Terpheny	1		57.1	49.9	114	70-135			

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

Work Orders: 572221,

Lab Batch #: 3037298

Sample: 572221-015 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 12/30/17 10:35 SURROGATE RECOVERY STUDY								
DRO-ORO By SW8015B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
	Analytes			[D]				
1-Chlorooct	ane	71.6	99.6	72	70-135			
o-Terphenyl		59.5	49.8	119	70-135			

Lab Batch #: 3037271 **Sample:** 572221-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg Date Analyzed: 12/30/17 12:00 SURROGATE RECOVERY STUDY **Amount** True Control DRO-ORO By SW8015B Flags Found Limits Amount Recovery [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 87.5 99.6 88 70-135 o-Terphenyl 49.8 58.6 118 70-135

Units: mg/kg Date Analyzed: 01/02/18 16:51 SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0513	0.0500	103	74-126	
1,2-Dichloroethane-D4	0.0476	0.0500	95	80-120	
Toluene-D8	0.0500	0.0500	100	73-132	

Units: Date Analyzed: 01/02/18 17:32 mg/kg SURROGATE RECOVERY STUDY Amount True Control BTEX by SW 8260B **Found** Amount Limits Flags Recovery [B] %R %R [A] [D] **Analytes** Dibromofluoromethane 0.0524 0.0500 105 74-126 1,2-Dichloroethane-D4 0.0507 0.0500 101 80-120 Toluene-D8 0.0490 0.0500 98 73-132

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

 Work Orders: 572221,
 Project ID:

 Lab Batch #: 3037321
 Sample: 572221-012 / SMP
 Batch: 1 Matrix: Soil

Units: mg/kg	Date Analyzed: 01/02/18 19:11	SURROGATE RECOVERY STUDY					
В	BTEX by SW 8260B		True Amount [B]	Recovery %R	Control Limits %R	Flags	
	Analytes			[D]			
Dibromofluoromethane		0.0472	0.0500	94	74-126		
1,2-Dichloroethane-D4		0.0520	0.0500	104	80-120		
Toluene-D8		0.0583	0.0500	117	73-132		

Units: mg/kg Date Analyzed: 01/02/18 19:44 SURROGATE RECOVERY STUDY								
BTEX by SW 8	260B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
Analytes				[D]				
Dibromofluoromethane	Dibromofluoromethane			90	74-126			
1,2-Dichloroethane-D4	0.0452	0.0500	90	80-120				
Toluene-D8	0.0534	0.0500	107	73-132				

 Lab Batch #: 3037321
 Sample: 572221-001 / SMP
 Batch: 1
 Matrix: Soil

Units:	mg/kg	Date Analyzed: 01/02/18 20:01	SURROGATE RECOVERY STUDY							
BTEX by SW 8260B Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
		Allalytes			[-]					
Dibromoflu	Dibromofluoromethane		0.0454	0.0500	91	74-126				
1,2-Dichloroethane-D4			0.0436	0.0500	87	80-120				
Toluene-D8			0.0517	0.0500	103	73-132				

Lab Batch #: 3037321 **Sample:** 572221-011 / SMP **Batch:** 1 **Matrix:** Soil

Units:	mg/kg	Date Analyzed: 01/02/18 20:17	SURROGATE RECOVERY STUDY					
BTEX by SW 8260B Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
Dibromofle	Dibromofluoromethane			0.0500	91	74-126		
1,2-Dichloroethane-D4			0.0481	0.0500	96	80-120		
Toluene-D	Toluene-D8			0.0500	111	73-132		

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

Work Orders: 572221,
Lab Batch #: 3037321
Sample: 572221-008 / SMP
Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 01/02/18 21:07	SURROGATE RECOVERY STUDY						
BTEX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Analytes			[D]				
Dibromofluoromethane	0.0497	0.0500	99	74-126			
1,2-Dichloroethane-D4	0.0478	0.0500	96	80-120			
Toluene-D8	0.0520	0.0500	104	73-132			

Lab Batch #: 3037271 **Sample:** 572221-008 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg Date Analyzed: 01/02/18 21:12 SURROGATE RECOVERY STUDY								
	DRO-ORO By SW8015B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1-Chlorooc	etane		89.0	99.5	89	70-135		
o-Terpheny	/1		45.8	49.8	92	70-135		

 Lab Batch #: 3037321
 Sample: 572221-013 / SMP
 Batch: 1
 Matrix: Soil

Units: mg/kg **Date Analyzed:** 01/02/18 23:02 SURROGATE RECOVERY STUDY Amount True Control BTEX by SW 8260B Found Amount Recovery Limits Flags [A] [B] %R %R [D] **Analytes** Dibromofluoromethane 0.0515 0.0500 103 74-126 1,2-Dichloroethane-D4 0.0459 0.0500 92 80-120 Toluene-D8 0.0520 0.0500 73-132 104

Lab Batch #: 3037271 **Sample:** 572221-001 / DL **Batch:** 1 **Matrix:** Soil

Units: mg/kg Date Analyzed: 01/02/18 25:57 SURROGATE RECOVERY STUDY								
	DRO-ORO By SW8015B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1-Chlorooc	tane		80.1	99.8	80	70-135		
o-Terphenyl			44.2	49.9	89	70-135		

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

 Work Orders: 572221,
 Project ID:

 Lab Batch #: 3037298
 Sample: 572221-015 / DL
 Batch: 1 Matrix: Soil

Units:	mg/kg	Date Analyzed: 01/03/18 00:18	SURROGATE RECOVERY STUDY						
	DRO-0	ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1-Chlorooc	etane		71.9	99.6	72	70-135			
o-Terpheny	/l		47.1	49.8	95	70-135			

Units: mg/kg **Date Analyzed:** 01/03/18 00:38 SURROGATE RECOVERY STUDY **Amount** True Control DRO-ORO By SW8015B Found Limits Flags Amount Recovery [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 85.0 99.6 85 70-135 o-Terphenyl 48.0 49.8 70-135 96

Units: mg/kg Date Analyzed: 01/03/18 13:04 SURROGATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0472	0.0500	94	74-126	
1,2-Dichloroethane-D4	0.0447	0.0500	89	80-120	
Toluene-D8	0.0565	0.0500	113	73-132	

 Lab Batch #: 3037396
 Sample: 572221-011 / DL
 Batch: 1
 Matrix: Soil

Units: mg/kg Date Analyzed: 01/03/18 13:21 SURROGATE RECOVERY STUDY

BTEX by SW 8260B Amount True Control Limits

BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0465	0.0500	93	74-126	
1,2-Dichloroethane-D4	0.0421	0.0500	84	80-120	
Toluene-D8	0.0502	0.0500	100	73-132	

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

Work Orders: 572221,
Lab Batch #: 3037396
Sample: 572221-018 / SMP
Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 01/03/18 15:27	SURROGATE RECOVERY STUDY						
BTEX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Analytes			[D]				
Dibromofluoromethane	0.0516	0.0500	103	74-126			
1,2-Dichloroethane-D4	0.0496	0.0500	99	80-120			
Toluene-D8	0.0509	0.0500	102	73-132			

Units:	mg/kg	Date Analyzed: 01/03/18 15:44	SURROGATE RECOVERY STUDY					
BTEX by SW 8260B Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
Dibromoflu	uoromethane		0.0527	0.0500	105	74-126		
1,2-Dichlor	1,2-Dichloroethane-D4			0.0500	110	80-120		
Toluene-D	Toluene-D8			0.0500	100	73-132		

Units:	mg/kg	Date Analyzed: 01/03/18 16:01	SURROGATE RECOVERY STUDY						
	BTEX by SW 8260B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
Dibromoflu	Dibromofluoromethane		0.0520	0.0500	104	74-126			
1,2-Dichloroethane-D4			0.0508	0.0500	102	80-120			
Toluene-D8			0.0502	0.0500	100	73-132			

Lab Batch #: 3037396 **Sample:** 572221-021 / SMP **Batch:** 1 **Matrix:** Soil

Units:	mg/kg	Date Analyzed: 01/03/18 16:21	SURROGATE RECOVERY STUDY					
	ВТЕ	EX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
Dibromoflu	Dibromofluoromethane		0.0523	0.0500	105	74-126		
1,2-Dichlor	1,2-Dichloroethane-D4		0.0475	0.0500	95	80-120		
Toluene-Da	8		0.0508	0.0500	102	73-132		

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

Work Orders: 572221,
Lab Batch #: 3037445
Sample: 572221-022 / SMP
Batch: 1 Matrix: Soil

Units:	mg/kg	Date Analyzed: 01/03/18 18:48	SURROGATE RECOVERY STUDY					
	BTEX by SW 8260B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
Dibromofluo	Dibromofluoromethane			0.0500	102	74-126		
1,2-Dichloro	1,2-Dichloroethane-D4			0.0500	100	80-120		
Toluene-D8			0.0515	0.0500	103	73-132		

Lab Batch #: 3037445 **Sample:** 572221-023 / SMP **Batch:** 1 **Matrix:** Soil

Jnits: mg/kg Date Analyzed: 01/03/18 19:04 SURROGATE RECOVERY STUDY							
BTEX by SW 8260B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes				[D]			
Dibromofluoromethane		0.0509	0.0500	102	74-126		
1,2-Dichloroethane-D4	0.0476	0.0500	95	80-120			
Toluene-D8	0.0523	0.0500	105	73-132			

Units:	mg/kg	Date Analyzed: 01/03/18 19:35	SURROGATE RECOVERY STUDY							
	ВТЕ	X by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[D]					
Dibromofluo	oromethane		0.0522	0.0500	104	74-126				
1,2-Dichloroethane-D4			0.0457	0.0500	91	80-120				
Toluene-D8			0.0510	0.0500	102	73-132				

Lab Batch #: 3037445 **Sample:** 572221-016 / SMP **Batch:** 1 **Matrix:** Soil

Units:	mg/kg	Date Analyzed: 01/03/18 21:42	SURROGATE RECOVERY STUDY						
	ВТЕ	EX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
Dibromoflu	uoromethane		0.0495	0.0500	99	74-126			
1,2-Dichlor	roethane-D4		0.0475	0.0500	95	80-120			
Toluene-D	8		0.0449	0.0500	90	73-132			

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

 Work Orders:
 572221,
 Project ID:

 Lab Batch #:
 3037445
 Sample:
 572221-014 / SMP
 Batch:
 1
 Matrix:
 Soil

Units: mg/kg	Date Analyzed: 01/03/18 21:58 SURROGATE RECOVERY STUDY							
ВТ	EX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
	Analytes			[D]				
Dibromofluoromethane		0.0456	0.0500	91	74-126			
1,2-Dichloroethane-D4		0.0443	0.0500	89	80-120			
Toluene-D8		0.0448	0.0500	90	73-132			

Units: mg/kg Date Analyzed: 01/03/18 22:13	SURROGATE RECOVERY STUDY							
BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
Allarytes			[2]					
Dibromofluoromethane	0.0478	0.0500	96	74-126				
1,2-Dichloroethane-D4	0.0454	0.0500	91	80-120				
Toluene-D8	0.0496	0.0500	99	73-132				

 Lab Batch #: 3037542
 Sample: 572221-017 / SMP
 Batch: 1
 Matrix: Soil

Units:	mg/kg	Date Analyzed: 01/04/18 14:03	SURROGATE RECOVERY STUDY					
	ВТЕ	X by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
		Analytes			נעו			
Dibromoflu	uoromethane		0.0546	0.0500	109	74-126		
1,2-Dichloroethane-D4			0.0539	0.0500	108	80-120		
Toluene-D	8		0.0482	0.0500	96	73-132		

Lab Batch #: 3037542 **Sample:** 572221-014 / DL **Batch:** 1 **Matrix:** Soil

Units:	mg/kg	Date Analyzed: 01/04/18 15:16	SURROGATE RECOVERY STUDY						
	ВТЕ	EX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
Dibromoflu	oromethane		0.0497	0.0500	99	74-126			
1,2-Dichlor	roethane-D4		0.0467	0.0500	93	80-120			
Toluene-D8	3		0.0482	0.0500	96	73-132			

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

 Work Orders: 572221,
 Project ID:

 Lab Batch #: 3037542
 Sample: 572221-016 / DL
 Batch: 1 Matrix: Soil

Units: mg/kg	Date Analyzed: 01/04/18 15:54	SURROGATE RECOVERY STUDY							
ВТ	EX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
	Analytes			[D]					
Dibromofluoromethane		0.0519	0.0500	104	74-126				
1,2-Dichloroethane-D4	0.0517	0.0500	103	80-120					
Toluene-D8	0.0449	0.0500	90	73-132					

Lab Batch #: 3037542 **Sample:** 572221-024 / SMP **Batch:** 1 **Matrix:** Soil

Units:	mg/kg	Date Analyzed: 01/04/18 16:31	SURROGATE RECOVERY STUDY						
	вте	X by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
Dibromoflu	oromethane		0.0566	0.0500	113	74-126			
1,2-Dichlor	oethane-D4		0.0560	0.0500	112	80-120			
Toluene-D8	3		0.0397	0.0500	79	73-132			

Lab Batch #: 3037397 **Sample:** 572221-025 / SMP **Batch:** 1 **Matrix:** Soil

Units:	mg/kg	Date Analyzed: 01/08/18 12:12	SURROGATE RECOVERY STUDY						
	DRO-	ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooc	tane		74.1	99.6	74	70-135			
o-Terpheny	1		35.4	49.8	71	70-135			

Lab Batch #: 3037397 **Sample:** 572221-016 / SMP **Batch:** 1 **Matrix:** Soil

Units:	mg/kg	Date Analyzed: 01/09/18 04:39	SURROGATE RECOVERY STUDY							
	DRO-0	ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[D]					
1-Chlorooct	tane		104	99.9	104	70-135				
o-Terpheny	1		43.8	50.0	88	70-135				

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

Work Orders: 572221,
Lab Batch #: 3038649
Sample: 572221-013 / SMP
Batch: 1 Matrix: Soil

Units:	mg/kg Date Analyzed: 01/19/18 02:03	SURROGATE RECOVERY STUDY						
	DRO-ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
	Analytes			[D]				
1-Chloroocta	ane	72.1	99.2	73	70-135			
o-Terphenyl		38.1	49.6	77	70-135			

Lab Batch #: 3038649 Sample: 572221-017 / SMP Batch: 1 Matrix: Soil

Date Analyzed: 01/19/18 08:40 **Units:** mg/kg SURROGATE RECOVERY STUDY **Amount** True Control DRO-ORO By SW8015B Found Limits Flags Amount Recovery [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 73.6 99.6 74 70-135 o-Terphenyl 49.8 73 70-135 36.6

Lab Batch #: 3037271 Sample: 7636744-1-BLK / BLK Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 12/29/17 12:52 SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	72.6	100	73	70-135	
o-Terphenyl	39.9	50.0	80	70-135	

Lab Batch #: 3037298 Sample: 7636802-1-BLK / BLK Batch: 1 Matrix: Solid

Units:	mg/kg	Date Analyzed: 12/29/17 17:03	SURROGATE RECOVERY STUDY					
	DRO-	ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1-Chlorooct	ane		78.6	100	79	70-135		
o-Terpheny			42.9	50.0	86	70-135		

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

Work Orders: 572221,

Lab Batch #: 3037321

Sample: 7636872-1-BLK / BLK

Batch: 1 Matrix: Solid

mg/kg **Units:** Date Analyzed: 01/02/18 15:37 SURROGATE RECOVERY STUDY True Amount Control BTEX by SW 8260B **Found** Amount Recovery Limits Flags [B] %R %R [D]**Analytes** Dibromofluoromethane 0.0500 0.0516 103 74-126 1.2-Dichloroethane-D4 93 0.0465 0.0500 80-120 Toluene-D8 0.0482 0.0500 96 73-132

Lab Batch #: 3037397 Sample: 7636876-1-BLK / BLK Batch: 1 Matrix: Solid

Units: Date Analyzed: 01/03/18 11:56 mg/kg SURROGATE RECOVERY STUDY Amount True Control DRO-ORO By SW8015B Found Amount Recovery Limits Flags [B] %R %R [A] [D] **Analytes** 1-Chlorooctane 99.2 100 99 70-135 o-Terphenyl 50.0 56.7 113 70-135

Lab Batch #: 3037396 Sample: 7636943-1-BLK / BLK Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 01/03/18 12:09 SURROGATE RECOVERY STUDY Amount True Control BTEX by SW 8260B **Found** Amount Recovery Limits Flags [B] %R %R [A] [D]**Analytes** Dibromofluoromethane 0.0509 0.0500 102 74-126 1,2-Dichloroethane-D4 0.0482 0.0500 80-120 96 Toluene-D8 0.0497 0.0500 99 73-132

Lab Batch #: 3037445 Sample: 7636978-1-BLK / BLK Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 01/03	3/18 18:33	SURROGATE RECOVERY STUDY						
BTEX by SW 8260B Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
Alialytes				[-]				
Dibromofluoromethane		0.0489	0.0500	98	74-126			
1,2-Dichloroethane-D4		0.0467	0.0500	93	80-120			
Toluene-D8	0.0558	0.0500	112	73-132				

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Form 2 - Surrogate Recoveries

Project Name: Lusk Deep Unit A #029H

Work Orders: 572221, **Project ID: Lab Batch #:** 3037542 Matrix: Solid **Sample:** 7637024-1-BLK / BLK Batch:

Units: mg/kg Date Analyzed: 01/04/18 12:32	SURROGATE RECOVERY STUDY						
BTEX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Analytes			[D]				
Dibromofluoromethane	0.0520	0.0500	104	74-126			
1,2-Dichloroethane-D4	0.0496	0.0500	99	80-120			
Toluene-D8	0.0495	0.0500	99	73-132			

Lab Batch #: 3038649 **Sample:** 7637669-1-BLK / BLK Batch: Matrix: Solid

Units:	mg/kg	Date Analyzed: 01/18/18 17:18	SURROGATE RECOVERY STUDY						
	DRO-	ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooc	tane	Analytes	70.2	100	70	70-135			
o-Terpheny	1		37.7	50.0	75	70-135			

Lab Batch #: 3037271 Sample: 7636744-1-BKS / BKS Batch: Matrix: Solid

Units: mg/kg **Date Analyzed:** 12/29/17 12:10 SURROGATE RECOVERY STUDY Amount True Control DRO-ORO By SW8015B Found Amount Recovery Limits Flags [B] %R %R [A] [D]**Analytes** 1-Chlorooctane 82.5 100 83 70-135 o-Terphenyl 43.5 50.0 87 70-135

Lab Batch #: 3037298 **Sample:** 7636802-1-BKS / BKS Batch: 1 Matrix: Solid

Units: Date Analyzed: 12/29/17 17:23 mg/kg SURROGATE RECOVERY STUDY Amount True Control DRO-ORO By SW8015B **Found** Amount Recovery Limits Flags [B] %R %R [A] [D] **Analytes** 1-Chlorooctane 90.8 100 91 70-135 o-Terphenyl 47.0 50.0 94 70-135

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

 Work Orders:
 572221,
 Project ID:

 Lab Batch #:
 3037321
 Sample:
 7636872-1-BKS / BKS
 Batch:
 1
 Matrix:
 Solid

Units: mg/kg Date Analyzed: 01/02/18 13:48	SU	SURROGATE RECOVERY STUDY						
BTEX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
Dibromofluoromethane	0.0479	0.0500	96	74-126				
1,2-Dichloroethane-D4	0.0474	0.0500	95	80-120				
Toluene-D8	0.0540	0.0500	108	73-132				

Lab Batch #: 3037396 Sample: 7636943-1-BKS / BKS Batch: 1 Matrix: Solid

Units:	mg/kg	Date Analyzed: 01/03/18 09:39	SURROGATE RECOVERY STUDY					
BTEX by SW 8260B Analytes			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
Dibromoflu	ioromethane		0.0502	0.0500	100	74-126		
1,2-Dichloroethane-D4			0.0538	0.0500	108	80-120		
Toluene-D8			0.0504	0.0500	101	73-132		

Lab Batch #: 3037397 Sample: 7636876-1-BKS / BKS Batch: 1 Matrix: Solid

Units:	mg/kg	Date Analyzed: 01/03/18 11:15	SURROGATE RECOVERY STUDY						
	DRO-	ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooc	tane	<i>v</i>	115	100	115	70-135			
o-Terpheny	/1		62.6	50.0	125	70-135			

Lab Batch #: 3037445 Sample: 7636978-1-BKS / BKS Batch: 1 Matrix: Solid

Units: mg/k	Date Analyzed: 01/03/18 16:25	SURROGATE RECOVERY STUDY						
BTEX by SW 8260B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
	Analytes			[D]				
Dibromofluoromethar	ne	0.0499	0.0500	100	74-126			
1,2-Dichloroethane-D	4	0.0503	0.0500	101	80-120			
Toluene-D8		0.0520	0.0500	104	73-132			

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

Work Orders: 572221,

Lab Batch #: 3037542

Sample: 7637024-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 01/04/18 10:07	SURROGATE RECOVERY STUDY							
BTEX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
Dibromofluoromethane	0.0515	0.0500	103	74-126				
1,2-Dichloroethane-D4	0.0494	0.0500	99	80-120				
Toluene-D8	0.0503	0.0500	101	73-132				

Lab Batch #: 3038649 **Sample:** 7637669-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units:	mg/kg	Date Analyzed: 01/18/18 16:15	SURROGATE RECOVERY STUDY						
DRO-ORO By SW8015B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[D]				
1-Chlorooct	ane		81.6	100	82	70-135			
o-Terphenyl			43.4	50.0	87	70-135			

 Lab Batch #: 3037271
 Sample: 7636744-1-BSD / BSD
 Batch: 1
 Matrix: Solid

Units: mg/kg Date Analyzed: 12/29/17 12:31 SURROGATE RECOVERY STUDY Amount True Control DRO-ORO By SW8015B Found Amount Recovery Limits Flags [B] [A] %R %R [D]**Analytes** 1-Chlorooctane 89.6 100 90 70-135 o-Terphenyl 44.4 50.0 89 70-135

Lab Batch #: 3037298 Sample: 7636802-1-BSD / BSD Batch: 1 Matrix: Solid

Units: Date Analyzed: 12/29/17 17:44 mg/kg SURROGATE RECOVERY STUDY Amount True Control DRO-ORO By SW8015B **Found** Amount Recovery Limits Flags [B] %R %R [A] [D] **Analytes** 1-Chlorooctane 85.0 100 70-135 85 o-Terphenyl 42.9 50.0 86 70-135

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

 Work Orders:
 572221,
 Project ID:

 Lab Batch #:
 3037321
 Sample:
 7636872-1-BSD / BSD
 Batch:
 1 Matrix:
 Solid

Units: mg/kg Date Analyzed: 01/02/18 13:20 SURROGATE RECOVERY STUDY								
BTEX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
Dibromofluoromethane	0.0482	0.0500	96	74-126				
1,2-Dichloroethane-D4	0.0479	0.0500	96	80-120				
Toluene-D8	0.0536	0.0500	107	73-132				

Lab Batch #: 3037396 Sample: 7636943-1-BSD / BSD Batch: 1 Matrix: Solid

Units:	mg/kg	Date Analyzed: 01/03/18 10:56	SURROGATE RECOVERY STUDY					
BTEX by SW 8260B Analytes			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
Dibromoflu	oromethane		0.0469	0.0500	94	74-126		
1,2-Dichloroethane-D4			0.0470	0.0500	94	80-120		
Toluene-D8			0.0545	0.0500	109	73-132		

 Lab Batch #: 3037397
 Sample: 7636876-1-BSD / BSD
 Batch: 1
 Matrix: Solid

Units:	mg/kg	Date Analyzed: 01/03/18 11:36	SURROGATE RECOVERY STUDY						
	DRO-	ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooc	tane		102	100	102	70-135			
o-Terpheny	1		52.9	50.0	106	70-135			

Lab Batch #: 3037445 Sample: 7636978-1-BSD / BSD Batch: 1 Matrix: Solid

Units: mg	/kg	Date Analyzed: 01/03/18 17:29	SURROGATE RECOVERY STUDY								
	BTEX	by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags				
	A	analytes			[D]						
Dibromofluorometh	nane		0.0521	0.0500	104	74-126					
1,2-Dichloroethane-D4			0.0558	0.0500	112	80-120					
Toluene-D8			0.0454	0.0500	91	73-132					

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Form 2 - Surrogate Recoveries

Project Name: Lusk Deep Unit A #029H

Work Orders: 572221, **Project ID: Lab Batch #:** 3037542 Matrix: Solid **Sample:** 7637024-1-BSD / BSD Batch:

Units: mg/kg	Jnits: mg/kg Date Analyzed: 01/04/18 11:28 SURROGATE RECOVERY STUDY							
ВП	TEX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
	Analytes			[D]				
Dibromofluoromethane		0.0498	0.0500	100	74-126			
1,2-Dichloroethane-D4		0.0503	0.0500	101	80-120			
Toluene-D8	0.0520	0.0500	104	73-132				

Lab Batch #: 3038649 **Sample:** 7637669-1-BSD / BSD Batch: Matrix: Solid

Units:	mg/kg	Date Analyzed: 01/18/18 16:36	SURROGATE RECOVERY STUDY						
DRO-ORO By SW8015B Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooc	tane	Analytes	76.2	100	76	70-135			
o-Terpheny	1		39.7	50.0	79	70-135			

Lab Batch #: 3037271 **Sample:** 572194-009 S / MS Batch: Matrix: Soil

Units: mg/kg Date Analyzed: 12/29/17 16:22 SURROGATE RECOVERY STUDY Amount True Control DRO-ORO By SW8015B Found Amount Recovery Limits Flags [A] [B] %R %R [D]**Analytes** 1-Chlorooctane 178 199 89 70-135 o-Terphenyl 88.4 99.5 89 70-135

Lab Batch #: 3037321 **Sample:** 572190-004 S / MS Batch: 1 Matrix: Soil

Units: Date Analyzed: 01/02/18 14:05 mg/kg SURROGATE RECOVERY STUDY Amount True Control BTEX by SW 8260B **Found** Amount Recovery Limits Flags [B] %R %R [A] [D] **Analytes** Dibromofluoromethane 0.0510 0.0500 102 74-126 1,2-Dichloroethane-D4 0.0557 0.0500 111 80-120 Toluene-D8 0.0513 0.0500 103 73-132

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Project Name: Lusk Deep Unit A #029H

 Work Orders:
 572221,
 Project ID:

 Lab Batch #:
 3037396
 Sample:
 572221-007 S / MS
 Batch:
 1 Matrix:
 Soil

Units: mg/k	its: mg/kg Date Analyzed: 01/03/18 10:23 SURROGATE RECOVERY STUDY								
	BTEX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
	Analytes			[D]					
Dibromofluoromethar	ne	0.0517	0.0500	103	74-126				
1,2-Dichloroethane-D	4	0.0552	0.0500	110	80-120				
Toluene-D8		0.0508	0.0500	102	73-132				

Lab Batch #: 3037445 **Sample:** 572221-022 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg Date Analyzed: 01/03/18 16:57	SU	SURROGATE RECOVERY STUDY							
BTEX by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
Dibromofluoromethane	0.0496	0.0500	99	74-126					
1,2-Dichloroethane-D4	0.0500	0.0500	100	80-120					
Toluene-D8	0.0498	0.0500	100	73-132					

Units:	mg/kg	Date Analyzed: 01/04/18 11:08	SURROGATE RECOVERY STUDY							
BTEX by SW 8260B			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
		Analytes			ردا					
Dibromofluo	Dibromofluoromethane			0.0500	108	74-126				
1,2-Dichloroethane-D4			0.0563	0.0500	113	80-120				
Toluene-D8			0.0459	0.0500	92	73-132				

Lab Batch #: 3037271 **Sample:** 572194-009 SD / MSD **Batch:** 1 **Matrix:** Soil

Units:	mg/kg	Date Analyzed: 12/29/17 16:42	SURROGATE RECOVERY STUDY						
DRO-ORO By SW8015B Analytes			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooct	ane		174	198	88	70-135			
o-Terphenyl			90.6	99.0	92	70-135			

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution



Form 2 - Surrogate Recoveries

Project Name: Lusk Deep Unit A #029H

 Work Orders: 572221,
 Project ID:

 Lab Batch #: 3037321
 Sample: 572190-004 SD / MSD
 Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 01/02/18 14:21	SURROGATE RECOVERY STUDY											
BTEX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags							
Analytes			[D]									
Dibromofluoromethane	0.0506	0.0500	101	74-126								
1,2-Dichloroethane-D4	0.0524	0.0500	105	80-120								
Toluene-D8	0.0538	0.0500	108	73-132								

Units: mg/	/kg Date Analyzed: 01/03/18 1	0:40	SURROGATE RECOVERY STUDY									
	BTEX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags						
	Analytes			[D]								
Dibromofluorometh	ane	0.0517	0.0500	103	74-126							
1,2-Dichloroethane-	-D4	0.0558	0.0500	112	80-120							
Toluene-D8		0.0501	0.0500	100	73-132							

 Lab Batch #: 3037445
 Sample: 572221-022 SD / MSD
 Batch: 1
 Matrix: Soil

Units: mg/kg Date Analyzed: 01/03/18 17:1	3 SU	RROGATE RI	ECOVERY S	STUDY	
BTEX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes			נעו		
Dibromofluoromethane	0.0496	0.0500	99	74-126	
1,2-Dichloroethane-D4	0.0498	0.0500	100	80-120	
Toluene-D8	0.0537	0.0500	107	73-132	

Lab Batch #: 3037542 **Sample:** 572221-024 SD / MSD **Batch:** 1 **Matrix:** Soil

Units:	mg/kg	Date Analyzed: 01/04/18 16:49	SURROGATE RECOVERY STUDY								
BTEX by SW 8260B Analytes Dibromofluoromethane		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
Dibromoflu	uoromethane		0.0538	0.0500	108	74-126					
1,2-Dichlor	roethane-D4		0.0576	0.0500	115	80-120					
Toluene-D	8		0.0460	0.0500	92	73-132					

Surrogate Recovery [D] = 100 * A / B

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

^{*} Surrogate outside of Laboratory QC limits

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

^{***} Poor recoveries due to dilution





Project Name: Lusk Deep Unit A #029H

Work Order #: 572221 Project ID:

Analyst: JTR Date Prepared: 01/02/2018 Date Analyzed: 01/02/2018

Lab Batch ID: 3037321 **Sample:** 7636872-1-BKS **Batch #:** 1 **Matrix:** Solid

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

BTEX by SW 8260B	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Benzene	< 0.00100	0.100	0.0969	97	0.100	0.0982	98	1	62-132	25	
Toluene	< 0.00100	0.100	0.106	106	0.100	0.104	104	2	66-124	25	
Ethylbenzene	< 0.00100	0.100	0.109	109	0.100	0.104	104	5	71-134	25	
m,p-Xylenes	< 0.00200	0.200	0.208	104	0.200	0.208	104	0	69-128	25	
o-Xylene	< 0.00100	0.100	0.107	107	0.100	0.108	108	1	72-131	25	

Analyst: JTR Date Prepared: 01/03/2018 Date Analyzed: 01/03/2018

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

BTEX by SW 8260B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Allalytes											
Benzene	< 0.00100	0.100	0.0965	97	0.100	0.102	102	6	62-132	25	
Toluene	< 0.00100	0.100	0.0983	98	0.100	0.110	110	11	66-124	25	
Ethylbenzene	< 0.00100	0.100	0.0981	98	0.100	0.109	109	11	71-134	25	
m,p-Xylenes	<0.00200	0.200	0.198	99	0.200	0.215	108	8	69-128	25	
o-Xylene	< 0.00100	0.100	0.101	101	0.100	0.111	111	9	72-131	25	

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





Project Name: Lusk Deep Unit A #029H

Work Order #: 572221 Project ID:

Analyst: JTR Date Prepared: 01/03/2018 Date Analyzed: 01/03/2018

Lab Batch ID: 3037445 **Sample:** 7636978-1-BKS **Batch #:** 1 **Matrix:** Solid

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

BTEX by SW 8260B	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Benzene	< 0.00100	0.100	0.0967	97	0.100	0.115	115	17	62-132	25	
Toluene	< 0.00100	0.100	0.103	103	0.100	0.0967	97	6	66-124	25	
Ethylbenzene	< 0.00100	0.100	0.0971	97	0.100	0.104	104	7	71-134	25	
m,p-Xylenes	< 0.00200	0.200	0.199	100	0.200	0.214	107	7	69-128	25	
o-Xylene	< 0.00100	0.100	0.0979	98	0.100	0.103	103	5	72-131	25	

Analyst: JTR Date Prepared: 01/04/2018 Date Analyzed: 01/04/2018

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

BTEX by SW 8260B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	< 0.00100	0.100	0.102	102	0.100	0.114	114	11	62-132	25	
Toluene	< 0.00100	0.100	0.0920	92	0.100	0.0987	99	7	66-124	25	
Ethylbenzene	< 0.00100	0.100	0.0871	87	0.100	0.0998	100	14	71-134	25	
m,p-Xylenes	< 0.00200	0.200	0.181	91	0.200	0.204	102	12	69-128	25	
o-Xylene	< 0.00100	0.100	0.0869	87	0.100	0.101	101	15	72-131	25	

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





Project Name: Lusk Deep Unit A #029H

Work Order #: 572221 Project ID:

 Analyst:
 DHE
 Date Prepared: 01/03/2018
 Date Analyzed: 01/03/2018

Lab Batch ID: 3037377 **Sample:** 7636896-1-BKS **Batch #:** 1 **Matrix:** Solid

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

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<1.00	10.0	9.75	98	10.0	9.69	97	1	80-120	20	

Analyst: DHE **Date Prepared:** 01/03/2018 **Date Analyzed:** 01/03/2018

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

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<1.00	10.0	9.77	98	10.0	9.75	98	0	80-120	20	

Analyst: ARL **Date Prepared:** 12/29/2017 **Date Analyzed:** 12/29/2017

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

DRO-ORO By SW8015B 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
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	857	86	1000	846	85	1	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	917	92	1000	918	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





Project Name: Lusk Deep Unit A #029H

Work Order #: 572221 Project ID:

Analyst: ISU Date Prepared: 12/29/2017 Date Analyzed: 12/29/2017

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

DRO-ORO By SW8015B 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
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	921	92	1000	859	86	7	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	1010	101	1000	950	95	6	70-135	35	

Analyst: ARL **Date Prepared:** 01/03/2018 **Date Analyzed:** 01/03/2018

Lab Batch ID: 3037397 **Sample:** 7636876-1-BKS **Batch #:** 1 **Matrix:** Solid

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

DRO-ORO By SW8015B	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
Analytes		[D]	[C]	[D]	[E]	Kesuit [F]	[0]				
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1000	100	1000	904	90	10	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	1050	105	1000	1010	101	4	70-135	35	

Analyst: ARL **Date Prepared:** 01/18/2018 **Date Analyzed:** 01/18/2018

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

DRO-ORO By SW8015B 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
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	986	99	1000	931	93	6	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	1130	113	1000	1070	107	5	70-135	35	

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

All results are based on MDL and Validated for QC Purposes



Project Name: Lusk Deep Unit A #029H

Work Order #: 572221 Project ID:

Lab Batch ID: 3037321 **QC- Sample ID:** 572190-004 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 01/02/2018 **Date Prepared:** 01/02/2018 **Analyst:** JTR

Reporting Units: mg/kg MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260B 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	<0.000998	0.0998	0.0797	80	0.0998	0.0882	88	10	62-132	25	
Toluene	<0.000998	0.0998	0.0850	85	0.0998	0.0948	95	11	66-124	25	
Ethylbenzene	<0.000998	0.0998	0.0824	83	0.0998	0.0928	93	12	71-134	25	
m,p-Xylenes	< 0.00200	0.200	0.165	83	0.200	0.182	91	10	69-128	25	
o-Xylene	< 0.000998	0.0998	0.0857	86	0.0998	0.0975	98	13	72-131	25	

Lab Batch ID: 3037396 **QC- Sample ID:** 572221-007 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 01/03/2018 **Date Prepared:** 01/03/2018 **Analyst:** JTR

Reporting Units: mg/kg MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260B 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	<0.000998	0.0998	0.0876	88	0.0996	0.0889	89	1	62-132	25	
Toluene	<0.000998	0.0998	0.0922	92	0.0996	0.0926	93	0	66-124	25	
Ethylbenzene	< 0.000998	0.0998	0.0890	89	0.0996	0.0900	90	1	71-134	25	
m,p-Xylenes	< 0.00200	0.200	0.180	90	0.199	0.180	90	0	69-128	25	
o-Xylene	< 0.000998	0.0998	0.0900	90	0.0996	0.0923	93	3	72-131	25	



Project Name: Lusk Deep Unit A #029H

Work Order #: 572221 Project ID:

Lab Batch ID: 3037445 **QC- Sample ID:** 572221-022 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 01/03/2018 Date Prepared: 01/03/2018 Analyst: JTR

Reporting Units: mg/kg MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260B	Parent Sample	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample	•	RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Benzene	< 0.000998	0.0998	0.102	102	0.0996	0.0924	93	10	62-132	25	
Toluene	< 0.000998	0.0998	0.102	102	0.0996	0.104	104	2	66-124	25	
Ethylbenzene	<0.000998	0.0998	0.110	110	0.0996	0.0925	93	17	71-134	25	
m,p-Xylenes	< 0.00200	0.200	0.225	113	0.199	0.192	96	16	69-128	25	
o-Xylene	< 0.000998	0.0998	0.109	109	0.0996	0.0932	94	16	72-131	25	

Lab Batch ID: 3037542 **QC- Sample ID:** 572221-024 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260B Analytes	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Sample %R	Added	Duplicate Spiked Sample Result [F]	%R	RPD %	Control Limits %R	Control Limits %RPD	Flag
·	[A]	[B]		[D]	[E]		[G]				
Benzene	<0.000992	0.0992	0.125	126	0.0998	0.129	129	3	62-132	25	
Toluene	< 0.000992	0.0992	0.0829	84	0.0998	0.0851	85	3	66-124	25	
Ethylbenzene	< 0.000992	0.0992	0.0911	92	0.0998	0.0951	95	4	71-134	25	
m,p-Xylenes	< 0.00198	0.198	0.196	99	0.200	0.198	99	1	69-128	25	
o-Xylene	< 0.000992	0.0992	0.0984	99	0.0998	0.0992	99	1	72-131	25	



Project Name: Lusk Deep Unit A #029H

Work Order #: 572221

Project ID:

Lab Batch ID: 3037377

QC- Sample ID: 572221-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 01/03/2018

Date Prepared: 01/03/2018

Analyst: DHE

Reporting Units: n

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 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
Chloride	11900	990	12900	101	990	12900	101	0	80-120	20	

Lab Batch ID: 3037377 **QC- Sample ID:** 572221-018 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 01/03/2018 **Date Prepared:** 01/03/2018 **Analyst:** DHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 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
Chloride	251	95.1	345	99	95.1	346	100	0	80-120	20	

Lab Batch ID: 3037378 **QC- Sample ID:** 572194-001 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Final 1.002

Chloride by EPA 300 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
Chloride	4620	489	5130	104	489	5100	98	1	80-120	20	

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



Project Name: Lusk Deep Unit A #029H

Work Order #: 572221 Project ID:

Lab Batch ID: 3037378 **QC- Sample ID:** 572225-002 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 01/03/2018 Date Prepared: 01/03/2018 Analyst: DHE

Reporting Units: mg/kg MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	%R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]		[D]	[E]		[G]				
Chloride	687	489	1180	101	489	1180	101	0	80-120	20	

Lab Batch ID: 3037271 **QC- Sample ID:** 572194-009 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 12/29/2017 **Date Prepared:** 12/29/2017 **Analyst:** ARL

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

DRO-ORO By SW8015B 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
Gasoline Range Hydrocarbons (GRO)	<14.9	1990	1590	80	1980	1730	87	8	70-135	35	
Diesel Range Organics (DRO)	<14.9	1990	1910	96	1980	2030	103	6	70-135	35	

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



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Phone No: Ilowry@trcsolutions.com 432.456.4450		Invoice To: COG Operat	Invoice To: COG Operating C/O Becky Haskell	y Haskell												Dw - Drinking wate P = Product SW = Surface water	ater er
Project Contact:																SL = Sludge OW =Ocean/Sea Water	Vater
Samplers's Name Joel Lowry		Invoice:								Εxŧ						WI = Wipe	
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6 SP #5 @ 3'		12/21/2017	4:4	s	-	-	\pm	+	+	<	<	+	+	#			
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Notice: Notice Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors, it ashigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility on the cost of samples and shall not assume any responsibility on the cost of samples and shall not assume any responsibility on the cost of samples and shall not assume any responsibility on the cost of samples. Any samples creeived by Xenco but not analyzed will be invoiced at \$5 per sample. These



Stafford, Texas (281-240-4200) Dallas Texas (214-902-0300)

CHAIN OF CUSTODY
Page Tof 2
San Antonio, Texas (210-509-3334) Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

Com Com	www.xencocom	Xenco Job #
8		
Client / Reporting Information		Analytical Information Matrix Codes
Company Name / Branch:	100	
Company Address:	Christipe State #001 COC CC	W = Water
2057 Commerce Drive	tion:	S = Soil/Sed/Solid
Midland, TX 79703	Lea Co, NM	GW = Ground Water
Email:	Invoice To:	D = Draduct
olutions.com	COG Operating C/O Becky Haskell	SW = Surface water
Project Contact: Joel Lowry		SL = Sludge OW =Ocean/Sea Water
Samplers's Name Joel Lowry		WI = Wipe
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	Level II Std QC Level IV (Full Data Pkg Iraw data)	lowry@trcsolutions.com
Next Day EMERGENCY 7 Day TAT	Level III Std QC+ Forms TRRP level IV	
2 Day EMERGENCY x Contract TAT		index Religiounino.com
3 Davie Medocenov	Level 3 (CLP Forms) UST / RG 411	kblackbum@trcsolutions.com
TAT Stands Day	TRRP Checklist	dneel2@concho.com
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Stafford, Texas (281-240-4200)

CHAIN OF CUSTODY

San Antonio, Texas (210-509-3334) Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

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any losses or expenses incurred by the Client if such loses are due to circumstances beyond the control of Xenco. A minimum charge of \$75 will be applied to each project. Xencos liability will be limited to the cost of samples received by Xenco but not analyzed will be invoiced at \$5 per sample. These



Stafford, Texas (281-240-4200)

CHAIN OF CUSTODY

San Antonio, Texas (210-509-3334) Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

Dallas Texas (214-902-0300))	Midland, 1	Midland, Texas (432-704-5251)	04-5251)											200	31
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Company Address: 2057 Commerce Drive Midland, TX 79703	Project Location: Lea Co, NM	tion:	3		+		# 039H	460							S = Soil/Sed/Solid GW =Ground Water DW = Drinking Water
Email: Phone No: ilowry@trcsolutions.com 432-466-4450	Invoice To: COG Operati	Invoice To: COG Operating C/O Becky Haskell	laskell												P = Product SW = Surface water SL = Sludge
Project Contact: Joel Lowry									t						OW =Ocean/Sea Water WI = Wipe
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Stafford, Texas (281-240-4200) Dallas Texas (214-902-0300)

CHAIN OF CUSTODY Page # Of

Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

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Provided Section Provided Se	TRC Environmental Corporation	7	CK DOO	1/2.4 A			W = Water
	Company Address: 2057 Commerce Drive Midland, TX 79703						S = Soll/Sed/Solid GW =Ground Water DW = Drinking Water
Field D Point of Coloron Sample Date Transcription Date Transcription Date	llowry@trcsolutions.com	Invoice To: COG Operating C/O Becky Haskell					P = Product SW = Surface water SL = Sludge
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 $IOS\ Number\ 1053900$

Date/Time: 12/28/17 17:13 Created by: Brenda Ward Please send report to: Kelsey Brooks

Lab# From: Lubbock Delivery Priority: Address: 6701 Aberdeen, Suite 9 Lubbock, TX 79424

Phone:

Lab# To: **Houston** Air Bill No.: 771105606137

E-Mail: kelsey.brooks@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
572221-001	S	SP #1 @ Surf.	12/21/17 10:25	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-001	S	SP #1 @ Surf.	12/21/17 10:25	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-001	S	SP #1 @ Surf.	12/21/17 10:25	SW8021B	BTEX by EPA 8021B	01/03/18	01/04/18	KEB	BR4FBZ BZ BZME EBZ X	
572221-001	S	SP #1 @ Surf.	12/21/17 10:25	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-002	S	SP #1 @ 1'	12/21/17 10:30	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-002	S	SP #1 @ 1'	12/21/17 10:30	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-002	S	SP #1 @ 1'	12/21/17 10:30	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-003	S	SP #1 @ 2'	12/21/17 10:35	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-003	S	SP #1 @ 2'	12/21/17 10:35	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-004	S	SP #1 @ Surf.	12/21/17 10:40	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-004	S	SP #1 @ Surf.	12/21/17 10:40	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-004	S	SP #1 @ Surf.	12/21/17 10:40	SW8021B	BTEX by EPA 8021B	01/03/18	01/04/18	KEB	BR4FBZ BZ BZME EBZ X	
572221-004	S	SP #1 @ Surf.	12/21/17 10:40	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-005	S	SP #2 @ 1'	12/21/17 10:45	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-005	S	SP #2 @ 1'	12/21/17 10:45	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-005	S	SP #2 @ 1'	12/21/17 10:45	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-006	S	SP #2 @ 2'	12/21/17 10:50	SW8015GRO	TPH GRO by EPA 8015 Mod.	HOLD	01/04/18	KEB	PHCG	
572221-006	S	SP #2 @ 2'	12/21/17 10:50	SW8015B_DROORO	DRO-ORO By SW8015B	HOLD	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-006	S	SP #2 @ 2'	12/21/17 10:50	E300_CL	Chloride by EPA 300	HOLD	01/18/18	KEB	CL	
572221-007	S	SP #2 @ 4'	12/21/17 10:55	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-008	S	SP #3 @ Surf.	12/21/17 11:00	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-008	S	SP #3 @ Surf.	12/21/17 11:00	SW8021B	BTEX by EPA 8021B	01/03/18	01/04/18	KEB	BR4FBZ BZ BZME EBZ X	
572221-008	S	SP #3 @ Surf.	12/21/17 11:00	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-008	S	SP #3 @ Surf.	12/21/17 11:00	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-009	S	SP #3 @ 1'	12/21/17 11:05	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	



Page 2 of 4

 $IOS\ Number\ 1053900$

Date/Time: 12/28/17 17:13 Created by: Brenda Ward Please send report to: Kelsey Brooks

Lab# From: Lubbock Delivery Priority: Address: 6701 Aberdeen, Suite 9 Lubbock, TX 79424

Lab# To: **Houston** Air Bill No.: 771105606137

E-Mail: kelsey.brooks@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
572221-009	S	SP #3 @ 1'	12/21/17 11:05	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-009	S	SP #3 @ 1'	12/21/17 11:05	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-010	S	SP #3 @ 2'	12/21/17 11:10	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-011	S	SP #4 @ Surf.	12/21/17 11:15	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-011	S	SP #4 @ Surf.	12/21/17 11:15	SW8021B	BTEX by EPA 8021B	01/03/18	01/04/18	KEB	BR4FBZ BZ BZME EBZ X	
572221-011	S	SP #4 @ Surf.	12/21/17 11:15	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-011	S	SP #4 @ Surf.	12/21/17 11:15	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-012	S	SP #4 @ 1'	12/21/17 11:20	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-012	S	SP #4 @ 1'	12/21/17 11:20	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-012	S	SP #4 @ 1'	12/21/17 11:20	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-013	S	SP #4 @ 2'	12/21/17 11:25	E300_CL	Chloride by EPA 300	HOLD	01/18/18	KEB	CL	
572221-014	S	SP #5 @ Surf.	12/21/17 11:30	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-014	S	SP #5 @ Surf.	12/21/17 11:30	SW8021B	BTEX by EPA 8021B	01/03/18	01/04/18	KEB	BR4FBZ BZ BZME EBZ X	
572221-014	S	SP #5 @ Surf.	12/21/17 11:30	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-014	S	SP #5 @ Surf.	12/21/17 11:30	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-015	S	SP #5 @ 1'	12/21/17 11:35	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-015	S	SP #5 @ 1'	12/21/17 11:35	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-015	S	SP #5 @ 1'	12/21/17 11:35	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-016	S	SP #5 @ 2'	12/21/17 11:40	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-016	S	SP #5 @ 2'	12/21/17 11:40	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-016	S	SP #5 @ 2'	12/21/17 11:40	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-017	S	SP #5 @ 3'	12/21/17 11:43	E300_CL	Chloride by EPA 300	HOLD	01/18/18	KEB	CL	
572221-018	S	North #1	12/21/17 11:45	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-018	S	North #1	12/21/17 11:45	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-018	S	North #1	12/21/17 11:45	SW8021B	BTEX by EPA 8021B	01/03/18	01/04/18	KEB	BR4FBZ BZ BZME EBZ X	



Page 3 of 4

 $IOS\ Number\ 1053900$

Date/Time: 12/28/17 17:13 Created by: Brenda Ward Please send report to: Kelsey Brooks

Lab# From: Lubbock Delivery Priority: Address: 6701 Aberdeen, Suite 9 Lubbock, TX 79424

Lab# To: **Houston** Air Bill No.: 771105606137

E-Mail: kelsey.brooks@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
572221-018	S	North #1	12/21/17 11:45	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-019	S	North #2	12/21/17 11:50	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-019	S	North #2	12/21/17 11:50	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-019	S	North #2	12/21/17 11:50	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-019	S	North #2	12/21/17 11:50	SW8021B	BTEX by EPA 8021B	01/03/18	01/04/18	KEB	BR4FBZ BZ BZME EBZ X	
572221-020	S	East #1	12/21/17 11:55	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-020	S	East #1	12/21/17 11:55	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-020	S	East #1	12/21/17 11:55	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-020	S	East #1	12/21/17 11:55	SW8021B	BTEX by EPA 8021B	01/03/18	01/04/18	KEB	BR4FBZ BZ BZME EBZ X	
572221-021	S	East #2	12/21/17 12:00	SW8021B	BTEX by EPA 8021B	01/03/18	01/04/18	KEB	BR4FBZ BZ BZME EBZ X	
572221-021	S	East #2	12/21/17 12:00	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-021	S	East #2	12/21/17 12:00	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-021	S	East #2	12/21/17 12:00	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-022	S	East #3	12/21/17 12:10	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-022	S	East #3	12/21/17 12:10	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-022	S	East #3	12/21/17 12:10	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-022	S	East #3	12/21/17 12:10	SW8021B	BTEX by EPA 8021B	01/03/18	01/04/18	KEB	BR4FBZ BZ BZME EBZ X	
572221-023	S	West #1	12/21/17 12:15	SW8021B	BTEX by EPA 8021B	01/03/18	01/04/18	KEB	BR4FBZ BZ BZME EBZ X	
572221-023	S	West #1	12/21/17 12:15	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-023	S	West #1	12/21/17 12:15	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-023	S	West #1	12/21/17 12:15	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-024	S	South #1	12/21/17 12:20	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	
572221-024	S	South #1	12/21/17 12:20	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-024	S	South #1	12/21/17 12:20	SW8021B	BTEX by EPA 8021B	01/03/18	01/04/18	KEB	BR4FBZ BZ BZME EBZ X	
572221-024	S	South #1	12/21/17 12:20	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	



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IOS Number 1053900

Date/Time: 12/28/17 17:13

Lubbock

Created by: Delivery Priority: Please send report to: Kelsey Brooks

Address: 6701 Aberdeen, Suite 9 Lubbock, TX 79424

Phone:

Lab# To: Houston

Lab# From:

Air Bill No.: 771105606137

Brenda Ward

E-Mail: kelsey.brooks@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
572221-025	S	South #2	12/21/17 12:30	SW8015B_DROORO	DRO-ORO By SW8015B	01/03/18	01/04/18	KEB	PHCC10C28 PHCC28C35	
572221-025	S	South #2	12/21/17 12:30	SW8021B	BTEX by EPA 8021B	01/03/18	01/04/18	KEB	BR4FBZ BZ BZME EBZ X	
572221-025	S	South #2	12/21/17 12:30	E300_CL	Chloride by EPA 300	01/03/18	01/18/18	KEB	CL	
572221-025	S	South #2	12/21/17 12:30	SW8015GRO	TPH GRO by EPA 8015 Mod.	01/03/18	01/04/18	KEB	PHCG	

Inter Office Shipment or Sample Comments:

Relinquished By

Received By:

Rene Vandenberghe

Date Relinquished: 12/28/2017

Date Received: 12/29/2017 10:00

Cooler Temperature: 3.6



XENCO Laboratories

Inter Office Report- Sample Receipt Checklist

Sent To: Houston Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient IOS #: 1053900 Temperature Measuring device used: hou-068

Date Sent: 12/28/2017 05:13 PM Sent By: Brenda Ward

Received By: Rene Vandenberghe	Date Received: 12/29/2017 1	10:00 AM	
Necestad By: Iteme vandenseigne			
	Sample Receipt Check	ilist	Comments
#1 *Temperature of cooler(s)?		3.6	
#2 *Shipping container in good condit	ion?	Yes	
#3 *Samples received with appropriat	e temperature?	Yes	
#4 *Custody Seals intact on shipping	container/ cooler?	No	
#5 *Custody Seals Signed and dated	for Containers/coolers	N/A	
#6 *IOS present?		Yes	
#7 Any missing/extra samples?		No	
#8 IOS agrees with sample label(s)/m	atrix?	Yes	
#9 Sample matrix/ properties agree w	ith IOS?	Yes	
#10 Samples in proper container/ bot	le?	Yes	
#11 Samples properly preserved?		Yes	
#12 Sample container(s) intact?		Yes	
#13 Sufficient sample amount for indi	cated test(s)?	Yes	
#14 All samples received within hold	time?	Yes	
Must be completed for after-hours onConformance:	delivery of samples prior to pla	icing in the refrigerator	
orrective Action Taken:			
	Nonconformance Docu	mentation	
contact:	Contacted by :	Date	:
Checklist reviewed by:	RCVLHO.	Date: 12/29/2017	

Rene Vandenberghe



XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: TRC Solutions, Inc

Date/ Time Received: 12/27/2017 05:12:00 PM

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

Work Order #: 572221

Temperature Measuring device used: IR-3

	Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?		1.1	
#2 *Shipping container in good condition	?	Yes	
#3 *Samples received on ice?		Yes	
#4 *Custody Seals intact on shipping cor	ntainer/ cooler?	N/A	
#5 Custody Seals intact on sample bottle	es?	N/A	
#6*Custody Seals Signed and dated?		N/A	
#7 *Chain of Custody present?		Yes	
#8 Any missing/extra samples?		No	
#9 Chain of Custody signed when relinqu	uished/ received?	Yes	
#10 Chain of Custody agrees with sampl	le labels/matrix?	Yes	
#11 Container label(s) legible and intact	?	Yes	
#12 Samples in proper container/ bottle?		Yes	
#13 Samples properly preserved?		Yes	
#14 Sample container(s) intact?		Yes	
#15 Sufficient sample amount for indicat	ed test(s)?	Yes	
#16 All samples received within hold time	e?	Yes	
#17 Subcontract of sample(s)?		Yes	Xenco Houston
#18 Water VOC samples have zero head	dspace?	N/A	
Must be completed for after-hours de	elivery of samples prior to placing in	the refrig	erator
Checklist completed by:		Date: <u>12/</u>	28/2017
Checklist reviewed by:		Date: 12/	28/2017

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

State of New Mexico Energy Minerals and Natural Resources

Revised April 3, 2017
Submit 1 Copy to appropriate District Office in

Form C-141

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

Release Notification and Corrective Action

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

	OPERATOR
Name of Company: COG Operating, LLC (OGRID# 229137)	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No.: 432-683-7443
Facility Name: Lusk Deep Unit A #029H	Facility Type: Well
Surface Owner: BLM Mineral Own	er: Federal API No.: 30-025-41563
LOCATI	ON OF RELEASE
	orth/South Line Feet from the East/West Line County
D 17 19S 32E 355	North 660 West Lea
Latitude: 32.6667595 L	ongitude: -103.7948532 NAD83
NATUR	RE OF RELEASE
Type of Release: Oil and Produced Water	Volume of Release: Volume Recovered:
Source of Release: Suction Line	10bbls Oil & 20bbls PW 8bbls Oil & 10bbls PW
Source of Release. Suction Line	Date and Hour of Occurrence: Date and Hour of Discovery: 11/24/2017 6:30am 11/24/2017 6:30am
Was Immediate Notice Given?	If YES, To Whom?
	ed Oliva Yu-NMOCD
D W 00111 W 1	Shelly Tucker-BLM
By Whom? Sheldon Hitchcock Was a Watercourse Reached?	Date and Hour: 11/24/2017 11:33am
Was a watercourse reaction? Yes ⊠ No	If YES, Volume Impacting the Watercourse.
If a Watercourse was Impacted, Describe Fully.*	DECEIVED
in a watercourse was impacted, Describe ruity,	RECEIVED
	By Olivia Yu at 9:19 am, Nov 28, 2017
Describe Cause of Problem and Remedial Action Taken.*	
Bands on 4" suction line failed resulting in a release onto the well pad	and into the adjacent pasture. The suction line was repaired.
Describe Area Affected and Cleanup Action Taken.*	
The release impacted the well pad and the adjacent pasture. A vacuum	truck was dispatched to recover all freestanding fluids. Concho will have the spill
area evaluated for any possible impact from the release and we will pro-	esent a remediation work plan to the NMOCD for approval prior to any significant
remediation activities.	
I hereby certify that the information given above is true and complete	to the best of my knowledge and understand that pursuant to NMOCD rules and
regulations all operators are required to report and/or file certain releas	se notifications and perform corrective actions for releases which may endanger
public health or the environment. The acceptance of a C-141 report by	the NMOCD marked as "Final Report" does not relieve the operator of liability
should their operations have failed to adequately investigate and remed	fiate contamination that pose a threat to ground water, surface water, human health
federal, state, or local laws and/or regulations.	rt does not relieve the operator of responsibility for compliance with any other
reserve, State, or total laws allower regulations.	OIL CONSERVATION DIVISION
01 11 1	OIL CONSERVATION DIVISION
Signature: Sheldan Jeis	4
Printed Name: Sheldon L. Hitchcock	Approved by Environmental Specialist:
Timed Name. Sheldon E. Thencock	44/00/0047
Title: HSE Coordinator	Approval Date: 11/28/2017 Expiration Date:
E-mail Address: slhitchcock@concho.com	Conditions of Approval:
	Attached
Date: 11/27/2017 Phone: 575-746-2010	see attached directive
Attach Additional Sheets If Necessary	

1RP-4882

nOY1733234682

pOY1733234867

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

State of New Mexico **Energy Minerals and Natural Resources**

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

Form C-141

Revised April 3, 2017

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

Santa 1 c, 1414 67505												
Release Notification and Corrective Action												
						OPERA	\boxtimes					
		OG Operat	Contact: Robert McNeill									
Address: 600 West Illinois Avenue, Midland TX 79701						Telephone No.: 432-683-7443						
Facility Name: Lusk Deep Unit A #029H						Facility Type: Well						
Surface Owner: BLM Mineral Owner:						Federal	A	API No.: 30-025-41563				
			LOCA	ATIO	N OF RELEASE							
						South Line	East/West	Sast/West Line County				
D						North	Wes	West			Lea	
Latitude : 32.6667595 Longitude : -103.7948532 NAD83												
NATURE OF RELEASE												
Type of Rele			Volume of Release: 15 bbls PW			Volume Recovered: 10bbls PW						
Source of Release: Water Seal						Date and Hour of Occurrence: 12/16/2017 6:00am			Date and Hour of Discovery: 12/16/2017 6:00am			
Was Immediate Notice Given? ☐ Yes ☑ No ☑ Not Required						If YES, To Whom?						
By Whom?						Date and Hour:						
Was a Watercourse Reached?						If YES, Volume Impacting the Watercourse.						
			Yes 🔀] No								
If a Waterco	urse was Im	pacted, Descr	k		RECEIVED							
							y Olivia Yı		2 nn	n Doc	10	2017
Describe Car	use of Probl	em and Reme	dial Action	n Taken.*		<u>B</u>	y Olivia Ti	u at Z.J	o pii	i, Dec	10,	2017
The shaft on	the H-pum	p twisted off c	ausing the	water seal to leal	k and re	lease produce	d water onto the	well pad. Th	ne pump	will be rem	oved a	and replaced.
Describe Are	ea Affected	and Cleanup A	Action Tak	ten.*								
				uck was dispatch sent a remediatio								
I hereby cert	ify that the	information gi	ven above	is true and comp	lete to t	he best of my	knowledge and u	understand th	hat purs	uant to NM	OCD r	ules and
				nd/or file certain r								
				ce of a C-141 report investigate and r								
				tance of a C-141								
federal, state	e, or local la	ws and/or regu	ılations.									
						OIL CONSERVATION DIVISION						
	A						\sim	1				
Sahot New						Approved by Environmental Specialist:						
Signature:						\Box						
Printed Nam	ne: Dakota N	leel								9		
Title: HSE Coordinator						Approval Date: 12/18/2017 Expiration Date:						
						/						
E-mail Address dneel2@concho.com						Conditions of Approval:						

* Attach Additional Sheets If Necessary

Date: 12/17/2017

1RP-4897

Phone: 575-746-2010

see attached directive

nOY1735252600

pOY1735252768

Operator/Responsible Party,

The OCD has received the form C-141 you provided on _12/17/2017_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number _1RP-4897__ has been assigned. Please refer to this case number in all future correspondence.

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

The responsible person shall complete <u>division-approved corrective action</u> for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District _1_ office in __Hobbs____ on or before _1/18/2018_. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

- •Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.
- If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.
- Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

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