

SITE INFORMATION

Report Type: Closure Report 2RP-3927

General Site Information:

Site:	Blue Thunder 4 Federal #1				
Company:	COG Operating LLC				
Section, Township and Range	Unit M	Sec. 04	T 19S	R 31E	
Lease Number:	API No. 30-015-34125				
County:	Eddy County				
GPS:	32.684022° N			103.881225° W	
Surface Owner:	Federal				
Mineral Owner:					
Directions:	From the intersection of 126A (Maljamar Rd) and Lusk Plant Rd. in rural Eddy County, turn west on Lusk Rd for approximately 6.20 mi, turn west onto lease road for 0.4 miles, turn south for 0.6 mi to location.				

Release Data:

Date Released:	9/23/2016	
Type Release:	Oil	
Source of Contamination:	Tank Overflow	
Fluid Released:	6 bbls	
Fluids Recovered:	0 bbls	

Official Communication:

Name:	Robert McNeil	Ike Tavarez
Company:	COG Operating, LLC	Tetra Tech
Address:	One Concho Center 600 W. Illinois Ave.	4000 N. Big Spring Ste 401
City:	Midland Texas, 79701	Midland, Texas
Phone number:	(432) 686-3023	(432) 687-8110
Fax:	(432) 684-7137	
Email:	rmcneil@conchoresources.com	Ike.Tavarez@tetrattech.com

Ranking Criteria

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	175'-200'
WellHead Protection:		
	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:		
	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
Total Ranking Score:		0

Acceptable Soil RRAL (mg/kg)		
Benzene	Total BTEX	TPH
10	50	5,000



July 17, 2017

Mike Bratcher
Environmental Engineer Specialist
Oil Conservation Division, District 2
811 S. First Street
Artesia, New Mexico 88210

Re: Closure Report for the COG Operating LLC., Blue Thunder 4 Federal #1, Unit M, Section 04, Township 19 South, Range 31 East, Eddy County, New Mexico. 2RP-3927

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG), to prepare a work plan and remediate a release that occurred at the COG at the Blue Thunder 4 Federal #1, Unit M, Section 04, Township 19 South, Range 31 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.684022°, W 103.881225°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on September 23, 2016, and released approximately six (6) barrels of oil due to a tank overflow caused by a dump valve failure. None of the fluids were recovered. The spill is located within the bermed facility and measures approximately 15' x 25'. The initial C-141 form is included in Appendix A.

Groundwater

No water wells were listed within Section 04 on the New Mexico Office of the State Engineer's (NMOSE) database. However, the nearest well listed on the NMOSE data base is located in Section 19 with a reported depth of approximately 180' below surface. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in this area between 175' and 200' below surface. The groundwater data is shown in Appendix B.

Tetra Tech

4000 North Big Spring, Suite 401, Midland, TX 79705

Tel 432.682.4559 Fax 432.682.3946 www.tetrattech.com

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Soil Assessment and Analytical Results

Prior to sampling the location, COG personnel performed a surficial scrape of the impacted area in order to prevent vertical migration of the impact. On December 19, 2016, COG personnel returned to the site to evaluate and sample the release area. Using a backhoe, one (1) trench (T-1) was installed to a total depth of 4.0' below surface within the release footprint, which measured approximately 15'x25'. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B, and chloride by EPA method 300.0. Copies of the laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1. The trench location is shown in Figure 3.

Referring to Table 1, none of the samples showed chloride concentrations above 32.0 mg/kg and were not significant in the subsurface soil. Additionally, the benzene and total BTEX concentrations were below the RRAL's in all collected samples. However, the sample collected at surface detected a total TPH concentration of 9,690 mg/kg, which exceeds the 5,000 mg/kg RRAL. However, the TPH concentration declined with depth to below the laboratory reporting limits at 1.0' below surface.

Remediation Activities

Tetra Tech submitted the work plan to the NMOCD and BLM for review and approval, dated April 21, 2017. The NMOCD approved the work plan with stipulations. As performed, the NMOCD requested lateral sampling/definition of the impacted soils.

On June 28-29, 2017, Tetra Tech personnel were onsite to supervise the excavation and remediation activities. The excavated areas and depths are shown on Figure 4 and highlighted (green) in Table 1. The area of trench (T-1) was excavated to 1.0' below surface. A total of three (3) sidewall samples (South Sidewall, West Sidewall, and North Sidewall) were collected to ensure the proper removal of the impacted material. A sample was not collected along the east sidewall, due to the equipment in the area. Selected samples were analyzed for TPH by EPA method 8015 modified. Copies of the laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The sidewall sample locations are shown on Figure 4.



Referring to Table 1, none of the sidewall samples collected showed TPH concentrations above the 5,000 mg/kg RRAL. The TPH concentrations detected ranged from 39.0 mg/kg to 3,840 mg/kg. Once the excavation was completed, the area of trench (T-1) was backfilled with clean material to surface grade. Approximately 20 cubic yards of excavated material was transported offsite for proper disposal.

Conclusion

Based on the soil assessment and remediation work performed at the site, COG requests closure of this spill. The final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

A handwritten signature in blue ink that reads 'Clair Gonzales'.

Clair Gonzales,
Geologist I

A handwritten signature in blue ink that reads 'Ike Tavarez'.

Ike Tavarez,
Senior Project Manager, P.G.

cc: Robert McNeill – COG
Dakota Neel – COG
Rebecca Haskell - COG
Shelly Tucker – BLM

Tables

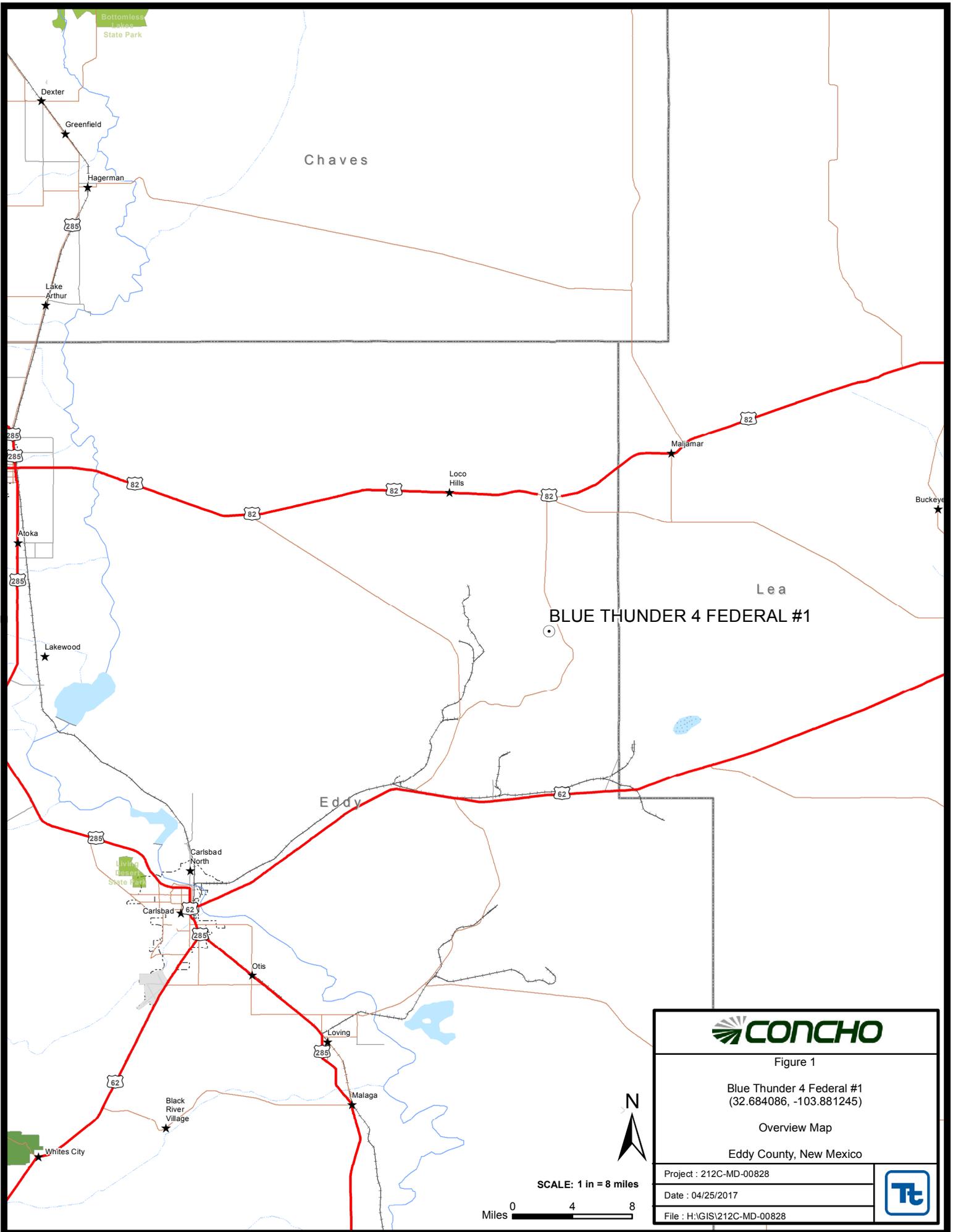
Table 1
COG Operating LLC.
Blue Thunder 4 Federal #1
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
T-1	12/19/2016	Surface		X	760	8,930	9,690	<0.050	0.111	<0.050	1.76	1.87	32.0
	"	1		X	<10.0	<10.0	<10.0	<0.50	<0.50	<0.50	<0.150	<0.300	<16.0
	"	2	X		<10.0	<10.0	<10.0	<0.50	<0.50	<0.50	<0.150	<0.300	<16.0
	"	3	X		<10.0	<10.0	<10.0	<0.50	<0.50	<0.50	<0.150	<0.300	32.0
	"	4	X		<10.0	<10.0	<10.0	<0.50	<0.50	<0.50	<0.150	<0.300	16.0
South Sidewall	6/28/2017	-	X		136	356	512	-	-	-	-	-	-
West Sidewall	6/28/2017	-	X		1,340	2,410	3,840	-	-	-	-	-	-
North Sidewall	6/28/2017	-	X		<15.0	39	39.0	-	-	-	-	-	-

(-) Not Analyzed

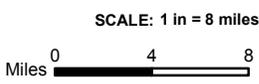
Excavation Depths

Figures



BLUE THUNDER 4 FEDERAL #1

Figure 1	
Blue Thunder 4 Federal #1 (32.684086, -103.881245)	
Overview Map	
Eddy County, New Mexico	
Project : 212C-MD-00828	
Date : 04/25/2017	
File : H:\GIS\212C-MD-00828	





SPILL AREA APPROX.
15'x30'

T-1

EXPLANATION

 TRENCH SAMPLE LOCATIONS
 SPILL AREA

CONCHO

Figure 3

Blue Thunder 4 Federal #1
(32.684086, -103.881245)

Spill Assessment Map

Eddy County, New Mexico

Project : 212C-MD-00828	
Date : 04/25/2017	
File : H:\GIS\212C-MD-00828	



Source: Esri, DigitalGlobe, GeoEye, USDA, USGS, AEX, Getmapp, User Community, ESRI, HERE, DeLorme, Swire, and the GIS User Community

SCALE: 1 IN = 50 FEET

Feet 0 25 50



1' DEEP BELOW SURFACE

EXPLANATION	
●	SIDEWALL SAMPLE LOCATIONS
■	TRENCH SAMPLE LOCATIONS
▨	EXCAVATED AREA

Figure 4	
Blue Thunder 4 Federal #1 (32.684086, -103.881245)	
Excavation Areas & Depths Map	
Eddy County, New Mexico	
Project : 212C-MD-00828	
Date : 07/11/2017	
File : H:\GIS\212C-MD-00828	



Source: Esri, DigitalGlobe, GeoEye, USDA, USGS, AEX, Getmapp, User Community, Esri, HERE, DeLorme, and the GIS User Community

SCALE: 1 IN = 25 FEET

Feet 0 12.5 25

Appendix A

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

State of New Mexico
Energy Minerals and Natural Resources

Form C-141
Revised August 8, 2011

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

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

Release Notification and Corrective Action

OPERATOR

Initial Report Final Report

Name of Company: COG Operating LLC	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-230-0077
Facility Name: BLUE THUNDER 4 FEDERAL #001	Facility Type: Battery

Surface Owner: Federal	Mineral Owner: Federal	API No. 30-015-34125
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LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	04	19S	31E	810	South	660	West	Eddy

Latitude Longitude

NATURE OF RELEASE

Type of Release: Oil	Volume of Release: 6 bbls Oil	Volume Recovered: 0 bbls Oil
Source of Release: Tank Overflow	Date and Hour of Occurrence: 9/23/2016 Unknown	Date and Hour of Discovery: 9/23/2016 9:00 AM
Was Immediate Notice Given? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
This release was caused when the dump valve failed to close allowing excess gas to transfer to the fiberglass tank. The dump valve is being replaced and the dump line will be re-routed to a larger steel tank.

Describe Area Affected and Cleanup Action Taken.*
This release remained within the dirt berm and on the location. The impacted areas of the location were scraped and the contaminated soils removed to eliminate further impact. Concho will have the spill site sampled to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation work.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: 	OIL CONSERVATION DIVISION		
Printed Name: Dakota Neel	Approved by Environmental Specialist:		
Title: Environmental Coordinator	Approval Date:	Expiration Date:	
E-mail Address: dneel2@concho.com	Conditions of Approval:		Attached <input type="checkbox"/>
Date: October 3, 2016	Phone: 575-748-6933		

* Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on back
side of form

Release Notification and Corrective Action

OPERATOR Initial Report Final Report

Name of Company COG Operating LLC	Contact Robert McNeil
Address 600 West Illinois Ave., Midland TX 79701	Telephone No. (432) 683-7443
Facility Name Blue Thunder 4 Federal #1	Facility Type Tank Battery

Surface Owner: Federal	Mineral Owner	API No. 30-015-34125
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LOCATION OF RELEASE

Unit Letter M	Section 04	Township 19S	Range 31E	Feet from the 810	North/South Line South	Feet from the 660	East/West Line West	County Eddy
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Latitude N 32.684022° Longitude W 103.881225°

NATURE OF RELEASE

Type of Release: Oil	Volume of Release 6 bbls	Volume Recovered 0 bbls
Source of Release: Tank Overflow	Date and Hour of Occurrence 09/23/16 unknown	Date and Hour of Discovery 09/23/16 9:00 am
Was Immediate Notice Given? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour .	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

N/A

Describe Cause of Problem and Remedial Action Taken.*

The dump valve failed to close, allowing excess gas to transfer to the fiberglass tank. The dump valve was replaced and the dump line re-routed to a larger steel tank. The impacted areas were scraped and the removed material was taken for proper disposal.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech inspected site and collected samples to define spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. Site was then brought up to surface grade with clean backfill material. Tetra Tech prepared closure report and submitted to NMOCD for review.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: 	OIL CONSERVATION DIVISION	
Printed Name: Ike Tavarez (agent for COG)	Approved by District Supervisor:	
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 07/11/17 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Blue Thunder 4 Federal #1
Eddy County, New Mexico

18 South			30 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	44
30	29	28	27	26	25
31	32	33	34	35	36

18 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	98	400
19	20	21	22	317	24
30	29	28	27	26	25
31	32	33	34	35	261

18 South			32 East		
6	5	4	65	3	2
7	460	8	9	10	11
82					12
18	17	16	15	14	13
19	20	21	84	22	23
	164			429	24
30	29	28	27	26	25
31	32	33	34	35	36
				117	

19 South			30 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
90					
115					

19 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	180	21	22	23	24
30	29	28	27	26	25
		180			
31	32	33	101	34	35
		140			130

19 South			32 East		
6	5	4	3	2	1
7	8	9	10	11	12
	365				
18	17	16	15	14	13
					135
					dry
19	20	21	22	23	24
102	345				
30	29	28	27	26	25
31	32	33	34	35	36
				250	

20 South			30 East		
6	5	3.5	4	3	2
7	8	9	10	11	12
18	17	16	15	14	13
		29			
19	20	21	22	23	24
	29	150			
30	29	28	27	26	25
31	32	33	34	35	36
	170	191			

20 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
			130		
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
					80

20 South			32 East		
6	5	4	3	2	1
					21.8
7	8	9	10	11	12
18	17	16	15	14	13
89					
19	20	21	22	23	24
30	29	28	27	26	25
9.9			12.3		
31	32	33	34	35	36
					46

- 88** New Mexico State Engineers Well Reports
- 105** USGS Well Reports
- 90** Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)
 Geology and Groundwater Resources of Eddy County, NM (Report 3)
- 34** NMOCD - Groundwater Data
- 123** Tetra Tech installed temporary wells and field water level
- 143** NMOCD Groundwater map well location

Photos



View North – Excavated Area of T-1



View North – Backfilled Area of T-1

Appendix C



January 05, 2017

DAKOTA NEEL
COG OPERATING
P. O. BOX 1630
ARTESIA, NM 88210

RE: BLUE THUNDER 4 FEDERAL #1

Enclosed are the results of analyses for samples received by the laboratory on 12/29/16 12:05.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene
Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/29/2016	Sampling Date:	12/19/2016
Reported:	01/05/2017	Sampling Type:	Soil
Project Name:	BLUE THUNDER 4 FEDERAL #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	NOT GIVEN		

Sample ID: T1 - SURFACE (H602889-01)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/30/2016	ND	1.82	91.1	2.00	2.19	
Toluene*	0.111	0.050	12/30/2016	ND	1.85	92.3	2.00	2.27	
Ethylbenzene*	<0.050	0.050	12/30/2016	ND	1.90	95.0	2.00	2.67	
Total Xylenes*	1.76	0.150	12/30/2016	ND	5.54	92.3	6.00	2.61	
Total BTEX	1.87	0.300	12/30/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.4 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	12/31/2016	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS						S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	760	10.0	12/30/2016	ND	184	92.0	200	3.90		
DRO >C10-C28	8930	10.0	12/30/2016	ND	190	95.0	200	1.29		

Surrogate: 1-Chlorooctane 186 % 35-147
Surrogate: 1-Chlorooctadecane 193 % 28-171

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/29/2016	Sampling Date:	12/19/2016
Reported:	01/05/2017	Sampling Type:	Soil
Project Name:	BLUE THUNDER 4 FEDERAL #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	NOT GIVEN		

Sample ID: T1 - 1' (H602889-02)

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	12/30/2016	ND	1.82	91.1	2.00	2.19		
Toluene*	<0.050	0.050	12/30/2016	ND	1.85	92.3	2.00	2.27		
Ethylbenzene*	<0.050	0.050	12/30/2016	ND	1.90	95.0	2.00	2.67		
Total Xylenes*	<0.150	0.150	12/30/2016	ND	5.54	92.3	6.00	2.61		
Total BTEX	<0.300	0.300	12/30/2016	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	12/31/2016	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	12/30/2016	ND	184	92.0	200	3.90		
DRO >C10-C28	<10.0	10.0	12/30/2016	ND	190	95.0	200	1.29		

Surrogate: 1-Chlorooctane 95.8 % 35-147
Surrogate: 1-Chlorooctadecane 110 % 28-171

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/29/2016	Sampling Date:	12/19/2016
Reported:	01/05/2017	Sampling Type:	Soil
Project Name:	BLUE THUNDER 4 FEDERAL #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	NOT GIVEN		

Sample ID: T1 - 2' (H602889-03)

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	12/30/2016	ND	1.82	91.1	2.00	2.19		
Toluene*	<0.050	0.050	12/30/2016	ND	1.85	92.3	2.00	2.27		
Ethylbenzene*	<0.050	0.050	12/30/2016	ND	1.90	95.0	2.00	2.67		
Total Xylenes*	<0.150	0.150	12/30/2016	ND	5.54	92.3	6.00	2.61		
Total BTEX	<0.300	0.300	12/30/2016	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	12/31/2016	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	12/30/2016	ND	184	92.0	200	3.90		
DRO >C10-C28	<10.0	10.0	12/30/2016	ND	190	95.0	200	1.29		

Surrogate: 1-Chlorooctane 104 % 35-147

Surrogate: 1-Chlorooctadecane 119 % 28-171

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/29/2016	Sampling Date:	12/19/2016
Reported:	01/05/2017	Sampling Type:	Soil
Project Name:	BLUE THUNDER 4 FEDERAL #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	NOT GIVEN		

Sample ID: T1 - 2' (H602889-03)

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	12/30/2016	ND	1.82	91.1	2.00	2.19		
Toluene*	<0.050	0.050	12/30/2016	ND	1.85	92.3	2.00	2.27		
Ethylbenzene*	<0.050	0.050	12/30/2016	ND	1.90	95.0	2.00	2.67		
Total Xylenes*	<0.150	0.150	12/30/2016	ND	5.54	92.3	6.00	2.61		
Total BTEX	<0.300	0.300	12/30/2016	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	12/31/2016	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	12/30/2016	ND	184	92.0	200	3.90		
DRO >C10-C28	<10.0	10.0	12/30/2016	ND	190	95.0	200	1.29		

Surrogate: 1-Chlorooctane 104 % 35-147

Surrogate: 1-Chlorooctadecane 119 % 28-171

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/29/2016	Sampling Date:	12/19/2016
Reported:	01/05/2017	Sampling Type:	Soil
Project Name:	BLUE THUNDER 4 FEDERAL #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	NOT GIVEN		

Sample ID: T1 - 4' (H602889-05)

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	12/30/2016	ND	1.82	91.1	2.00	2.19		
Toluene*	<0.050	0.050	12/30/2016	ND	1.85	92.3	2.00	2.27		
Ethylbenzene*	<0.050	0.050	12/30/2016	ND	1.90	95.0	2.00	2.67		
Total Xylenes*	<0.150	0.150	12/30/2016	ND	5.54	92.3	6.00	2.61		
Total BTEX	<0.300	0.300	12/30/2016	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.7 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	01/04/2017	ND	416	104	400	3.77		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	12/30/2016	ND	184	92.0	200	3.90		
DRO >C10-C28	<10.0	10.0	12/30/2016	ND	190	95.0	200	1.29		

Surrogate: 1-Chlorooctane 98.8 % 35-147

Surrogate: 1-Chlorooctadecane 114 % 28-171

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report



Celey D. Keene, Lab Director/Quality Manager



101 East Marland, Hobbs, NM 88240
 (575) 393-2326 FAX (575) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

105

BILL TO

ANALYSIS REQUEST

Company Name: COG Operating LLC
 Project Manager: Dakota Neel
 Address: 2208 West Main
 City: Artesia State: NM Zip: 88210
 Phone #: 432-215-2783 Fax #:
 Project #: Project Owner:
 Project Name: BLUE THUNDER 4 FEDERAL #1
 Project Location:
 Sampler Name: Dakota Neel & Aaron Lieb
 FOR LAB USE ONLY

P.O. #:
 Company: COG Operating LLC
 Attn: Robert McNeill
 Address: 600 W Illinois
 City: Midland
 State: TX Zip: 79701
 Phone #: (432) 221-0388
 Fax #:

Lab I.D.	Sample I.D.	T1 - SURFACE	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	BTEX	TPH	Chloride
					GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :					
H1002887-		T1 - 1'									12/19/16	2:00 PM	X	X	X
		T1 - 2'									12/19/16	2:00 PM	X	X	X
		T1 - 3'									12/19/16	2:00 PM	X	X	X
		T1 - 4'									12/19/16	2:00 PM	X	X	X

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Relinquished By: *[Signature]*
 Date: 12-29-16
 Time: 12:05
 Received By: *[Signature]*
 Date:
 Time:
 Sample Condition: Cool Intact
 Yes No

Delivered By: (Circle One)
 Sampler - UPS - Bus - Other: #75 5:22
 CHECKED BY: *[Signature]*
 Phone Result: Yes No Add'l Phone #:
 Fax Result: Yes No Add'l Fax #:
 REMARKS:
 dneel2@concho.com
 rgrubbs@concho.com

FORM 0007-20
 5. Please fax written changes to 575-393-2476

Analytical Report 556710

for
Tetra Tech- Midland

Project Manager: Ike Tavaréz

COG-Blue Thunder 4 Fed 1

212C-MD-00828

11-JUL-17

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)
Xenco-San Antonio: Texas (T104704534)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)



11-JUL-17

Project Manager: **Ike Tavaréz**
Tetra Tech- Midland
4000 N. Big Spring Suite 401
Midland, TX 79705

Reference: XENCO Report No(s): **556710**
COG-Blue Thunder 4 Fed 1
Project Address: Eddy Co NM

Ike Tavaréz:

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) 556710. 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. 556710 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Julian Martinez

Project Manager

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Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



Sample Cross Reference 556710



Tetra Tech- Midland, Midland, TX

COG-Blue Thunder 4 Fed 1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SSW	S	06-28-17 00:00		556710-001
WSW	S	06-28-17 00:00		556710-002
NSW	S	06-28-17 00:00		556710-003



CASE NARRATIVE

Client Name: Tetra Tech- Midland

Project Name: COG-Blue Thunder 4 Fed 1

Project ID: 212C-MD-00828
Work Order Number(s): 556710

Report Date: 11-JUL-17
Date Received: 06/30/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None



Certificate of Analysis Summary 556710



Tetra Tech- Midland, Midland, TX

Project Name: COG-Blue Thunder 4 Fed 1

Project Id: 212C-MD-00828

Contact: Ike Tavarez

Project Location: Eddy Co NM

Date Received in Lab: Fri Jun-30-17 10:41 am

Report Date: 11-JUL-17

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	556710-001	556710-002	556710-003			
	<i>Field Id:</i>	SSW	WSW	NSW			
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL			
	<i>Sampled:</i>	Jun-28-17 00:00	Jun-28-17 00:00	Jun-28-17 00:00			
TPH By SW8015 Mod	<i>Extracted:</i>	Jul-02-17 12:00	Jul-02-17 12:00	Jul-02-17 12:00			
	<i>Analyzed:</i>	Jul-03-17 02:27	Jul-03-17 02:48	Jul-03-17 03:10			
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL			
Gasoline Range Hydrocarbons		136 15.0	1340 15.0	ND 15.0			
Diesel Range Organics		356 15.0	2410 15.0	39.0 15.0			
Oil Range Hydrocarbons		20.3 15.0	85.0 15.0	ND 15.0			
Total TPH		512 15.0	3840 15.0	39.0 15.0			

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

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

Version: 1.9%

Julian Martinez
Project Manager

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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5332 Blackberry Drive, San Antonio TX 78238
1211 W Florida Ave, Midland, TX 79701
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(432) 563-1800	(432) 563-1713
(602) 437-0330	



Form 2 - Surrogate Recoveries

Project Name: COG-Blue Thunder 4 Fed 1

Work Orders : 556710,

Project ID: 212C-MD-00828

Lab Batch #: 3021536

Sample: 556710-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/03/17 02:27

SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	100	99.7	100	70-135	
o-Terphenyl	50.1	49.9	100	70-135	

Lab Batch #: 3021536

Sample: 556710-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/03/17 02:48

SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.5	99.7	99	70-135	
o-Terphenyl	41.7	49.9	84	70-135	

Lab Batch #: 3021536

Sample: 556710-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/03/17 03:10

SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.2	99.9	98	70-135	
o-Terphenyl	48.9	50.0	98	70-135	

Lab Batch #: 3021536

Sample: 727090-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/03/17 01:23

SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	107	100	107	70-135	
o-Terphenyl	54.9	50.0	110	70-135	

Lab Batch #: 3021536

Sample: 727090-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/03/17 01:44

SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	105	100	105	70-135	
o-Terphenyl	53.2	50.0	106	70-135	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: COG-Blue Thunder 4 Fed 1

Work Orders : 556710,

Project ID: 212C-MD-00828

Lab Batch #: 3021536

Sample: 727090-1-BSD / BSD

Batch: 1 **Matrix:** Solid

Units: mg/kg

Date Analyzed: 07/03/17 02:06

SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	99.8	100	100	70-135	
o-Terphenyl	49.3	50.0	99	70-135	

Lab Batch #: 3021536

Sample: 556710-002 S / MS

Batch: 1 **Matrix:** Soil

Units: mg/kg

Date Analyzed: 07/03/17 03:31

SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	95.5	99.8	96	70-135	
o-Terphenyl	43.8	49.9	88	70-135	

Lab Batch #: 3021536

Sample: 556710-002 SD / MSD

Batch: 1 **Matrix:** Soil

Units: mg/kg

Date Analyzed: 07/03/17 03:53

SURROGATE RECOVERY STUDY					
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	92.8	99.9	93	70-135	
o-Terphenyl	45.8	50.0	92	70-135	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



BS / BSD Recoveries



Project Name: COG-Blue Thunder 4 Fed 1

Work Order #: 556710

Project ID: 212C-MD-00828

Analyst: ARM

Date Prepared: 07/02/2017

Date Analyzed: 07/03/2017

Lab Batch ID: 3021536

Sample: 727090-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod	Blank Sample Result [A]	Spike Added [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											
Gasoline Range Hydrocarbons	<15.0	1000	1030	103	1000	1010	101	2	70-135	35	
Diesel Range Organics	<15.0	1000	1030	103	1000	991	99	4	70-135	35	

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

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

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

All results are based on MDL and Validated for QC Purposes



Form 3 - MS / MSD Recoveries



Project Name: COG-Blue Thunder 4 Fed 1

Work Order # : 556710

Project ID: 212C-MD-00828

Lab Batch ID: 3021536

QC- Sample ID: 556710-002 S

Batch #: 1 **Matrix:** Soil

Date Analyzed: 07/03/2017

Date Prepared: 07/02/2017

Analyst: ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod	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
Analytes											
Gasoline Range Hydrocarbons	1340	998	2300	96	999	2210	87	4	70-135	35	
Diesel Range Organics	2410	998	3440	103	999	3260	85	5	70-135	35	

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

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

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

Analysis Request of Chain of Custody Record



TETRA TECH
 1910 N. Big Spring St.
 Midland, Texas 79705
 (432) 682-4559 • Fax (432) 682-3946

5560710

CLIENT NAME:

COG

SITE MANAGER:

Ike Tawarz

PROJECT NO.:

212C.R.D.00828

PROJECT NAME:

Blue Thunder 4 Feb 1 Eddy Comm

LAB I.D. NUMBER

DATE

TIME

MATRIX

COMP.

GRAB

SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE METHOD

BTEX 8021B

TPH 8015 MOD. TX1005 (Ext. to C35)

PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Vr Pd Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC.MS Vol. 8240/8260/624

GC.MS Semi. Vol. 8270/625

PCB's 8080/608

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

PAGE: 1 OF: 1

ANALYSIS REQUEST
 (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	PRESERVATIVE METHOD	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS	
	6/28	-	S	X	X	SSW / or	1				X			X																	
	6/28	-	S	X	X	WSW	1				X			X																	
	6/28	-	S	X	X	NSW	1				X			X																	

RELINQUISHED BY: (Signature) *Cliff Murrill* Date: 6/30/17
 Time: 1041

RECEIVED BY: (Signature) *Ike Tawarz* Date: _____
 Time: _____

RELINQUISHED BY: (Signature) _____ Date: _____
 Time: _____

RECEIVED BY: (Signature) _____ Date: _____
 Time: _____

RECEIVING LABORATORY: _____
 ADDRESS: _____ STATE: _____ PHONE: _____ ZIP: _____
 CITY: _____ DATE: _____ TIME: _____

SAMPLE CONDITION WHEN RECEIVED: _____ REMARKS: _____

Temp: 4.1 IR ID: R-8
 CF: (-0.6: -0.2°C)
 (6-23: +0.2°C)
 Corrected Temp: 3.9

SAMPLED BY: (Print & Initial) *Cliff Murrill* Date: 6/28/17
 Time: 12:00
 SAMPLE SHIPPED BY: (Circle) _____ AIRBILL #: _____
 FEDEX _____ BUS _____ OTHER: _____
 HAND DELIVERED _____ UPS _____
 TETRA TECH CONTACT PERSON: _____ Results by: _____
 RUSH Charges Authorized: Yes No

