

SITE INFORMATION

Report Type: Closure Report 1RP-4467

General Site Information:

Site:	Gunner 8 Federal Com #006H					
Company:	COG Operating LLC					
Section, Township and Range	Unit N	Sec. 8	T 26S	R 34E		
Lease Number:	API No. 30-025-41181					
County:	Lea County					
GPS:	32.05079° N			103.49169° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From NM 128 and CR 1 in Lea county, travel SOUTH on CR 1 for 10.40 mi, turn EAST onto lease road for 10 mi, turn SOUTH for 0.80 mi, turn EAST onto lease road for 0.70 mi to location.					

Release Data:

Date Released:	9/24/2016
Type Release:	Oil
Source of Contamination:	Flare
Fluid Released:	25 bbl
Fluids Recovered:	24 bbls

Official Communication:

Name:	Robert McNeil		Ike Tavaréz
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		4000 N. Big Spring
	600 W. Illinois Ave.		Ste 401
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 682-4559
Fax:	(432) 684-7137		
Email:	rmcneil@conchoresources.com		Ike.Tavaréz@tetrattech.com

Ranking Criteria

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	0
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



TETRA TECH

APPROVED

By Olivia Yu at 4:22 pm, May 03, 2017

NMOCD approves
1RP-4467 for
closure.

January 3, 2017

Ms. Kristen Lynch
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Closure Report for the COG Operating LLC., Gunner 8 Federal Com #006H, Unit N, Section 8, Township 26 South, Range 35 East, Lea County, New Mexico. 1RP-4467

Ms. Lynch:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC., (COG) to assess a spill from the Gunner 8 Federal Com #006H, Unit N, Section 8, Township 26 South, Range 35 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.05079°, W 103.49169°. 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 24, 2016, and released approximately twenty five (25) barrels of oil due to a failed dump valve sending oil to the flare. Approximately twenty-four (24) barrels of oil was recovered. The release was contained within the firewall around the flare which measured approximately 45' x 55'. The initial C-141 form is included in Appendix A.

Groundwater

No water wells were listed within Section 8 on the New Mexico Office of the State Engineer's website. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in this area is between 125' to 150' below surface. The groundwater data is shown in Appendix B.

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,

Tetra Tech

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

Tel 432.682.4559 Fax 432.682.3946 www.tetrattech.com



TETRA TECH

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

On November 30, 2016, Tetra Tech personnel were onsite to evaluate and sample the release area. A total of two sample trenches (T-1 and T-2) were installed inside the firewalls flare area to depths of 4.0' below surface for each trench. 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 laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The trench locations are shown on Figure 3.

Referring to Table 1, none of the trench samples exceeded the RRAL's for TPH, benzene or total BTEX. Trenches (T-1 and T-2) showed total TPH concentrations of 2,745 mg/kg and 4,270 mg/kg at 0-1' below surface, respectively. The total BTEX concentrations in these areas were 1.86 mg/kg (T-1) and 11.4 mg/kg (T-2) at 0-1' below surface. In addition, the benzene concentrations were <0.050 mg/kg (T-1) and 0.073 mg/kg (T-2) at 0-1' below surface.

The chlorides detected ranged from <16.0 mg/kg to 48.0 mg/kg in the both of the sample trenches. Based on the results, the chloride do not appear to an environmental concern.

Conclusion

Based on the laboratory results, all of the samples were below the RRAL's and COG requests closure of this spill issue. The final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

A handwritten signature in blue ink, appearing to read 'Ike Tavarez'.

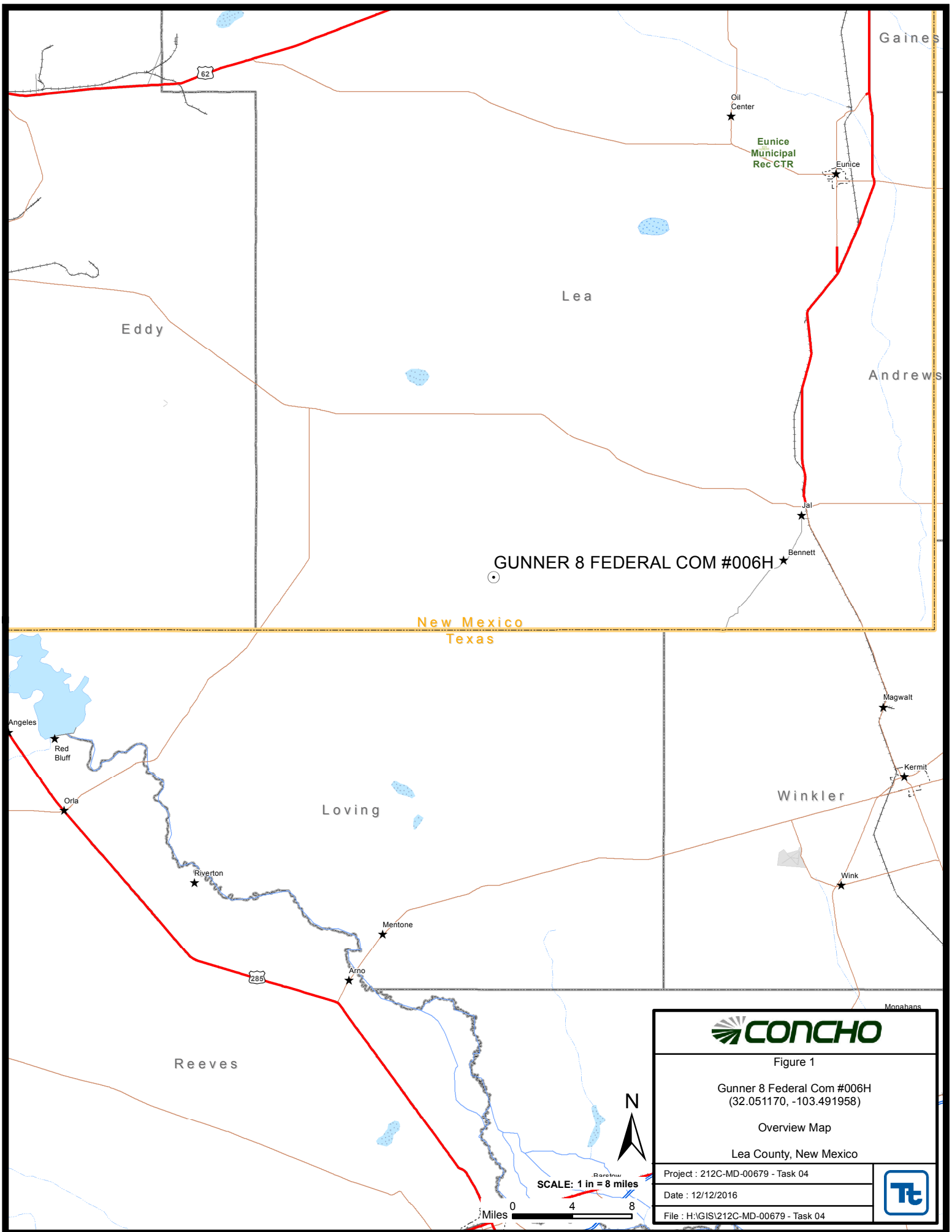
Ike Tavarez, PG
Senior Project Manager

A handwritten signature in blue ink, appearing to read 'Clair Gonzales'.

Clair Gonzales,
Geologist I

Cc: Robert McNeill – COG
Dakota Neel – COG
Shelly Tucker – BLM

Figures



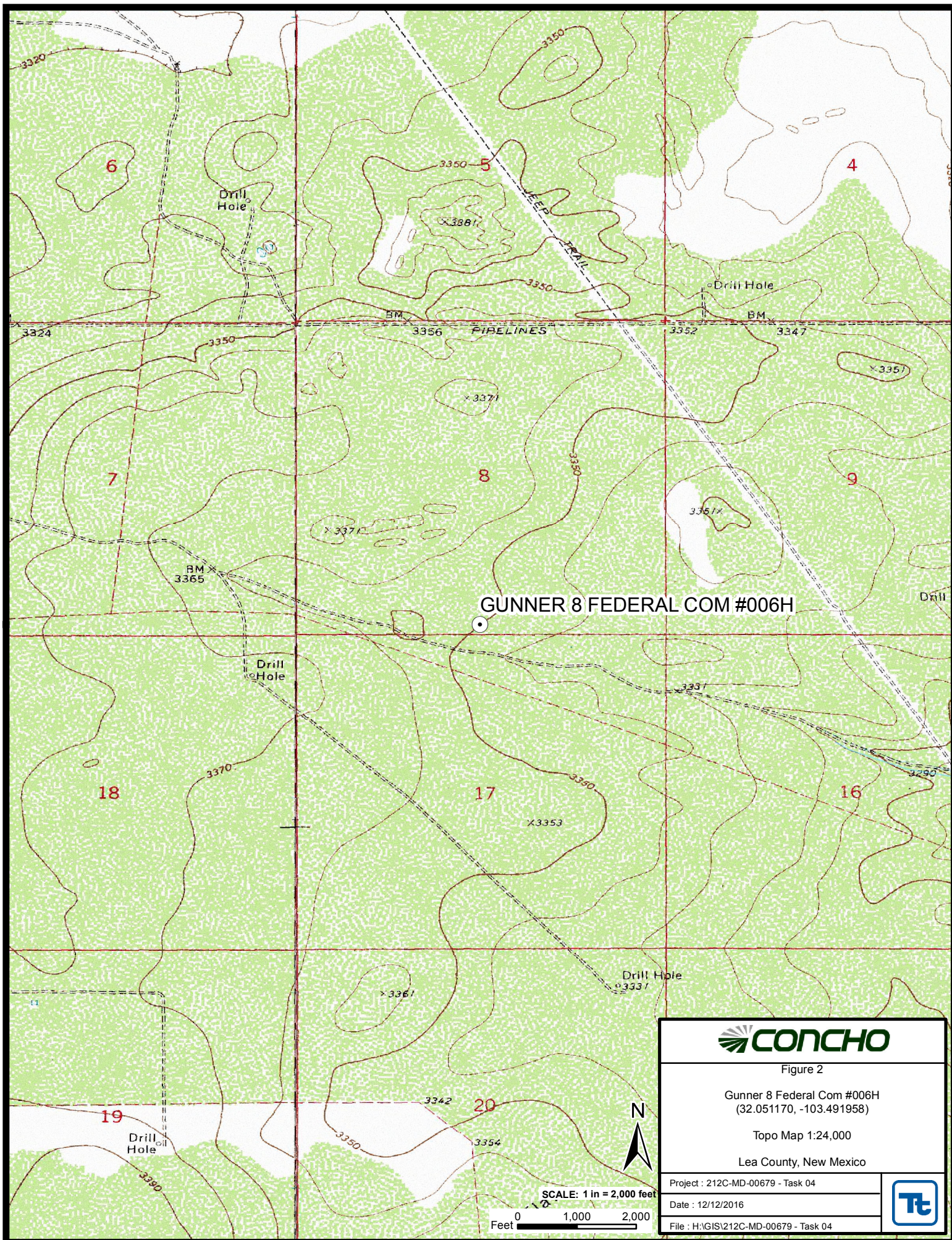


Figure 2

Gunner 8 Federal Com #006H
(32.051170, -103.491958)

Topo Map 1:24,000

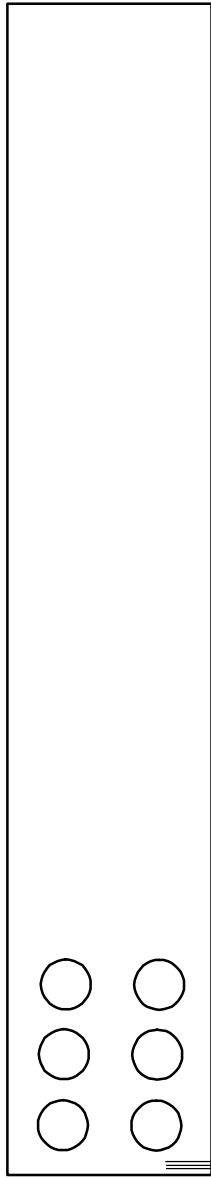
Lea County, New Mexico

Project : 212C-MD-00679 - Task 04

Date : 12/12/2016

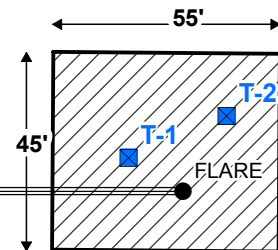
File : H:\GIS\212C-MD-00679 - Task 04







PAD

FLARE



PASTURE

EXPLANATION

-  TRENCH SAMPLE LOCATIONS
-  SPILL AREA



SCALE: 1 IN = 50 FEET

Feet 



Figure 3

Gunner 8 Federal Com #006H
(32.051170, -103.491958)

Spill Assessment Map

Lea County, New Mexico

Project : 212C-MD-00679 - Task 04

Date : 12/12/2016

File : H:\GIS\212C-MD-00679 - Task 04



Tables

Table 1
COG Operating LLC.
Gunner 8 Federal Commingle #6H
Lea 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	11/30/2016	0-1	X		14.8	2,730	2,745	<0.050	0.355	0.297	1.21	1.86	<16.0
	"	2	X		-	-	-	-	-	-	-	-	<16.0
	"	3	X		-	-	-	-	-	-	-	-	48.0
	"	4	X		-	-	-	-	-	-	-	-	48.0
T-2	11/30/2016	0-1	X		<50.0	4,270	4,270	0.073	2.29	1.87	7.21	11.4	48.0
	"	2	X		-	-	-	-	-	-	-	-	48.0
	"	3	X		-	-	-	-	-	-	-	-	32.0
	"	4	X		-	-	-	-	-	-	-	-	48.0

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

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

Form C-141
Revised August 8, 2011

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: GUNNER 8 FEDERAL COM #006H	Facility Type: Battery

Surface Owner: Federal	Mineral Owner: Federal	API No. 30-025-41181
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LOCATION OF RELEASE

Unit Letter N	Section 8	Township 26S	Range 34E	Feet from the 190	North/South Line South	Feet from the 2625	East/West Line West	County Lea
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Latitude Longitude

NATURE OF RELEASE

Type of Release: Oil	Volume of Release: 25 bbls Oil	Volume Recovered: 24 bbls Oil
Source of Release: Flare	Date and Hour of Occurrence: 9/24/2016 4:00 PM	Date and Hour of Discovery: 9/24/2016 4:15 PM
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Kristen Lynch/NMOCD & Shelly Tucker/BLM	
By Whom? Dakota Neel	Date and Hour: 9/26/2016 @ 4:19 PM	
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 occurred when a dump valve failed on the fresh water knock out sending oil to the flare. The dump valve has been replaced.

Describe Area Affected and Cleanup Action Taken.*

This release remained on location within the bermed area around the flare. Vacuum trucks were immediately dispatched to recover all standing fluid. 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: 10/18/2016	Expiration Date: 12/18/2016
E-mail Address: dneel2@concho.com	NMOCD Accepts Discrete Samples Only	
Date: September 30, 2016	Conditions of Approval: Please Notify NMOCD Prior to all sampling. Please submit Remediation Plan no later than 11/18/2016.	Attached <input type="checkbox"/> IRP 4467
Phone: 575-748-6933		

* Attach Additional Sheets If Necessary

nKL1629252081
pKL1629252712

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 Gunner 8 Federal Com #006H	Facility Type Battery

Surface Owner: Federal	Mineral Owner	API No. 30-025-41181
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LOCATION OF RELEASE

Unit Letter N	Section 8	Township 26S	Range 34E	Feet from the 190	North/South Line South	Feet from the 2625	East/West Line West	County Lea
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Latitude N 32.05079° Longitude W 103.49169 °

NATURE OF RELEASE

Type of Release: Oil	Volume of Release 25 bbls oil	Volume Recovered 24 bbls oil
Source of Release: Flare	Date and Hour of Occurrence 9/24/16 4:00 pm	Date and Hour of Discovery 9/24/16 4:15 pm
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Kristen Lynch NMOCD / Shelly Tucker BLM	
By Whom? Dakota Neel	Date and Hour 9/26/26 4:19 pm	
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

APPROVED

By Olivia Yu at 4:26 pm, May 03, 2017



Describe Cause of Problem and Remedial Action Taken.*

The release was caused by a failed dump valve on the FWKO, which sent oil to the flare. The dump valve was replaced. The release was confined within the bermed area around the flare. Vacuum trucks were immediately dispatched to recover all standing fluid.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech inspected site and collected samples to define spills extent. None of the samples collected showed impact above the RRAL's. 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 	
Title: Project Manager	Approval Date: 5/3/2017	Expiration Date: xx/xx/xxxx
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 12/9/16 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

1RP-4467

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Gunner 8 Federal Com #006H
Lea County, New Mexico

25 South			33 East		
6	5	4	3	172	2
7	8	9	10	11	12
18	17	16	15	140	200
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
257					

25 South			34 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
31	32	33	34	35	36

25 South			35 East		
6	5	4	3	108	2
7	165	9	10	11	12
18	17	16	15	14	13
230	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

26 South			33 East		
6	5	4	3	175	2
7	8	9	10	11	12
18	17	16	15	145	200
19	20	21	22	135	24
30	29	28	27	26	25
31	32	33	34	35	36

26 South			34 East		
6	5	4	3	2	1
160	8	9	10	11	12
7	SITE				
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

26 South			35 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
31	32	33	34	35	36

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



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	POD Sub-Code	basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
C 02291	CUB	LE		1	1	2	06	26S	34E	640825	3550140*	220	160	60
C 02292 POD1	C	LE		4	1	2	06	26S	34E	640992	3549987	200	140	60
C 03441 POD1	C	LE		4	1	2	06	26S	34E	640971	3550039	250		
C 03442 POD1	C	LE		4	1	2	06	26S	34E	641056	3550028	251		

Average Depth to Water: **150 feet**

Minimum Depth: **140 feet**

Maximum Depth: **160 feet**

Record Count: 4

PLSS Search:

Township: 26S

Range: 34E

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

Appendix C



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

December 06, 2016

IKE TAVAREZ

TETRA TECH

1910 N. BIG SPRING STREET

MIDLAND, TX 79705

RE: COG / GUNNER 8 FED COM #6H

Enclosed are the results of analyses for samples received by the laboratory on 12/01/16 14:15.

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/ga/lab_accred_certif.html.

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

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

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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,

Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:TETRA TECH
1910 N. BIG SPRING STREET
MIDLAND TX, 79705Project: COG / GUNNER 8 FED COM #6H
Project Number: 212C-MD-00679.04
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946Reported:
06-Dec-16 15:36

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
T-1 0-1	H602690-01	Soil	30-Nov-16 00:00	01-Dec-16 14:15
T-1 2	H602690-02	Soil	30-Nov-16 00:00	01-Dec-16 14:15
T-1 3	H602690-03	Soil	30-Nov-16 00:00	01-Dec-16 14:15
T-1 4	H602690-04	Soil	30-Nov-16 00:00	01-Dec-16 14:15
T-2 0-1	H602690-05	Soil	30-Nov-16 00:00	01-Dec-16 14:15
T-2 2	H602690-06	Soil	30-Nov-16 00:00	01-Dec-16 14:15
T-2 3	H602690-07	Soil	30-Nov-16 00:00	01-Dec-16 14:15
T-2 4	H602690-08	Soil	30-Nov-16 00:00	01-Dec-16 14:15

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 or 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 damage 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:

TETRA TECH
1910 N. BIG SPRING STREET
MIDLAND TX, 79705

Project: COG / GUNNER 8 FED COM #6H
Project Number: 212C-MD-00679.04
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
06-Dec-16 15:36

T-1 0-1 H602690-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	<16.0		16.0	mg/kg	4	6120208	AC	02-Dec-16	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Toluene*	0.355		0.050	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Ethylbenzene*	0.297		0.050	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Total Xylenes*	1.21		0.150	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Total BTEX	1.86		0.300	mg/kg	50	6120501	MS	05-Dec-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 122 % 73.6-140 6120501 MS 05-Dec-16 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	14.8		10.0	mg/kg	1	6120204	MS	02-Dec-16	8015B	
DRO >C10-C28	2730		10.0	mg/kg	1	6120204	MS	02-Dec-16	8015B	

Surrogate: 1-Chlorooctane 74.6 % 35-147 6120204 MS 02-Dec-16 8015B

Surrogate: 1-Chlorooctadecane 95.7 % 28-171 6120204 MS 02-Dec-16 8015B

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 or 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 damage 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:TETRA TECH
1910 N. BIG SPRING STREET
MIDLAND TX, 79705Project: COG / GUNNER 8 FED COM #6H
Project Number: 212C-MD-00679.04
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946Reported:
06-Dec-16 15:36**T-1 2****H602690-02 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	<16.0		16.0	mg/kg	4	6120208	AC	02-Dec-16	4500-Cl-B	
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Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:TETRA TECH
1910 N. BIG SPRING STREET
MIDLAND TX, 79705Project: COG / GUNNER 8 FED COM #6H
Project Number: 212C-MD-00679.04
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946Reported:
06-Dec-16 15:36**T-1 3****H602690-03 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	48.0		16.0	mg/kg	4	6120208	AC	02-Dec-16	4500-Cl-B	
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:TETRA TECH
1910 N. BIG SPRING STREET
MIDLAND TX, 79705Project: COG / GUNNER 8 FED COM #6H
Project Number: 212C-MD-00679.04
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946Reported:
06-Dec-16 15:36**T-1 4****H602690-04 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	48.0		16.0	mg/kg	4	6120208	AC	02-Dec-16	4500-Cl-B	
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TETRA TECH
1910 N. BIG SPRING STREET
MIDLAND TX, 79705

Project: COG / GUNNER 8 FED COM #6H
Project Number: 212C-MD-00679.04
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
06-Dec-16 15:36

T-2 0-1

H602690-05 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	48.0		16.0	mg/kg	4	6120208	AC	02-Dec-16	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	0.073		0.050	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Toluene*	2.29		0.050	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Ethylbenzene*	1.87		0.050	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Total Xylenes*	7.21		0.150	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Total BTEX	11.4		0.300	mg/kg	50	6120501	MS	05-Dec-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			126 %		73.6-140	6120501	MS	05-Dec-16	8021B	
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<50.0		50.0	mg/kg	5	6120204	MS	05-Dec-16	8015B	
DRO >C10-C28	4270		50.0	mg/kg	5	6120204	MS	05-Dec-16	8015B	

Surrogate: 1-Chlorooctane			79.3 %		35-147	6120204	MS	05-Dec-16	8015B	
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Surrogate: 1-Chlorooctadecane			140 %		28-171	6120204	MS	05-Dec-16	8015B	
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:TETRA TECH
1910 N. BIG SPRING STREET
MIDLAND TX, 79705Project: COG / GUNNER 8 FED COM #6H
Project Number: 212C-MD-00679.04
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946Reported:
06-Dec-16 15:36**T-2 2****H602690-06 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	48.0		16.0	mg/kg	4	6120208	AC	05-Dec-16	4500-Cl-B	
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:TETRA TECH
1910 N. BIG SPRING STREET
MIDLAND TX, 79705Project: COG / GUNNER 8 FED COM #6H
Project Number: 212C-MD-00679.04
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946Reported:
06-Dec-16 15:36**T-2 3****H602690-07 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	32.0		16.0	mg/kg	4	6120208	AC	05-Dec-16	4500-Cl-B	
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:TETRA TECH
1910 N. BIG SPRING STREET
MIDLAND TX, 79705Project: COG / GUNNER 8 FED COM #6H
Project Number: 212C-MD-00679.04
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946Reported:
06-Dec-16 15:36**T-2 4****H602690-08 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	48.0		16.0	mg/kg	4	6120208	AC	05-Dec-16	4500-Cl-B	
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 TETRA TECH
 1910 N. BIG SPRING STREET
 MIDLAND TX, 79705

 Project: COG / GUNNER 8 FED COM #6H
 Project Number: 212C-MD-00679.04
 Project Manager: IKE TAVAREZ
 Fax To: (432) 682-3946

 Reported:
 06-Dec-16 15:36

Inorganic Compounds - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Batch 6120208 - 1:4 DI Water									
Blank (6120208-BLK1)				Prepared & Analyzed: 02-Dec-16					
Chloride	ND	16.0	mg/kg						
LCS (6120208-BS1)				Prepared & Analyzed: 02-Dec-16					
Chloride	400	16.0	mg/kg	400	100	80-120			
LCS Dup (6120208-BSD1)				Prepared & Analyzed: 02-Dec-16					
Chloride	400	16.0	mg/kg	400	100	80-120	0.00	20	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TETRA TECH
1910 N. BIG SPRING STREET
MIDLAND TX, 79705

Project: COG / GUNNER 8 FED COM #6H
Project Number: 212C-MD-00679.04
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
06-Dec-16 15:36

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 6120501 - Volatiles

Blank (6120501-BLK1)

Prepared & Analyzed: 02-Dec-16

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.0575		mg/kg	0.0500		115	73.6-140			

LCS (6120501-BS1)

Prepared & Analyzed: 02-Dec-16

Benzene	2.02	0.050	mg/kg	2.00		101	82.6-122			
Toluene	2.06	0.050	mg/kg	2.00		103	72.9-122			
Ethylbenzene	2.01	0.050	mg/kg	2.00		101	65.4-131			
Total Xylenes	6.09	0.150	mg/kg	6.00		102	73.8-125			
Surrogate: 4-Bromofluorobenzene (PID)	0.0580		mg/kg	0.0500		116	73.6-140			

LCS Dup (6120501-BSD1)

Prepared & Analyzed: 02-Dec-16

Benzene	2.08	0.050	mg/kg	2.00		104	82.6-122	3.18	8.23	
Toluene	2.13	0.050	mg/kg	2.00		106	72.9-122	3.09	8.71	
Ethylbenzene	2.07	0.050	mg/kg	2.00		104	65.4-131	3.08	9.46	
Total Xylenes	6.26	0.150	mg/kg	6.00		104	73.8-125	2.75	8.66	
Surrogate: 4-Bromofluorobenzene (PID)	0.0578		mg/kg	0.0500		116	73.6-140			

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TETRA TECH
1910 N. BIG SPRING STREET
MIDLAND TX, 79705

Project: COG / GUNNER 8 FED COM #6H
Project Number: 212C-MD-00679.04
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
06-Dec-16 15:36

Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 6120204 - General Prep - Organics

Blank (6120204-BLK1)

Prepared & Analyzed: 02-Dec-16

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C35	ND	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	39.0		mg/kg	50.0		78.1	35-147			
Surrogate: 1-Chlorooctadecane	39.4		mg/kg	50.0		78.7	28-171			

LCS (6120204-BS1)

Prepared & Analyzed: 02-Dec-16

GRO C6-C10	182	10.0	mg/kg	200		90.9	76.7-115			
DRO >C10-C28	192	10.0	mg/kg	200		96.0	78.3-122			
Total TPH C6-C28	374	10.0	mg/kg	400		93.5	79.8-117			
Surrogate: 1-Chlorooctane	39.1		mg/kg	50.0		78.3	35-147			
Surrogate: 1-Chlorooctadecane	39.8		mg/kg	50.0		79.7	28-171			

LCS Dup (6120204-BSD1)

Prepared & Analyzed: 02-Dec-16

GRO C6-C10	185	10.0	mg/kg	200		92.6	76.7-115	1.79	9.42	
DRO >C10-C28	197	10.0	mg/kg	200		98.4	78.3-122	2.43	13.2	
Total TPH C6-C28	382	10.0	mg/kg	400		95.5	79.8-117	2.12	10.7	
Surrogate: 1-Chlorooctane	40.0		mg/kg	50.0		80.0	35-147			
Surrogate: 1-Chlorooctadecane	40.8		mg/kg	50.0		81.6	28-171			

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

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

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