

SITE INFORMATION

Report Type: Closure Report 1RP-4492

General Site Information:

Site:	Blue Jay Federal #001H					
Company:	COG Operating LLC					
Section, Township and Range	Unit O	Sec. 18	T 20S	R 35E		
Lease Number:	API No. 30-025-42338					
County:	Lea County					
GPS:	32.56651° N			103.49514° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From HWY 176 & Co Rd 27A in Lea County, travel NORTH on CR 27A for 2.30 mi, turn EAST onto lease road for 1.65 mi, turn NORTH for 0.65 mi to location on west side of the road.					

Release Data:

Date Released:	10/21/2016
Type Release:	Oil & Produced Water
Source of Contamination:	Damaged dump valve
Fluid Released:	197 bbls oil & 169 bbls water
Fluids Recovered:	182 bbls oil & 159 bbls water

Official Communication:

Name:	Robert McNeil	Ike Tavarez
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.Tavarez@tetrattech.com

Ranking Criteria

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

Acceptable Soil RRAL (mg/kg)		
Benzene	Total BTEX	TPH
10	50	100



September 25, 2017

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

Re: Closure Report for the COG Operating LLC., Blue Jay Federal #001H, Unit O, Section 18, Township 20 South, Range 35 East, Lea County, New Mexico. 1RP-4492

Ms. Yu:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC., (COG) to assess a spill from the Blue Jay Federal #001H, Unit O, Section 18, Township 20 South, Range 35 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.566561°, W 103.49514°. 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 October 21, 2016, and released approximately one hundred and ninety-seven (197) barrels of oil and one hundred and sixty nine (169) barrels of produced water due to a damaged dump valve. Approximately one hundred and eighty-two (182) barrels of oil and one hundred and fifty-nine (159) barrels of produced water were recovered. The spill occurred inside of the lined facility which breached the metal containment and the fluid migrated onto the pad, covering an area measuring approximately 60' x 80' on the pad. The initial C-141 form is included in Appendix A.

Groundwater

No water wells were listed within Section 18 on the New Mexico Office of the State Engineer database. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in this area is between 25' to 50' 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 100 mg/kg.

Soil Assessment and Analytical Results

On December 1, 2016, Tetra Tech personnel were onsite to evaluate and sample the release area. Two sample trenches (T-1 and T-2) were installed on the pad to assess the impacted soils. 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 results of the sampling 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. Both areas showed total TPH and benzene concentrations below the laboratory reporting limits. Total BTEX concentrations of 0.432 mg/kg (T-1) and <0.300 mg/kg (T-2) were detected at 0-1' below surface. Additionally, the areas of trenches (T-1 and T-2) did not show a significant chloride impact with a concentration high of 32.0 mg/kg.

Additional Sampling

On July 6, 2017, Tetra Tech personnel were onsite to attain confirmation samples for further vertical delineation, as requested by the NMOCD. Three (3) trenches, T-1 (T-1), T-2, and T-3 (T-2), were installed in the release area. The areas of trenches (T-1 and T-3) were sampled at 8.0' and 10.0' and the area of trench (T-2) was sampled at 8.0' and 12.0' below surface. The 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 sampling results are summarized in Table 1. The trench locations are shown in Figure 3A.



Referring to Table 1, none the samples collected in the areas of trenches (T-1, T-2, and T-3) showed benzene or total BTEX concentrations above the laboratory reporting limits. The area of trench (T-1) showed a total TPH concentration of 99.9 mg/kg at 0'-1' below surface, which declined with depth and showed concentrations of <15.0 mg/kg at 8.0' and 10.0' below surface. The area of trench (T-3) did not show any TPH concentrations above the laboratory reporting limits. However, the area of trench (T-2) showed an elevated TPH concentration of 146 mg/kg at 0'-1' below surface, which declined with depth to 15.0 mg/kg at 2.0', and showed a bottom trench concentration of <15.0 mg/kg at 12.0' below surface.

The areas of trenches (T-1, T-2 and T-3) did not show a significant chloride impact to the soils with chloride concentrations ranging from 5.95 mg/kg (T-2 at 12.0') and 132 mg/kg (T-2 at 0-1').

Conclusion

Based on the laboratory results, which show minimal TPH concentrations to the surface soils in the area of trench (T-3), COG requests closure of this spill issue. However, COG will perform a surficial scrape and work the area of trench (T-3) in order to assist the degradation of the hydrocarbons. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call at (432) 682-4559.

Respectfully submitted,
TETRA TECH

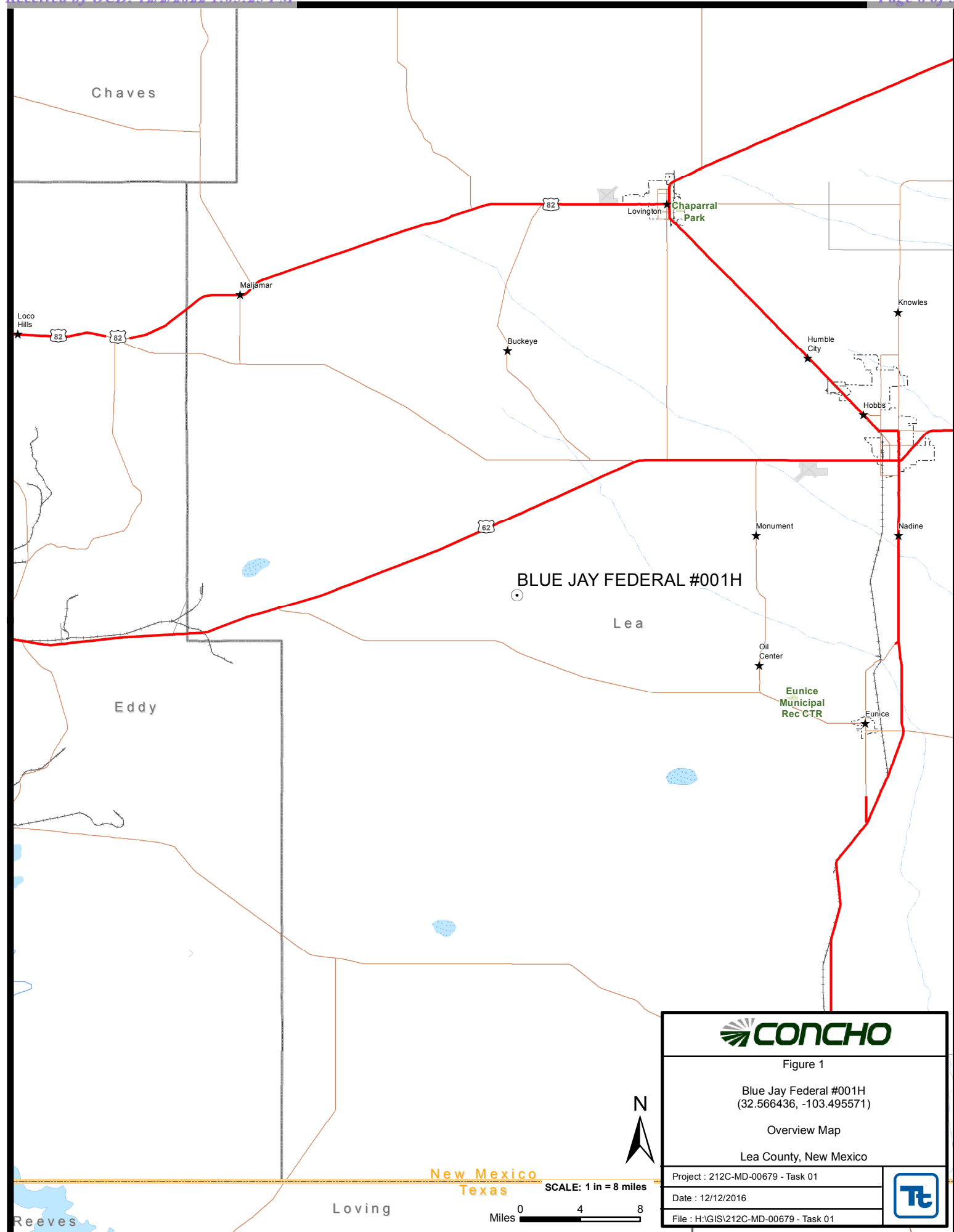
A handwritten signature in blue ink, appearing to read 'Ike Tavarez'.

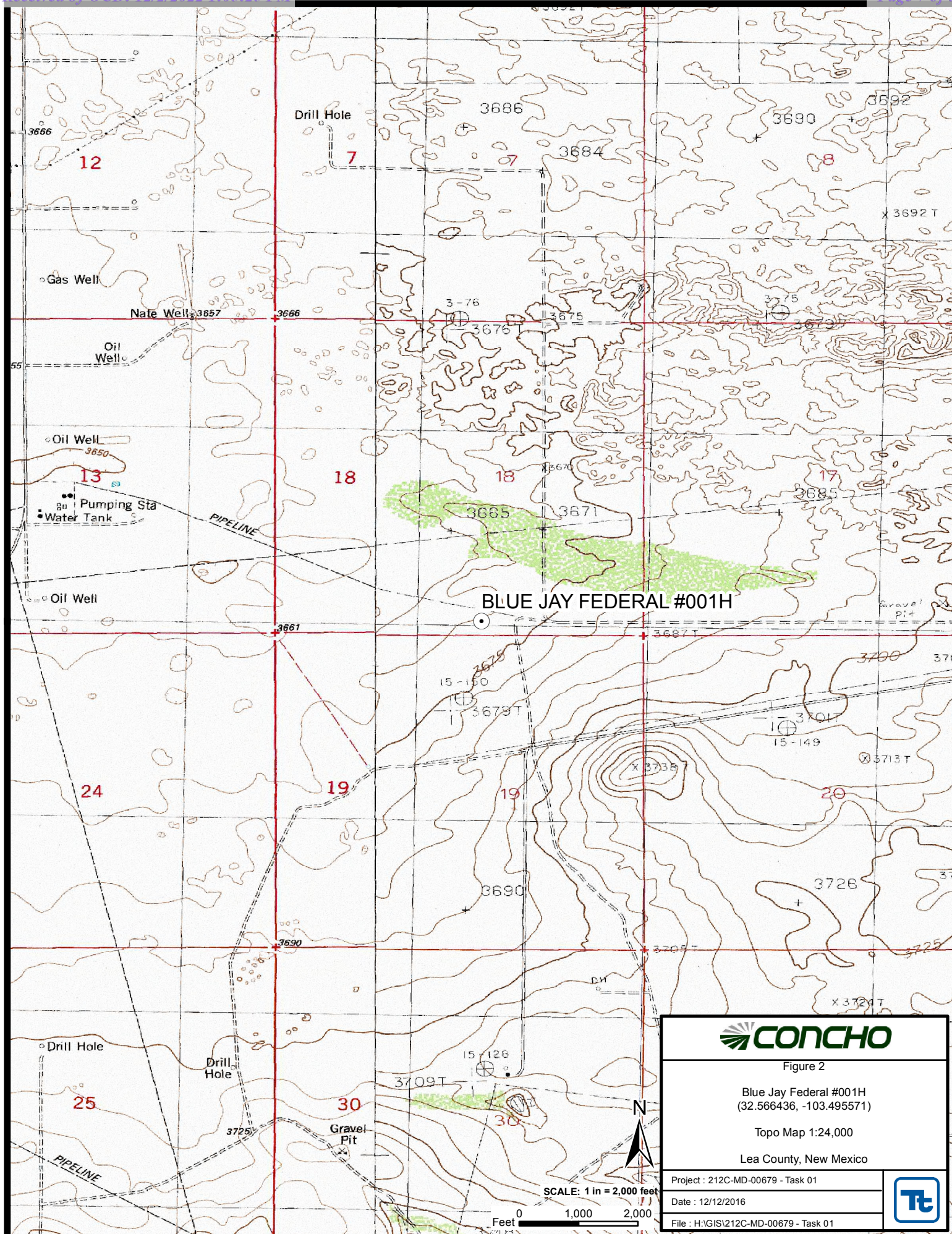
Ike Tavarez, PG
Senior Project Manager

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

Clair Gonzales,
Geologist I

Figures







Tables

Table 1
COG Operating LLC.
Blue Jay Federal #1H
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						
Trench 1	12/1/2016	0-1	X		<10.0	<10.0	<20.0	<0.050	0.086	0.051	0.295	0.432	<16.0
	"	2	X		-	-	-	-	-	-	-	-	32.0
	"	3	X		-	-	-	-	-	-	-	-	32.0
	"	4	X		-	-	-	-	-	-	-	-	16.0
	7/6/2017	0-1	X		<15.0	99.9	99.9	<0.00196	<0.00196	<0.00196	<0.00196	<0.00196	6.61
	"	8	X		<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	6.88
	"	10	X		<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	8.00
Trench 2	12/1/2016	0-1	X		<10.0	<10.0	<20.0	<0.050	<0.050	<0.050	<0.150	<0.300	<16.0
	"	2	X		-	-	-	-	-	-	-	-	<16.0
	"	3	X		-	-	-	-	-	-	-	-	<16.0
	"	4	X		-	-	-	-	-	-	-	-	<16.0
Trench 3	7/6/2017	0-1	X		<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	32.7
	"	8	X		<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	13.9
	"	10	X		<15.0	<15.0	<15.0	<0.00197	<0.00197	<0.00197	<0.00197	<0.00197	25.2
Trench 2	7/6/2017	0-1	X		<15.0	146	146	<0.00197	<0.00197	<0.00197	<0.00197	<0.00197	132
	"	2	X		<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	8.22
	"	8	X		<14.9	<14.9	<14.9	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	6.63
	"	12	X		<15.0	<15.0	<15.0	<0.00196	<0.00196	<0.00196	<0.00196	<0.00196	5.95

212C-MD-00679.01
Cardinal Labs
Xenco Labs

Photos

COG
Blue Jay Federal #1H
Lea Count, New Mexico



View South East, Trench #1



View North East, Trench #1

COG
Blue Jay Federal #1H
Lea Count, New Mexico



View North, Trench #2



View North, Trench #2

COG
Blue Jay Federal #1H
Lea Count, New Mexico



View North, Trench #3



View East, Trench #3

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: Blue Jay Federal #001H	Facility Type: Battery

Surface Owner: Federal	Mineral Owner: Federal	API No. 30-025-42338
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LOCATION OF RELEASE

Unit Letter O	Section 18	Township 20S	Range 35E	Feet from the 190	North/South Line South	Feet from the 2310	East/West Line East	County Lea
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32.5664367366954,-103.495571226436

NATURE OF RELEASE

Type of Release: Oil and Produced Water	Volume of Release: 197 bbls of Oil ; 169 bbls of PW	Volume Recovered: 182 bbls of Oil ; 159 bbls of PW
Source of Release: Dump Valve	Date and Hour of Occurrence: 10/21/2016 unknown	Date and Hour of Discovery: 10/21/2016 3:00 AM
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?	Date and Hour: 10/21/2016 @ 1:42 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.*

The release was caused by a damaged dump valve on a FWKO. The dump valve was removed to determine cause of damage and a new dump valve was installed. Vacuum trucks were immediately dispatched to recover all standing fluid from the well pad and the lined containment. The impacted area of the well pad was lightly scraped to remove the surface contamination and the impacted soil was hauled off.

Describe Area Affected and Cleanup Action Taken.*

This release occurred within the falcon lined containment and on a portion of the well pad directly in front of the containment walls. There was no impact to the pasture. 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: 12/02/2022	Expiration Date:
E-mail Address: dneel2@concho.com		Conditions of Approval:	Attached <input type="checkbox"/>
Date: 10/28/2016 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 Jay Federal #001H	Facility Type Well		
Surface Owner: Federal Mineral Owner		API No. 30-025-42338	

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	18	20S	35E	190	South	2310	East	Lea

Latitude N 32.56644° Longitude W 103.49557°

NATURE OF RELEASE

Type of Release: Oil & Produced Water	Volume of Release 197 bbls oil & 169 bbls produced water	Volume Recovered 182 bbls oil & 159 bbls produced water
Source of Release: Dump valve	Date and Hour of Occurrence 10/21/16 unknown	Date and Hour of Discovery 10/21/16 3:00 am
Was Immediate Notice Given? Yes No Not Required	If YES, To Whom? Kristen Lynch NMOCD / Shelly Tucker BLM	
By Whom?	Date and Hour 10/21/16 1:42 pm.	
Was a Watercourse Reached? Yes 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 release was caused by a damaged dump valve on a FWKO. The dump valve was removed to determine the cause of damage and a new dump valve was installed. Vacuum trucks were immediately dispatched to recover all standing fluid from the well pad and the lined containment. The impacted area of the well pad was lightly scraped to remove the surface contamination and the impacted soil was hauled for proper disposal.		
Describe Area Affected and Cleanup Action Taken.* Tetra Tech inspected site and collected samples to define spills extent. Minimal surficial impact in one area will be scraped and blended to assist the degradation of the hydrocarbons. 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:	
Date: 09/25/17 Phone: (432) 682-4559	Attached	

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Blue Jay Federal #001H
Lea County, New Mexico

19 South			34 East		
6	5	4	3	2	1
244				100	
7	8	9	29	11	12
		28.6		123	60
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
65					28

19 South			35 East		
6	5	4	3	2	1
58	63	70			63
7	8	9	20	11	12
51	18		53		
18	17	26	16	15	14
	30		26	27	27
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
					20

19 South			36 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

20 South			34 East		
6	5	4	125	3	2
7	8	9	10	11	12
18	17	128	16	15	14
	140			150	
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	82	36
					270

20 South			35 East		
6	5	4	3	2	1
56	64				
64					
7	8	9	10	11	12
18	17	16	15	14	13
SITE					49
19	20	21	22	23	24
30	29	28	27	26	25
31	65	32	33	34	35
			89		36

20 South			36 East		
6	5	4	3	2	1
32	28			92	40
7	8	9	10	11	12
	33	38		32	29
18	17	16	15	14	13
34				45	
19	20	21	22	23	24
30	29	28	27	26	106
31	32	33	34	35	36
	170				122

21 South			33 East		
6	5	4	3	2	1
				79	
7	8	9	10	11	12
				107	
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	179	33	180	36

21 South			34 East		
6	5	4	3	2	1
		95			
7	8	120	9	10	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	140	27	26
31	32	33	34	35	36

21 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
L 04116 S	L	LE		1	2	02	20S	35E		647710	3608881*	55	50	5
L 04157	L	LE		3	3	06	20S	35E		640483	3607561*	70	64	6
L 04158	L	LE		2	4	05	20S	35E		643290	3608008*	70	64	6
L 14097 POD1	L	LE		1	3	3	06	20S	35E	638740	3718500	61	0	61

Average Depth to Water: **44 feet**

Minimum Depth: **0 feet**

Maximum Depth: **64 feet**

Record Count: 4

PLSS Search:

Township: 20S

Range: 35E

*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.

12/8/16 1:33 PM

Page 1 of 1

WATER COLUMN/ AVERAGE
DEPTH TO WATER

Appendix C

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

December 07, 2016

IKE TAVAREZ

TETRA TECH

1910 N. BIG SPRING STREET

MIDLAND, TX 79705

RE: BLUE JAY FEDERAL #1H

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



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

Analytical Results For:

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

Project: BLUE JAY FEDERAL #1H
Project Number: 212C-MD-00679.01
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
07-Dec-16 11:25

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
T-1 0-1	H602693-01	Soil	01-Dec-16 00:00	01-Dec-16 14:15
T-1 2	H602693-02	Soil	01-Dec-16 00:00	01-Dec-16 14:15
T-1 3	H602693-03	Soil	01-Dec-16 00:00	01-Dec-16 14:15
T-1 4	H602693-04	Soil	01-Dec-16 00:00	01-Dec-16 14:15
T-2 0-1	H602693-05	Soil	01-Dec-16 00:00	01-Dec-16 14:15
T-2 2	H602693-06	Soil	01-Dec-16 00:00	01-Dec-16 14:15
T-2 3	H602693-07	Soil	01-Dec-16 00:00	01-Dec-16 14:15
T-2 4	H602693-08	Soil	01-Dec-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



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

Analytical Results For:

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

Project: BLUE JAY FEDERAL #1H
Project Number: 212C-MD-00679.01
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
07-Dec-16 11:25

T-1 0-1
H602693-01 (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	6120504	AC	05-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*	0.086		0.050	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Ethylbenzene*	0.051		0.050	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Total Xylenes*	0.295		0.150	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Total BTEX	0.432		0.300	mg/kg	50	6120501	MS	05-Dec-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 119 % 73.6-140 6120501 MS 05-Dec-16 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6120204	MS	03-Dec-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6120204	MS	03-Dec-16	8015B	

Surrogate: 1-Chlorooctane 76.7 % 35-147 6120204 MS 03-Dec-16 8015B

Surrogate: 1-Chlorooctadecane 78.1 % 28-171 6120204 MS 03-Dec-16 8015B

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Project: BLUE JAY FEDERAL #1H
Project Number: 212C-MD-00679.01
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
07-Dec-16 11:25

T-1 2
H602693-02 (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	6120504	AC	05-Dec-16	4500-Cl-B	
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Analytical Results For:

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

Project: BLUE JAY FEDERAL #1H
Project Number: 212C-MD-00679.01
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
07-Dec-16 11:25

T-1 3
H602693-03 (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	6120504	AC	05-Dec-16	4500-Cl-B	
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Analytical Results For:

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

Project: BLUE JAY FEDERAL #1H
Project Number: 212C-MD-00679.01
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
07-Dec-16 11:25

T-1 4
H602693-04 (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	6120504	AC	05-Dec-16	4500-Cl-B	
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Analytical Results For:

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

Project: BLUE JAY FEDERAL #1H
Project Number: 212C-MD-00679.01
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
07-Dec-16 11:25

T-2 0-1
H602693-05 (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	6120504	AC	05-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*	<0.050		0.050	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6120501	MS	05-Dec-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			118 %		73.6-140	6120501	MS	05-Dec-16	8021B	
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6120204	MS	03-Dec-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6120204	MS	03-Dec-16	8015B	
Surrogate: 1-Chlorooctane			74.6 %		35-147	6120204	MS	03-Dec-16	8015B	
Surrogate: 1-Chlorooctadecane			73.3 %		28-171	6120204	MS	03-Dec-16	8015B	

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Analytical Results For:

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

Project: BLUE JAY FEDERAL #1H
Project Number: 212C-MD-00679.01
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
07-Dec-16 11:25

T-2 2
H602693-06 (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	6120504	AC	05-Dec-16	4500-Cl-B	
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Analytical Results For:

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

Project: BLUE JAY FEDERAL #1H
Project Number: 212C-MD-00679.01
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
07-Dec-16 11:25

T-2 3
H602693-07 (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	6120504	AC	05-Dec-16	4500-Cl-B	
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Analytical Results For:

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

Project: BLUE JAY FEDERAL #1H
Project Number: 212C-MD-00679.01
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
07-Dec-16 11:25

T-2 4
H602693-08 (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	6120504	AC	05-Dec-16	4500-Cl-B	
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Analytical Results For:

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

Project: BLUE JAY FEDERAL #1H
Project Number: 212C-MD-00679.01
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
07-Dec-16 11:25

Inorganic Compounds - Quality Control**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Batch 6120504 - 1:4 DI Water									
Blank (6120504-BLK1)					Prepared & Analyzed: 05-Dec-16				
Chloride	ND	16.0	mg/kg						
LCS (6120504-BS1)					Prepared & Analyzed: 05-Dec-16				
Chloride	416	16.0	mg/kg	400	104	80-120			
LCS Dup (6120504-BSD1)					Prepared & Analyzed: 05-Dec-16				
Chloride	400	16.0	mg/kg	400	100	80-120	3.92	20	

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Analytical Results For:

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

Project: BLUE JAY FEDERAL #1H
Project Number: 212C-MD-00679.01
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
07-Dec-16 11:25

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



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Analytical Results For:

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

Project: BLUE JAY FEDERAL #1H
Project Number: 212C-MD-00679.01
Project Manager: IKE TAVAREZ
Fax To: (432) 682-3946

Reported:
07-Dec-16 11:25

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
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

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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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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A handwritten signature in cursive script, appearing to read "Celey D. Keene".

Celey D. Keene, Lab Director/Quality Manager

Analysis Request of Chain of Custody Record



TETRA TECH

1910 N. Big Spring St.
Midland, Texas 79705

(432) 682-4559 • Fax (432) 682-3946

CLIENT NAME:

COG

SITE MANAGER:

He Tontate

PROJECT NO.:

225mo-001679.61

PROJECT NAME:

Blue Jay Federal #11H

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.)

Page 15 of 15

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	PRESERVATIVE METHOD	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	
1	12/1					T-1 D-1	2				X			X											X					
2	12/1					T-2	2							X											X					
3	12/1					T-2	3							X											X					
4	12/1					T-2	4							X											X					
5	12/1					T-2	0-1							X											X					
6	12/1					T-2	2							X											X					
7	12/1					T-2	3							X											X					
8	12/1					T-2	4							X											X					
9	12/1					T-2	4							X											X					

Analytical Report 557413

for
Tetra Tech- Midland

Project Manager: Ike Tavaréz

COG-Blue Jay Federal #001H

212C-MD-00679.01

19-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)



19-JUL-17

Project Manager: **Ike Tavaréz**

Tetra Tech- Midland

4000 N. Big Spring Suite 401

Midland, TX 79705

Reference: XENCO Report No(s): **557413**

COG-Blue Jay Federal #001H

Project Address: Lea County 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) 557413. 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. 557413 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,

A handwritten signature in black ink, appearing to read 'Kelsey Brooks', written over a horizontal line.

Kelsey Brooks

Project Manager

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**Sample Cross Reference 557413****Tetra Tech- Midland, Midland, TX**

COG-Blue Jay Federal #001H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Trench #1 (0-1')	S	07-06-17 00:00		557413-001
Trench #1 (8')	S	07-06-17 00:00		557413-002
Trench #1 (10')	S	07-06-17 00:00		557413-003
Trench #2 (0-1')	S	07-06-17 00:00		557413-004
Trench #2 (2')	S	07-06-17 00:00		557413-005
Trench #2 (8')	S	07-06-17 00:00		557413-006
Trench #2 (12')	S	07-06-17 00:00		557413-007
Trench #3 (0-1')	S	07-06-17 00:00		557413-008
Trench #3 (8')	S	07-06-17 00:00		557413-009
Trench #3 (10')	S	07-06-17 00:00		557413-010



CASE NARRATIVE

Client Name: Tetra Tech- Midland

Project Name: COG-Blue Jay Federal #001H

Project ID: 212C-MD-00679.01
Work Order Number(s): 557413

Report Date: 19-JUL-17
Date Received: 07/12/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3022274 BTEX by EPA 8021B

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



Certificate of Analysis Summary 557413

Tetra Tech- Midland, Midland, TX

Project Name: COG-Blue Jay Federal #001H



Project Id: 212C-MD-00679.01
Contact: Ike Tavarez
Project Location: Lea County NM

Date Received in Lab: Wed Jul-12-17 03:38 pm
Report Date: 19-JUL-17
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	557413-001	557413-002	557413-003	557413-004	557413-005	557413-006
	<i>Field Id:</i>	Trench #1 (0-1')	Trench #1 (8')	Trench #1 (10')	Trench #2 (0-1')	Trench #2 (2')	Trench #2 (8')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jul-06-17 00:00	Jul-06-17 00:00	Jul-06-17 00:00	Jul-06-17 00:00	Jul-06-17 00:00	Jul-06-17 00:00
BTEX by EPA 8021B	<i>Extracted:</i>	Jul-13-17 17:30	Jul-13-17 17:30	Jul-13-17 17:30	Jul-13-17 17:30	Jul-13-17 17:30	Jul-13-17 17:30
	<i>Analyzed:</i>	Jul-14-17 11:31	Jul-14-17 11:47	Jul-14-17 12:03	Jul-14-17 12:20	Jul-14-17 12:36	Jul-14-17 12:52
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00196 0.00196	<0.00200 0.00200	<0.00201 0.00201	<0.00197 0.00197	<0.00200 0.00200	<0.00198 0.00198
Toluene		<0.00196 0.00196	<0.00200 0.00200	<0.00201 0.00201	<0.00197 0.00197	<0.00200 0.00200	<0.00198 0.00198
Ethylbenzene		<0.00196 0.00196	<0.00200 0.00200	<0.00201 0.00201	<0.00197 0.00197	<0.00200 0.00200	<0.00198 0.00198
m,p-Xylenes		<0.00393 0.00393	<0.00401 0.00401	<0.00402 0.00402	<0.00394 0.00394	<0.00399 0.00399	<0.00396 0.00396
o-Xylene		<0.00196 0.00196	<0.00200 0.00200	<0.00201 0.00201	<0.00197 0.00197	<0.00200 0.00200	<0.00198 0.00198
Total Xylenes		<0.00196 0.00196	<0.00200 0.00200	<0.00201 0.00201	<0.00197 0.00197	<0.00200 0.00200	<0.00198 0.00198
Total BTEX		<0.00196 0.00196	<0.00200 0.00200	<0.00201 0.00201	<0.00197 0.00197	<0.00200 0.00200	<0.00198 0.00198
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Jul-18-17 09:30	Jul-18-17 09:30	Jul-18-17 09:30	Jul-18-17 09:30	Jul-18-17 09:30	Jul-18-17 09:30
	<i>Analyzed:</i>	Jul-18-17 12:53	Jul-18-17 13:16	Jul-18-17 13:24	Jul-18-17 13:32	Jul-18-17 13:39	Jul-18-17 13:47
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		6.61 4.96	6.88 4.96	8.00 4.91	132 4.95	8.22 4.91	6.63 4.97
TPH By SW8015 Mod	<i>Extracted:</i>	Jul-14-17 17:00	Jul-14-17 17:00	Jul-14-17 17:00	Jul-14-17 17:00	Jul-14-17 17:00	Jul-14-17 17:00
	<i>Analyzed:</i>	Jul-15-17 04:07	Jul-15-17 04:28	Jul-15-17 04:49	Jul-15-17 05:10	Jul-15-17 05:31	Jul-15-17 05:52
	<i>Units/RL:</i>	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)		99.9 15.0	<15.0 15.0	<15.0 15.0	146 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
Total TPH		99.9 15.0	<15.0 15.0	<15.0 15.0	146 15.0	<15.0 15.0	<14.9 14.9

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

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Kelsey Brooks
Project Manager



Certificate of Analysis Summary 557413

Tetra Tech- Midland, Midland, TX

Project Name: COG-Blue Jay Federal #001H



Project Id: 212C-MD-00679.01
Contact: Ike Tavaréz
Project Location: Lea County NM

Date Received in Lab: Wed Jul-12-17 03:38 pm
Report Date: 19-JUL-17
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	557413-007	557413-008	557413-009	557413-010		
	<i>Field Id:</i>	Trench #2 (12')	Trench #3 (0-1')	Trench #3 (8')	Trench #3 (10')		
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL		
	<i>Sampled:</i>	Jul-06-17 00:00	Jul-06-17 00:00	Jul-06-17 00:00	Jul-06-17 00:00		
BTEX by EPA 8021B	<i>Extracted:</i>	Jul-13-17 17:30	Jul-13-17 17:30	Jul-13-17 17:30	Jul-13-17 17:30		
	<i>Analyzed:</i>	Jul-14-17 13:08	Jul-14-17 13:25	Jul-14-17 13:41	Jul-14-17 13:57		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Benzene		<0.00196 0.00196	<0.00200 0.00200	<0.00201 0.00201	<0.00197 0.00197		
Toluene		<0.00196 0.00196	<0.00200 0.00200	<0.00201 0.00201	<0.00197 0.00197		
Ethylbenzene		<0.00196 0.00196	<0.00200 0.00200	<0.00201 0.00201	<0.00197 0.00197		
m,p-Xylenes		<0.00393 0.00393	<0.00401 0.00401	<0.00402 0.00402	<0.00394 0.00394		
o-Xylene		<0.00196 0.00196	<0.00200 0.00200	<0.00201 0.00201	<0.00197 0.00197		
Total Xylenes		<0.00196 0.00196	<0.00200 0.00200	<0.00201 0.00201	<0.00197 0.00197		
Total BTEX		<0.00196 0.00196	<0.00200 0.00200	<0.00201 0.00201	<0.00197 0.00197		
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Jul-18-17 09:30	Jul-18-17 09:30	Jul-18-17 11:45	Jul-18-17 11:45		
	<i>Analyzed:</i>	Jul-18-17 13:55	Jul-18-17 14:03	Jul-18-17 14:49	Jul-18-17 15:12		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Chloride		5.95 4.94	32.7 4.94	13.9 4.99	25.2 4.91		
TPH By SW8015 Mod	<i>Extracted:</i>	Jul-14-17 17:00	Jul-14-17 17:00	Jul-14-17 17:00	Jul-14-17 17:00		
	<i>Analyzed:</i>	Jul-15-17 06:13	Jul-15-17 06:33	Jul-15-17 06:54	Jul-15-17 07:15		
	<i>Units/RL:</i>	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		
Diesel Range Organics (DRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0		
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0		
Total TPH		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 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.
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Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Kelsey Brooks
Project Manager



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 **SQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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 1211 W Florida Ave, Midland, TX 79701
 2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282

Phone	Fax
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(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 Jay Federal #001H

Work Orders : 557413,

Project ID: 212C-MD-00679.01

Lab Batch #: 3022274

Sample: 557413-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/14/17 11:31

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0265	0.0300	88	80-120	
4-Bromofluorobenzene	0.0285	0.0300	95	80-120	

Lab Batch #: 3022274

Sample: 557413-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/14/17 11:47

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0317	0.0300	106	80-120	
4-Bromofluorobenzene	0.0313	0.0300	104	80-120	

Lab Batch #: 3022274

Sample: 557413-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/14/17 12:03

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0310	0.0300	103	80-120	
4-Bromofluorobenzene	0.0299	0.0300	100	80-120	

Lab Batch #: 3022274

Sample: 557413-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/14/17 12:20

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0271	0.0300	90	80-120	
4-Bromofluorobenzene	0.0311	0.0300	104	80-120	

Lab Batch #: 3022274

Sample: 557413-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/14/17 12:36

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0301	0.0300	100	80-120	
4-Bromofluorobenzene	0.0265	0.0300	88	80-120	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: COG-Blue Jay Federal #001H

Work Orders : 557413,

Project ID: 212C-MD-00679.01

Lab Batch #: 3022274

Sample: 557413-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/14/17 12:52

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0296	0.0300	99	80-120	
4-Bromofluorobenzene	0.0317	0.0300	106	80-120	

Lab Batch #: 3022274

Sample: 557413-007 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/14/17 13:08

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0291	0.0300	97	80-120	
4-Bromofluorobenzene	0.0312	0.0300	104	80-120	

Lab Batch #: 3022274

Sample: 557413-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/14/17 13:25

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0274	0.0300	91	80-120	
4-Bromofluorobenzene	0.0261	0.0300	87	80-120	

Lab Batch #: 3022274

Sample: 557413-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/14/17 13:41

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0351	0.0300	117	80-120	
4-Bromofluorobenzene	0.0303	0.0300	101	80-120	

Lab Batch #: 3022274

Sample: 557413-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/14/17 13:57

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0327	0.0300	109	80-120	
4-Bromofluorobenzene	0.0313	0.0300	104	80-120	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: COG-Blue Jay Federal #001H

Work Orders : 557413,

Project ID: 212C-MD-00679.01

Lab Batch #: 3022399

Sample: 557413-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/15/17 04:07

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	107	99.9	107	70-135	
o-Terphenyl	55.4	50.0	111	70-135	

Lab Batch #: 3022399

Sample: 557413-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/15/17 04:28

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	106	99.7	106	70-135	
o-Terphenyl	54.9	49.9	110	70-135	

Lab Batch #: 3022399

Sample: 557413-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/15/17 04:49

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	109	99.7	109	70-135	
o-Terphenyl	56.3	49.9	113	70-135	

Lab Batch #: 3022399

Sample: 557413-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/15/17 05:10

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	104	99.8	104	70-135	
o-Terphenyl	53.0	49.9	106	70-135	

Lab Batch #: 3022399

Sample: 557413-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/15/17 05:31

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	119	99.9	119	70-135	
o-Terphenyl	59.3	50.0	119	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 Jay Federal #001H

Work Orders : 557413,

Project ID: 212C-MD-00679.01

Lab Batch #: 3022399

Sample: 557413-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/15/17 05:52

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	104	99.6	104	70-135	
o-Terphenyl	54.3	49.8	109	70-135	

Lab Batch #: 3022399

Sample: 557413-007 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/15/17 06:13

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	108	99.7	108	70-135	
o-Terphenyl	56.4	49.9	113	70-135	

Lab Batch #: 3022399

Sample: 557413-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/15/17 06:33

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	110	99.8	110	70-135	
o-Terphenyl	55.5	49.9	111	70-135	

Lab Batch #: 3022399

Sample: 557413-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/15/17 06:54

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	100	99.8	100	70-135	
o-Terphenyl	51.4	49.9	103	70-135	

Lab Batch #: 3022399

Sample: 557413-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/15/17 07:15

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	118	99.8	118	70-135	
o-Terphenyl	58.4	49.9	117	70-135	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

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 Jay Federal #001H

Work Orders : 557413,

Project ID: 212C-MD-00679.01

Lab Batch #: 3022274

Sample: 727633-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/13/17 19:26

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0263	0.0300	88	80-120	
4-Bromofluorobenzene	0.0275	0.0300	92	80-120	

Lab Batch #: 3022399

Sample: 727686-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/15/17 03:05

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	116	100	116	70-135	
o-Terphenyl	62.6	50.0	125	70-135	

Lab Batch #: 3022274

Sample: 727633-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/13/17 18:04

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0298	0.0300	99	80-120	
4-Bromofluorobenzene	0.0254	0.0300	85	80-120	

Lab Batch #: 3022399

Sample: 727686-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/15/17 03:25

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	115	100	115	70-135	
o-Terphenyl	59.2	50.0	118	70-135	

Lab Batch #: 3022274

Sample: 727633-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/13/17 18:21

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0317	0.0300	106	80-120	
4-Bromofluorobenzene	0.0325	0.0300	108	80-120	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: COG-Blue Jay Federal #001H

Work Orders : 557413,

Project ID: 212C-MD-00679.01

Lab Batch #: 3022399

Sample: 727686-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/15/17 03:46

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	109	100	109	70-135	
o-Terphenyl	55.5	50.0	111	70-135	

Lab Batch #: 3022274

Sample: 557431-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/13/17 18:37

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0338	0.0300	113	80-120	
4-Bromofluorobenzene	0.0355	0.0300	118	80-120	

Lab Batch #: 3022399

Sample: 557413-010 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/15/17 07:35

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	101	100	101	70-135	
o-Terphenyl	50.6	50.0	101	70-135	

Lab Batch #: 3022274

Sample: 557431-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/13/17 18:53

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0346	0.0300	115	80-120	
4-Bromofluorobenzene	0.0347	0.0300	116	80-120	

Lab Batch #: 3022399

Sample: 557413-010 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/15/17 07:57

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	102	99.9	102	70-135	
o-Terphenyl	50.8	50.0	102	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 Jay Federal #001H

Work Order #: 557413

Project ID: 212C-MD-00679.01

Analyst: JUM

Date Prepared: 07/13/2017

Date Analyzed: 07/13/2017

Lab Batch ID: 3022274

Sample: 727633-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	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											
Benzene	<0.00198	0.0992	0.102	103	0.0998	0.122	122	18	70-130	35	
Toluene	<0.00198	0.0992	0.0949	96	0.0998	0.114	114	18	70-130	35	
Ethylbenzene	<0.00198	0.0992	0.0907	91	0.0998	0.117	117	25	71-129	35	
m,p-Xylenes	<0.00397	0.198	0.165	83	0.200	0.209	105	24	70-135	35	
o-Xylene	<0.00198	0.0992	0.0887	89	0.0998	0.115	115	26	71-133	35	

Analyst: MGO

Date Prepared: 07/18/2017

Date Analyzed: 07/18/2017

Lab Batch ID: 3022517

Sample: 727803-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [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											
Chloride	<5.00	250	254	102	250	257	103	1	90-110	20	

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

All results are based on MDL and Validated for QC Purposes



BS / BSD Recoveries



Project Name: COG-Blue Jay Federal #001H

Work Order #: 557413

Project ID: 212C-MD-00679.01

Analyst: MGO

Date Prepared: 07/18/2017

Date Analyzed: 07/18/2017

Lab Batch ID: 3022571

Sample: 727805-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [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											
Chloride	<5.00	250	256	102	250	260	104	2	90-110	20	

Analyst: ARM

Date Prepared: 07/14/2017

Date Analyzed: 07/15/2017

Lab Batch ID: 3022399

Sample: 727686-1-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 (GRO)	<15.0	1000	976	98	1000	961	96	2	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	955	96	1000	960	96	1	70-135	35	

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

All results are based on MDL and Validated for QC Purposes



Form 3 - MS / MSD Recoveries



Project Name: COG-Blue Jay Federal #001H

Work Order #: 557413

Project ID: 212C-MD-00679.01

Lab Batch ID: 3022274

QC- Sample ID: 557431-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 07/13/2017

Date Prepared: 07/13/2017

Analyst: JUM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00198	0.0992	0.0893	90	0.0998	0.0957	96	7	70-130	35	
Toluene	<0.00198	0.0992	0.0971	98	0.0998	0.0842	84	14	70-130	35	
Ethylbenzene	<0.00198	0.0992	0.0816	82	0.0998	0.0822	82	1	71-129	35	
m,p-Xylenes	0.00444	0.198	0.164	81	0.200	0.163	79	1	70-135	35	
o-Xylene	0.00391	0.0992	0.103	100	0.0998	0.0840	80	20	71-133	35	

Lab Batch ID: 3022517

QC- Sample ID: 557365-002 S

Batch #: 1 Matrix: Soil

Date Analyzed: 07/18/2017

Date Prepared: 07/18/2017

Analyst: MGO

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 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	82.6	246	334	102	246	335	103	0	90-110	20	

Lab Batch ID: 3022517

QC- Sample ID: 557665-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 07/18/2017

Date Prepared: 07/18/2017

Analyst: MGO

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 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	47.5	246	318	110	246	316	109	1	90-110	20	

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

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

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

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



Form 3 - MS / MSD Recoveries



Project Name: COG-Blue Jay Federal #001H

Work Order #: 557413

Project ID: 212C-MD-00679.01

Lab Batch ID: 3022571

QC- Sample ID: 557413-009 S

Batch #: 1 Matrix: Soil

Date Analyzed: 07/18/2017

Date Prepared: 07/18/2017

Analyst: MGO

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 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	13.9	250	274	104	250	275	104	0	90-110	20	

Lab Batch ID: 3022399

QC- Sample ID: 557413-010 S

Batch #: 1 Matrix: Soil

Date Analyzed: 07/15/2017

Date Prepared: 07/14/2017

Analyst: ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1090	109	999	942	94	15	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	1080	108	999	950	95	13	70-135	35	

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

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

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

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

Analysis Request of Chain of Custody Record



Tetra Tech, Inc.

4000 N. Big Spring Street, Ste
401 Midland, Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

557413

Client Name:	COG	Site Manager:	Ike Tavarez
Project Name:	Blue Jay Federal #001H		
Project Location: (county, state)	Lea County, New Mexico	Project #:	212C-MD-00679.01
Invoice to:	Tetra Tech		
Receiving Laboratory:	Xenco Midland Tx	Sampler Signature:	
Comments:			

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX		PRESERVATIVE METHOD			# CONTAINERS	FILTERED (Y/N)	ANALYSIS REQUEST (Circle or Specify Method No.)		
		YEAR: 2017	DATE	TIME	WATER	SOIL	HCL	HNO ₃				ICE	None
	Trench #1 (0-1')		7/6/2017		X		X		1	N	BTEX 8021B BTEX 8260B		
	Trench #1 (8')		7/6/2017		X		X		1	N	TPH TX1005 (Ext to C35)		
	Trench #1 (10')		7/6/2017		X		X		1	N	TPH 8015M (GRO - DRO - ORO - MRO)		
	Trench #2 (0-1')		7/6/2017		X		X		1	N	PAH 8270C		
	Trench #2 (2')		7/6/2017		X		X		1	N	Total Metals Ag As Ba Cd Cr Pb Se Hg		
	Trench #2 (8')		7/6/2017		X		X		1	N	TCLP Metals Ag As Ba Cd Cr Pb Se Hg		
	Trench #2 (12')		7/6/2017		X		X		1	N	TCLP Volatiles		
	Trench #3 (0-1')		7/6/2017		X		X		1	N	TCLP Semi Volatiles		
	Trench #3 (8')		7/6/2017		X		X		1	N	RCI		
	Trench #3 (10')		7/6/2017		X		X		1	N	GC/MS Vol. 8260B / 624		

Relinquished by:	Date: 7-18-17	Time: 15:38	Received by:	Date: 7-18-17	Time: 15:38
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

Temp: 2.9	IR ID: R-8
CF: (0-6: -0.2°C)	
(6-23: +0.2°C)	
Corrected Temp: 2.7	

LAB USE ONLY	REMARKS:
	STANDARD
	<input type="checkbox"/> RUSH: Same Day 24 hr 48 hr 72 hr
	<input type="checkbox"/> Rush Charges Authorized
	<input type="checkbox"/> Special Report Limits or TRRP Report

ND DELIVERED FEDEX UPS Tracking #:



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland

Date/ Time Received: 07/12/2017 03:38:00 PM

Work Order #: 557413

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist**Comments**

#1 *Temperature of cooler(s)?	2.7
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seal present on shipping container/ cooler?	N/A
#5 *Custody Seals intact on shipping container/ cooler?	N/A
#6 Custody Seals intact on sample bottles?	N/A
#7 *Custody Seals Signed and dated?	N/A
#8 *Chain of Custody present?	Yes
#9 Sample instructions complete on Chain of Custody?	Yes
#10 Any missing/extra samples?	No
#11 Chain of Custody signed when relinquished/ received?	Yes
#12 Chain of Custody agrees with sample label(s)?	Yes
#13 Container label(s) legible and intact?	Yes
#14 Sample matrix/ properties agree with Chain of Custody?	Yes
#15 Samples in proper container/ bottle?	Yes
#16 Samples properly preserved?	Yes
#17 Sample container(s) intact?	Yes
#18 Sufficient sample amount for indicated test(s)?	Yes
#19 All samples received within hold time?	Yes
#20 Subcontract of sample(s)?	N/A
#21 VOC samples have zero headspace?	N/A

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

Analyst:

PH Device/Lot#:

Checklist completed by:

Jessica Kramer

Date: 07/13/2017

Checklist reviewed by:

Kelsey Brooks

Date: 07/13/2017

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 163398

CONDITIONS

Operator: COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701	OGRID: 229137
	Action Number: 163398
	Action Type: [IM-SD] Incident File Support Doc (ENV) (IM-BNF)

CONDITIONS

Created By	Condition	Condition Date
amaxwell	None	12/2/2022