Bratcher, Mike, EMNRD

From: Bratcher, Mike, EMNRD
Sent: Wednesday, February 05, 2014 10:17 AM
To: 'Tavarez, Ike'
Cc: Robert McNeill; Robert Grubbs; Michelle Mullins (MMullins@concho.com)
Subject: RE: COG Operating - Loving State #2 and Myox 32 Fee 2H - Work Plans Approval Request

Reference: COG * Loving St 2 * 30-015-24429 * N-1-24s-27e * Eddy County, New Mexico
OCD Tracking number: 2RP-1920 * Date of release: 9/14/13

Ike,

Your proposal for remediation of the above referenced produced fluid release is approved. Please notify OCD prior to commencement of remedial activities and in the event proposed excavation depths are not achieved.

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

If you have any questions or concerns, and for notification, please contact me.

Mike Bratcher
NMOCD District 2
811 S. First Street
Artesia, NM 88210
O: 575-748-1283 X108
C: 575-626-0857
F: 575-748-9720

From: Tavarez, Ike [mailto:Ike.Tavarez@tetratech.com]
Sent: Tuesday, January 28, 2014 2:58 PM
To: Bratcher, Mike, EMNRD
Cc: Robert McNeill; Robert Grubbs; Michelle Mullins (MMullins@concho.com)
Subject: COG Operating - Loving State #2 and Myox 32 Fee 2H - Work Plans Approval Request

Mike,

Please find the enclosed COG -Work Plans for the above referenced sites located in Eddy County, New Mexico. The work plans includes the soil assessments and recommendations for remediation for each of the sites. I will mail you a hard copy of the work plans for your files. Once approved, Tetra Tech will schedule the soil remediation and notify you prior to implementing the work plan. Please let me know if you need additional information or call me if you have any questions, thanks

Ike Tavarez, PG | Senior Project Manager

SITE INFORMATION

Report Type: Closure Report

General Site Information:						
Site:	Loving State #2 Tank Battery					
Company:	COG Operating LLC					
Section, Township and Range	Sec. 1	T 24S	R 27E			
Lease Number:	API-30-015-24429					
County:	Eddy County					
GPS:	32.24223° N			104.14571° W		
Surface Owner:	State					
Mineral Owner:						
Directions:	South of Loving, from the intersection of HWY 285 and CR 716, travel south for 0.4 miles and turn West onto Bounds Rd. Continue East for 2.0 miles, and turn south onto lease road for 1.5 miles. Then turn East for 0.3 miles to location.					

Release Data:	
Date Released:	9/14/2013
Type Release:	Produced Water
Source of Contamination:	Increased production
Fluid Released:	80 bbls
Fluids Recovered:	70 bbls

Official Communication:			
Name:	Robert McNeil		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		4000 N. Big Spring St.
	600 W. Illinois Ave.		Ste. 401
City:	Midland Texas, 79701		Midland, Texas, 79705
Phone number:	(432) 686-3023		(432) 687-8110
Fax:	(432) 684-7137		
Email:	rmcneil@conchoresources.com		ike.tavarez@tetratech.com

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	20	
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

NM OIL CONSERVATION
ARTESIA DISTRICT
JUN 04 2014
RECEIVED

TETRA TECH

May 28, 2014

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

Re: Closure Report for the COG Operating LLC., Loving State #2 Tank Battery, Unit N, Section 01, Township 24 South, Range 27 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill at the Loving State #2 Tank Battery located in Unit N, Section 01, Township 24 South, Range 27 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.24223°, W 104.14571°. 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 14, 2013, and released approximately eighty (80) barrels of produced water from an increase in production. To alleviate the problem, COG personnel installed a high alarm. Seventy (70) barrels of standing fluids were recovered. The spill was contained within the facility firewalls and measured approximately 40' x 80'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 01. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 33' below surface. The groundwater data is shown in Appendix B.

Tetra Tech
4000 North Big Spring, Midland, TX, Ste 401 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.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 October 23, 2013, Tetra Tech personnel inspected and sampled the spill area. Three (3) auger holes (AH-1, AH-2, and AH-3) were installed using a stainless steel hand auger to assess the impacted soils. Selected soil 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 auger hole locations are shown on Figure 3.

Referring to Table 1, none of the samples exceeded the RRAL for BTEX. Auger holes (AH-1and AH-3) did show TPH concentrations above the RRAL for TPH at 0-1' but declined below the RRAL at 1'-1.5' below surface. In addition, the area of AH-2 did show a deeper impact to the soils with TPH concentrations declining below the RRAL at 2'-2.5' below surface. None of the samples showed elevated chloride concentrations in the subsurface soils.

Remediation Activities

On March 6, 2014, Tetra Tech supervised the removal impacted material as highlighted (green) in Table 1 and shown on Figure 4. The areas of auger holes (AH-1 and AH-3) were excavated to depths of approximately 1.0' below surface. The area of auger hole (AH-2) was excavated to a depth of approximately 2.0' below surface. Once the area was excavated to the appropriate depths, the excavations were backfilled with clean soil to grade, and approximately 36 cubic yards of excavated material was hauled to proper disposal.

Conclusion

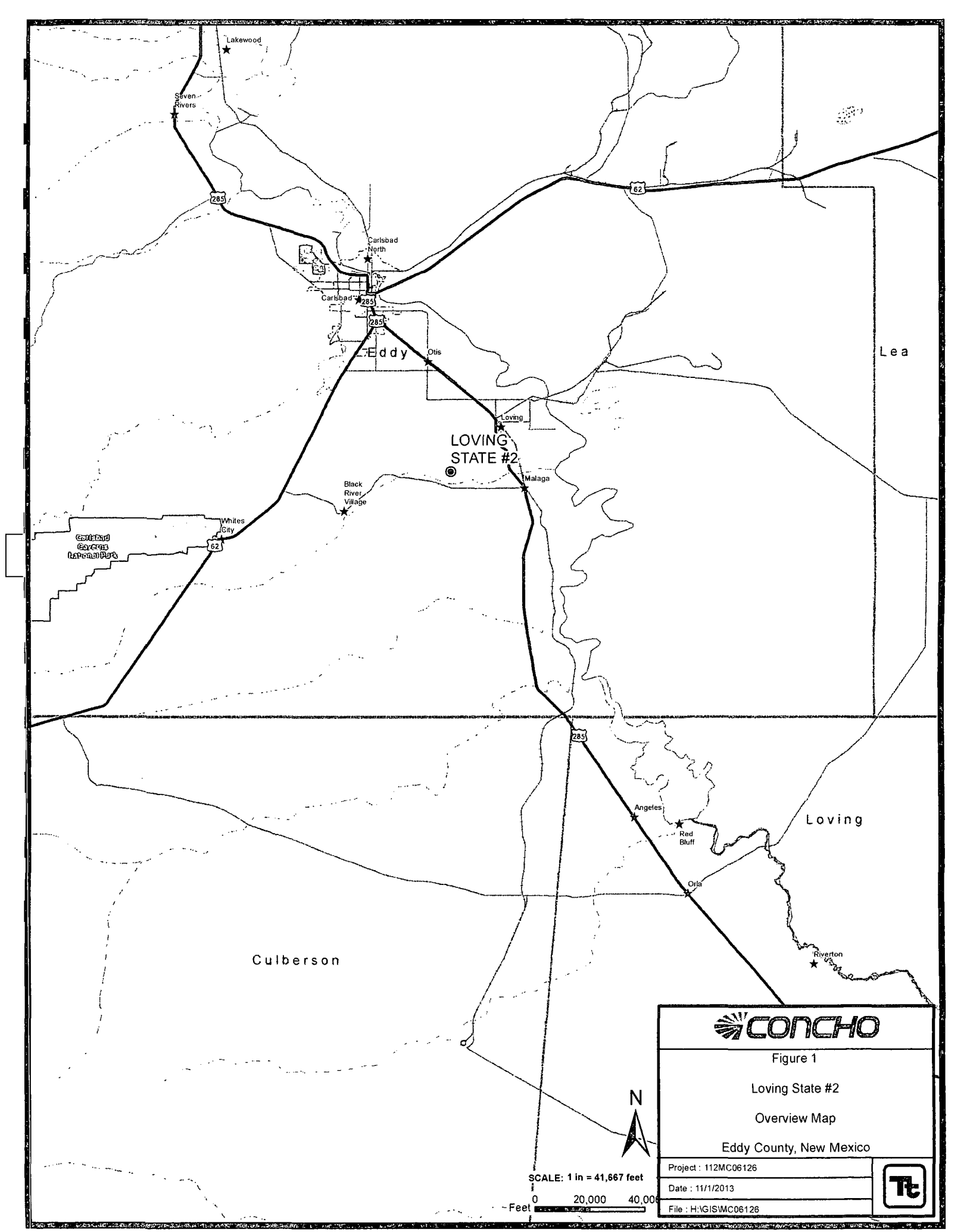
Based on the assessment and work performed at this site, COG requests closure of this spill issue. A final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

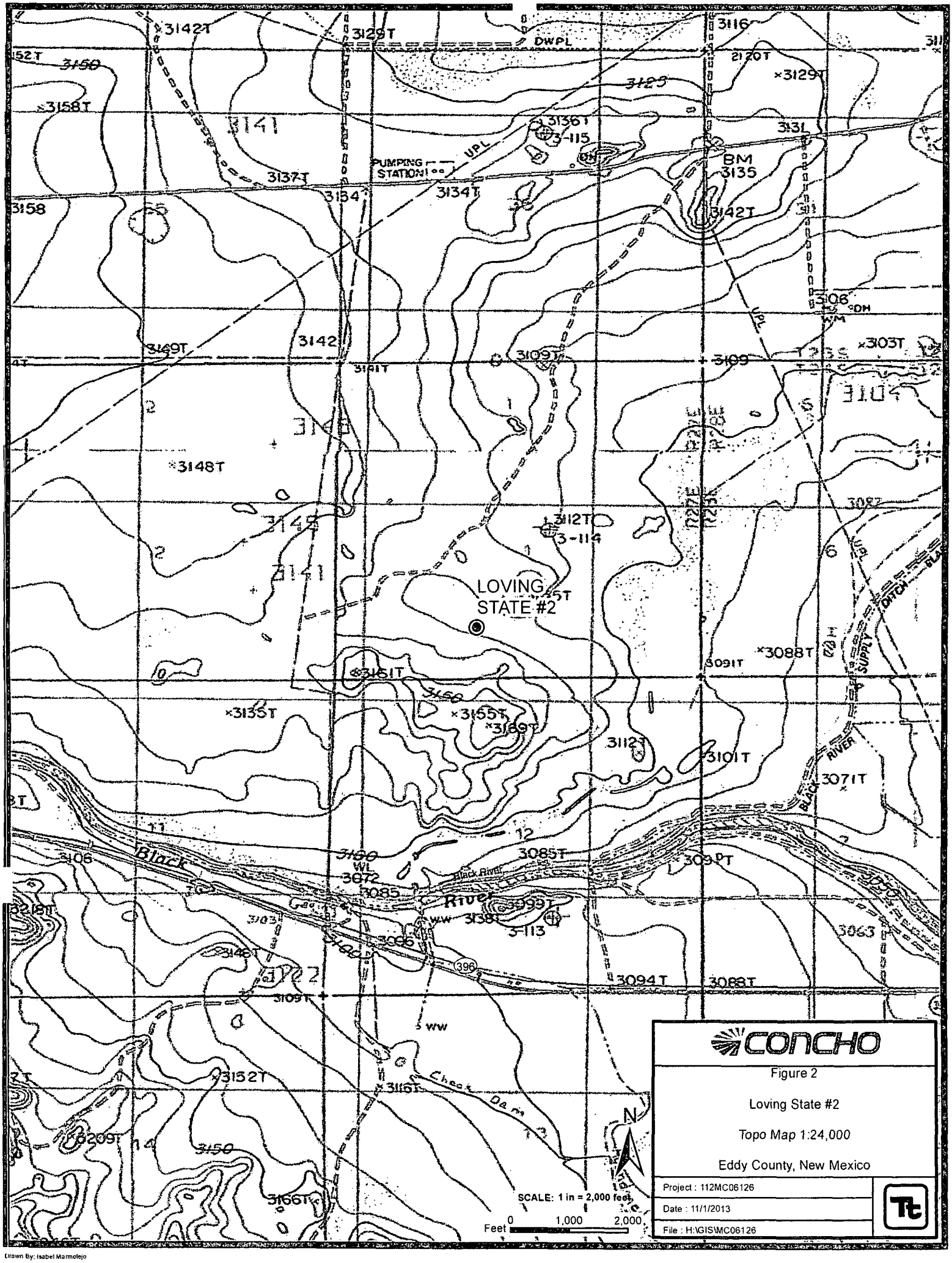
Respectfully submitted,
TETRA TECH

Ike Tavarez, PG
Senior Project Manager

cc: Robert McNeil – COG

Figures

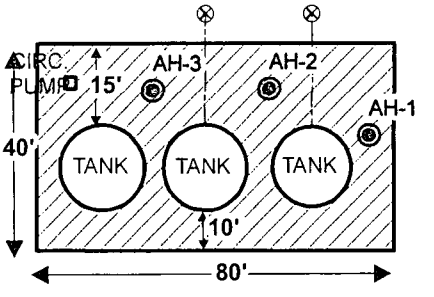

Lakewood
Seven Rivers
285
62
Carlsbad North
Carlsbad
285
285
Eddy
Otis
Lea
Loving
LOVING STATE #2
Malaga
Black River Village
Whites City
62
Carlsbad Caverns National Park
285
Angeles
Red Bluff
Loving
Orla
Culberson
Riverton
N
SCALE: 1 in = 41,667 feet
0
20,000
40,000
Feet
CONCHO
Figure 1
Loving State #2
Overview Map
Eddy County, New Mexico
Project : 112MC06126
Date : 11/1/2013
File : H:\GIS\MC06126
Drawn By: Isabel Marmolejo



Drawn By: Isabel Marmolejo

PAD

PASTURE



PASTURE

EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- SPILL AREA

N

SCALE: 1 IN = 43 FEET

Feet 0 10 20

CONCHO

Figure 3

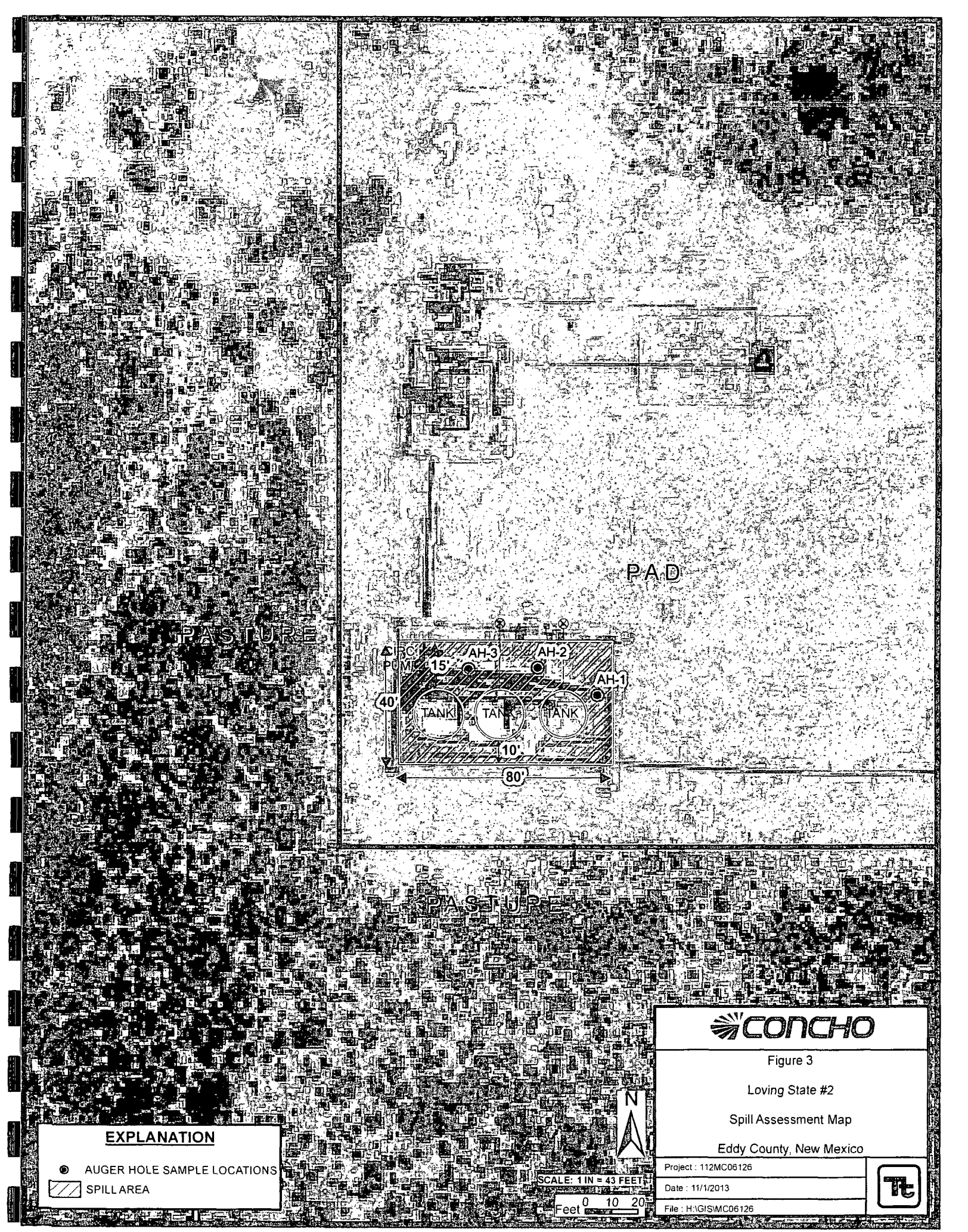
Loving State #2

Spill Assessment Map

Eddy County, New Mexico

Project : 112MC06126	
Date : 11/1/2013	
File : H:\GIS\MC06126	

Drawn By: Isabel Marmolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- SPILL AREA

CONCHO

Figure 3

Loving State #2

Spill Assessment Map

Eddy County, New Mexico

Project : 112MC06126

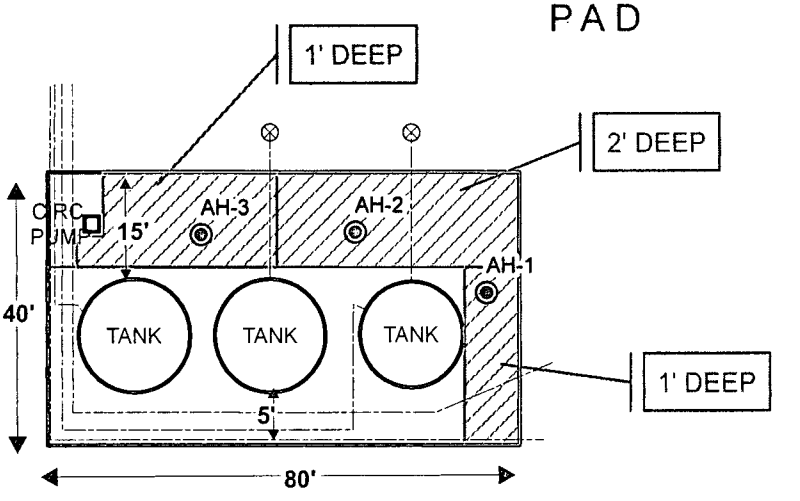
Date : 11/1/2013

File : H:\GIS\MC06126

Drawn By: Isabel Marmolejo

PASTURE

PAD



PASTURE

EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- EXCAVATED AREAS

N

SCALE: 1 IN = 33 FEET

Feet 0 10 20

CONCHO

Figure 4

Loving State #2

Excavation Areas & Depths Map

Eddy County, New Mexico

Project : 112MC06126

Date : 05/28/2014

File : H:\GIS\MC06126

Drawn By: Isabel Marmolejo

Tables

Table 1
COG Operating LLC.
Loving St #2
Eddy County, New Mexico

Sample ID	Sample Date	BEB Sample Depth (ft)	Excavation Bottom 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						
AH-1	10/29/2013	0-1	-		X	242	308	**550.0**	<0.0200	0.297	1.340	5.45	7.087	<20.0
	"	1-1.5	-	X		5.85	<50.0	5.85	-	-	-	-	-	<20.0
	"	2-2.5	-	X		-	-	-	-	-	-	-	-	<20.0
	"	3-3.5	-	X		-	-	-	-	-	-	-	-	235
AH-2	10/29/2013	0-1	-		X	6.60	98.8	<50.0	<0.0200	<0.0200	<0.0200	0.0239	0.0239	<20.0
	"	1-1.5	-		X	<4.00	2,660	**2,660**	-	-	-	-	-	<20.0
	"	2-2.5	-		X	<4.00	<50.0	<50.0	-	-	-	-	-	<20.0
	"	3-3.5	-	X		-	-	-	-	-	-	-	-	30.0
AH-3	10/29/2013	0-1	-		X	4.74	528	**533**	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<20.0
	"	1-1.5	-	X		<4.00	<50.0	<50.0	-	-	-	-	-	<20.0
	"	2-2.5	-	X		-	-	-	-	-	-	-	-	<20.0
	"	3-3.5	-	X		-	-	-	-	-	-	-	-	<20.0

(-) Not Analyzed
(BEB) Below Excavation Bottom

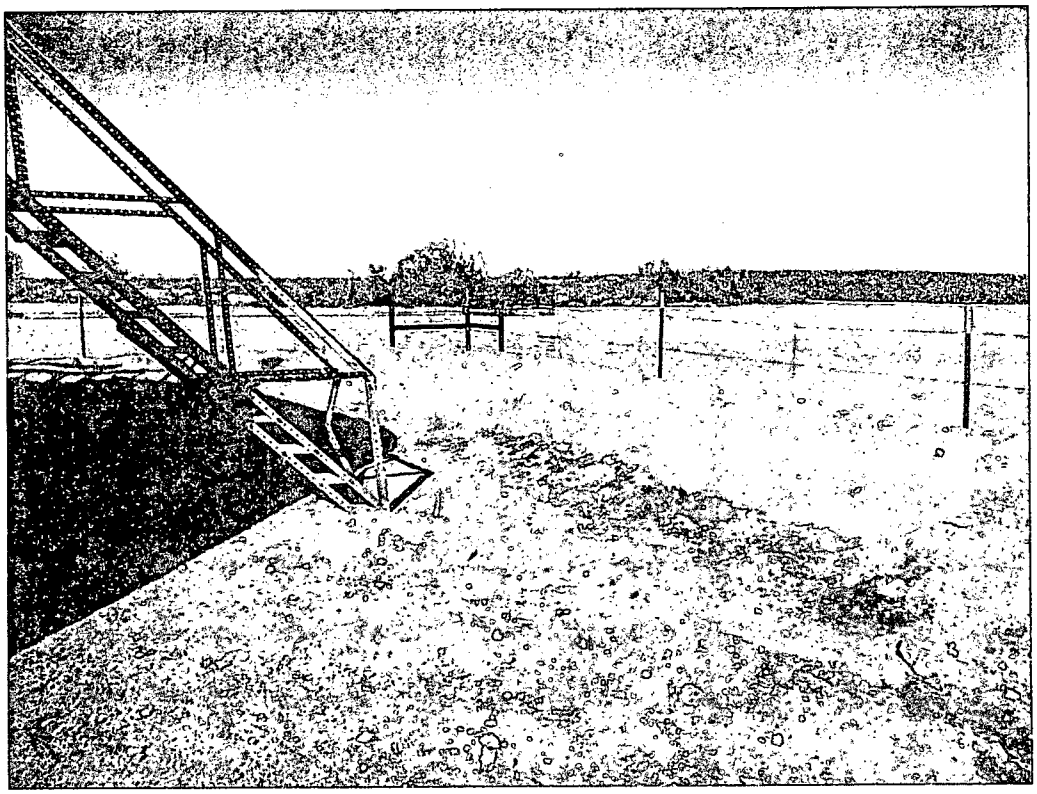
Excavation Depths

112MC06126

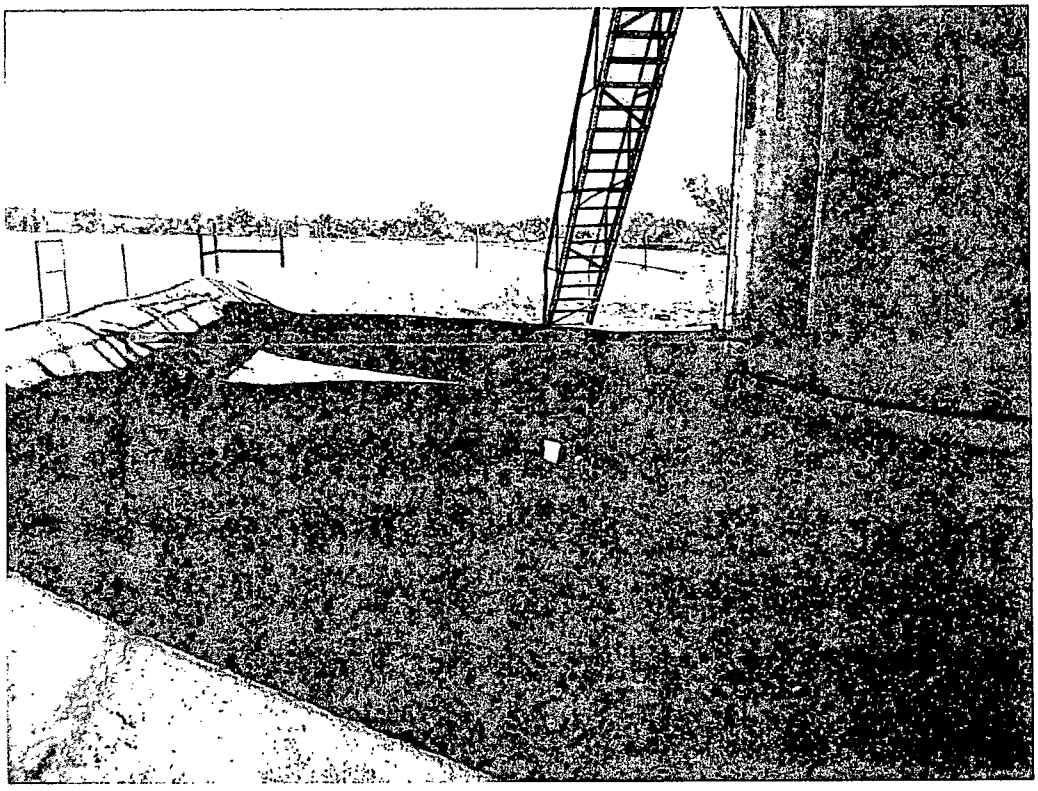
Photos

COG Operating LLC
Loving State #2
Eddy County, New Mexico

TETRA TECH



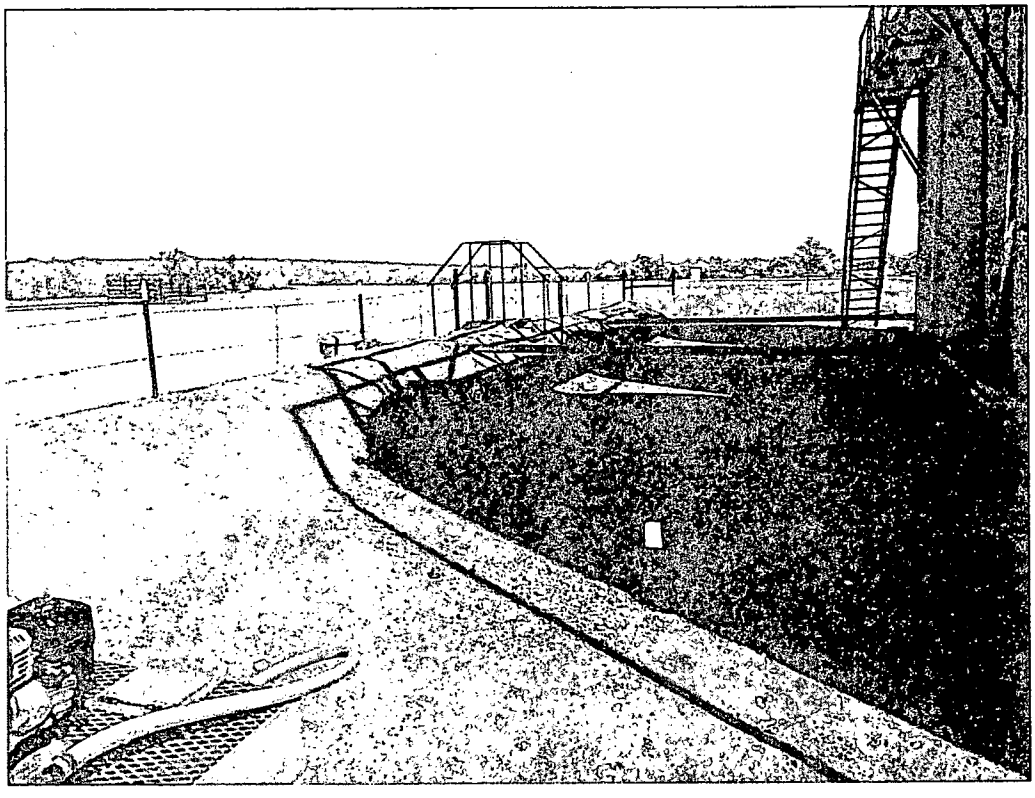
View North – Area of AH-1



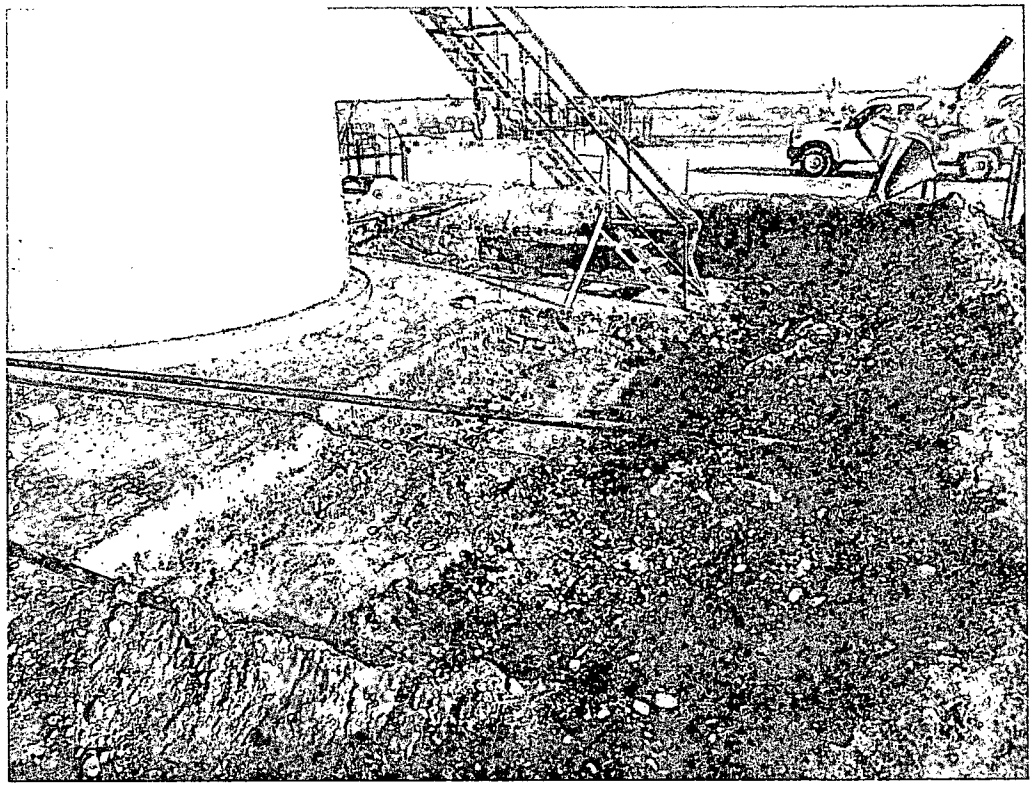
View East – Area of AH-2

COG Operating LLC
Loving State #2
Eddy County, New Mexico

TETRA TECH



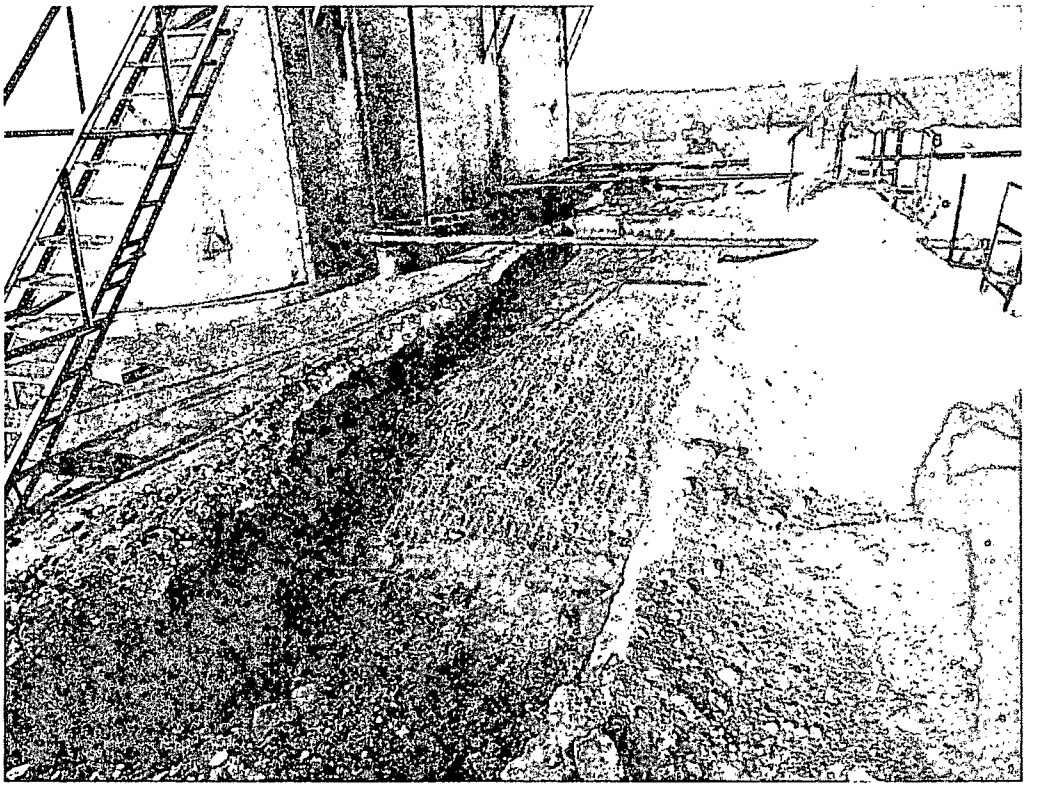
View East – Area of AH-3



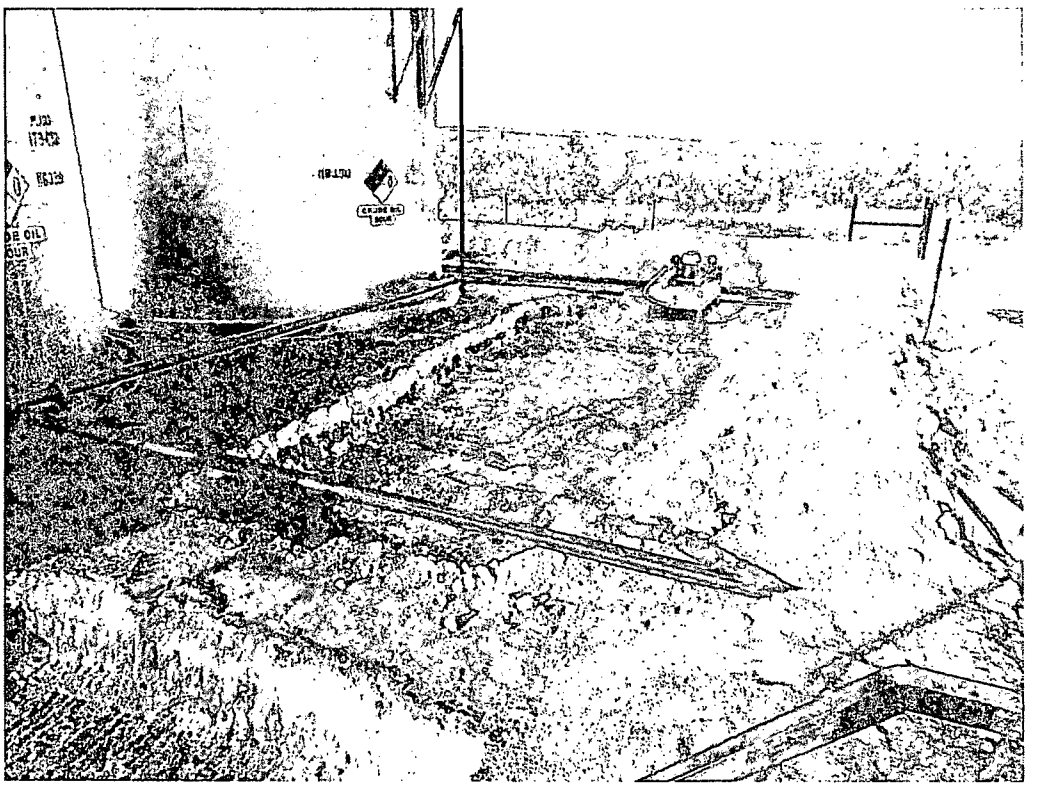
View North – Excavated area of AH-1

COG Operating LLC
Loving State #2
Eddy County, New Mexico

TETRA TECH



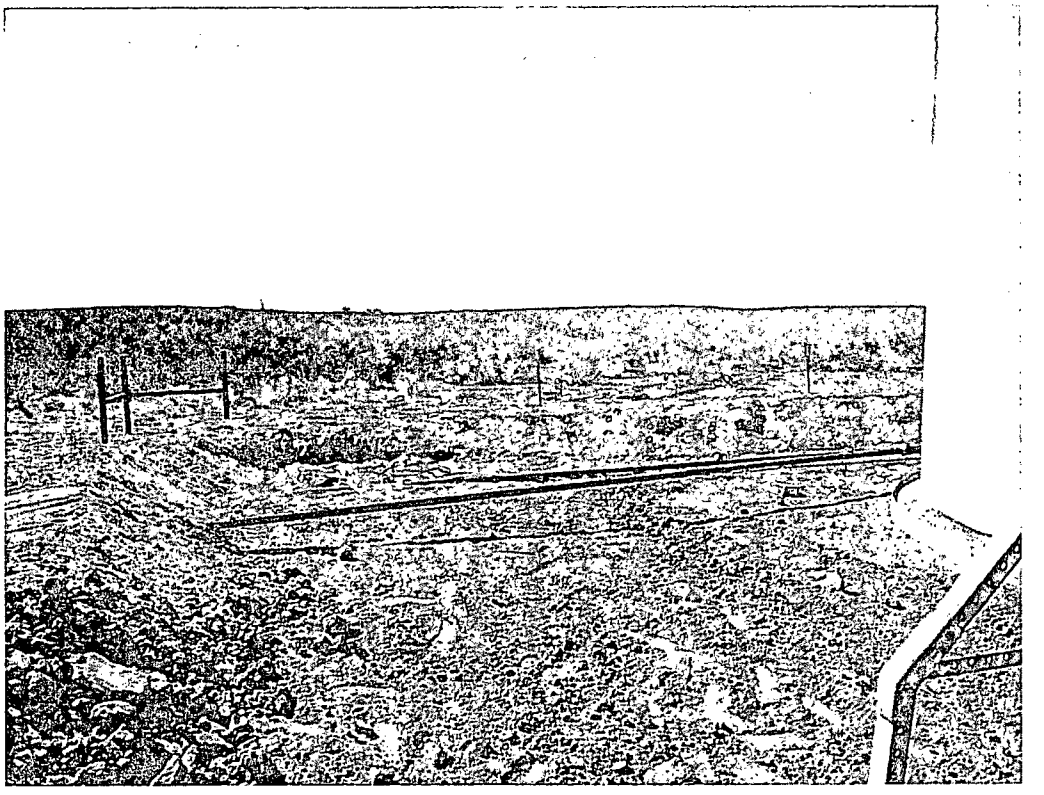
View West – Excavated area of AH-2



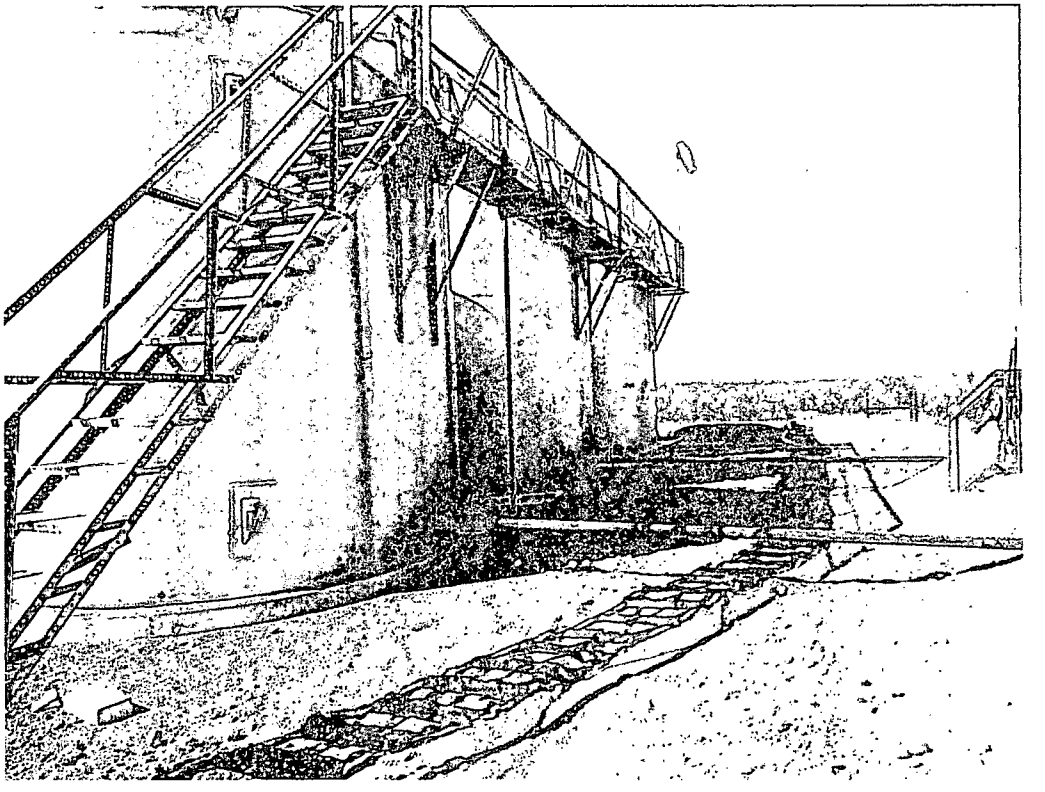
View West – Excavated area of AH-3

COG Operating LLC
Loving State #2
Eddy County, New Mexico

TETRA TECH



View South – Backfilled area of AH-1



View West – Backfilled areas of AH-2 and AH-3

Appendix A

GW - 50'

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 McNeill
Address	600 West Illinois Avenue, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	Loving State #002	Facility Type	Tank Battery

Surface Owner State	Mineral Owner	Lease No. (API#) 30-015-24429

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
N	01	24S	27E					Eddy

Latitude 32.24223 Longitude 104.14571

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 80bbls	Volume Recovered 70bbls
Source of Release Water tank	Date and Hour of Occurrence 09-14-2013	Date and Hour of Discovery 09-14-2013 10.00am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher - NMOCD	
By Whom? Robert Grubbs Jr.	Date and Hour 09-16-2013 2:08pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

An increase of production caused the water tank to overflow. Have water trucks on call and have a high alarm installed.

Describe Area Affected and Cleanup Action Taken.*

Initially an estimated 80bbls of produced water was released due to an increase of production. We were able to recover 70bbls of fluid. The spill was contained in the Tank Battery. Tetra Tech will sample the spill site area to delineate any possible contamination from the release and we will present a 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: Robert Grubbs Jr.	Approved by District Supervisor:	
Title: Senior Environmental Coordinator	Approval Date:	Expiration Date:
E-mail Address: rgrubbs@concho.com	Conditions of Approval:	Attached ☐
Date: 09-17-2013 Phone: 432-661-6601		

* Attach Additional Sheets If Necessary

NM OIL CONSERVATION
ARTESIA DISTRICT
JUN 04 2014
RECEIVED

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
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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 Avenue Midland, Texas 79701**	Telephone No. **(432) 230-0077**
Facility Name Loving State #2	Facility Type **Tank Battery**

Surface Owner: State	Mineral Owner	Lease No. (API#) 30-015-24429

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
N	01	24S	27E					Eddy

Latitude N 32.24223 ° **Longitude** W 104.14571°

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 80 bbls	Volume Recovered 70 bbls
Source of Release: Water Tank	Date and Hour of Occurrence 09-14-2013	Date and Hour of Discovery 09-14-2013 10:00 a.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **Mike Bratcher –NMOCD**	
By Whom? Robert Grubbs Jr.	Date and Hour 09-16-2013 2:08 p.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

N/A

NM OIL CONSERVATION
ARTESIA DISTRICT
JUN 04 2014
RECEIVED

Describe Cause of Problem and Remedial Action Taken.*

An increase in production caused the water tank to overflow. Have water trucks on call and have a high alarm installed.

Describe Area Affected and Cleanup Action Taken.*

Initially an estimated 80 bbls of produced water was released due to an increase in production. 70 bbls was recovered using a vacuum truck. The spill was contained in the tank battery. Tetra Tech inspected site and collected samples to define spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. Site was then brought up to surface grade with clean backfill material. Tetra Tech prepared closure report and submitted to NMOCD for review.

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

Signature: (Agent for COG)	OIL CONSERVATION DIVISION	
Printed Name: Ike Tavarez	Approved by District Supervisor:	
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	Attached ☐
Date: 5/28/14 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Loving State #2
Eddy County, New Mexico

23 South 26 East

6	5	4	3 **220**	2	1
7	8 **267**	9	10	11	12
18	17	16	15	14	13
19	20	21	22 **224**	23	24
30 **99**	29	28	27	26	25
31	32 **223**	33	34	35	36

Carlsbad

23 South 27 East

6	5 **83**	4 **90**	3	2 **70**	1 **17**
7	8	9	10	11	12 **40**
18	17	16	15	14 **75**	13
19	20	21	22	23 **23**	24 **90**
30	29 **103**	28	27	26	25
31	32	33	34	35	36

23 South 28 East

6 **16.5**	5	4	3	2	1
7 **26.5**	8	9	10	11 **30.5**	12 **20**
18 **63**	17	16	15 **14**	14	13 **12** **33**
19	20 **56**	21	22 **39**	23	24 **36**
30	29 **28.7**	28	27	26	25 **44**
31	32	33	34	35	36

24 South 26 East

6 **63**	5	4	3	2	1
7 **250**	8 **450**	9	10	11	12
18 **650**	17	16	15	14 **30**	13
19	20	21	22	23 **38** **37**	24 **28** **30**
30 **70**	29 **46**	28	27 **30**	26	25
31	32 **111** **109**	33	34	35	36

24 South 27 East

6	5	4	3	2	1 **SITE**
7	8 **17** **26**	9 **43**	10	11	12 **27**
18 **30** **34**	17	16	15	14	13 **30** **31**
19	20	21	22 **70**	23	24
30	29	28	27	26	25
31	32	33	34	35	36

24 South 28 East

6 **70**	5 **30**	4 **30**	3	2 **55**	1 **60**
7	8 **50**	9	10 **17**	11 **20**	12 **73**
18	17 **42**	16 **29**	15 **18**	14 **52**	13 **34**
19	20 **48**	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

25 South 26 East

6	5	4	3 **45**	2	1
7 **60**	8	9 **45**	10	11	12
18	17	16	15	14	13
19	20	21	22 **118**	23	24
30	29	28	27	26	25
31	32	33	34	35	36

25 South 27 East

6	5	4	3	2	1
7	8	9	10	11	12 **92**
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33 **19**	34	35	36

25 South 28 East

6	5 **59**	4 **35**	3 **32**	2	1 Site
7	8	9	10	11	12
18 **67**	17	16	15 **48** **49**	14	13
19	20 **96**	21	22	23	24
30	29 **15**	28 **90**	27	26 **40**	25
31	32	33	34	35	36 **40**

- New Mexico State Engineers Well Reports
- USGS Well Reports
- Geology and Groundwater Conditions in Southern Eddy, County, NM
- NMOCD - Groundwater Data
- Field water level
- New Mexico Water and Infrastructure Data System

Appendix C

Summary Report

Ike Tavarez
Tetra Tech
1910 N. Big Spring Street
Midland, TX 79705

Report Date: November 5, 2013

Work Order: 13102423

Project Location: Eddy Co, NM
Project Name: COG/Loving St #2
Project Number: TBD

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
344640	AH-1 0-1'	soil	2013-10-23	00:00	2013-10-24
344641	AH-1 1-1.5'	soil	2013-10-23	00:00	2013-10-24
344642	AH-1 2-2.5'	soil	2013-10-23	00:00	2013-10-24
344643	AH-1 3-3.5'	soil	2013-10-23	00:00	2013-10-24
344644	AH-2 0-1'	soil	2013-10-23	00:00	2013-10-24
344645	AH-2 1-1.5'	soil	2013-10-23	00:00	2013-10-24
344646	AH-2 2-2.5'	soil	2013-10-23	00:00	2013-10-24
344647	AH-2 3-3.5'	soil	2013-10-23	00:00	2013-10-24
344648	AH-3 0-1'	soil	2013-10-23	00:00	2013-10-24
344649	AH-3 1-1.5'	soil	2013-10-23	00:00	2013-10-24
344650	AH-3 2-2.5'	soil	2013-10-23	00:00	2013-10-24
344651	AH-3 3-3.5'	soil	2013-10-23	00:00	2013-10-24

	BTEX				TPH DRO - NEW	TPH GRO
Sample - Field Code	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
344640 - AH-1 0-1'	<0.0200	**0.297**	**1.34**	**5.45**	**308**	**242** Qr,Qs
344641 - AH-1 1-1.5'					<50.0	**5.85** Qs
344644 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	**0.0239**	**98.8**	**6.60**
344645 - AH-2 1-1.5'					**2660**	<4.00 Qs
344646 - AH-2 2-2.5'					<50.0	<4.00 Qs
344648 - AH-3 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	**528**	**4.74** Qr,Qs
344649 - AH-3 1-1.5'					<50.0	<4.00 Qs

Sample: 344640 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 344641 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 344642 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 344643 - AH-1 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**235**	mg/Kg	4

Sample: 344644 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 344645 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 344646 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 344647 - AH-2 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**30.0**	mg/Kg	4

Sample: 344648 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 344649 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 344650 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 344651 - AH-3 3-3.5'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915-585-3443 FAX 915-585-4944
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(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBENC: 237019 HUB: 1752439743100-86536 DBE: VN 20657
NCTRCA WFWB38444Y0909

NELAP Certifications

Lubbock: T104704219-08-TX LELAP-02003 Kansas E-10317 **El Paso:** T104704221-08-TX LELAP-02002 **Midland:** T104704392-08-TX

Analytical and Quality Control Report

Ike Tavarez
Tetra Tech
1910 N. Big Spring Street
Midland, TX, 79705

Report Date: November 5, 2013

Work Order: 13102423

Project Location: Eddy Co, NM
Project Name: COG/Loving St #2
Project Number: TBD

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
344640	AH-1 0-1'	soil	2013-10-23	00:00	2013-10-24
344641	AH-1 1-1.5'	soil	2013-10-23	00:00	2013-10-24
344642	AH-1 2-2.5'	soil	2013-10-23	00:00	2013-10-24
344643	AH-1 3-3.5'	soil	2013-10-23	00:00	2013-10-24
344644	AH-2 0-1'	soil	2013-10-23	00:00	2013-10-24
344645	AH-2 1-1.5'	soil	2013-10-23	00:00	2013-10-24
344646	AH-2 2-2.5'	soil	2013-10-23	00:00	2013-10-24
344647	AH-2 3-3.5'	soil	2013-10-23	00:00	2013-10-24
344648	AH-3 0-1'	soil	2013-10-23	00:00	2013-10-24
344649	AH-3 1-1.5'	soil	2013-10-23	00:00	2013-10-24
344650	AH-3 2-2.5'	soil	2013-10-23	00:00	2013-10-24

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
344651	AH-3 3-3.5'	soil	2013-10-23	00:00	2013-10-24

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Case Narrative

Samples for project COG/Loving St #2 were received by TraceAnalysis, Inc. on 2013-10-24 and assigned to work order 13102423. Samples for work order 13102423 were received intact at a temperature of 4.4 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	89979	2013-10-25 at 09:16	106254	2013-10-26 at 10:48
BTEX	S 8021B	89999	2013-10-25 at 12:37	106332	2013-10-26 at 17:00
Chloride (Titration)	SM 4500-Cl B	90061	2013-10-29 at 13:46	106359	2013-10-30 at 14:19
Chloride (Titration)	SM 4500-Cl B	90061	2013-10-29 at 13:46	106364	2013-10-30 at 15:16
TPH DRO - NEW	S 8015 D	90025	2013-10-25 at 16:00	106285	2013-10-28 at 14:04
TPH DRO - NEW	S 8015 D	90062	2013-10-28 at 16:00	106322	2013-10-29 at 14:04
TPH DRO - NEW	S 8015 D	90106	2013-10-30 at 14:00	106384	2013-10-31 at 09:42
TPH GRO	S 8015 D	89979	2013-10-25 at 09:16	106255	2013-10-26 at 10:53
TPH GRO	S 8015 D	89999	2013-10-25 at 12:37	106333	2013-10-26 at 17:00
TPH GRO	S 8015 D	90076	2013-10-30 at 10:26	106377	2013-10-31 at 08:14

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 13102423 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 344640 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	106254	Date Analyzed:	2013-10-26	Analyzed By:	AK
Prep Batch:	89979	Sample Preparation:	2013-10-25	Prepared By:	AK

Parameter	Flag	Result	RL Units	Dilution	RL
Benzene		<0.0200	mg/Kg	1	0.0200
Toluene		**0.297**	mg/Kg	1	0.0200
Ethylbenzene		**1.34**	mg/Kg	1	0.0200
Xylene		**5.45**	mg/Kg	1	0.0200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.14	mg/Kg	1	2.00	107	70 - 130
4-Bromofluorobenzene (4-BFB)		5.65	mg/Kg	1	2.00	282	70 - 130

Sample: 344640 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106359	Date Analyzed:	2013-10-30	Analyzed By:	AR
Prep Batch:	90061	Sample Preparation:	2013-10-31	Prepared By:	AR

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		<20.0	mg/Kg	5	4.00

Sample: 344640 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	106285	Date Analyzed:	2013-10-28	Analyzed By:	KC
Prep Batch:	90025	Sample Preparation:	2013-10-25	Prepared By:	KC

Parameter	Flag	Result	RL Units	Dilution	RL
DRO		**308**	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		124	mg/Kg	1	100	124	70 - 130

Sample: 344640 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	106333	Date Analyzed:	2013-10-26	Analyzed By:	AK
Prep Batch:	89999	Sample Preparation:	2013-10-25	Prepared By:	AK

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		**242**	mg/Kg	5	4.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.31	mg/Kg	5	2.00	116	70 - 130
4-Bromofluorobenzene (4-BFB)		9.89	mg/Kg	5	2.00	494	70 - 130

Sample: 344641 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106359	Date Analyzed:	2013-10-30	Analyzed By:	AR
Prep Batch:	90061	Sample Preparation:	2013-10-31	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<20.0	mg/Kg	5	4.00

Sample: 344641 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	106322	Date Analyzed:	2013-10-29	Analyzed By:	KC
Prep Batch:	90062	Sample Preparation:	2013-10-28	Prepared By:	KC

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<50.0	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		89.9	mg/Kg	1	100	90	76.3 - 192.6

Sample: 344641 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	106377	Date Analyzed:	2013-10-31	Analyzed By:	AK
Prep Batch:	90076	Sample Preparation:	2013-10-30	Prepared By:	AK

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		**5.85**	mg/Kg	1	4.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.46	mg/Kg	1	2.00	123	70 - 130
4-Bromofluorobenzene (4-BFB)		2.24	mg/Kg	1	2.00	112	70 - 130

Sample: 344642 - AH-1 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106359	Date Analyzed:	2013-10-30	Analyzed By:	AR
Prep Batch:	90061	Sample Preparation:	2013-10-31	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<20.0	mg/Kg	5	4.00

Sample: 344643 - AH-1 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106359	Date Analyzed:	2013-10-30	Analyzed By:	AR
Prep Batch:	90061	Sample Preparation:	2013-10-31	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**235**	mg/Kg	5	4.00

Sample: 344644 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	106254	Date Analyzed:	2013-10-26	Analyzed By:	AK
Prep Batch:	89979	Sample Preparation:	2013-10-25	Prepared By:	AK

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.0200	mg/Kg	1	0.0200
Toluene		<0.0200	mg/Kg	1	0.0200
Ethylbenzene		<0.0200	mg/Kg	1	0.0200
Xylene		**0.0239**	mg/Kg	1	0.0200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.09	mg/Kg	1	2.00	104	70 - 130
4-Bromofluorobenzene (4-BFB)		2.08	mg/Kg	1	2.00	104	70 - 130

Sample: 344644 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106359	Date Analyzed:	2013-10-30	Analyzed By:	AR
Prep Batch:	90061	Sample Preparation:	2013-10-31	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<20.0	mg/Kg	5	4.00

Sample: 344644 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	106285	Date Analyzed:	2013-10-28	Analyzed By:	KC
Prep Batch:	90025	Sample Preparation:	2013-10-25	Prepared By:	KC

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		**98.8**	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		116	mg/Kg	1	100	116	70 - 130

Sample: 344644 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	106255	Date Analyzed:	2013-10-26	Analyzed By:	AK
Prep Batch:	89979	Sample Preparation:	2013-10-25	Prepared By:	AK

Parameter	Flag	Result	RL	Units	Dilution	RL
GRO		**6.60**		mg/Kg	1	4.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.38	mg/Kg	1	2.00	119	70 - 130
4-Bromofluorobenzene (4-BFB)		3.24	mg/Kg	1	2.00	162	70 - 130

Sample: 344645 - AH-2 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106359	Date Analyzed:	2013-10-30	Analyzed By:	AR
Prep Batch:	90061	Sample Preparation:	2013-10-31	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		<20.0		mg/Kg	5	4.00

Sample: 344645 - AH-2 1-1.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	106322	Date Analyzed:	2013-10-29	Analyzed By:	KC
Prep Batch:	90062	Sample Preparation:	2013-10-28	Prepared By:	KC

Parameter	Flag	Result	RL	Units	Dilution	RL
DRO		**2660**		mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		306	mg/Kg	1	100	306	76.3 - 192.6

Sample: 344645 - AH-2 1-1.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	106377	Date Analyzed:	2013-10-31	Analyzed By:	AK
Prep Batch:	90076	Sample Preparation:	2013-10-30	Prepared By:	AK

Parameter	Flag	Result	RL	Units	Dilution	RL
GRO		<4.00		mg/Kg	1	4.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.28	mg/Kg	1	2.00	114	70 - 130
4-Bromofluorobenzene (4-BFB)		2.31	mg/Kg	1	2.00	116	70 - 130

Sample: 344646 - AH-2 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106359	Date Analyzed:	2013-10-30	Analyzed By:	AR
Prep Batch:	90061	Sample Preparation:	2013-10-31	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		<20.0		mg/Kg	5	4.00

Sample: 344646 - AH-2 2-2.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	106384	Date Analyzed:	2013-10-31	Analyzed By:	KC
Prep Batch:	90106	Sample Preparation:	2013-10-30	Prepared By:	KC

Parameter	Flag	Result	RL	Units	Dilution	RL
DRO		<50.0		mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		95.8	mg/Kg	1	100	96	70 - 130

Sample: 344646 - AH-2 2-2.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	106377	Date Analyzed:	2013-10-31	Analyzed By:	AK
Prep Batch:	90076	Sample Preparation:	2013-10-30	Prepared By:	AK

Parameter	Flag	Result	RL	Units	Dilution	RL
GRO		<4.00		mg/Kg	1	4.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.50	mg/Kg	1	2.00	125	70 - 130
4-Bromofluorobenzene (4-BFB)		2.50	mg/Kg	1	2.00	125	70 - 130

Sample: 344647 - AH-2 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106359	Date Analyzed:	2013-10-30	Analyzed By:	AR
Prep Batch:	90061	Sample Preparation:	2013-10-31	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		**30.0**		mg/Kg	5	4.00

Sample: 344648 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	106332	Date Analyzed:	2013-10-26	Analyzed By:	AK
Prep Batch:	89999	Sample Preparation:	2013-10-25	Prepared By:	AK

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		<0.0200		mg/Kg	1	0.0200
Toluene		<0.0200		mg/Kg	1	0.0200
Ethylbenzene		<0.0200		mg/Kg	1	0.0200
Xylene		<0.0200		mg/Kg	1	0.0200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.86	mg/Kg	1	2.00	93	70 - 130
4-Bromofluorobenzene (4-BFB)		2.19	mg/Kg	1	2.00	110	70 - 130

Sample: 344648 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106359	Date Analyzed:	2013-10-30	Analyzed By:	AR
Prep Batch:	90061	Sample Preparation:	2013-10-31	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		<20.0		mg/Kg	5	4.00

Sample: 344648 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	106322	Date Analyzed:	2013-10-29	Analyzed By:	KC
Prep Batch:	90062	Sample Preparation:	2013-10-28	Prepared By:	KC

Parameter	Flag	Result	RL	Units	Dilution	RL
DRO		**528**		mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		168	mg/Kg	1	100	168	76.3 - 192.6

Sample: 344648 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	106333	Date Analyzed:	2013-10-26	Analyzed By:	AK
Prep Batch:	89999	Sample Preparation:	2013-10-25	Prepared By:	AK

Parameter	Flag	Result	RL	Units	Dilution	RL
GRO		**4.74**		mg/Kg	1	4.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.03	mg/Kg	1	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)		1.68	mg/Kg	1	2.00	84	70 - 130

Sample: 344649 - AH-3 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106359	Date Analyzed:	2013-10-30	Analyzed By:	AR
Prep Batch:	90061	Sample Preparation:	2013-10-31	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<20.0	mg/Kg	5	4.00

Sample: 344649 - AH-3 1-1.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	106384	Date Analyzed:	2013-10-31	Analyzed By:	KC
Prep Batch:	90106	Sample Preparation:	2013-10-30	Prepared By:	KC

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<50.0	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		93.0	mg/Kg	1	100	93	70 - 130

Sample: 344649 - AH-3 1-1.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	106377	Date Analyzed:	2013-10-31	Analyzed By:	AK
Prep Batch:	90076	Sample Preparation:	2013-10-30	Prepared By:	AK

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<4.00	mg/Kg	1	4.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.27	mg/Kg	1	2.00	114	70 - 130
4-Bromofluorobenzene (4-BFB)		2.33	mg/Kg	1	2.00	116	70 - 130

Sample: 344650 - AH-3 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106364	Date Analyzed:	2013-10-30	Analyzed By:	AR
Prep Batch:	90061	Sample Preparation:	2013-10-31	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<20.0	mg/Kg	5	4.00

Sample: 344651 - AH-3 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106364	Date Analyzed:	2013-10-30	Analyzed By:	AR
Prep Batch:	90061	Sample Preparation:	2013-10-31	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<20.0	mg/Kg	5	4.00

Method Blank (1) QC Batch: 106254

QC Batch:	106254	Date Analyzed:	2013-10-26	Analyzed By:	AK
Prep Batch:	89979	QC Preparation:	2013-10-25	Prepared By:	AK

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.00810	mg/Kg	0.02
Toluene		<0.00750	mg/Kg	0.02
Ethylbenzene		<0.00730	mg/Kg	0.02
Xylene		<0.00700	mg/Kg	0.02

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.26	mg/Kg	1	2.00	113	70 - 130
4-Bromofluorobenzene (4-BFB)		2.11	mg/Kg	1	2.00	106	70 - 130

Method Blank (1) QC Batch: 106255

QC Batch:	106255	Date Analyzed:	2013-10-26	Analyzed By:	AK
Prep Batch:	89979	QC Preparation:	2013-10-25	Prepared By:	AK

Parameter	Flag	MDL Result	Units	RL
GRO		<2.32	mg/Kg	4

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.39	mg/Kg	1	2.00	120	70 - 130
4-Bromofluorobenzene (4-BFB)		2.52	mg/Kg	1	2.00	126	70 - 130

Method Blank (1) QC Batch: 106285

QC Batch: 106285 Date Analyzed: 2013-10-28 Analyzed By: KC
Prep Batch: 90025 QC Preparation: 2013-10-25 Prepared By: KC

Parameter	Flag	MDL Result	Units	RL
DRO		7.98	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		106	mg/Kg	1	100	106	88.3 - 126.1

Method Blank (1) QC Batch: 106322

QC Batch: 106322 Date Analyzed: 2013-10-29 Analyzed By: KC
Prep Batch: 90062 QC Preparation: 2013-10-28 Prepared By: KC

Parameter	Flag	MDL Result	Units	RL
DRO		15.0	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		103	mg/Kg	1	100	103	64.1 - 164.4

Method Blank (1) QC Batch: 106332

QC Batch: 106332 Date Analyzed: 2013-10-26 Analyzed By: AK
Prep Batch: 89999 QC Preparation: 2013-10-25 Prepared By: AK

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.00810	mg/Kg	0.02

continued ...

method blank continued ...

Parameter	Flag	MDL Result	Units	RL
Toluene		<0.00750	mg/Kg	0.02
Ethylbenzene		<0.00730	mg/Kg	0.02
Xylene		<0.00700	mg/Kg	0.02

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.08	mg/Kg	1	2.00	104	70 - 130
4-Bromofluorobenzene (4-BFB)		1.96	mg/Kg	1	2.00	98	70 - 130

Method Blank (1) QC Batch: 106333

QC Batch: 106333 Date Analyzed: 2013-10-26 Analyzed By: AK
Prep Batch: 89999 QC Preparation: 2013-10-25 Prepared By: AK

Parameter	Flag	MDL Result	Units	RL
GRO		<2.32	mg/Kg	4

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.35	mg/Kg	1	2.00	118	70 - 130
4-Bromofluorobenzene (4-BFB)		2.38	mg/Kg	1	2.00	119	70 - 130

Method Blank (1) QC Batch: 106359

QC Batch: 106359 Date Analyzed: 2013-10-30 Analyzed By: AR
Prep Batch: 90061 QC Preparation: 2013-10-29 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<3.85	mg/Kg	4

Method Blank (1) QC Batch: 106364

QC Batch: 106364 Date Analyzed: 2013-10-30 Analyzed By: AR
Prep Batch: 90061 QC Preparation: 2013-10-29 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<3.85	mg/Kg	4

Method Blank (1) QC Batch: 106377

QC Batch: 106377 | Date Analyzed: 2013-10-31 | Analyzed By: AK
Prep Batch: 90076 | QC Preparation: 2013-10-30 | Prepared By: AK

Parameter	Flag	MDL Result	Units	RL
GRO		<2.32	mg/Kg	4

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.38	mg/Kg	1	2.00	119	70 - 130
4-Bromofluorobenzene (4-BFB)		2.26	mg/Kg	1	2.00	113	70 - 130

Method Blank (1) QC Batch: 106384

QC Batch: 106384 | Date Analyzed: 2013-10-31 | Analyzed By: KC
Prep Batch: 90106 | QC Preparation: 2013-10-30 | Prepared By: KC

Parameter	Flag	MDL Result	Units	RL
DRO		8.80	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		121	mg/Kg	1	100	121	88.3 - 126.1

Laboratory Control Spike (LCS-1)

QC Batch: 106254 | Date Analyzed: 2013-10-26 | Analyzed By: AK
Prep Batch: 89979 | QC Preparation: 2013-10-25 | Prepared By: AK

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	2.03	mg/Kg	1	2.00	<0.00810	102	70 - 130
Toluene	2.07	mg/Kg	1	2.00	<0.00750	104	70 - 130
Ethylbenzene	2.12	mg/Kg	1	2.00	<0.00730	106	70 - 130
Xylene	6.47	mg/Kg	1	6.00	<0.00700	108	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	2.13	mg/Kg	1	2.00	<0.00810	106	70 - 130	5	20
Toluene	2.12	mg/Kg	1	2.00	<0.00750	106	70 - 130	2	20

continued ...

control spikes continued ...

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Ethylbenzene	2.20	mg/Kg	1	2.00	<0.00730	110	70 - 130	4	20
Xylene	6.62	mg/Kg	1	6.00	<0.00700	110	70 - 130	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.18	2.28	mg/Kg	1	2.00	109	114	70 - 130
4-Bromofluorobenzene (4-BFB)	2.21	2.07	mg/Kg	1	2.00	110	104	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 106255 | Date Analyzed: 2013-10-26 | Analyzed By: AK
Prep Batch: 89979 | QC Preparation: 2013-10-25 | Prepared By: AK

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	17.7	mg/Kg	1	20.0	<2.32	88	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	17.0	mg/Kg	1	20.0	<2.32	85	70 - 130	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.42	2.36	mg/Kg	1	2.00	121	118	70 - 130
4-Bromofluorobenzene (4-BFB)	2.50	2.42	mg/Kg	1	2.00	125	121	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 106285 | Date Analyzed: 2013-10-28 | Analyzed By: KC
Prep Batch: 90025 | QC Preparation: 2013-10-25 | Prepared By: KC

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	215	mg/Kg	1	250	7.98	83	79.4 - 120.1

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

continued ...

control spikes continued ...

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	233	mg/Kg	1	250	7.98	90	79.4 - 120.1	8	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	100	98.4	mg/Kg	1	100	100	98	92.9 - 137.7

Laboratory Control Spike (LCS-1)

QC Batch: 106322 | Date Analyzed: 2013-10-29 | Analyzed By: KC
Prep Batch: 90062 | QC Preparation: 2013-10-28 | Prepared By: KC

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	297	mg/Kg	1	250	15	113	53.8 - 129

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	315	mg/Kg	1	250	15	126	53.8 - 129	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	115	118	mg/Kg	1	100	115	118	61.3 - 170.4

Laboratory Control Spike (LCS-1)

QC Batch: 106332 | Date Analyzed: 2013-10-26 | Analyzed By: AK
Prep Batch: 89999 | QC Preparation: 2013-10-25 | Prepared By: AK

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	2.19	mg/Kg	1	2.00	<0.00810	110	70 - 130
Toluene	2.20	mg/Kg	1	2.00	<0.00750	110	70 - 130
Ethylbenzene	2.31	mg/Kg	1	2.00	<0.00730	116	70 - 130
Xylene	6.94	mg/Kg	1	6.00	<0.00700	116	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	2.12	mg/Kg	1	2.00	<0.00810	106	70 - 130	3	20
Toluene	2.13	mg/Kg	1	2.00	<0.00750	106	70 - 130	3	20
Ethylbenzene	2.21	mg/Kg	1	2.00	<0.00730	110	70 - 130	4	20
Xylene	6.67	mg/Kg	1	6.00	<0.00700	111	70 - 130	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.31	2.24	mg/Kg	1	2.00	116	112	70 - 130
4-Bromofluorobenzene (4-BFB)	2.35	2.19	mg/Kg	1	2.00	118	110	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 106333 | Date Analyzed: 2013-10-26 | Analyzed By: AK
Prep Batch: 89999 | QC Preparation: 2013-10-25 | Prepared By: AK

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	16.3	mg/Kg	1	20.0	<2.32	82	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	17.2	mg/Kg	1	20.0	<2.32	86	70 - 130	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.25	2.32	mg/Kg	1	2.00	112	116	70 - 130
4-Bromofluorobenzene (4-BFB)	2.61	2.44	mg/Kg	1	2.00	130	122	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 106359 | Date Analyzed: 2013-10-30 | Analyzed By: AR
Prep Batch: 90061 | QC Preparation: 2013-10-29 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	2360	mg/Kg	1	2500	<3.85	94	89.7 - 115.9

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	2470	mg/Kg	1	2500	<3.85	99	89.7 - 115.9	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 106364 | Date Analyzed: 2013-10-30 | Analyzed By: AR
Prep Batch: 90061 | QC Preparation: 2013-10-29 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	2690	mg/Kg	1	2500	<3.85	108	89.7 - 115.9

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	2520	mg/Kg	1	2500	<3.85	101	89.7 - 115.9	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 106377 | Date Analyzed: 2013-10-31 | Analyzed By: AK
Prep Batch: 90076 | QC Preparation: 2013-10-30 | Prepared By: AK

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	15.3	mg/Kg	1	20.0	<2.32	76	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	15.4	mg/Kg	1	20.0	<2.32	77	70 - 130	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.30	2.21	mg/Kg	1	2.00	115	110	70 - 130
4-Bromofluorobenzene (4-BFB)	2.42	2.34	mg/Kg	1	2.00	121	117	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 106384 | Date Analyzed: 2013-10-31 | Analyzed By: KC
Prep Batch: 90106 | QC Preparation: 2013-10-30 | Prepared By: KC

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	213	mg/Kg	1	250	8.8	82	79.4 - 120.1

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	245	mg/Kg	1	250	8.8	94	79.4 - 120.1	14	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	104	104	mg/Kg	1	100	104	104	92.9 - 137.7

Matrix Spike (MS-1) Spiked Sample: 344503

QC Batch: 106254 | Date Analyzed: 2013-10-26 | Analyzed By: AK
Prep Batch: 89979 | QC Preparation: 2013-10-25 | Prepared By: AK

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	2.09	mg/Kg	1	2.00	<0.00810	104	70 - 130
Toluene	2.09	mg/Kg	1	2.00	<0.00750	104	70 - 130
Ethylbenzene	2.14	mg/Kg	1	2.00	<0.00730	107	70 - 130
Xylene	6.45	mg/Kg	1	6.00	<0.00700	108	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	2.04	mg/Kg	1	2.00	<0.00810	102	70 - 130	2	20
Toluene	2.04	mg/Kg	1	2.00	<0.00750	102	70 - 130	2	20
Ethylbenzene	2.14	mg/Kg	1	2.00	<0.00730	107	70 - 130	0	20
Xylene	6.44	mg/Kg	1	6.00	<0.00700	107	70 - 130	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.19	2.12	mg/Kg	1	2	110	106	70 - 130
4-Bromofluorobenzene (4-BFB)	2.07	2.09	mg/Kg	1	2	104	104	70 - 130

Matrix Spike (MS-1) Spiked Sample: 344503

QC Batch: 106255 | Date Analyzed: 2013-10-26 | Analyzed By: AK
Prep Batch: 89979 | QC Preparation: 2013-10-25 | Prepared By: AK

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	17.2	mg/Kg	1	20.0	<2.32	86	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	17.0	mg/Kg	1	20.0	<2.32	85	70 - 130	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.42	2.33	mg/Kg	1	2	121	116	70 - 130
4-Bromofluorobenzene (4-BFB)	2.51	2.43	mg/Kg	1	2	126	122	70 - 130

Matrix Spike (MS-1) Spiked Sample: 344644

QC Batch: 106285 | Date Analyzed: 2013-10-28 | Analyzed By: KC
Prep Batch: 90025 | QC Preparation: 2013-10-25 | Prepared By: KC

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	280	mg/Kg	1	250	98.8	72	64.8 - 149.9

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	272	mg/Kg	1	250	98.8	69	64.8 - 149.9	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	116	113	mg/Kg	1	100	116	113	85.4 - 147.7

Matrix Spike (MS-1) Spiked Sample: 344877

QC Batch: 106322 | Date Analyzed: 2013-10-29 | Analyzed By: KC
Prep Batch: 90062 | QC Preparation: 2013-10-28 | Prepared By: KC

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	301	mg/Kg	1	250	14	115	29 - 168.5

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	292	mg/Kg	1	250	14	111	29 - 168.5	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	106	104	mg/Kg	1	100	106	104	59.5 - 168.9

Matrix Spike (MS-1) Spiked Sample: 344652

QC Batch: 106332 | Date Analyzed: 2013-10-26 | Analyzed By: AK
Prep Batch: 89999 | QC Preparation: 2013-10-25 | Prepared By: AK

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.83	mg/Kg	1	2.00	<0.00810	92	70 - 130
Toluene	1.86	mg/Kg	1	2.00	<0.00750	93	70 - 130
Ethylbenzene	1.93	mg/Kg	1	2.00	<0.00730	96	70 - 130
Xylene	5.80	mg/Kg	1	6.00	<0.00700	97	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	1.94	mg/Kg	1	2.00	<0.00810	97	70 - 130	6	20
Toluene	1.97	mg/Kg	1	2.00	<0.00750	98	70 - 130	6	20
Ethylbenzene	2.04	mg/Kg	1	2.00	<0.00730	102	70 - 130	6	20
Xylene	6.15	mg/Kg	1	6.00	<0.00700	102	70 - 130	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.95	2.07	mg/Kg	1	2	98	104	70 - 130
4-Bromofluorobenzene (4-BFB)	1.94	2.02	mg/Kg	1	2	97	101	70 - 130

Matrix Spike (MS-1) Spiked Sample: 344652

QC Batch: 106333 | Date Analyzed: 2013-10-26 | Analyzed By: AK
Prep Batch: 89999 | QC Preparation: 2013-10-25 | Prepared By: AK

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	29.0	mg/Kg	1	20.0	<2.32	145	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	16.0	mg/Kg	1	20.0	<2.32	80	70 - 130	58	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.81	2.24	mg/Kg	1	2	140	112	70 - 130
4-Bromofluorobenzene (4-BFB)	3.06	2.50	mg/Kg	1	2	153	125	70 - 130

Matrix Spike (MS-1) Spiked Sample: 344649

QC Batch: 106359 | Date Analyzed: 2013-10-30 | Analyzed By: AR
Prep Batch: 90061 | QC Preparation: 2013-10-29 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	2440	mg/Kg	5	2500	<19.2	98	78.9 - 121

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	2600	mg/Kg	5	2500	<19.2	104	78.9 - 121	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 344659

QC Batch: 106364 | Date Analyzed: 2013-10-30 | Analyzed By: AR
Prep Batch: 90061 | QC Preparation: 2013-10-29 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	6000	mg/Kg	10	2500	3300	108	78.9 - 121

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	5740	mg/Kg	10	2500	3300	98	78.9 - 121	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 344673

QC Batch: 106377 | Date Analyzed: 2013-10-31 | Analyzed By: AK
Prep Batch: 90076 | QC Preparation: 2013-10-30 | Prepared By: AK

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	3000	mg/Kg	50	20.0	2500	2500	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	2900	mg/Kg	50	20.0	2500	2000	70 - 130	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.75	1.56	mg/Kg	50	2	88	78	70 - 130
4-Bromofluorobenzene (4-BFB)	89.4	89.4	mg/Kg	50	2	4470	4470	70 - 130

Matrix Spike (MS-1) Spiked Sample: 344661

QC Batch: 106384 | Date Analyzed: 2013-10-31 | Analyzed By: KC
Prep Batch: 90106 | QC Preparation: 2013-10-30 | Prepared By: KC

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	201	mg/Kg	1	250	10.6	76	64.8 - 149.9

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	203	mg/Kg	1	250	10.6	77	64.8 - 149.9	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	93.6	95.7	mg/Kg	1	100	94	96	85.4 - 147.7

Standard (CCV-1)

QC Batch: 106254 | Date Analyzed: 2013-10-26 | Analyzed By: AK

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/kg	0.100	0.111	111	80 - 120	2013-10-26
Toluene		mg/kg	0.100	0.109	109	80 - 120	2013-10-26
Ethylbenzene		mg/kg	0.100	0.108	108	80 - 120	2013-10-26
Xylene		mg/kg	0.300	0.326	109	80 - 120	2013-10-26

Standard (CCV-2)

QC Batch: 106254 Date Analyzed: 2013-10-26 Analyzed By: AK

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/kg	0.100	0.114	114	80 - 120	2013-10-26
Toluene		mg/kg	0.100	0.112	112	80 - 120	2013-10-26
Ethylbenzene		mg/kg	0.100	0.110	110	80 - 120	2013-10-26
Xylene		mg/kg	0.300	0.331	110	80 - 120	2013-10-26

Standard (CCV-3)

QC Batch: 106254 Date Analyzed: 2013-10-26 Analyzed By: AK

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/kg	0.100	0.109	109	80 - 120	2013-10-26
Toluene		mg/kg	0.100	0.108	108	80 - 120	2013-10-26
Ethylbenzene		mg/kg	0.100	0.105	105	80 - 120	2013-10-26
Xylene		mg/kg	0.300	0.313	104	80 - 120	2013-10-26

Standard (CCV-1)

QC Batch: 106255 Date Analyzed: 2013-10-26 Analyzed By: AK

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.14	114	80 - 120	2013-10-26

Standard (CCV-2)

QC Batch: 106255 Date Analyzed: 2013-10-26 Analyzed By: AK

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.929	93	80 - 120	2013-10-26

Standard (CCV-3)

QC Batch: 106255 Date Analyzed: 2013-10-26 Analyzed By: AK

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.02	102	80 - 120	2013-10-26

Standard (CCV-1)

QC Batch: 106285 Date Analyzed: 2013-10-28 Analyzed By: KC

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	206	82	80 - 120	2013-10-28

Standard (CCV-2)

QC Batch: 106285 Date Analyzed: 2013-10-28 Analyzed By: KC

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	233	93	80 - 120	2013-10-28

Standard (CCV-3)

QC Batch: 106285 Date Analyzed: 2013-10-28 Analyzed By: KC

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	206	82	80 - 120	2013-10-28

Standard (CCV-1)

QC Batch: 106322 Date Analyzed: 2013-10-29 Analyzed By: KC

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	298	119	80 - 120	2013-10-29

Standard (CCV-2)

QC Batch: 106322 Date Analyzed: 2013-10-29 Analyzed By: KC

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	276	110	80 - 120	2013-10-29

Standard (CCV-3)

QC Batch: 106322 Date Analyzed: 2013-10-29 Analyzed By: KC

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	282	113	80 - 120	2013-10-29

Standard (CCV-1)

QC Batch: 106332 Date Analyzed: 2013-10-26 Analyzed By: AK

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/kg	0.100	0.109	109	80 - 120	2013-10-26
Toluene		mg/kg	0.100	0.108	108	80 - 120	2013-10-26
Ethylbenzene		mg/kg	0.100	0.105	105	80 - 120	2013-10-26
Xylene		mg/kg	0.300	0.313	104	80 - 120	2013-10-26

Standard (CCV-2)

QC Batch: 106332 Date Analyzed: 2013-10-26 Analyzed By: AK

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/kg	0.100	0.111	111	80 - 120	2013-10-26
Toluene		mg/kg	0.100	0.108	108	80 - 120	2013-10-26
Ethylbenzene		mg/kg	0.100	0.105	105	80 - 120	2013-10-26
Xylene		mg/kg	0.300	0.315	105	80 - 120	2013-10-26

Standard (CCV-3)

QC Batch: 106332 Date Analyzed: 2013-10-26 Analyzed By: AK

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/kg	0.100	0.108	108	80 - 120	2013-10-26
Toluene		mg/kg	0.100	0.106	106	80 - 120	2013-10-26
Ethylbenzene		mg/kg	0.100	0.102	102	80 - 120	2013-10-26
Xylene		mg/kg	0.300	0.307	102	80 - 120	2013-10-26

Standard (CCV-1)

QC Batch: 106333 Date Analyzed: 2013-10-26 Analyzed By: AK

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.03	103	80 - 120	2013-10-26

Standard (CCV-2)

QC Batch: 106333 Date Analyzed: 2013-10-26 Analyzed By: AK

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.935	94	80 - 120	2013-10-26

Standard (CCV-3)

QC Batch: 106333 Date Analyzed: 2013-10-26 Analyzed By: AK

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.952	95	80 - 120	2013-10-26

Standard (CCV-1)

QC Batch: 106359 Date Analyzed: 2013-10-30 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2013-10-30

Standard (CCV-2)

QC Batch: 106359 | Date Analyzed: 2013-10-30 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.9	100	85 - 115	2013-10-30

Standard (CCV-1)

QC Batch: 106364 | Date Analyzed: 2013-10-30 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2013-10-30

Standard (CCV-2)

QC Batch: 106364 | Date Analyzed: 2013-10-30 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.2	99	85 - 115	2013-10-30

Standard (CCV-1)

QC Batch: 106377 | Date Analyzed: 2013-10-31 | Analyzed By: AK

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.891	89	80 - 120	2013-10-31

Standard (CCV-2)

QC Batch: 106377 | Date Analyzed: 2013-10-31 | Analyzed By: AK

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.914	91	80 - 120	2013-10-31

Standard (CCV-3)

QC Batch: 106377 Date Analyzed: 2013-10-31 Analyzed By: AK

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.06	106	80 - 120	2013-10-31

Standard (CCV-1)

QC Batch: 106384 Date Analyzed: 2013-10-31 Analyzed By: KC

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	241	96	80 - 120	2013-10-31

Standard (CCV-2)

QC Batch: 106384 Date Analyzed: 2013-10-31 Analyzed By: KC

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	215	86	80 - 120	2013-10-31

10-24

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 2

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

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.:

PROJECT NAME: COG- Loving St. #2 Lidly Co, NM

LAB I.D. NUMBER	DATE 2013	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	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. 8081/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
544640	10/23		S		X	AH 1 (0-1)	1				Y		X	X										X				
641						(1-1.5)	1																	X				
642						(2-2.5)	1																	X				
643						(3-3.5)	1																	X				
644						AH 2 (0-1)	1						X	X										X				
645						(1-1.5)	1																	X				
646						(2-2.5)	1																	X				
647						(3-3.5)	1																	X				
648						AH 3 (0-1)	1						X	X										X				
649						(1-1.5)	1																	X				

RELINQUISHED BY: (Signature) Date: 10-24-13 Time: 1430 RECEIVED BY: (Signature) Date: 10/24/13 Time: 14:35

SAMPLED BY: (Print & Initial) Adrian / MarcusG Date: Time:

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

SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS AIRBILL #: OTHER:

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

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RECEIVING LABORATORY: Trace RECEIVED BY: (Signature)

ADDRESS:

CITY: Midland STATE: ZIP:

CONTACT: PHONE: DATE: TIME:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 4°C

REMARKS: Run deeper samples if Total Benzene exceeds 10 mg/kg or Total BTEX exceeds 50 ~~or TPH exceeds~~ YC

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

Midland - all

Run deeper samples if TPH exceeds 100 mg/kg

01 4c

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: Ike Tavarez

PROJECT NO.:

PROJECT NAME: COG-Loving St #2 Eddy Co, NM

LAB I.D. NUMBER	DATE 2013	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	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. 8080/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
(50)	10/23		S		X	AH 3 (2-2.5)	1					X													X				
(51)	10/23		S		X	(3-3.5)	1					X													X				

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature)	Date: 10-24-13 Time: 1438	RECEIVED BY: (Signature)	Date: 10/24/13 Time: 14:35
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:

SAMPLED BY: (Print & Initial) Adrian & Marcus AG Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS AIRBILL #: OTHER:

RECEIVING LABORATORY: Trace RECEIVED BY: (Signature)

ADDRESS:

CITY: Midland STATE: ZIP:

CONTACT: PHONE: DATE: TIME:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 4 40

REMARKS: KC

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.