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

HOBBS OCD
AUG 28 2014
RECEIVED

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 **Pat Ellis**
Address **600 West Illinois Avenue, Midland, Texas 79701**	Telephone No. **(432) 230-0077**
Facility Name Prohibition Federal Unit #2	Facility Type **SWD**

Surface Owner: Federal	Mineral Owner	Lease No. (API#) 30-025-31716

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
K	11	22S	32E					Lea

Latitude N 32.40443 ° **Longitude** W 103.64730°

NATURE OF RELEASE

Type of Release: Oil and produced water	Volume of Release 10 **bbls of oil** 30 bbls produced water	Volume Recovered 7 **bbls of oil** 25 bbls produced water
Source of Release: Water Tank	Date and Hour of Occurrence 09-24-2013	Date and Hour of Discovery **09-24-2013 8:00 a.m.**
Was Immediate Notice Given? ☒ Yes ☐ No ☒ Not Required	If YES, To Whom? **Geoffrey Leking NMOCD**	
By Whom? Michelle Mullins	Date and Hour 09-25-2013 07:39 a.m.	
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.*

Plunger on triplex pump broke. Replaced triplex pump.

Describe Area Affected and Cleanup Action Taken.*

Initially 10 bbls of oil and 30 bbls of produced water were released due to a mechanical failure on the triplex pump, causing the water tank to overflow. We were able to recover 7 bbls of oil and 25 bbls of produced water with a vacuum truck. The spill occurred in an unlined facility. Tetra Tech inspected site and collected samples to define spills extent. Soil that exceeded RRAL or impacted chloride soil were removed and hauled away for proper disposal. The entire facility was capped with clay and backfilled with clean backfill material. Tetra Tech prepared closure report and submitted to NMOCD for review.

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

Signature:	OIL CONSERVATION DIVISION
Printed Name: Ike Tavarez (agent for COG)	Approved by ~~District Supervisor~~: Environmental Specialist
Title: Senior Project Manager	Approval Date: 8-28-14 Expiration Date: —
E-mail Address: ike.tavarez@tetratech.com	Conditions of Approval: — Attached ☐ IRP-32837
Date: 7-2-14 Phone: (432) 686-3023	

AUG 28 2014

og-id 229137
n701424 041693
p701424 041609

SITE INFORMATION

Report Type: Closure Report

HOBBS OCD

AUG 28 2014

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General Site Information:					
Site:	**Prohibition Federal Unit #2 SWD**				
Company:	**COG Operating LLC**				
Section, Township and Range	**Unit K**	**Sec 11**	**T22S**	**R32E**	
Lease Number:	**API-30-025-31716**				
County:	**Lea County**				
GPS:	**32.40443° N**			**103.64730° W**	
Surface Owner:	**Federal**				
Mineral Owner:					
Directions:	East of Loving at the intersection of Hwy 31 and Hwy 128 (Jal Hwy), travel east on Hwy 128 for 17.8 miles, turn left onto Red Rd and travel for 7.32 miles, turn right (Mills Ranch Rd) and travel for 7.1 miles, turn left and travel 1.2 miles to site.				

Release Data:	
Date Released:	9/25/2013
Type Release:	Oil and Produced Water
Source of Contamination:	Produced Water Tank
Fluid Released:	10 bbls of Oil, 30 bbls of Produced Water
Fluids Recovered:	7 bbls of Oil, 25 bbls of Produced Water

Official Communication:			
Name:	Robert McNeill		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	600 W. Illinois Ave.		4000 N. Big Spring
P.O. Box			Suite 401
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 682-4559
Fax:	(432) 684-7137		
Email:	rmcneill@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	0
WellHead Protection:	***Ranking Score***	***Site Data***
Water Source <1,000 ft., Private <200 ft.	*20*	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:	***Ranking Score***	***Site Data***
<200 ft.	*20*	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
Total Ranking Score:	**0**	

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

TETRA TECH

July 2, 2014

Mr. Geoffrey Leking
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Closure Report for the COG Operating LLC., Prohibition Federal Unit #2 SWD, Unit K, Section 11, Township 22 South, Range 32 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the Prohibition Federal Unit #2 SWD, Unit K, Section 11, Township 22 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.40443°, W 103.64730°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on September 24, 2013, and released approximately ten (10) barrels of oil and thirty (30) barrels of produced water from the water tank with seven (7) barrels oil and twenty five (25) barrels of produced water recovered. The spill was completely contained inside the firewalls of the tank battery and measured approximately 20' x 85'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 11. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 350' below surface. The USGS and the New Mexico State Engineers have wells listed in Section 14 at depths to groundwater of 382' and 350', respectively. The average depth to groundwater map is shown in Appendix B.

Tetra Tech
1910 North Big Spring, Midland,TX 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 5,000 mg/kg.

Soil Assessment and Analytical Results

On October 29, 2013, Tetra Tech personnel inspected and sampled the spill area. Four (3) auger holes (AH-1 through AH-3) were installed using a stainless steel hand auger 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 sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, all auger holes showed concentrations below the RRAL for TPH, BTEX, and Benzene. However, the auger holes (AH-1, AH-2 and AH-3) showed elevated chloride concentrations. The areas of auger hole (AH-1 and AH-3) were not vertically defined, with bottom hole samples of 3,290 mg/kg at 2-2.5' and 3,460 mg/kg at 1-1.5', respectively. Auger hole (AH-2) did show a significant decline with depth to 798 mg/kg at 2-2.5' below surface.

Remediation Activities

Once the assessment was performed, Tetra Tech submitted a work plan for removal of the impacted soils where accessible. However, COG decided to reconstruct the tank battery facility, which included lining the facility. All of the tanks, piping, and pumps were moved and this allowed Tetra Tech access the area to properly delineate and remediate the site.

On April 30, 2014, Tetra Tech began supervising the excavation of impacted materials as highlighted (green) on Table 1 and shown on Figure 4. Initially, Tetra Tech excavated approximately 2.0' of soil inside the facility firewalls. Once completed, three (3) boreholes were installed in the areas of AH-1 (BH-3), AH-2 (BH-2) and AH-3 (BH-1) to define the chloride extents.

Referring to Table 1, boreholes (BH-1, BH-2, and BH-3) showed elevated chloride concentrations of 18,200 mg/kg at 39'-40', 2,660 mg/kg at 2'-3', and 11,600 mg/kg at 19'-20' below excavation bottom (2.0'), respectively. The chloride concentrations declined with depth to 148 mg/kg at 69'-70', 294 mg/kg at 49'-50', and 500 mg/kg at 39'-40' below excavation bottom.

After drilling the boreholes, an addition 2.0' of soil was removed (total depth 4.0') between the facility firewalls and capped with clay material to prevent vertical migration. The area was backfilled with clean soil and compacted for the construction of the new facility. Approximately 820 yards of excavated soil was transported offsite for proper disposal.

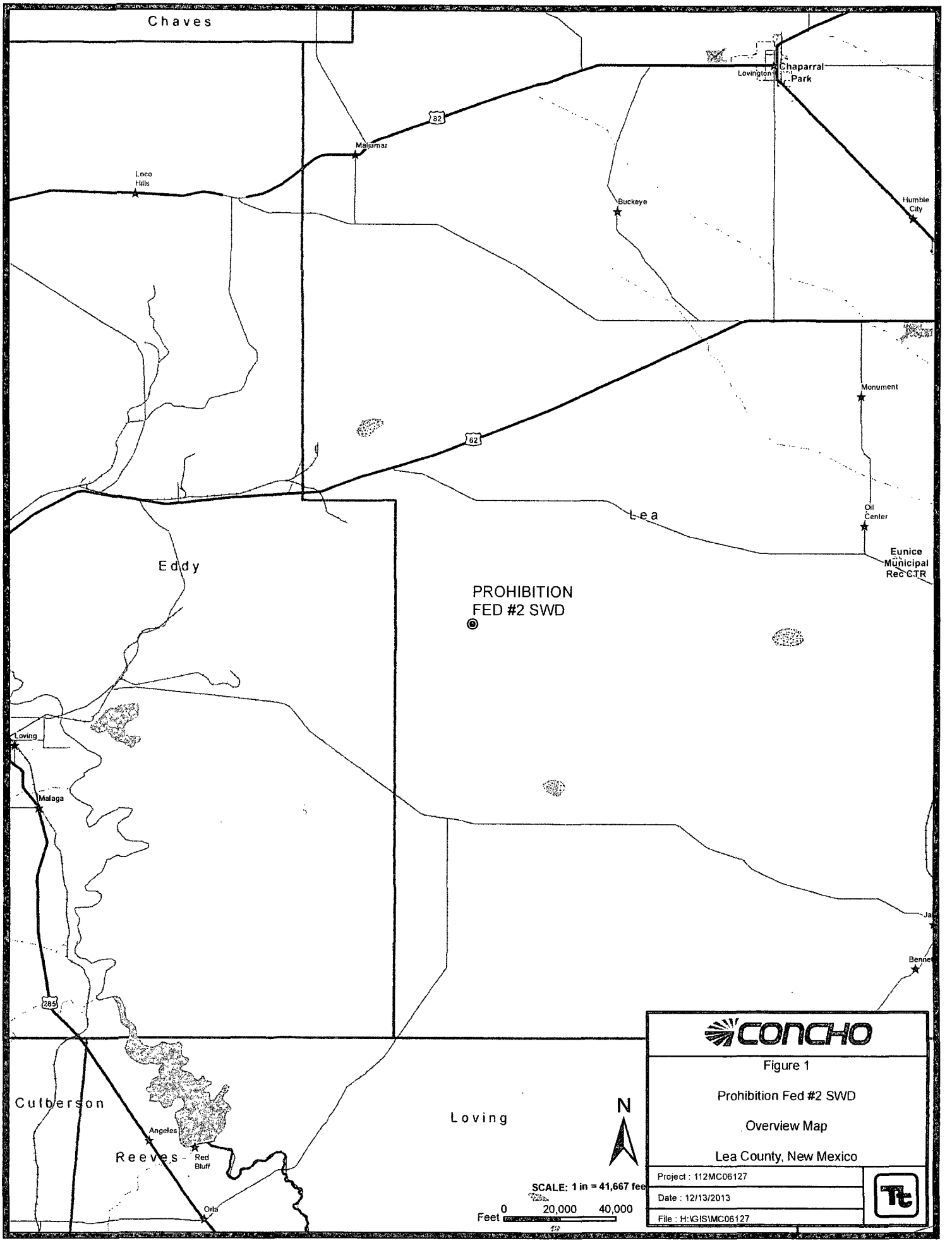
Conclusion

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

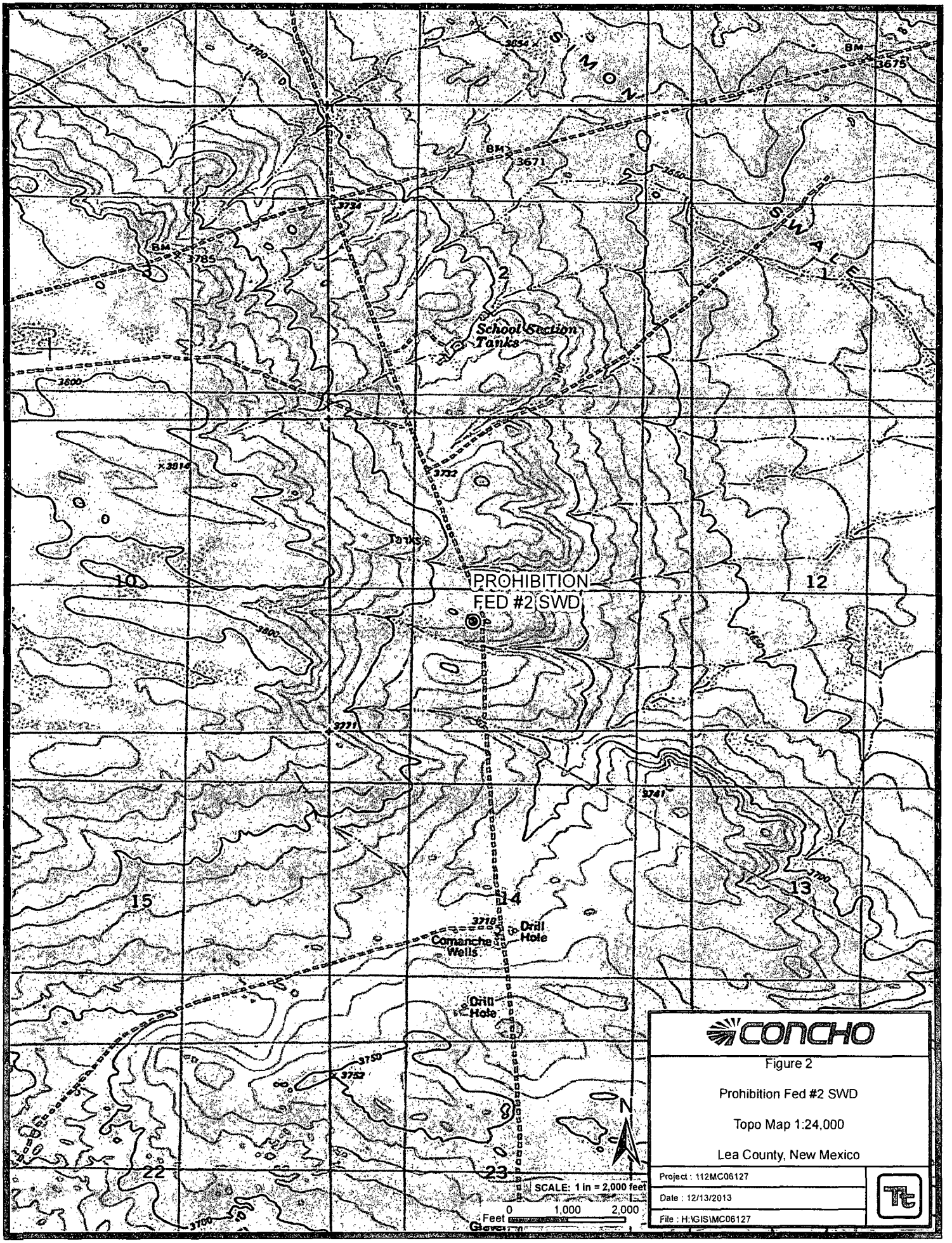
Respectfully submitted,
TETRA TECH

Clair Gonzales
Geologist

cc: Robert McNeill – COG
cc: Jeff Robertson - BLM



Drawn By: Isabel Marmolejo



CONCHO

Figure 2

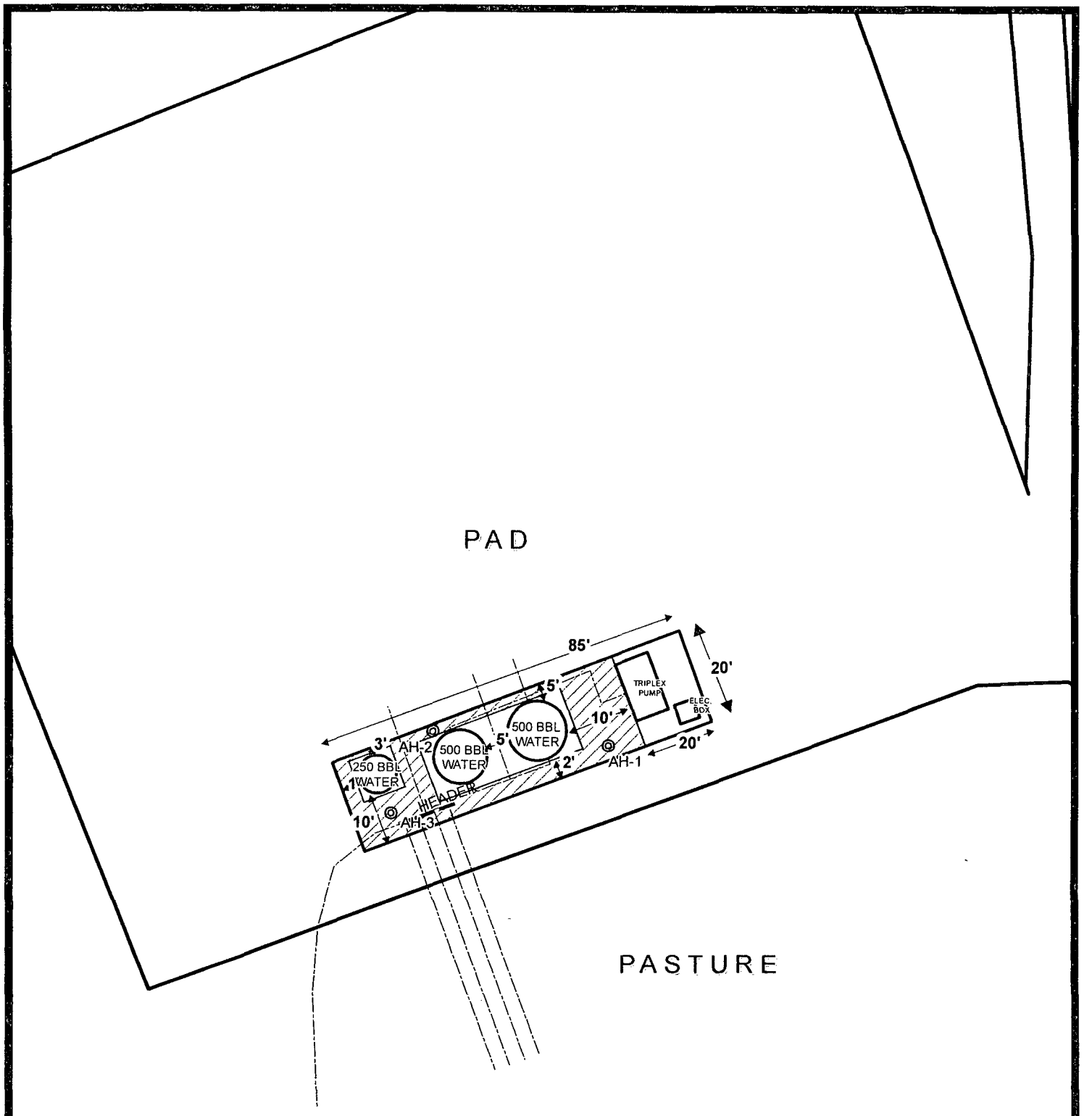
Prohibition Fed #2 SWD

Topo Map 1:24,000

Lea County, New Mexico

Project : 112MC06127	
Date : 12/13/2013	
File : H:\GIS\MC06127	

Drawn By: Isabel Marmolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- SPILL AREA

N

SCALE: 1 IN = 38 FEET

Feet 0 20 40

CONCHO

Figure 3

Prohibition Federal Unit #2 SWD

Spill Assessment Map

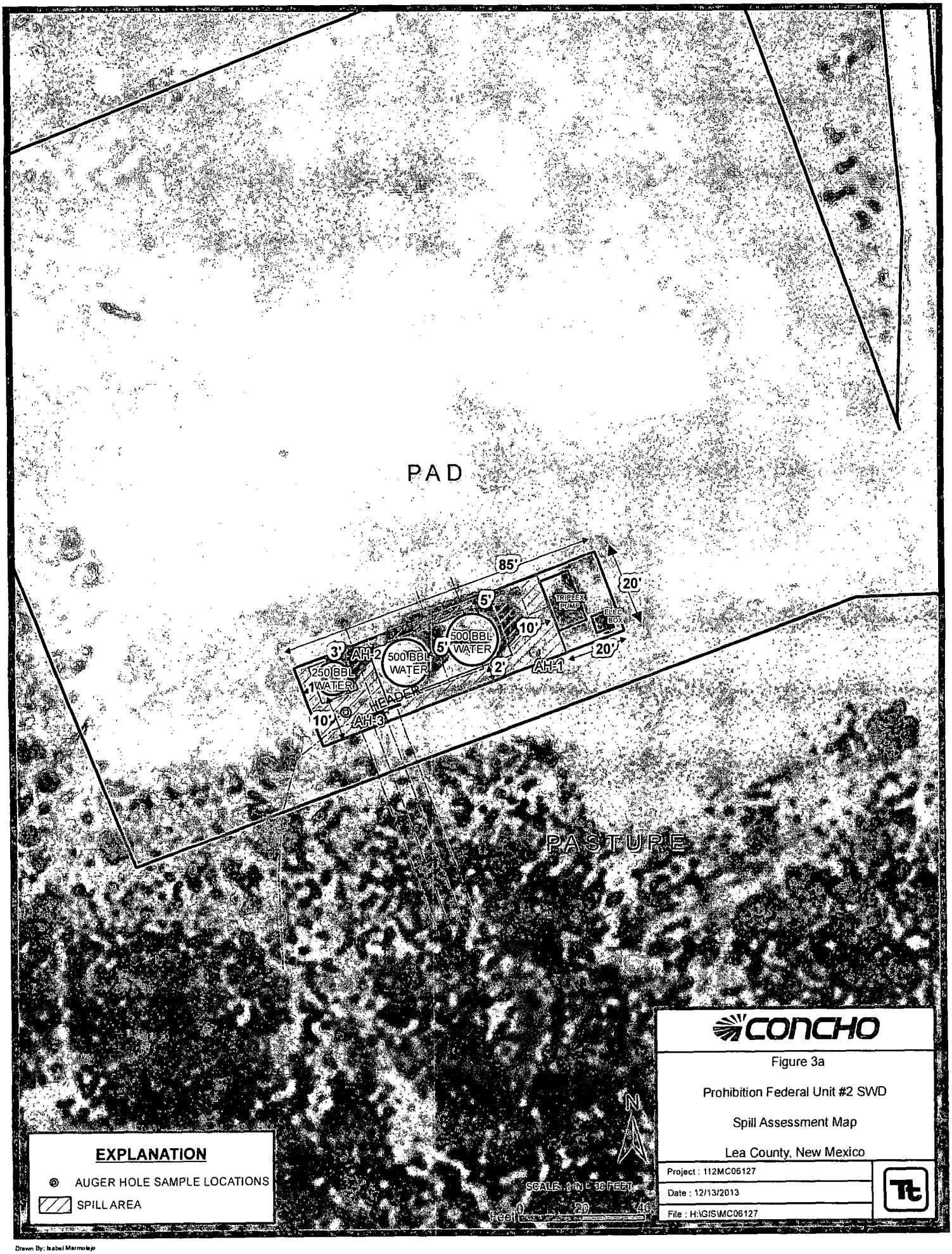
Lea County, New Mexico

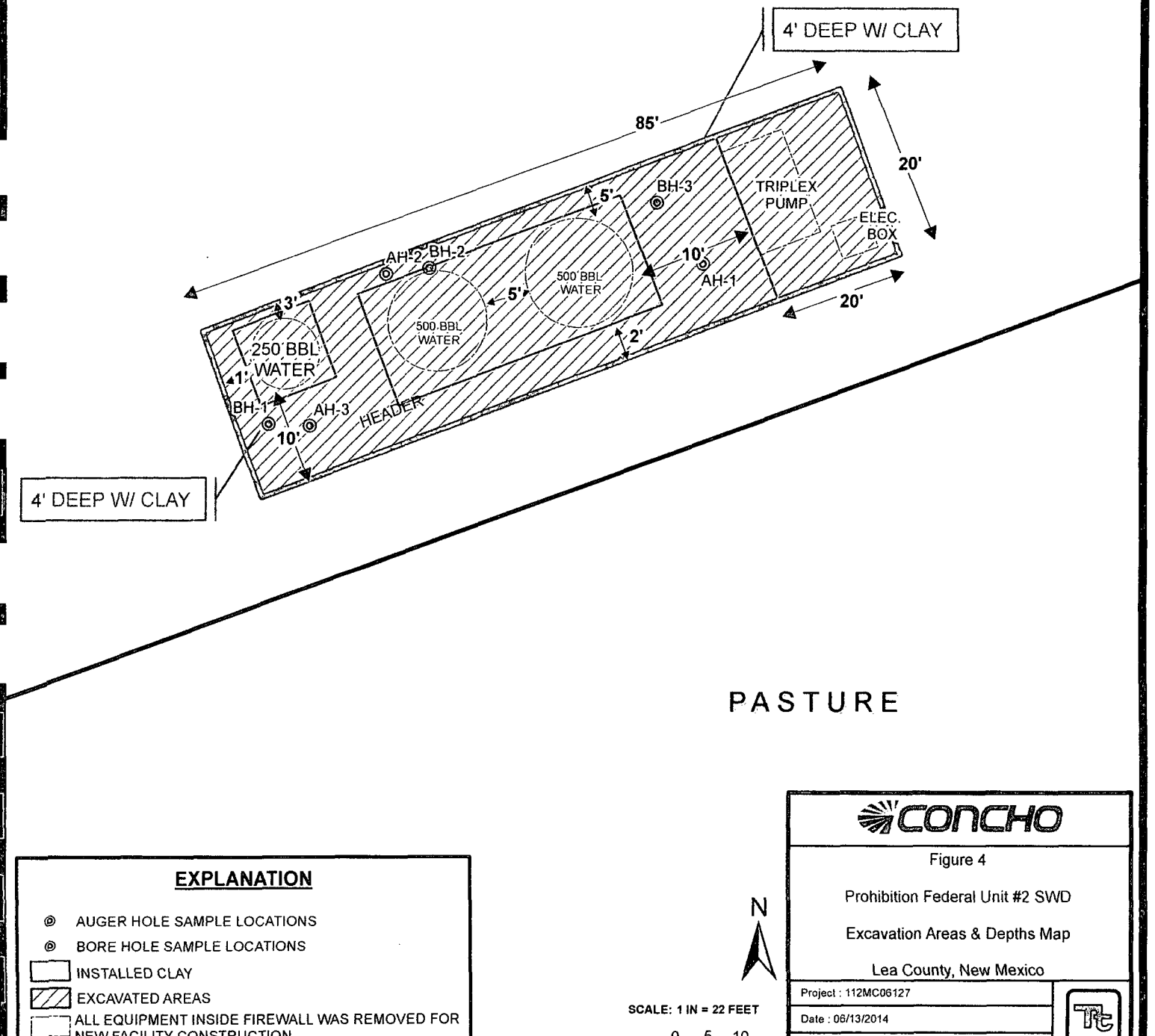
Project : 112MC06127

Date : 12/13/2013

File : H:\GIS\MC06127

Drawn By: Isabel Marmolejo


PAD
85'
20'
5'
TRIPLEX PUMP
ELEC BOX
10'
3'
AH-2
500 BBL WATER
5'
500 BBL WATER
2'
AH-1
20'
250 BBL WATER
HEADER
10'
AH-3
PASTURE
N
SCALE: 1" = 38 FEET
0
20
40
Feet
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
SPILL AREA
CONCHO
Figure 3a
Prohibition Federal Unit #2 SWD
Spill Assessment Map
Lea County, New Mexico
Project : 112MC06127
Date : 12/13/2013
File : H:\GIS\MC06127
Drawn By: Isabel Marmolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- BORE HOLE SAMPLE LOCATIONS
- INSTALLED CLAY
- EXCAVATED AREAS
- ALL EQUIPMENT INSIDE FIREWALL WAS REMOVED FOR NEW FACILITY CONSTRUCTION

N

SCALE: 1 IN = 22 FEET

Feet 0 5 10

CONCHO

Figure 4

Prohibition Federal Unit #2 SWD

Excavation Areas & Depths Map

Lea County, New Mexico

Project : 112MC06127	
Date : 06/13/2014	
File : H:\GIS\MC06127	

Drawn By: Isabel Marmolejo

Table 1
COG Operating LLC.
Prohibition Federal #2 Salt Water Disposal
Lea 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	0		X	23.7	261	285	<0.100	<0.100	<0.100	<0.100	<0.100	**11,800**
	"	1-1.5	"		X	-	-	-	-	-	-	-	-	**3,290**
	"	2-2.5	"		X	-	-	-	-	-	-	-	-	**3,290**
BH-3	5/12/2014	0-1	2		X	-	-	-	-	-	-	-	-	**5,290**
	"	2-3	2		X	-	-	-	-	-	-	-	-	**9,900**
	"	4-5	2		X	-	-	-	-	-	-	-	-	**3,040**
	"	6-7	2	X		-	-	-	-	-	-	-	-	**2,700**
	"	9-10	2	X		-	-	-	-	-	-	-	-	**3,090**
	"	14-15	2	X		-	-	-	-	-	-	-	-	**4,800**
	"	19-20	2	X		-	-	-	-	-	-	-	-	**11,600**
	"	24-25	2	X		-	-	-	-	-	-	-	-	**7,350**
	"	29-30	2	X		-	-	-	-	-	-	-	-	**2,150**
	"	39-40	2	X		-	-	-	-	-	-	-	-	500
AH-2	10/29/2013	0-1	0		X	<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	**1,370**
	"	1-1.5	"		X	-	-	-	-	-	-	-	-	**1,450**
	"	2-2.5	"		X	-	-	-	-	-	-	-	-	798
BH-2	5/12/2014	0-1	2		X	-	-	-	-	-	-	-	-	**1,920**
	"	2-3	2		X	-	-	-	-	-	-	-	-	**2,660**
	"	4-5	2		X	-	-	-	-	-	-	-	-	246
	"	6-7	2	X		-	-	-	-	-	-	-	-	345
	"	9-10	2	X		-	-	-	-	-	-	-	-	640
	"	14-15	2	X		-	-	-	-	-	-	-	-	**1,380**
	"	19-20	2	X		-	-	-	-	-	-	-	-	739
	"	24-25	2	X		-	-	-	-	-	-	-	-	588
	"	29-30	2	X		-	-	-	-	-	-	-	-	**2,210**
	"	39-40	2	X		-	-	-	-	-	-	-	-	**1,370**
	"	49-50	2	X		-	-	-	-	-	-	-	-	294

Table 1
COG Operating LLC.
Prohibition Federal #2 Salt Water Disposal
Lea 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-3	10/29/2013	0-1	0	X		101	1,920	2,021	<0.100	<0.100	<0.100	0.722	0.722	1,840
	"	1-1.5	"	X		-	-	-	-	-	-	-	-	6,640
	"	2-2.5	"	X		-	-	-	-	-	-	-	-	3,460
BH-1	5/12/2014	0-1	2		X	-	-	-	-	-	-	-	-	4,140
	"	2-3	2		X	-	-	-	-	-	-	-	-	4,240
	"	4-5	2		X	-	-	-	-	-	-	-	-	3,700
	"	6-7	2	X		-	-	-	-	-	-	-	-	3,200
	"	9-10	2	X		-	-	-	-	-	-	-	-	13,200
	"	14-15	2	X		-	-	-	-	-	-	-	-	8,720
	"	19-20	2	X		-	-	-	-	-	-	-	-	4,240
	"	24-25	2	X		-	-	-	-	-	-	-	-	4,680
	"	29-30	2	X		-	-	-	-	-	-	-	-	6,900
	"	39-40	2	X		-	-	-	-	-	-	-	-	18,200
	"	49-50	2	X		-	-	-	-	-	-	-	-	7,000
	"	59-60	2	X		-	-	-	-	-	-	-	-	246
	"	69-70	2	X		-	-	-	-	-	-	-	-	148

(-) Not Analyzed

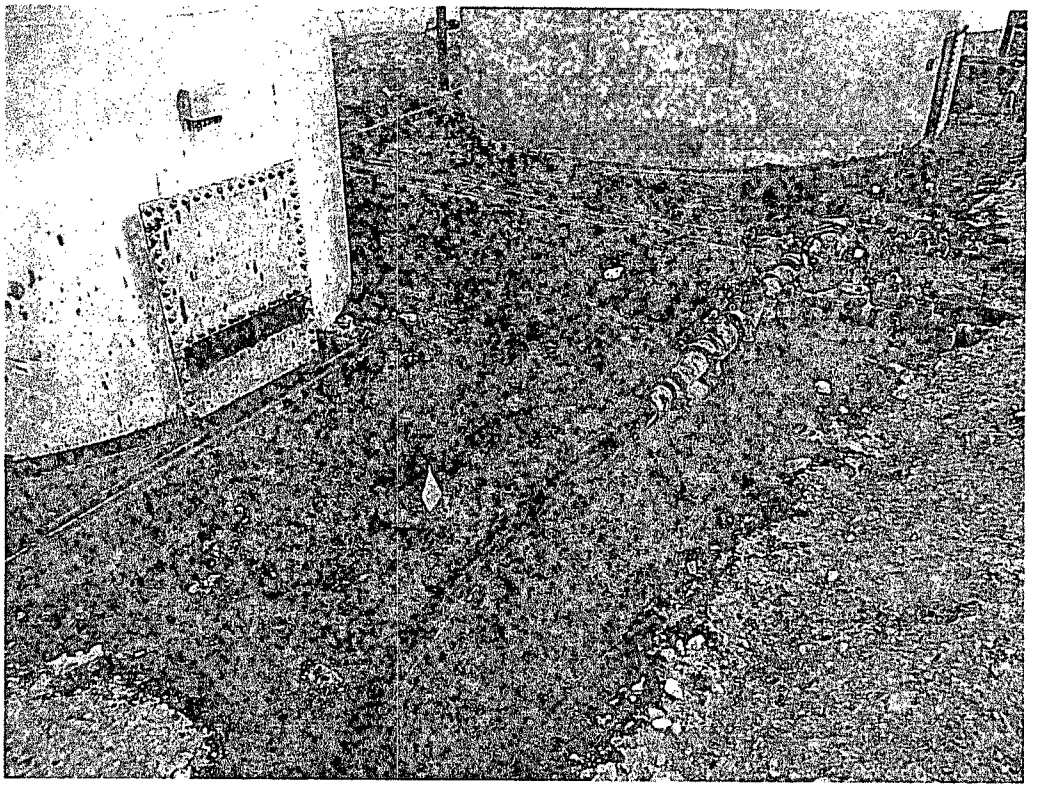
(BEB) Below Excavation Bottom

Excavation Depths

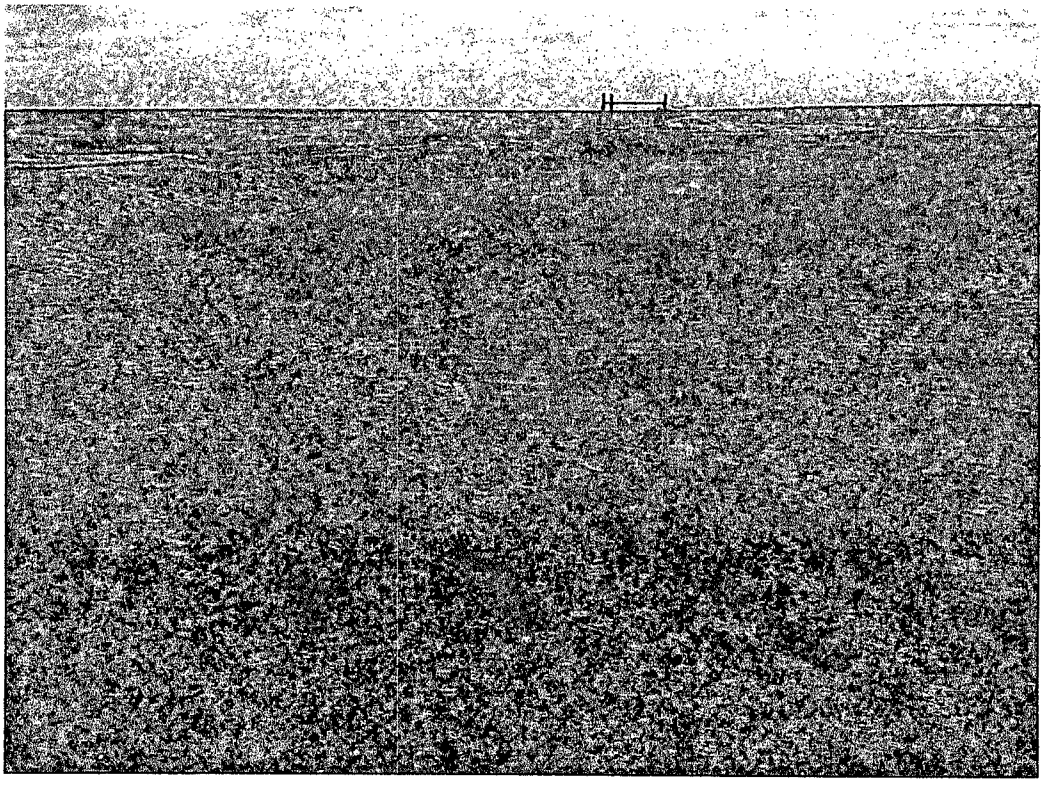
Clay Cap

COG Operating LLC
Prohibition Federal Unit
#2 SWD
Eddy County, New Mexico

TETRA TECH

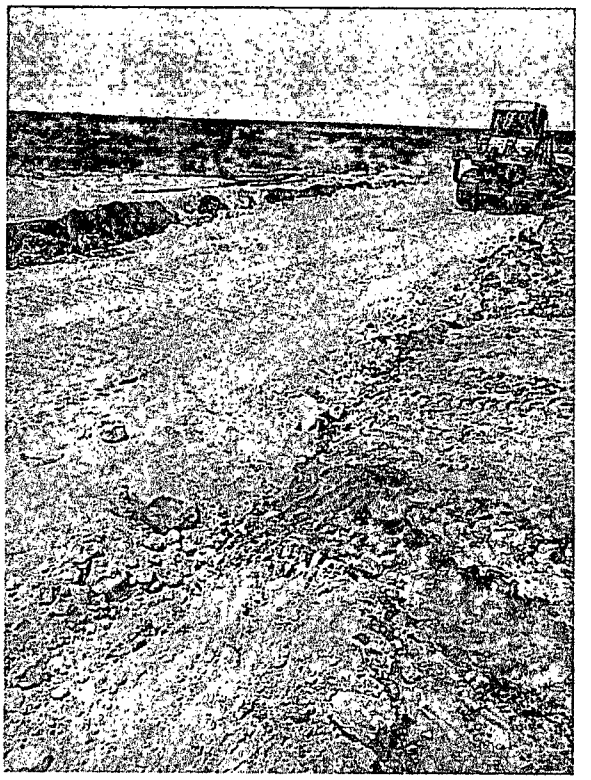


View Northeast – AH-2 and AH-3



View West – Excavated area of AH-1, AH-2 and AH-3

COG Operating LLC
Prohibition Federal Unit
#2 SWD
Eddy County, New Mexico



View West – Backfilling of the areas

TETRA TECH

Water Well Data
Average Depth to Groundwater (ft)
COG - Prohibition Federal Unit #2 SWD
Lea County, New Mexico

21 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16 630	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33 SITE	34	35	36

22 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16 448	15	14	13
19	20 47	21	22	23	24
30	29 413	28 444	27	26	25
31	32	33	34	35	36

23 South 31 East

6 85	5 354	4 168	3	2	1
7 140	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

21 South 32 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

22 South 32 East

6	5	4	3	2	1
7	8	9	10	11 SITE	12
18	17	16	15	14 382 350	13
19 (S) 280	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

23 South 32 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21 400	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

21 South 33 East

6	5	4	3	2 79 107	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28 179	27	26	25
31	32	33	34	35	36

22 South 33 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13 391
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

23 South 33 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

- 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

Sample: 345573 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**3290**	mg/Kg	4

Sample: 345574 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**1370**	mg/Kg	4

Sample: 345575 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**1450**	mg/Kg	4

Sample: 345576 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**798**	mg/Kg	4

Sample: 345577 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		**1840**	mg/Kg	4

Sample: 345578 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**6640**	mg/Kg	4

Sample: 345579 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**3460**	mg/Kg	4

Summary Report

Ike Tavarez
Tetra Tech
1901 N. Big Spring St.
Midland, TX 79705

Report Date: May 21, 2014

Work Order: 14051609

Project Location: Lea Co, NM
Project Name: COG/Prohibition Fed #2 SWD
Project Number: 112MC06127

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
363176	BH-1 0-1' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363177	BH-1 2-3' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363178	BH-1 4-5' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363179	BH-1 6-7' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363180	BH-1 9-10' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363181	BH-1 14-15' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363182	BH-1 19-20' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363183	BH-1 24-25' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363184	BH-1 29-30' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363185	BH-1 39-40' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363186	BH-1 49-50' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363187	BH-1 59-60' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363188	BH-1 69-70' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363189	BH-2 0-1' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363190	BH-2 2-3' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363191	BH-2 4-5' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363192	BH-2 6-7' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363193	BH-2 9-10' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363194	BH-2 14-15' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363195	BH-2 19-20' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363196	BH-2 24-25' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363197	BH-2 29-30' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363198	BH-2 39-40' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363199	BH-2 49-50' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363200	BH-3 0-1' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363201	BH-3 2-3' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363202	BH-3 4-5' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363203	BH-3 6-7' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363204	BH-3 9-10' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363205	BH-3 14-15' (2' BEB)	soil	2014-05-12	00:00	2014-05-16

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
363206	BH-3 19-20' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363207	BH-3 24-25' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363208	BH-3 29-30' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363209	BH-3 39-40' (2' BEB)	soil	2014-05-12	00:00	2014-05-16

Sample: 363176 - BH-1 0-1' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**4140**	mg/Kg	4

Sample: 363177 - BH-1 2-3' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**4240**	mg/Kg	4

Sample: 363178 - BH-1 4-5' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**3700**	mg/Kg	4

Sample: 363179 - BH-1 6-7' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**3200**	mg/Kg	4

Sample: 363180 - BH-1 9-10' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**13200**	mg/Kg	4

Sample: 363181 - BH-1 14-15' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**8720**	mg/Kg	4

Sample: 363182 - BH-1 19-20' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**4240**	mg/Kg	4

Sample: 363183 - BH-1 24-25' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**4680**	mg/Kg	4

Sample: 363184 - BH-1 29-30' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**6900**	mg/Kg	4

Sample: 363185 - BH-1 39-40' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**18200**	mg/Kg	4

Sample: 363186 - BH-1 49-50' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**7000**	mg/Kg	4

Sample: 363187 - BH-1 59-60' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**246**	mg/Kg	4

Sample: 363188 - BH-1 69-70' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**148**	mg/Kg	4

Sample: 363189 - BH-2 0-1' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**1920**	mg/Kg	4

Sample: 363190 - BH-2 2-3' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**2660**	mg/Kg	4

Sample: 363191 - BH-2 4-5' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**246**	mg/Kg	4

Sample: 363192 - BH-2 6-7' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**345**	mg/Kg	4

Sample: 363193 - BH-2 9-10' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**640**	mg/Kg	4

Sample: 363194 - BH-2 14-15' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**1380**	mg/Kg	4

Sample: 363195 - BH-2 19-20' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**739**	mg/Kg	4

Sample: 363196 - BH-2 24-25' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**588**	mg/Kg	4

Sample: 363197 - BH-2 29-30' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**2210**	mg/Kg	4

Sample: 363198 - BH-2 39-40' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**1370**	mg/Kg	4

Sample: 363199 - BH-2 49-50' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**294**	mg/Kg	4

Sample: 363200 - BH-3 0-1' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**5290**	mg/Kg	4

Sample: 363201 - BH-3 2-3' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**9900**	mg/Kg	4

Sample: 363202 - BH-3 4-5' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**3040**	mg/Kg	4

Sample: 363203 - BH-3 6-7' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**2700**	mg/Kg	4

Sample: 363204 - BH-3 9-10' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**3090**	mg/Kg	4

Sample: 363205 - BH-3 14-15' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**4800**	mg/Kg	4

Sample: 363206 - BH-3 19-20' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**11600**	mg/Kg	4

Sample: 363207 - BH-3 24-25' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**7350**	mg/Kg	4

Sample: 363208 - BH-3 29-30' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**2150**	mg/Kg	4

Sample: 363209 - BH-3 39-40' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**500**	mg/Kg	4

TRACEANALYSIS, INC.

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Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: November 11, 2013

Work Order: 13110110

Project Location: Lea Co, NM
Project Name: COG/Prohibition Fed #2 SWD
Project Number: 112MC06127

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
345571	AH-1 0-1'	soil	2013-10-29	00:00	2013-11-01
345572	AH-1 1-1.5'	soil	2013-10-29	00:00	2013-11-01
345573	AH-1 2-2.5'	soil	2013-10-29	00:00	2013-11-01
345574	AH-2 0-1'	soil	2013-10-29	00:00	2013-11-01
345575	AH-2 1-1.5'	soil	2013-10-29	00:00	2013-11-01
345576	AH-2 2-2.5'	soil	2013-10-29	00:00	2013-11-01
345577	AH-3 0-1'	soil	2013-10-29	00:00	2013-11-01
345578	AH-3 1-1.5'	soil	2013-10-29	00:00	2013-11-01
345579	AH-3 2-2.5'	soil	2013-10-29	00:00	2013-11-01

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.

Michael Abel

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

Report Contents

Case Narrative

Samples for project COG/Prohibition Fed #2 SWD were received by TraceAnalysis, Inc. on 2013-11-01 and assigned to work order 13110110. Samples for work order 13110110 were received intact at a temperature of 2.1 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	90163	2013-11-01 at 13:59	106472	2013-11-03 at 12:51
BTEX	S 8021B	90181	2013-11-04 at 10:21	106510	2013-11-05 at 07:47
Chloride (Titration)	SM 4500-Cl B	90322	2013-11-07 at 10:47	106694	2013-11-11 at 14:30
TPH DRO - NEW	S 8015 D	90216	2013-11-04 at 11:00	106517	2013-11-05 at 09:31
TPH GRO	S 8015 D	90163	2013-11-01 at 13:59	106471	2013-11-03 at 12:50
TPH GRO	S 8015 D	90181	2013-11-04 at 10:21	106511	2013-11-05 at 07:48

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 13110110 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: 345571 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	106472	Date Analyzed:	2013-11-03	Analyzed By:	AK
Prep Batch:	90163	Sample Preparation:	2013-11-01	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.100	mg/Kg	5	0.0200
Toluene	U	1	<0.100	mg/Kg	5	0.0200
Ethylbenzene	U	1	<0.100	mg/Kg	5	0.0200
Xylene	U	1	<0.100	mg/Kg	5	0.0200

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr		8.65	mg/Kg	5	2.00	432	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		8.78	mg/Kg	5	2.00	439	70 - 130

Sample: 345571 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106694	Date Analyzed:	2013-11-11	Analyzed By:	AR
Prep Batch:	90322	Sample Preparation:	2013-11-07	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**11800**	mg/Kg	10	4.00

Sample: 345571 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	106517	Date Analyzed:	2013-11-05	Analyzed By:	KC
Prep Batch:	90216	Sample Preparation:	2013-11-04	Prepared By:	KC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	**261**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsi	Qsr	158	mg/Kg	1	100	158	70 - 130

Sample: 345571 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	106471	Date Analyzed:	2013-11-03	Analyzed By:	AK
Prep Batch:	90163	Sample Preparation:	2013-11-01	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs	1	**23.7**	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	9.85	mg/Kg	5	2.00	492	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsi	13.6	mg/Kg	5	2.00	680	70 - 130

Sample: 345572 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106694	Date Analyzed:	2013-11-11	Analyzed By:	AR
Prep Batch:	90322	Sample Preparation:	2013-11-07	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**3290**	mg/Kg	10	4.00

Sample: 345573 - AH-1 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106694	Date Analyzed:	2013-11-11	Analyzed By:	AR
Prep Batch:	90322	Sample Preparation:	2013-11-07	Prepared By:	AR

continued ...

sample 345573 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**3290**	mg/Kg	10	4.00

Sample: 345574 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	106510	Date Analyzed:	2013-11-05	Analyzed By:	AK
Prep Batch:	90181	Sample Preparation:	2013-11-04	Prepared By:	AK

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.83	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.90	mg/Kg	1	2.00	95	70 - 130

Sample: 345574 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106694	Date Analyzed:	2013-11-11	Analyzed By:	AR
Prep Batch:	90322	Sample Preparation:	2013-11-07	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1370**	mg/Kg	10	4.00

Sample: 345574 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	106517	Date Analyzed:	2013-11-05	Analyzed By:	KC
Prep Batch:	90216	Sample Preparation:	2013-11-04	Prepared By:	KC

Parameter	Flag	Cert	Result	RL Result	Units	Dilution	RL
DRO	[illegible]	1		<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			117	mg/Kg	1	100	117	70 - 130

Sample: 345574 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	106511	Date Analyzed:	2013-11-05	Analyzed By:	AK
Prep Batch:	90181	Sample Preparation:	2013-11-04	Prepared By:	AK

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.16	mg/Kg	1	2.00	108	70 - 130
4-Bromofluorobenzene (4-BFB)			2.26	mg/Kg	1	2.00	113	70 - 130

Sample: 345575 - AH-2 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106694	Date Analyzed:	2013-11-11	Analyzed By:	AR
Prep Batch:	90322	Sample Preparation:	2013-11-07	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Result	Units	Dilution	RL
Chloride				**1450**	mg/Kg	10	4.00

Sample: 345576 - AH-2 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106694	Date Analyzed:	2013-11-11	Analyzed By:	AR
Prep Batch:	90322	Sample Preparation:	2013-11-07	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**798**	mg/Kg	5	4.00

Sample: 345577 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	106472	Date Analyzed:	2013-11-03	Analyzed By:	AK
Prep Batch:	90163	Sample Preparation:	2013-11-01	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.100	mg/Kg	5	0.0200
Toluene	U	1	<0.100	mg/Kg	5	0.0200
Ethylbenzene	U	1	<0.100	mg/Kg	5	0.0200
Xylene		1	**0.722**	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.51	mg/Kg	5	2.00	76	70 - 130
4-Bromofluorobenzene (4-BFB)			2.52	mg/Kg	5	2.00	126	70 - 130

Sample: 345577 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106694	Date Analyzed:	2013-11-11	Analyzed By:	AR
Prep Batch:	90322	Sample Preparation:	2013-11-07	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**1840**	mg/Kg	10	4.00

Sample: 345577 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	106517	Date Analyzed:	2013-11-05	Analyzed By:	KC
Prep Batch:	90216	Sample Preparation:	2013-11-04	Prepared By:	KC

Parameter	Flag	Cert	Result	RL Result	Units	Dilution	RL
DRO		1	**1920**		mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsu	Qsu	353	mg/Kg	5	100	353	70 - 130

Sample: 345577 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	106471	Date Analyzed:	2013-11-03	Analyzed By:	AK
Prep Batch:	90163	Sample Preparation:	2013-11-01	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Result	Units	Dilution	RL
GRO	Qs	1	**101**		mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.69	mg/Kg	5	2.00	84	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsu	Qsu	8.09	mg/Kg	5	2.00	404	70 - 130

Sample: 345578 - AH-3 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106694	Date Analyzed:	2013-11-11	Analyzed By:	AR
Prep Batch:	90322	Sample Preparation:	2013-11-07	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Result	Units	Dilution	RL
Chloride			**6640**		mg/Kg	10	4.00

Sample: 345579 - AH-3 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106694	Date Analyzed:	2013-11-11	Analyzed By:	AR
Prep Batch:	90322	Sample Preparation:	2013-11-07	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**3460**	mg/Kg	10	4.00

Method Blanks

Method Blank (1) QC Batch: 106471

QC Batch: 106471 | Date Analyzed: 2013-11-03 | Analyzed By: AK
Prep Batch: 90163 | QC Preparation: 2013-11-01 | Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.84	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.84	mg/Kg	1	2.00	92	70 - 130

Method Blank (1) QC Batch: 106472

QC Batch: 106472 | Date Analyzed: 2013-11-03 | Analyzed By: AK
Prep Batch: 90163 | QC Preparation: 2013-11-01 | Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00810	mg/Kg	0.02
Toluene		1	<0.00750	mg/Kg	0.02
Ethylbenzene		1	<0.00730	mg/Kg	0.02
Xylene		1	<0.00700	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.67	mg/Kg	1	2.00	84	70 - 130
4-Bromofluorobenzene (4-BFB)			1.64	mg/Kg	1	2.00	82	70 - 130

Method Blank (1) QC Batch: 106510

QC Batch: 106510 | Date Analyzed: 2013-11-05 | Analyzed By: AK
Prep Batch: 90181 | QC Preparation: 2013-11-04 | Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00810	mg/Kg	0.02
Toluene		1	<0.00750	mg/Kg	0.02
Ethylbenzene		1	<0.00730	mg/Kg	0.02
Xylene		1	<0.00700	mg/Kg	0.02

Surrogate	Flag	Cert	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)			2.14	mg/Kg	1	2.00	107	70 - 130

Method Blank (1) QC Batch: 106511

QC Batch: 106511 | Date Analyzed: 2013-11-05 | Analyzed By: AK
Prep Batch: 90181 | QC Preparation: 2013-11-04 | Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.40	mg/Kg	1	2.00	120	70 - 130
4-Bromofluorobenzene (4-BFB)			2.56	mg/Kg	1	2.00	128	70 - 130

Method Blank (1) QC Batch: 106517

QC Batch: 106517 | Date Analyzed: 2013-11-05 | Analyzed By: KC
Prep Batch: 90216 | QC Preparation: 2013-11-04 | Prepared By: KC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	11.6	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			117	mg/Kg	1	100	117	88.3 - 126.1

Method Blank (1) QC Batch: 106694

QC Batch:	106694	Date Analyzed:	2013-11-11	Analyzed By:	AR
Prep Batch:	90322	QC Preparation:	2013-11-07	Prepared By:	AR

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

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 106471 | Date Analyzed: 2013-11-03 | Analyzed By: AK
Prep Batch: 90163 | QC Preparation: 2013-11-01 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.7	mg/Kg	1	20.0	<2.32	78	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.4	mg/Kg	1	20.0	<2.32	77	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)	2.15	2.22	mg/Kg	1	2.00	108	111	70 - 130
4-Bromofluorobenzene (4-BFB)	2.36	2.42	mg/Kg	1	2.00	118	121	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 106472 | Date Analyzed: 2013-11-03 | Analyzed By: AK
Prep Batch: 90163 | QC Preparation: 2013-11-01 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.00	mg/Kg	1	2.00	<0.00810	100	70 - 130
Toluene		1	2.02	mg/Kg	1	2.00	<0.00750	101	70 - 130
Ethylbenzene		1	2.09	mg/Kg	1	2.00	<0.00730	104	70 - 130
Xylene		1	6.30	mg/Kg	1	6.00	<0.00700	105	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.89	mg/Kg	1	2.00	<0.00810	94	70 - 130	6	20
Toluene		1	1.92	mg/Kg	1	2.00	<0.00750	96	70 - 130	5	20
Ethylbenzene		1	2.00	mg/Kg	1	2.00	<0.00730	100	70 - 130	4	20

continued ...

control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Xylene		1	6.02	mg/Kg	1	6.00	<0.00700	100	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)	2.02	1.92	mg/Kg	1	2.00	101	96	70 - 130
4-Bromofluorobenzene (4-BFB)	2.12	1.91	mg/Kg	1	2.00	106	96	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 106510 | Date Analyzed: 2013-11-05 | Analyzed By: AK
Prep Batch: 90181 | QC Preparation: 2013-11-04 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.93	mg/Kg	1	2.00	<0.00810	96	70 - 130
Toluene		1	1.96	mg/Kg	1	2.00	<0.00750	98	70 - 130
Ethylbenzene		1	2.02	mg/Kg	1	2.00	<0.00730	101	70 - 130
Xylene		1	6.19	mg/Kg	1	6.00	<0.00700	103	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.84	mg/Kg	1	2.00	<0.00810	92	70 - 130	5	20
Toluene		1	1.86	mg/Kg	1	2.00	<0.00750	93	70 - 130	5	20
Ethylbenzene		1	1.93	mg/Kg	1	2.00	<0.00730	96	70 - 130	5	20
Xylene		1	5.88	mg/Kg	1	6.00	<0.00700	98	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)	2.01	1.98	mg/Kg	1	2.00	100	99	70 - 130
4-Bromofluorobenzene (4-BFB)	2.14	2.00	mg/Kg	1	2.00	107	100	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 106511 | Date Analyzed: 2013-11-05 | Analyzed By: AK
Prep Batch: 90181 | QC Preparation: 2013-11-04 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	16.8	mg/Kg	1	20.0	<2.32	84	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	16.3	mg/Kg	1	20.0	<2.32	82	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)	2.37	2.21	mg/Kg	1	2.00	118	110	70 - 130
4-Bromofluorobenzene (4-BFB)	2.55	2.53	mg/Kg	1	2.00	128	126	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 106517 | Date Analyzed: 2013-11-05 | Analyzed By: KC
Prep Batch: 90216 | QC Preparation: 2013-11-04 | Prepared By: KC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	269	mg/Kg	1	250	11.6	103	79.4 - 120.1

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	272	mg/Kg	1	250	11.6	104	79.4 - 120.1	1	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	124	126	mg/Kg	1	100	124	126	92.9 - 137.7

Laboratory Control Spike (LCS-1)

QC Batch: 106694 | Date Analyzed: 2013-11-11 | Analyzed By: AR
Prep Batch: 90322 | QC Preparation: 2013-11-07 | Prepared By: AR

continued ...

control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2260	mg/Kg	1	2500	<3.85	90	89.7 - 115.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2360	mg/Kg	1	2500	<3.85	94	89.7 - 115.9	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: 344675

QC Batch: 106471 | Date Analyzed: 2013-11-03 | Analyzed By: AK
Prep Batch: 90163 | QC Preparation: 2013-11-01 | Prepared By: AK

Param		F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	1	3160	mg/Kg	40	20.0	3550	-1950	70 - 130

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

Param		F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	Qs	Qs	1	3330	mg/Kg	40	20.0	3550	-1100	70 - 130	5	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)	Qsr	Qsr	3.26	3.40	mg/Kg	40	2	163	170	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	95.9	100	mg/Kg	40	2	4795	5000	70 - 130

Matrix Spike (MS-1) Spiked Sample: 345433

QC Batch: 106472 | Date Analyzed: 2013-11-03 | Analyzed By: AK
Prep Batch: 90163 | QC Preparation: 2013-11-01 | Prepared By: AK

continued ...

matrix spikes continued ...

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.63	mg/Kg	2	2.00	<0.0162	82	70 - 130
Toluene		1	1.77	mg/Kg	2	2.00	0.0264	87	70 - 130
Ethylbenzene		1	1.83	mg/Kg	2	2.00	0.0314	90	70 - 130
Xylene		1	5.66	mg/Kg	2	6.00	0.313	89	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.70	mg/Kg	2	2.00	<0.0162	85	70 - 130	4	20
Toluene		1	1.82	mg/Kg	2	2.00	0.0264	90	70 - 130	3	20
Ethylbenzene		1	1.86	mg/Kg	2	2.00	0.0314	91	70 - 130	2	20
Xylene		1	6.16	mg/Kg	2	6.00	0.313	97	70 - 130	8	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)	1.62	1.63	mg/Kg	2	2	81	82	70 - 130
4-Bromofluorobenzene (4-BFB)	2.03	2.10	mg/Kg	2	2	102	105	70 - 130

Matrix Spike (MS-1) Spiked Sample: 345574

QC Batch: 106510 | Date Analyzed: 2013-11-05 | Analyzed By: AK
Prep Batch: 90181 | QC Preparation: 2013-11-04 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.81	mg/Kg	1	2.00	<0.00810	90	70 - 130
Toluene		1	1.83	mg/Kg	1	2.00	<0.00750	92	70 - 130
Ethylbenzene		1	1.88	mg/Kg	1	2.00	<0.00730	94	70 - 130
Xylene		1	5.72	mg/Kg	1	6.00	<0.00700	95	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.55	mg/Kg	1	2.00	<0.00810	78	70 - 130	16	20
Toluene		1	1.54	mg/Kg	1	2.00	<0.00750	77	70 - 130	17	20
Ethylbenzene		1	1.60	mg/Kg	1	2.00	<0.00730	80	70 - 130	16	20
Xylene		1	4.84	mg/Kg	1	6.00	<0.00700	81	70 - 130	17	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)	1.89	1.57	mg/Kg	1	2	94	78	70 - 130
4-Bromofluorobenzene (4-BFB)	1.93	1.65	mg/Kg	1	2	96	82	70 - 130

Matrix Spike (MS-1) Spiked Sample: 345574

QC Batch: 106511 | Date Analyzed: 2013-11-05 | Analyzed By: AK
Prep Batch: 90181 | QC Preparation: 2013-11-04 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	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	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.7	mg/Kg	1	20.0	<2.32	78	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)	2.00	2.04	mg/Kg	1	2	100	102	70 - 130
4-Bromofluorobenzene (4-BFB)	2.58	2.24	mg/Kg	1	2	129	112	70 - 130

Matrix Spike (MS-1) Spiked Sample: 345574

QC Batch: 106517 | Date Analyzed: 2013-11-05 | Analyzed By: KC
Prep Batch: 90216 | QC Preparation: 2013-11-04 | Prepared By: KC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	329	mg/Kg	1	250	17.8	124	64.8 - 149.9

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	305	mg/Kg	1	250	17.8	115	64.8 - 149.9	8	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	126	122	mg/Kg	1	100	126	122	85.4 - 147.7

Matrix Spike (MS-1) Spiked Sample: 345581

QC Batch: 106694 | Date Analyzed: 2013-11-11 | Analyzed By: AR
Prep Batch: 90322 | QC Preparation: 2013-11-07 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			7490	mg/Kg	10	2500	5150	94	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			7820	mg/Kg	10	2500	5150	107	78.9 - 121	4	20

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

Calibration Standards

Standard (CCV-1)

QC Batch: 106471 | Date Analyzed: 2013-11-03 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.824	82	80 - 120	2013-11-03

Standard (CCV-2)

QC Batch: 106471 | Date Analyzed: 2013-11-03 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.889	89	80 - 120	2013-11-03

Standard (CCV-1)

QC Batch: 106472 | Date Analyzed: 2013-11-03 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.106	106	80 - 120	2013-11-03
Toluene		1	mg/kg	0.100	0.105	105	80 - 120	2013-11-03
Ethylbenzene		1	mg/kg	0.100	0.103	103	80 - 120	2013-11-03
Xylene		1	mg/kg	0.300	0.309	103	80 - 120	2013-11-03

Standard (CCV-2)

QC Batch: 106472 | Date Analyzed: 2013-11-03 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.120	120	80 - 120	2013-11-03
Toluene		1	mg/kg	0.100	0.120	120	80 - 120	2013-11-03
Ethylbenzene		1	mg/kg	0.100	0.116	116	80 - 120	2013-11-03
Xylene		1	mg/kg	0.300	0.349	116	80 - 120	2013-11-03

Standard (CCV-1)

QC Batch: 106510 Date Analyzed: 2013-11-05 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.111	111	80 - 120	2013-11-05
Toluene		1	mg/kg	0.100	0.109	109	80 - 120	2013-11-05
Ethylbenzene		1	mg/kg	0.100	0.106	106	80 - 120	2013-11-05
Xylene		1	mg/kg	0.300	0.318	106	80 - 120	2013-11-05

Standard (CCV-2)

QC Batch: 106510 Date Analyzed: 2013-11-05 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0976	98	80 - 120	2013-11-05
Toluene		1	mg/kg	0.100	0.106	106	80 - 120	2013-11-05
Ethylbenzene		1	mg/kg	0.100	0.0954	95	80 - 120	2013-11-05
Xylene		1	mg/kg	0.300	0.298	99	80 - 120	2013-11-05

Standard (CCV-1)

QC Batch: 106511 Date Analyzed: 2013-11-05 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.937	94	80 - 120	2013-11-05

Standard (CCV-2)

QC Batch: 106511 Date Analyzed: 2013-11-05 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.887	89	80 - 120	2013-11-05

Standard (CCV-1)

QC Batch: 106517 Date Analyzed: 2013-11-05 Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	248	99	80 - 120	2013-11-05

Standard (CCV-2)

QC Batch: 106517 Date Analyzed: 2013-11-05 Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	263	105	80 - 120	2013-11-05

Standard (CCV-1)

QC Batch: 106694 Date Analyzed: 2013-11-11 Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.8	100	85 - 115	2013-11-11

Standard (CCV-2)

QC Batch: 106694 Date Analyzed: 2013-11-11 Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-11-11

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-12-4	Midland

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

13110110

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1

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

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 112MC061287 AG

PROJECT NAME: COG - Prohibition Fed #2 SWD Lea 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. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
345571	10/29		S		X	AH 1 (0-1)	1				X		X	X											X				
572						(1-1.5)																							
573						(2-2.5)																							
574						AH 2 (0-1)							X	X															
575						(1-1.5)																							
576						(2-2.5)																							
577						AH 3 (0-1)							X	X															
578						(1-1.5)																							
579						(2-2.5)																							

RELINQUISHED BY: (Signature) Adrian Garcia — Date: — Time:
RECEIVED BY: (Signature) — Date: — Time:
SAMPLED BY: (Print & Initial) Adrian Garcia / Marcus Kujawski — Date: 10/27/13 — Time:

RELINQUISHED BY: (Signature) — Date: 11/1/13 — Time: 09:49
RECEIVED BY: (Signature) — Date: 11/1/13 — Time: 9:45
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
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 2.1°

REMARKS: Run deeper samples if Benzene exceeds 10 mg/kg or Total BTEX exceeds 50 mg/kg
Run deeper samples if TPH exceeds 5000 mg/kg

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

Mediated · all

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
5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Ike Tavarez
Tetra Tech
1901 N. Big Spring St.
Midland, TX, 79705

Report Date: May 21, 2014

Work Order: 14051609

Project Location: Lea Co, NM
Project Name: COG/Prohibition Fed #2 SWD
Project Number: 112MC06127

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
363176	BH-1 0-1' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363177	BH-1 2-3' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363178	BH-1 4-5' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363179	BH-1 6-7' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363180	BH-1 9-10' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363181	BH-1 14-15' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363182	BH-1 19-20' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363183	BH-1 24-25' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363184	BH-1 29-30' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363185	BH-1 39-40' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363186	BH-1 49-50' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363187	BH-1 59-60' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363188	BH-1 69-70' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363189	BH-2 0-1' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363190	BH-2 2-3' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363191	BH-2 4-5' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363192	BH-2 6-7' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363193	BH-2 9-10' (2' BEB)	soil	2014-05-12	00:00	2014-05-16

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
363194	BH-2 14-15' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363195	BH-2 19-20' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363196	BH-2 24-25' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363197	BH-2 29-30' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363198	BH-2 39-40' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363199	BH-2 49-50' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363200	BH-3 0-1' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363201	BH-3 2-3' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363202	BH-3 4-5' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363203	BH-3 6-7' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363204	BH-3 9-10' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363205	BH-3 14-15' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363206	BH-3 19-20' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363207	BH-3 24-25' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363208	BH-3 29-30' (2' BEB)	soil	2014-05-12	00:00	2014-05-16
363209	BH-3 39-40' (2' BEB)	soil	2014-05-12	00:00	2014-05-16

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

Report Contents

Case Narrative

Samples for project COG/Prohibition Fed #2 SWD were received by TraceAnalysis, Inc. on 2014-05-16 and assigned to work order 14051609. Samples for work order 14051609 were received intact at a temperature of 2.6 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	94754	2014-05-16 at 16:05	112067	2014-05-19 at 14:04
Chloride (Titration)	SM 4500-Cl B	94754	2014-05-16 at 16:05	112068	2014-05-19 at 14:06
Chloride (Titration)	SM 4500-Cl B	94755	2014-05-19 at 11:30	112069	2014-05-19 at 14:13
Chloride (Titration)	SM 4500-Cl B	94755	2014-05-19 at 11:30	112070	2014-05-19 at 14:19

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 14051609 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: 363176 - BH-1 0-1' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112067	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**4140**	mg/Kg	5	4.00

Sample: 363177 - BH-1 2-3' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112067	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**4240**	mg/Kg	5	4.00

Sample: 363178 - BH-1 4-5' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112067	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**3700**	mg/Kg	5	4.00

Sample: 363179 - BH-1 6-7' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112067	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**3200**	mg/Kg	5	4.00

Sample: 363180 - BH-1 9-10' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112067	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**13200**	mg/Kg	5	4.00

Sample: 363181 - BH-1 14-15' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112067	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**8720**	mg/Kg	5	4.00

Sample: 363182 - BH-1 19-20' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112067	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**4240**	mg/Kg	5	4.00

Sample: 363183 - BH-1 24-25' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112067	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**4680**	mg/Kg	5	4.00

Sample: 363184 - BH-1 29-30' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112067	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**6900**	mg/Kg	5	4.00

Sample: 363185 - BH-1 39-40' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112067	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**18200**	mg/Kg	5	4.00

Sample: 363186 - BH-1 49-50' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112068	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**7000**	mg/Kg	5	4.00

Sample: 363187 - BH-1 59-60' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112068	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**246**	mg/Kg	5	4.00

Sample: 363188 - BH-1 69-70' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112068	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**148**	mg/Kg	5	4.00

Sample: 363189 - BH-2 0-1' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112068	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1920**	mg/Kg	5	4.00

Sample: 363190 - BH-2 2-3' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112068	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2660**	mg/Kg	5	4.00

Sample: 363191 - BH-2 4-5' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112068	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**246**	mg/Kg	5	4.00

Sample: 363192 - BH-2 6-7' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112068	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**345**	mg/Kg	5	4.00

Sample: 363193 - BH-2 9-10' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112068	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**640**	mg/Kg	5	4.00

Sample: 363194 - BH-2 14-15' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112068	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1380**	mg/Kg	5	4.00

Sample: 363195 - BH-2 19-20' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112068	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94754	Sample Preparation:	2014-05-16	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**739**	mg/Kg	5	4.00

Sample: 363196 - BH-2 24-25' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112069	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**588**	mg/Kg	5	4.00

Sample: 363197 - BH-2 29-30' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112069	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2210**	mg/Kg	5	4.00

Sample: 363198 - BH-2 39-40' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112069	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1370**	mg/Kg	5	4.00

Sample: 363199 - BH-2 49-50' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112069	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**294**	mg/Kg	5	4.00

Sample: 363200 - BH-3 0-1' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112069	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**5290**	mg/Kg	5	4.00

Sample: 363201 - BH-3 2-3' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112069	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**9900**	mg/Kg	5	4.00

Sample: 363202 - BH-3 4-5' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112069	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**3040**	mg/Kg	5	4.00

Sample: 363203 - BH-3 6-7' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112069	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2700**	mg/Kg	5	4.00

Sample: 363204 - BH-3 9-10' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112069	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**3090**	mg/Kg	5	4.00

Sample: 363205 - BH-3 14-15' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112069	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**4800**	mg/Kg	5	4.00

Sample: 363206 - BH-3 19-20' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112070	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**11600**	mg/Kg	5	4.00

Sample: 363207 - BH-3 24-25' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112070	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**7350**	mg/Kg	5	4.00

Sample: 363208 - BH-3 29-30' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112070	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2150**	mg/Kg	5	4.00

Sample: 363209 - BH-3 39-40' (2' BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	112070	Date Analyzed:	2014-05-19	Analyzed By:	AK
Prep Batch:	94755	Sample Preparation:	2014-05-19	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**500**	mg/Kg	5	4.00

Method Blanks

Method Blank (1) QC Batch: 112067

QC Batch: 112067 | Date Analyzed: 2014-05-19 | Analyzed By: AK
Prep Batch: 94754 | QC Preparation: 2014-05-16 | Prepared By: SS

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

Method Blank (1) QC Batch: 112068

QC Batch: 112068 | Date Analyzed: 2014-05-19 | Analyzed By: AK
Prep Batch: 94754 | QC Preparation: 2014-05-16 | Prepared By: SS

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

Method Blank (1) QC Batch: 112069

QC Batch: 112069 | Date Analyzed: 2014-05-19 | Analyzed By: AK
Prep Batch: 94755 | QC Preparation: 2014-05-19 | Prepared By: SS

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

Method Blank (1) QC Batch: 112070

QC Batch: 112070 | Date Analyzed: 2014-05-19 | Analyzed By: AK
Prep Batch: 94755 | QC Preparation: 2014-05-19 | Prepared By: SS

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

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 112067 | Date Analyzed: 2014-05-19 | Analyzed By: AK
Prep Batch: 94754 | QC Preparation: 2014-05-16 | Prepared By: SS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2610	mg/Kg	5	2500	<19.2	104	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2710	mg/Kg	5	2500	<19.2	108	85 - 115	4	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: 112068 | Date Analyzed: 2014-05-19 | Analyzed By: AK
Prep Batch: 94754 | QC Preparation: 2014-05-16 | Prepared By: SS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2560	mg/Kg	5	2500	<19.2	102	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2510	mg/Kg	5	2500	<19.2	100	85 - 115	2	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: 112069 | Date Analyzed: 2014-05-19 | Analyzed By: AK
Prep Batch: 94755 | QC Preparation: 2014-05-19 | Prepared By: SS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2650	mg/Kg	5	2500	<19.2	106	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2600	mg/Kg	5	2500	<19.2	104	85 - 115	2	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: 112070 | Date Analyzed: 2014-05-19 | Analyzed By: AK
Prep Batch: 94755 | QC Preparation: 2014-05-19 | Prepared By: SS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2600	mg/Kg	5	2500	<19.2	104	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2500	mg/Kg	5	2500	<19.2	100	85 - 115	4	20

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

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 363185

QC Batch: 112067 | Date Analyzed: 2014-05-19 | Analyzed By: AK
Prep Batch: 94754 | QC Preparation: 2014-05-16 | Prepared By: SS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			20600	mg/Kg	5	2500	18200	96	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			20900	mg/Kg	5	2500	18200	108	78.9 - 121	1	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: 363195

QC Batch: 112068 | Date Analyzed: 2014-05-19 | Analyzed By: AK
Prep Batch: 94754 | QC Preparation: 2014-05-16 | Prepared By: SS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			3300	mg/Kg	5	2500	739	102	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			3100	mg/Kg	5	2500	739	94	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: 363205

QC Batch: 112069 | Date Analyzed: 2014-05-19 | Analyzed By: AK
Prep Batch: 94755 | QC Preparation: 2014-05-19 | Prepared By: SS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			7500	mg/Kg	5	2500	4800	108	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			7260	mg/Kg	5	2500	4800	98	78.9 - 121	3	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: 363215

QC Batch: 112070 | Date Analyzed: 2014-05-19 | Analyzed By: AK
Prep Batch: 94755 | QC Preparation: 2014-05-19 | Prepared By: SS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			4550	mg/Kg	5	2500	2200	94	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			4750	mg/Kg	5	2500	2200	102	78.9 - 121	4	20

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

Calibration Standards

Standard (CCV-1)

QC Batch: 112067 Date Analyzed: 2014-05-19 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2014-05-19

Standard (CCV-1)

QC Batch: 112068 Date Analyzed: 2014-05-19 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2014-05-19

Standard (CCV-1)

QC Batch: 112069 Date Analyzed: 2014-05-19 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.0	99	85 - 115	2014-05-19

Standard (CCV-1)

QC Batch: 112070 Date Analyzed: 2014-05-19 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.0	99	85 - 115	2014-05-19

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

1405|609

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 4

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

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez ~~Prohibition #2 SWD~~

PROJECT NO.: 112MC06127

PROJECT NAME: Prohibition #2 SWD

LAB I.D. NUMBER	DATE 2014	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION Lea Co. NM	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
363176	5/12		S		X	BH-1 0-1 (2' BEB)					X	
177						2-3 "						
178						4-5 "						
179						6-7 "						
180						9-10 "						
181						14-15 "						
182						19-20 "						
183						24-25 "						
184						29-30 "						
185						39-40 "						

ANALYSIS REQUEST (Circle or Specify Method No.)

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

RELINQUISHED BY: (Signature)	Date: 5/16/14 Time: 1600	RECEIVED BY: (Signature)	Date: 5/16/14 Time: 10:56
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:

SAMPLED BY: (Print & Initial) Date: 5/12/14 Time:

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

AIRBILL #:

OTHER:

TETRA TECH CONTACT PERSON:

Results by:

RUSH Charges Authorized: Yes No

RECEIVING LABORATORY:

ADDRESS:

CITY: STATE: ZIP:

CONTACT: PHONE:

RECEIVED BY: (Signature)

DATE: TIME:

SAMPLE CONDITION WHEN RECEIVED: 2.6°

REMARKS: Midland - all

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

1405160S

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: DG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 112MC01127

PROJECT NAME: Prohibition #2 SWD

LAB I.D. NUMBER	DATE 2014	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	ANALYSIS REQUEST (Circle or Specify Method No.): 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
186	5/12		S		X	BH-1 49-50 (2' BEB)					X													X				
187	"		"		"	59-60 "					"													X				
188						69-70 "																		X				
189						BH-2 0-1 (2' BEB)																		X				
190						2-3 "																		X				
191						4-5 "																		X				
192						6-7 "																		X				
193						9-10 "																		X				
194						14-15 "																		X				
195						19-20 "																		X				

RELINQUISHED BY: (Signature) Date: 5/16/14 Time: 1050 RECEIVED BY: (Signature) Date: 5/16/14 Time: 1050 SAMPLED BY: (Print & Initial) Date: 5/12/14 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: Results by:

RECEIVING LABORATORY: RECEIVED BY: (Signature)
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE: DATE: TIME:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 2-6°

REMARKS:

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

1405160S

Analysis Request of Chain of Custody Record

PAGE: 3 OF: 4

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.: 112MC04127

PROJECT NAME: Prohibition #2 SWD

LAB I.D. NUMBER	DATE 2014	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
196	5/12		S	X		BH-2 24-25 (2' BEB)					X	
197						29-30 "						
198						39-40 "						
199						49-50 "						
200						BH-3 0-1 (2' BEB)						
201						2-3 "						
202						4-5 "						
203						6-7 "						
204						9-10 "						
205						14-15 "						

ANALYSIS REQUEST (Circle or Specify Method No.)

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

RELINQUISHED BY: (Signature) Date: 5/16/14 Time: 1032
RECEIVED BY: (Signature) Date: 5/16/14 Time: 10:56
SAMPLED BY: (Print & Initial) Date: 5/12/14 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:
Results by:

RECEIVING LABORATORY:
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 2 6°
REMARKS:

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

14051609

Analysis Request of Chain of Custody Record

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

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: COG
SITE MANAGER: Ike Tavarez
PROJECT NO.: 112MC061127
PROJECT NAME: Prohibition #2 SWD

LAB I.D. NUMBER	DATE 2014	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. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
206	5/12		S		X	BH-3 19-20 (2' BEB)					Y													X				
207	"		"		"	24-25 "					"													X				
208	"		"		"	29-30 "					"													X				
209	"	X	"		"	39-40 "					"													X				

RELINQUISHED BY: (Signature)	Date: 5/12/14 Time: 1800	RECEIVED BY: (Signature)	Date: 5/12/14 Time: 12:30
SAMPLED BY: (Print & Initial)	Date: 5/12/14 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:	Results by:		
RECEIVING LABORATORY: ADDRESS: CITY: STATE: ZIP: CONTACT: PHONE:	RECEIVED BY: (Signature) DATE: TIME:		RUSH Charges Authorized: Yes No
SAMPLE CONDITION WHEN RECEIVED: 2.6°	REMARKS:		

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