SITE INFORMATION

Report Type: Closure

General Site Information:						
Site:	Weems #1 Tank Battery					
Company:	COG Operating LLC					
Section, Township and Range	Unit B	Sec 34	T22S	R27E		
Lease Number:	API-30-015-35789					
County:	Eddy County					
GPS:	32.35320° N			104.17399° W		
Surface Owner:	State					
Mineral Owner:						
Directions:	In Carlsbad, from the intersection of Highway 285 and Highway 62, travel South on Highway 285 for 3.7 miles. Turn right on to location of site.					

Release Data:	
Date Released:	7/9/2013
Type Release:	Oil and produced water
Source of Contamination:	Drain Line Failure
Fluid Released:	154 bbls Oil, 16 bbls Produced Water
Fluids Recovered:	0 bbls Oil and Produced Water

Official Communication:			
Name:	Robert McNeill		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		4000 N. Big Spring St.
	600 W. Illinois Ave.		
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	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:	**10**	

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	1,000

TETRA TECH

November 19, 2013

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

Re: Closure Report for the COG Operating LLC., Weems #1 Tank Battery, Unit B, Section 34, Township 22 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 from the Weems #1 Tank Battery located in Unit B, Section 34, Township 22 South, Range 27 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.35320°, W 104.17399°. 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 July 09, 2013, and released approximately one hundred fifty four (154) barrels of oil and sixteen (16) barrels of produced water from 1 inch nipple that failed on a drain line due to corrosion. To alleviate the problem, COG personnel replaced the nipple to prevent a reoccurrence. Zero (0) barrels of oil or produced water was recovered. The spill initiated inside a lined tank battery, but then ran onto the pad affecting an area approximately 85' X 15' and 55' x 20'. The initial C-141 form is enclosed in Appendix A.

Groundwater

According to the NM State Engineers Well Report, two (2) water wells were listed in Section 34 with depth to groundwater of approximately 60' below surface. The Geology and Groundwater Conditions in Southern Eddy County, New Mexico Resource shows groundwater depth of approximately 53' below surface. The groundwater data is shown in Appendix B.

Tetra Tech
4000 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 1,000 mg/kg.

Soil Assessment and Analytical Results

On August 14, 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 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, a hydrocarbon impact was detected in the subsurface soils. The BTEX concentrations detected were all below the RRAL. Auger holes (AH-1 and AH-3) showed a shallow impact to the soils at 0'-1', but declined below the TPH RRAL at 1'-1.5' below surface. The area of auger hole (AH-2) showed a deeper impact to the subsurface soils and not vertically defined. The bottom auger hole sample showed a TPH concentration of 22,500 mg/kg at 6'-6.5' below surface. Deeper samples were not collected due to the dense formation at the site.

In addition, the chlorides detected ranged from <20.0 mg/kg to 340 mg/kg. The chloride concentrations detected do not appear to be an environmental concern.

Remedial Activities and Conclusion

COG excavated the impacted material as highlighted (green) in Table 1 and shown on Figure 4. The areas of AH-1 and AH-3 were excavated to a depth of approximately 1.0' below surface to remove the hydrocarbon impacted soil above the RRAL.

In the area of AH-2, a backhoe trench was installed to vertically define the hydrocarbon extents. Based on the results, the area was excavated to approximately 8.0' below surface where the hydrocarbon impact decreased below regulatory levels. Approximately 0000 cubic yards of soil was transported to proper disposal and the excavation was backfilled with clean soil to grade.

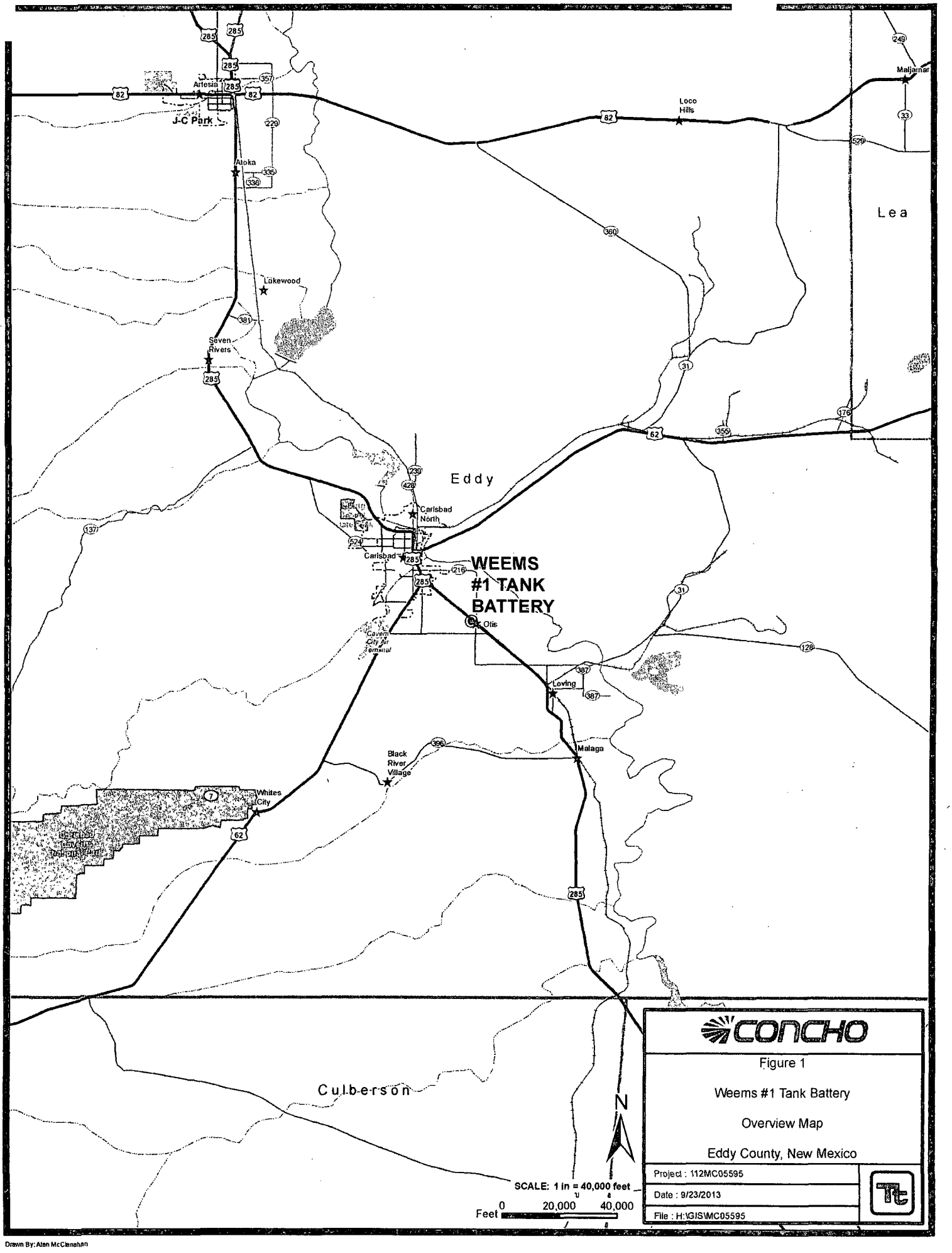
COG proposes to close the site due to the remedial actions taken following the approved work plan. The final C-141 is included in Appendix A. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

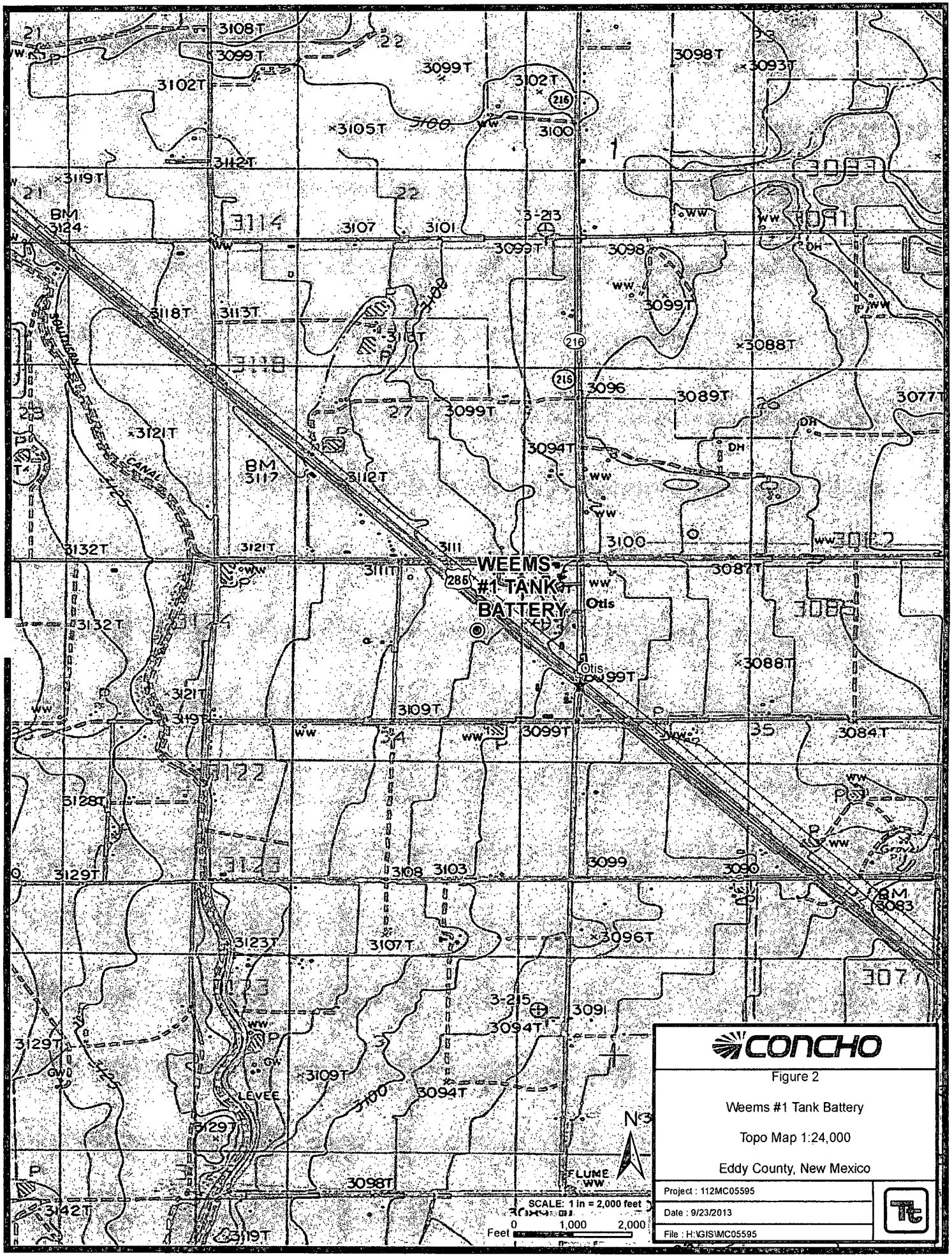
Marcus Kujawski
Staff Scientist

cc: Robert McNeill – COG

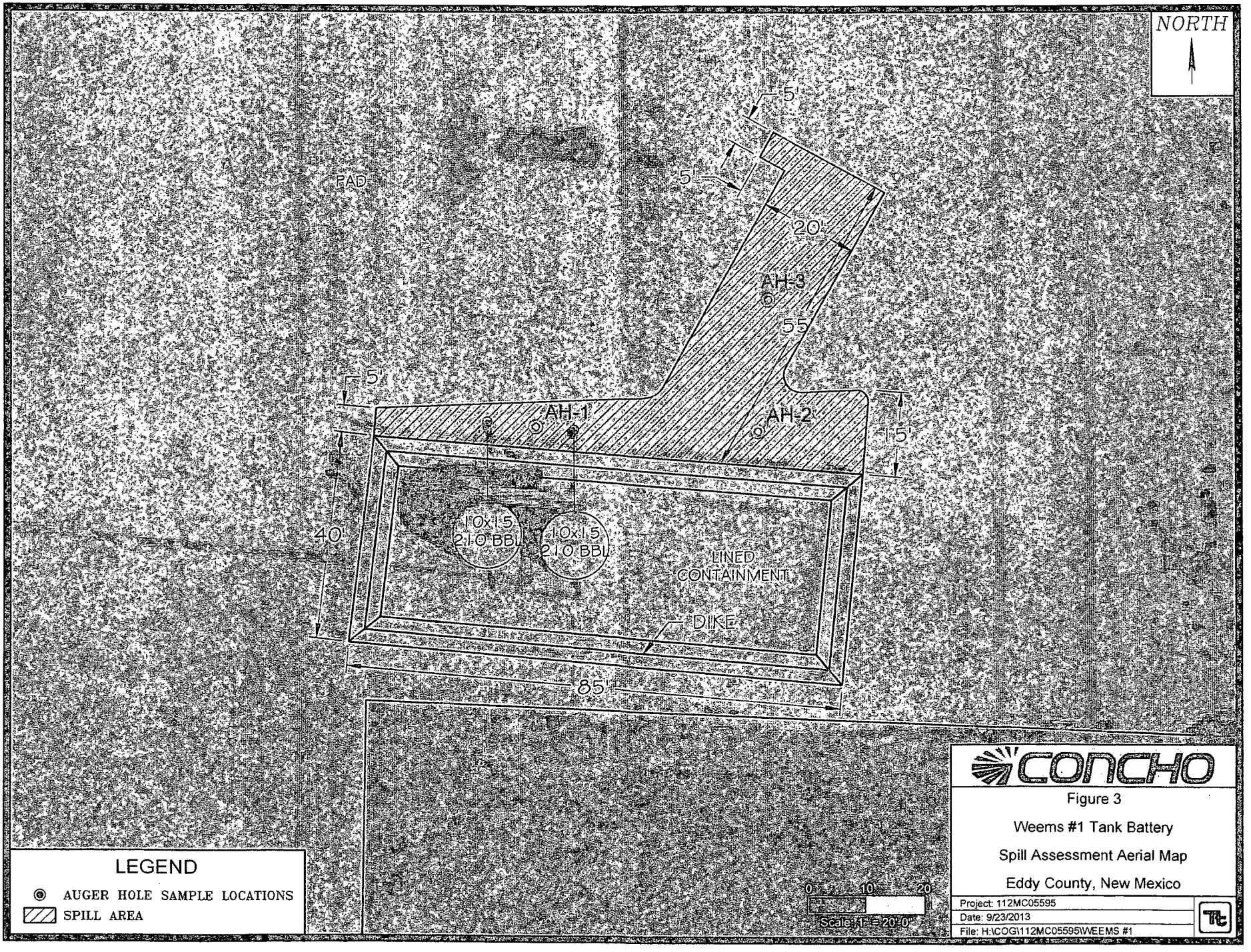
Figures

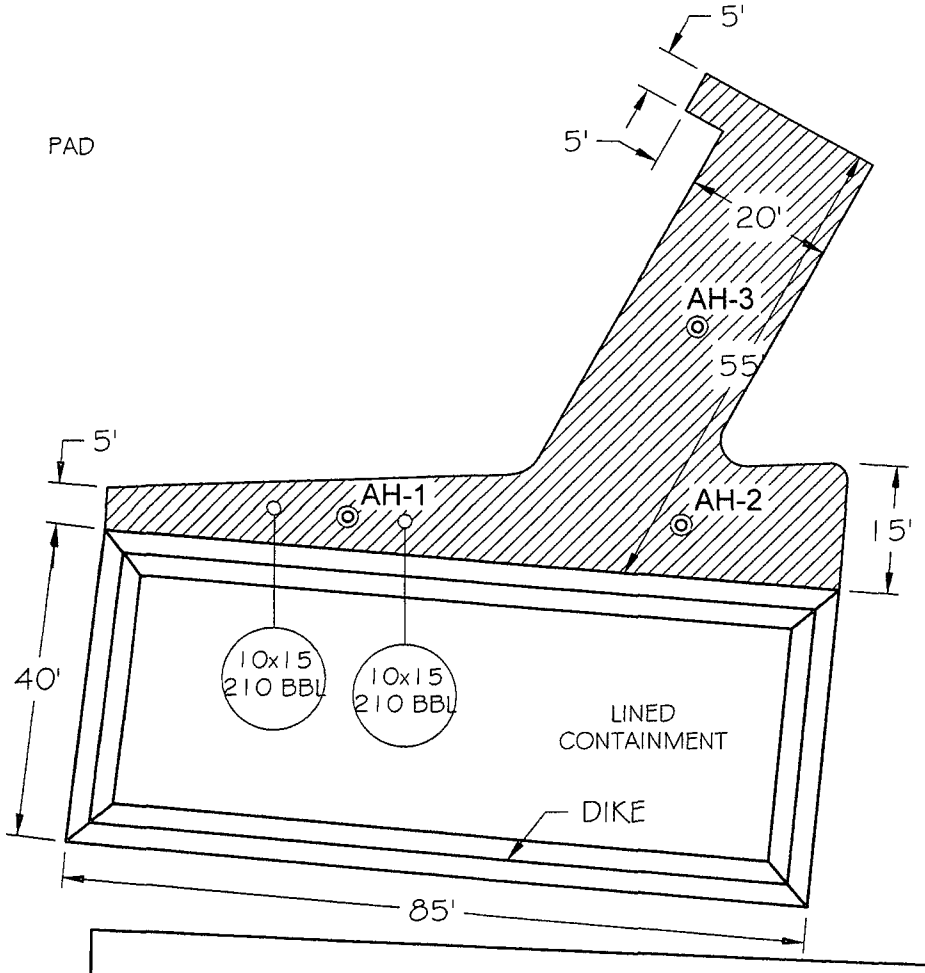


Drawn By: Alan McClenahan



Drawn By: Alan McClanahan


NORTH
5'
5'
PAD
20'
AH-3
0'
55'
5'
AH-1
0'
AH-2
0'
5'
40'
10'x 15'
210 BBL
10'x 15'
210 BBL
LINED
CONTAINMENT
DIKE
85'
LEGEND
AUGER HOLE SAMPLE LOCATIONS
SPILL AREA
0
10
20
Scale: 1" = 20'-0"
CONCHO
Figure 3
Weems #1 Tank Battery
Spill Assessment Aerial Map
Eddy County, New Mexico
Project: 112MC05595
Date: 9/23/2013
File: H:\COG\112MC05595\WEEMS #1



LEGEND

◎ AUGER HOLE SAMPLE LOCATIONS

SPILL AREA

0 10 20

Scale: 1" = 20'-0"

CONCHO

Figure 3

Weems #1 Tank Battery

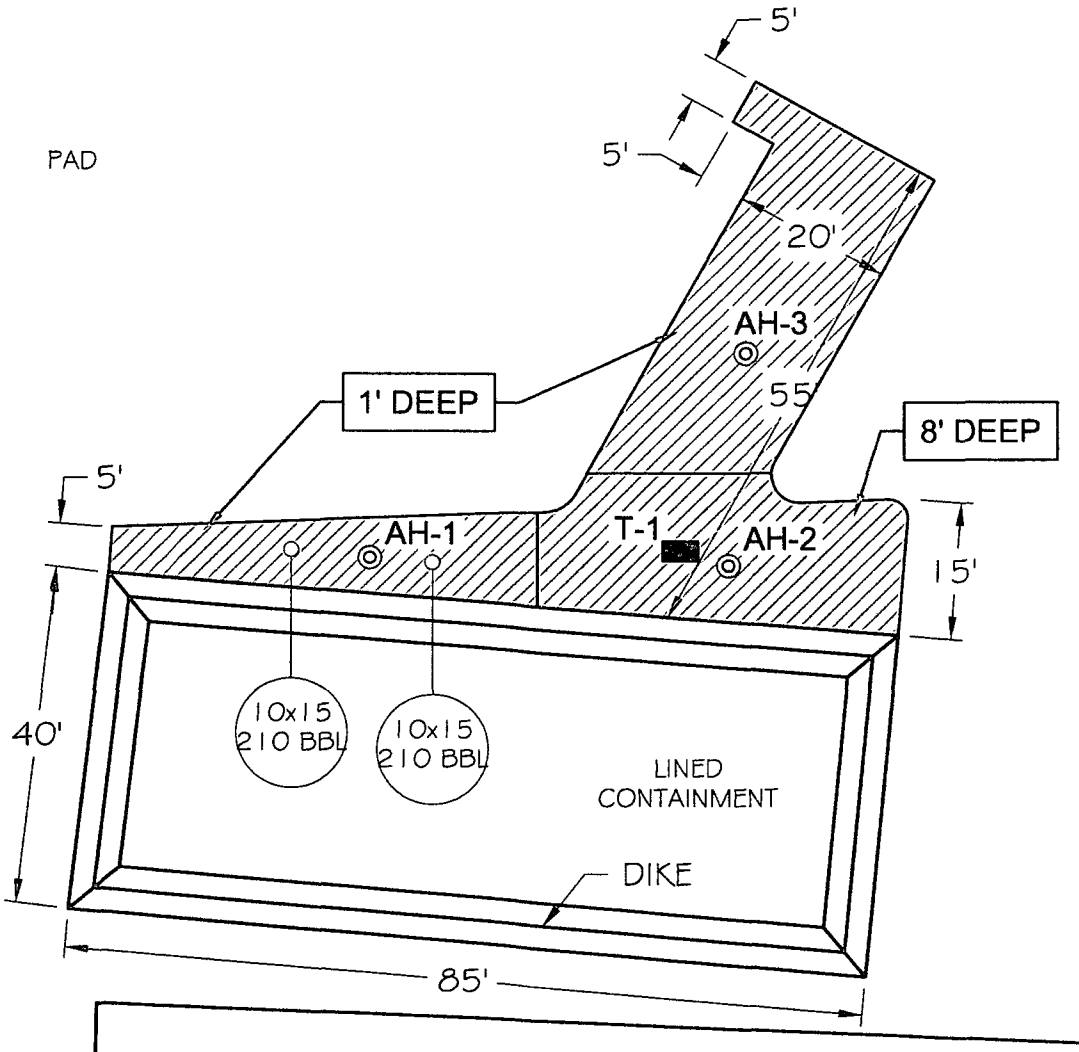
Spill Assessment Map

Eddy County, New Mexico

Project: 112MC05595

Date: 9/23/2013

File: H:\COG\112MC05595\WEEMS #1



LEGEND

- AUGER HOLE SAMPLE LOCATIONS
- TRENCHING LOCATIONS
- EXCAVATION AREAS

0 10 20

Scale: 1" = 20'-0"

CONCHO

Figure 4

Weems #1 Tank Battery

Excavation Areas & Depths Map

Eddy County, New Mexico

Project: 112MC05595

Date: 9/23/2013

File: H:\COG\112MC05595\WEEMS #1

Tables

Table 1
COG Operating LLC.
Weems #1 Tank Battery
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	8/14/2013	0-1	0		X	1,650	93.4	**1,743**	<0.0200	0.294	2.82	2.61	5.43	<20.0
	"	1-1.5	"	X		24.7	<50.0	24.7	-	-	-	-		<20.0
	"	2-2.5	"	X		-	-	-	-	-	-	-	-	<20.0
	"	3-3.5	"	x		-	-	-	-	-	-	-	-	98.5
	"	4-4.5	"	X		-	-	-	-	-	-	-	-	73.9
AH-2	8/14/2013	0-1	0		X	2,560	561	**3,121**	<0.100	<0.100	7.75	37.6	45.4	<20.0
	"	1-1.5	"		X	3,790	2,140	**5,930**	-	-	-	-	-	<20.0
	"	2-2.5	"		X	3,740	3,950	**7,690**	-	-	-	-	-	217
	"	3-3.5	"		X	6,360	6,500	**12,860**	-	-	-	-	-	340
	"	4-4.5	"		X	6,970	8,670	**15,640**	-	-	-	-	-	271
	"	5-5.5	"		X	6,530	8,780	**15,310**	-	-	-	-	-	212
Trench	"	6-6.5	"		X	10,300	12,200	**22,500**	-	-	-	-	-	98.7
T-1	11/11/2013	0	4		X	6840	8,670	**15,510**	<5.00	57.5	29.4	349	436	-
	"	2	6		X	444	1,510	**1,954**	<0.500	1.03	2.25	15.2	18.4	-
	"	4	8	X		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	-
	"	6	10	X		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	-
	"	8	12	X		<10.0	<10.0	<10.0	<0.050	0.084	<0.050	<0.150	<0.300	-
	"	10	14	X		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	-
AH-3	8/14/2013	0-1	0		X	3130	412	**3,542**	<0.400	<0.400	8.69	24.2	32.9	<20.0
	"	1-1.5	"	X		24.7	<50.0	24.7	-	-	-	-	-	24.7
	"	2-2.5	"	X		-	-	-	-	-	-	-	-	59.2
	"	3-3.5	"	x		-	-	-	-	-	-	-	-	187
	"	4-4.5	"	X		-	-	-	-	-	-	-	-	197
	"	5-5.5	"	X		-	-	-	-	-	-	-	-	78.9
	"	6-6.5	"	X		-	-	-	-	-	-	-	-	143

Trench Trench to Define

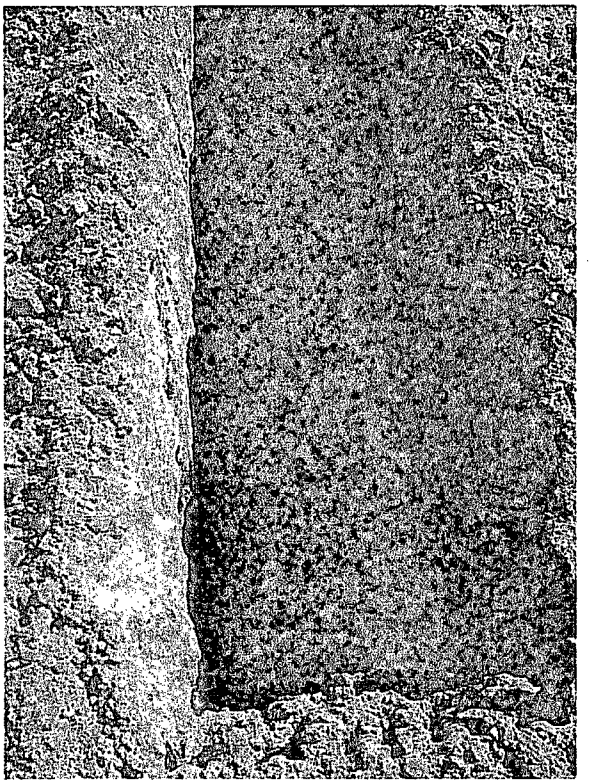
(-) Not Analyzed

Excavation Depths

Photos

COG Operating LLC
Weems #1 Tank Battery
Eddy County, New Mexico

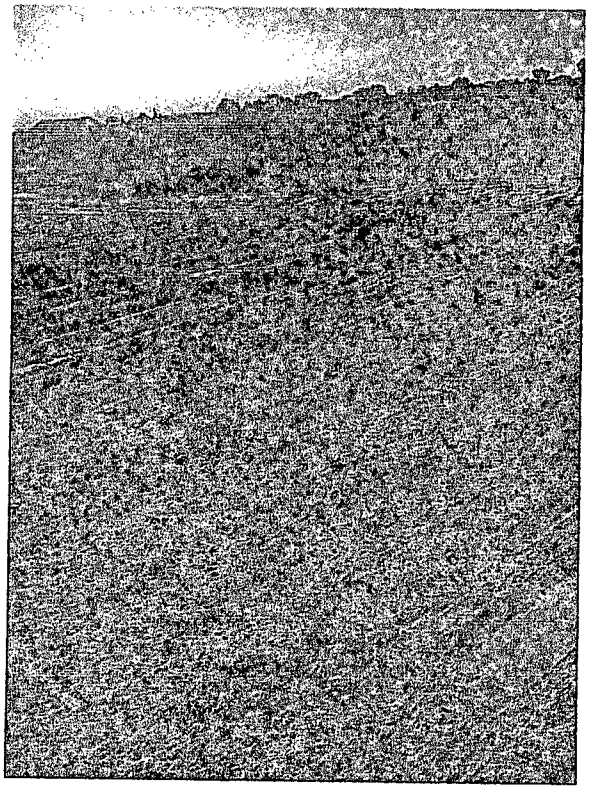
View East – AH-2 area at 4.0'



View East – T-1 in the area of AH-2 at 10.0'

TETRA TECH

COG Operating LLC
Weems #1 Tank Battery
Eddy County, New Mexico



View Southeast – AH-2 and AH-3 areas backfilled

TETRA TECH

Appendix A

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 W. Illinois Ave, Midland, Texas 79701**	Telephone No. **(432) 685-4332**
Facility Name **Weems #1**	Facility Type **Tank Battery**

Surface Owner: State	Mineral Owner	Lease No. (API#) 30-015-1535789

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
B	34	22S	27E					

Latitude 32.35320° N **Longitude** 104.17399° W

NATURE OF RELEASE

Type of Release: Oil and Produced Water	Volume of Release 154 bbls of Oil, 16 bbls Produced Water	Volume Recovered 0 bbls of Oil, 0 bbls of Produced Water
Source of Release: One inch nipple	Date and Hour of Occurrence 7/09/2013	Date and Hour of Discovery 7/09/2013 9:00 am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **Mike Bratcher - NMOCD**	
By Whom? Michelle Mullins	Date and Hour 7/11/2013 8:40 am	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

N/A

RECEIVED
MAR 05 2014
NMOCD ARTESIA

Describe Cause of Problem and Remedial Action Taken.*

A one inch nipple failed on a drain line due to corrosion. Replaced the nipple with a new one to prevent a reoccurrence.

Describe Area Affected and Cleanup Action Taken.*

Initially an estimated 154bbls of oil and 16bbls of produced water was released due to a one inch nipple that failed. No fluid was recovered. The spill area is located on the pad and the adjacent pasture. Tetra Tech inspected site and collected samples to define spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. Site was then brought up to surface grade with clean backfill material. Tetra Tech prepared closure report and submitted to NMOCD for review.

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

Signature:	OIL CONSERVATION DIVISION	
Printed Name: Ike Tavarez (Agent for COG)	Approved by District Supervisor:	
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	Attached ☐
Date: 11/19/2013 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
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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, TX 79701	Telephone No.	432-230-0077
Facility Name	Weems #001	Facility Type	Tank Battery

Surface Owner State	Mineral Owner	Lease No. (API#) 30-01535789

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
B	34	22S	27E					EDDY

Latitude 32.35320 **Longitude** 104.17399

NATURE OF RELEASE

Type of Release Oil and produced water	Volume of Release 154bbls of oil 16bbls of produced water	Volume Recovered 0bbls of oil 0bbls of produced water
Source of Release One inch nipple	Date and Hour of Occurrence 07-09-2013	Date and Hour of Discovery 07-09-2013 9:00am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher - NMOCD	
By Whom? Michelle Mullins	Date and Hour 07-11-2013 8:40am	
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.*

A one inch nipple failed on drain line due to corrosion. Replaced one inch nipple with a new one to prevent a reoccurrence.

Describe Area Affected and Cleanup Action Taken.*

Initially an estimated 154bbls of oil and 16bbls of produced water was released due to a one inch nipple that failed. We were unable to recover any fluid. The spill area is located on the pad and the adjacent pasture. 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: Robert Grubbs Jr	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: 07-12-2013 Phone: 432-661-6601	

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Weems #1
Eddy County, New Mexico

21 South 26 East

6	5 **65**	4	3 **140**	2 120	1 **89**
7 **66** Artesian	8	9 **150**	10 **115**	11	12
18 150 **240**	17 174 **178 35**	16 139 **65**	15 **93** **65**	14	13 76 **170**
19 **254**	20 **210**	21 **70**	22 **55**	23 **36** **34**	24 **50** **43**
30 **115**	29 **220**	28 **75** **190**	27	26 **40**	25 **41** **40**
31 200	32 **164**	33 **45** **120**	34	35 **90**	36 **23** **26**

21 South 27 East

6 **34** **175**	5 **350**	4	3	2	1 **12** **186**
7	8	9 **81** **78**	10	11	12
18	17	16	15	14	13
19 **30** **3627**	20	21 Site **75**	22	23	24
30 **16** **16**	29 **11** **31 30**	28 **40** **46**	27	26 **70 32**	25 **12**
31 **15** **17**	32 **15** **15**	33	34	35 **30**	36

21 South 28 East

6	5	4 **80**	3	2	1
7	8	9	10	11	12
18 **9** **19**	17 **37**	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

22 South 26 East

6	5	4 **68**	3 **140** **135**	2 **105**	1 **32** **41**
7	8	9 **73**	10 **95**	11 **60** **60**	12 **32** **45**
18	17	16	15	14 **68** **30**	13 **45** **60**
19	20 **180**	21	22	23 **78**	24 **85** **108**
30	29	28 **140**	27 **96**	26 **71**	25 **96**
31 **105**	32	33	34	35 **150**	36 **115**

22 South 27 East

6	5 **85**	4 **46**	3	2	1 **40**
7	8 **22** **40**	9 **40** **40**	10 **11** **40**	11	12
18 **84**	17 **28** **29**	16 **70**	15 **15** **20**	14	13
19	20 **62** **53**	21 **60** **55**	22 **34** **100**	23 **45**	24 **15**
30 **99** **100**	29 **85** **90**	28 **66** **84**	27 **47** **112**	26 **38** **40**	25 **40**
31 **112** **145**	32 **81** **170**	33 **66** **150**	34 **53** **60Site**	35 **57** **60**	36 **28** **57**

22 South 28 East

6	5	4 **131**	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30 **12** **10**	29	28	27	26	25
31 **42**	32 **35**	33	34	35	36

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

23 South 27 East

6 Carlsbad	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 Loving	27	26	25 **44**
31	32	33	34	35	36

New Mexico State Engineers Well Reports

USGS Well Reports

Geology and Groundwater Conditions in Southern Eddy, County, NM

Appendix C

Summary Report

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

Report Date: September 3, 2013

Work Order: 13082238

Project Location: Eddy Co., NM
Project Name: COG/Weems #1 TB
Project Number: 112MC05595

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
339579	AH-1 0-1'	soil	2013-08-14	00:00	2013-08-22
339580	AH-1 1-1.5'	soil	2013-08-14	00:00	2013-08-22
339581	AH-1 2-2.5'	soil	2013-08-14	00:00	2013-08-22
339582	AH-1 3-3.5'	soil	2013-08-14	00:00	2013-08-22
339583	AH-1 4-4.5'	soil	2013-08-14	00:00	2013-08-22
339584	AH-2 0-1'	soil	2013-08-14	00:00	2013-08-22
339585	AH-2 1-1.5'	soil	2013-08-14	00:00	2013-08-22
339586	AH-2 2-2.5'	soil	2013-08-14	00:00	2013-08-22
339587	AH-2 3-3.5'	soil	2013-08-14	00:00	2013-08-22
339588	AH-2 4-4.5'	soil	2013-08-14	00:00	2013-08-22
339589	AH-2 5-5.5'	soil	2013-08-14	00:00	2013-08-22
339590	AH-2 6-6.5'	soil	2013-08-14	00:00	2013-08-22
339591	AH-3 0-1'	soil	2013-08-14	00:00	2013-08-22
339592	AH-3 1-1.5'	soil	2013-08-14	00:00	2013-08-22
339593	AH-3 2-2.5'	soil	2013-08-14	00:00	2013-08-22
339594	AH-3 3-3.5'	soil	2013-08-14	00:00	2013-08-22
339595	AH-3 4-4.5'	soil	2013-08-14	00:00	2013-08-22
339596	AH-3 5-5.5'	soil	2013-08-14	00:00	2013-08-22
339597	AH-3 6-6.5'	soil	2013-08-14	00:00	2013-08-22

	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)
339579 - AH-1 0-1'	<0.0200	**0.294**	**2.82**	**2.61**	**93.4**	**1650** Qs
339580 - AH-1 1-1.5'					<50.0	**24.7** Qs
339584 - AH-2 0-1'	<0.100	<0.100	**7.75**	**37.6**	**561**	**2560** Qs
339585 - AH-2 1-1.5'					**2140** [1]	**3790** Qs

continued ...

[1] Sample run out of hold time.

This is only a summary. Please, refer to the complete report package for quality control data.

... continued

Sample - Field Code	BTEX Benzene (mg/Kg)	BTEX Toluene (mg/Kg)	BTEX Ethylbenzene (mg/Kg)	BTEX Xylene (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
339586 - AH-2 2-2.5'					**3950** [2]	**3740** Je,Qs
339587 - AH-2 3-3.5'					**6500** Je	**6360** Qs
339588 - AH-2 4-4.5'					**8670** Je	**6970** Qs
339589 - AH-2 5-5.5'					**8780** Je	**6530** Qs
339590 - AH-2 6-6.5'					**12200** Je	**10300** Je,Qs
339591 - AH-3 0-1'	<0.400	<0.400	**8.69**	**24.2**	**412**	**3130** Qs
339592 - AH-3 1-1.5'					<50.0	**24.7** Qs

Sample: 339579 - AH-1 0-1'

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

Sample: 339580 - AH-1 1-1.5'

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

Sample: 339581 - AH-1 2-2.5'

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

Sample: 339582 - AH-1 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**98.5**	mg/Kg	4

Sample: 339583 - AH-1 4-4.5'

Param	Flag	Result	Units	RL
Chloride		**73.9**	mg/Kg	4

Sample: 339584 - AH-2 0-1'

continued ...

[2]Sample run out of hold time.

sample 339584 continued ...

Param	Flag	Result	Units	RL

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

Sample: 339585 - AH-2 1-1.5'

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

Sample: 339586 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**217**	mg/Kg	4

Sample: 339587 - AH-2 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**340**	mg/Kg	4

Sample: 339588 - AH-2 4-4.5'

Param	Flag	Result	Units	RL
Chloride		**271**	mg/Kg	4

Sample: 339589 - AH-2 5-5.5'

Param	Flag	Result	Units	RL
Chloride		**212**	mg/Kg	4

Sample: 339590 - AH-2 6-6.5'

Param	Flag	Result	Units	RL
Chloride		**98.7**	mg/Kg	4

Sample: 339591 - AH-3 0-1'

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

Sample: 339592 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**24.7**	mg/Kg	4

Sample: 339593 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**59.2**	mg/Kg	4

Sample: 339594 - AH-3 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**187**	mg/Kg	4

Sample: 339595 - AH-3 4-4.5'

Param	Flag	Result	Units	RL
Chloride		**197**	mg/Kg	4

Sample: 339596 - AH-3 5-5.5'

Param	Flag	Result	Units	RL
Chloride		**78.9**	mg/Kg	4

Sample: 339597 - AH-3 6-6.5'

Param	Flag	Result	Units	RL
Chloride		**143**	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: September 3, 2013

Work Order: 13082238

Project Location: Eddy Co., NM
Project Name: COG/Weems #1 TB
Project Number: 112MC05595

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
339579	AH-1 0-1'	soil	2013-08-14	00:00	2013-08-22
339580	AH-1 1-1.5'	soil	2013-08-14	00:00	2013-08-22
339581	AH-1 2-2.5'	soil	2013-08-14	00:00	2013-08-22
339582	AH-1 3-3.5'	soil	2013-08-14	00:00	2013-08-22
339583	AH-1 4-4.5'	soil	2013-08-14	00:00	2013-08-22
339584	AH-2 0-1'	soil	2013-08-14	00:00	2013-08-22
339585	AH-2 1-1.5'	soil	2013-08-14	00:00	2013-08-22
339586	AH-2 2-2.5'	soil	2013-08-14	00:00	2013-08-22
339587	AH-2 3-3.5'	soil	2013-08-14	00:00	2013-08-22
339588	AH-2 4-4.5'	soil	2013-08-14	00:00	2013-08-22
339589	AH-2 5-5.5'	soil	2013-08-14	00:00	2013-08-22
339590	AH-2 6-6.5'	soil	2013-08-14	00:00	2013-08-22
339591	AH-3 0-1'	soil	2013-08-14	00:00	2013-08-22
339592	AH-3 1-1.5'	soil	2013-08-14	00:00	2013-08-22
339593	AH-3 2-2.5'	soil	2013-08-14	00:00	2013-08-22
339594	AH-3 3-3.5'	soil	2013-08-14	00:00	2013-08-22
339595	AH-3 4-4.5'	soil	2013-08-14	00:00	2013-08-22
339596	AH-3 5-5.5'	soil	2013-08-14	00:00	2013-08-22

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
339597	AH-3 6-6.5'	soil	2013-08-14	00:00	2013-08-22

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/Weems #1 TB were received by TraceAnalysis, Inc. on 2013-08-22 and assigned to work order 13082238. Samples for work order 13082238 were received intact at a temperature of 5.2 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	88565	2013-08-28 at 12:00	104527	2013-08-29 at 09:20
Chloride (Titration)	SM 4500-Cl B	88453	2013-08-26 at 10:05	104452	2013-08-27 at 16:08
Chloride (Titration)	SM 4500-Cl B	88453	2013-08-26 at 10:05	104453	2013-08-27 at 16:24
Chloride (Titration)	SM 4500-Cl B	88453	2013-08-26 at 10:05	104454	2013-08-27 at 16:32
TPH DRO - NEW	S 8015 D	88492	2013-08-26 at 10:32	104431	2013-08-27 at 10:33
TPH DRO - NEW	S 8015 D	88645	2013-08-30 at 14:00	104631	2013-09-03 at 09:27
TPH DRO - NEW	S 8015 D	88651	2013-08-30 at 14:00	104635	2013-08-30 at 10:35
TPH GRO	S 8015 D	88572	2013-08-28 at 12:00	104535	2013-08-29 at 11:13

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 13082238 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: 339579 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	104527	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88565	Sample Preparation:	2013-08-28	Prepared By:	KC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene		1	**0.294**	mg/Kg	1	0.0200
Ethylbenzene		1	**2.82**	mg/Kg	1	0.0200
Xylene		1	**2.61**	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.31	mg/Kg	1	2.00	116	70 - 130
4-Bromofluorobenzene (4-BFB)			1.83	mg/Kg	1	2.00	92	70 - 130

Sample: 339579 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104452	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

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

Sample: 339579 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	104431	Date Analyzed:	2013-08-27	Analyzed By:	CW
Prep Batch:	88492	Sample Preparation:	2013-08-26	Prepared By:	CW

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	B	1	**93.4**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			105	mg/Kg	1	100	105	76.3 - 192.6

Sample: 339579 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	104535	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88572	Sample Preparation:	2013-08-28	Prepared By:	KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs	1	**1650**	mg/Kg	20	4.00

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[1]	Qsr	Qsr	1.67	mg/Kg	20	40.0	4	70 - 130
4-Bromofluorobenzene (4-BFB)				44.2	mg/Kg	20	40.0	110	70 - 130

Sample: 339580 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104453	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

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

Sample: 339580 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	104635	Date Analyzed:	2013-08-30	Analyzed By:	CW
Prep Batch:	88651	Sample Preparation:	2013-08-30	Prepared By:	CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			115	mg/Kg	1	100	115	76.3 - 192.6

Sample: 339580 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	104535	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88572	Sample Preparation:	2013-08-28	Prepared By:	KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	QR	1	**24.7**	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.50	mg/Kg	1	2.00	75	70 - 130
4-Bromofluorobenzene (4-BFB)			1.69	mg/Kg	1	2.00	84	70 - 130

Sample: 339581 - AH-1 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104453	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

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

Sample: 339582 - AH-1 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104453	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

continued ...

sample 339582 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**98.5**	mg/Kg	5	4.00

Sample: 339583 - AH-1 4-4.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104453	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**73.9**	mg/Kg	5	4.00

Sample: 339584 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	104527	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88565	Sample Preparation:	2013-08-28	Prepared By:	KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.100	mg/Kg	5	0.0200
Toluene	U	1	<0.100	mg/Kg	5	0.0200
Ethylbenzene		1	**7.75**	mg/Kg	5	0.0200
Xylene		1	**37.6**	mg/Kg	5	0.0200

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[2] Qsr	Qsr		2.43	mg/Kg	5	10.0	24	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		2.44	mg/Kg	5	10.0	24	70 - 130

Sample: 339584 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104453	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

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

Sample: 339584 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	104431	Date Analyzed:	2013-08-27	Analyzed By:	CW
Prep Batch:	88492	Sample Preparation:	2013-08-26	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**561**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			111	mg/Kg	1	100	111	76.3 - 192.6

Sample: 339584 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	104535	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88572	Sample Preparation:	2013-08-28	Prepared By:	KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs	1	**2560**	mg/Kg	20	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	3 Qsr	Qsr	1.58	mg/Kg	20	40.0	4	70 - 130
4-Bromofluorobenzene (4-BFB)			39.5	mg/Kg	20	40.0	99	70 - 130

Sample: 339585 - AH-2 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104453	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

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

Sample: 339585 - AH-2 1-1.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	104631	Date Analyzed:	2013-09-03	Analyzed By:	CW
Prep Batch:	88645	Sample Preparation:	2013-08-30	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO [4]		1	**2140**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			159	mg/Kg	1	100	159	76.3 - 192.6

Sample: 339585 - AH-2 1-1.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	104535	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88572	Sample Preparation:	2013-08-28	Prepared By:	KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs	1	**3790**	mg/Kg	20	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT) [5]	Qsr	Qsr	1.73	mg/Kg	20	40.0	4	70 - 130
4-Bromofluorobenzene (4-BFB)			47.4	mg/Kg	20	40.0	118	70 - 130

Sample: 339586 - AH-2 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104453	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**217**	mg/Kg	5	4.00

Sample: 339586 - AH-2 2-2.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	104631	Date Analyzed:	2013-09-03	Analyzed By:	CW
Prep Batch:	88645	Sample Preparation:	2013-08-30	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO [6]		1	**3950**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	210	mg/Kg	1	100	210	76.3 - 192.6

Sample: 339586 - AH-2 2-2.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	104535	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88572	Sample Preparation:	2013-08-28	Prepared By:	KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Je,Qs	1	**3740**	mg/Kg	20	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT) [7]	Qsr	Qsr	1.20	mg/Kg	20	40.0	3	70 - 130
4-Bromofluorobenzene (4-BFB)			41.8	mg/Kg	20	40.0	104	70 - 130

Sample: 339587 - AH-2 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104453	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**340**	mg/Kg	5	4.00

Sample: 339587 - AH-2 3-3.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	104631	Date Analyzed:	2013-09-03	Analyzed By:	CW
Prep Batch:	88645	Sample Preparation:	2013-08-30	Prepared By:	CW

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Je	1	**6500**	mg/Kg	1	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		299	mg/Kg	1	100	299	76.3 - 192.6

Sample: 339587 - AH-2 3-3.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	104535	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88572	Sample Preparation:	2013-08-28	Prepared By:	KC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	Qs	1	**6360**	mg/Kg	20	4.00

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	8 Qsr	Qsr		1.16	mg/Kg	20	40.0	3	70 - 130
4-Bromofluorobenzene (4-BFB)				29.3	mg/Kg	20	40.0	73	70 - 130

Sample: 339588 - AH-2 4-4.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104453	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**271**	mg/Kg	5	4.00

Sample: 339588 - AH-2 4-4.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	104631	Date Analyzed:	2013-09-03	Analyzed By:	CW
Prep Batch:	88645	Sample Preparation:	2013-08-30	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Je	1	**8670**	mg/Kg	1	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		380	mg/Kg	1	100	380	76.3 - 192.6

Sample: 339588 - AH-2 4-4.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	104535	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88572	Sample Preparation:	2013-08-28	Prepared By:	KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs	1	**6970**	mg/Kg	50	4.00

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	9 Qsr	Qsr		1.37	mg/Kg	50	100	1	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		40.1	mg/Kg	50	100	40	70 - 130

Sample: 339589 - AH-2 5-5.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104453	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**212**	mg/Kg	5	4.00

Sample: 339589 - AH-2 5-5.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	104631	Date Analyzed:	2013-09-03	Analyzed By:	CW
Prep Batch:	88645	Sample Preparation:	2013-08-30	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Je	1	**8780**	mg/Kg	1	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		385	mg/Kg	1	100	385	76.3 - 192.6

Sample: 339589 - AH-2 5-5.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	104535	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88572	Sample Preparation:	2013-08-28	Prepared By:	KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs	1	**6530**	mg/Kg	50	4.00

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	10 Qsr	Qsr		1.01	mg/Kg	50	100	1	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		31.5	mg/Kg	50	100	32	70 - 130

Sample: 339590 - AH-2 6-6.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104454	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Chloride			**98.7**		mg/Kg	5	4.00

Sample: 339590 - AH-2 6-6.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	104631	Date Analyzed:	2013-09-03	Analyzed By:	CW
Prep Batch:	88645	Sample Preparation:	2013-08-30	Prepared By:	CW

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
DRO	Je	1	**12200**		mg/Kg	1	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		486	mg/Kg	1	100	486	76.3 - 192.6

Sample: 339590 - AH-2 6-6.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	104535	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88572	Sample Preparation:	2013-08-28	Prepared By:	KC

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
GRO	Je,Qs	1	**10300**		mg/Kg	50	4.00

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	11 Qsr	Qsr		0.911	mg/Kg	50	100	1	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		56.0	mg/Kg	50	100	56	70 - 130

Sample: 339591 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	104527	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88565	Sample Preparation:	2013-08-28	Prepared By:	KC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.400	mg/Kg	20	0.0200
Toluene	U	1	<0.400	mg/Kg	20	0.0200
Ethylbenzene		1	**8.69**	mg/Kg	20	0.0200
Xylene		1	**24.2**	mg/Kg	20	0.0200

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[12] QSR	QSR		2.33	mg/Kg	20	40.0	6	70 - 130
4-Bromofluorobenzene (4-BFB)	QSR	QSR		27.5	mg/Kg	20	40.0	69	70 - 130

Sample: 339591 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104454	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

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

Sample: 339591 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	104431	Date Analyzed:	2013-08-27	Analyzed By:	CW
Prep Batch:	88492	Sample Preparation:	2013-08-26	Prepared By:	CW

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	**412**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			110	mg/Kg	1	100	110	76.3 - 192.6

Sample: 339591 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	104535	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88572	Sample Preparation:	2013-08-28	Prepared By:	KC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	Qs	1	**3130**	mg/Kg	20	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT) [13]	Qsr	Qsr	1.66	mg/Kg	20	40.0	4	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	25.0	mg/Kg	20	40.0	62	70 - 130

Sample: 339592 - AH-3 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104454	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**24.7**	mg/Kg	5	4.00

Sample: 339592 - AH-3 1-1.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	104635	Date Analyzed:	2013-08-30	Analyzed By:	CW
Prep Batch:	88651	Sample Preparation:	2013-08-30	Prepared By:	CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			115	mg/Kg	1	100	115	76.3 - 192.6

Sample: 339592 - AH-3 1-1.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	104535	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88572	Sample Preparation:	2013-08-28	Prepared By:	KC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	Qs	1	**24.7**	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.41	mg/Kg	1	2.00	70	70 - 130
4-Bromofluorobenzene (4-BFB)			1.81	mg/Kg	1	2.00	90	70 - 130

Sample: 339593 - AH-3 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104454	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**59.2**	mg/Kg	5	4.00

Sample: 339594 - AH-3 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104454	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**187**	mg/Kg	5	4.00

Sample: 339595 - AH-3 4-4.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104454	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**197**	mg/Kg	5	4.00

Sample: 339596 - AH-3 5-5.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104454	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**78.9**	mg/Kg	5	4.00

Sample: 339597 - AH-3 6-6.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104454	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	Sample Preparation:	2013-08-26	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**143**	mg/Kg	5	4.00

Method Blanks

Method Blank (1) QC Batch: 104431

QC Batch:	104431	Date Analyzed:	2013-08-27	Analyzed By:	CW
Prep Batch:	88492	QC Preparation:	2013-08-26	Prepared By:	CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO			14.1	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			102	mg/Kg	1	100	102	64.1 - 164.4

Method Blank (1) QC Batch: 104452

QC Batch:	104452	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	QC Preparation:	2013-08-26	Prepared By:	AR

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

Method Blank (1) QC Batch: 104453

QC Batch:	104453	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	QC Preparation:	2013-08-26	Prepared By:	AR

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

Method Blank (1) QC Batch: 104454

QC Batch:	104454	Date Analyzed:	2013-08-27	Analyzed By:	AR
Prep Batch:	88453	QC Preparation:	2013-08-26	Prepared By:	AR

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

Method Blank (1) QC Batch: 104527

QC Batch:	104527	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88565	QC Preparation:	2013-08-28	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)			2.09	mg/Kg	1	2.00	104	70 - 130
4-Bromofluorobenzene (4-BFB)			1.97	mg/Kg	1	2.00	98	70 - 130

Method Blank (1) QC Batch: 104535

QC Batch:	104535	Date Analyzed:	2013-08-29	Analyzed By:	KC
Prep Batch:	88572	QC Preparation:	2013-08-28	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)			1.51	mg/Kg	1	2.00	76	70 - 130
4-Bromofluorobenzene (4-BFB)			1.65	mg/Kg	1	2.00	82	70 - 130

Method Blank (1) QC Batch: 104631

QC Batch:	104631	Date Analyzed:	2013-09-03	Analyzed By:	CW
Prep Batch:	88645	QC Preparation:	2013-08-30	Prepared By:	CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	16.6	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			94.2	mg/Kg	1	100	94	64.1 - 164.4

Method Blank (1) QC Batch: 104635

QC Batch:	104635	Date Analyzed:	2013-08-30	Analyzed By:	CW
Prep Batch:	88651	QC Preparation:	2013-08-30	Prepared By:	CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	10.8	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			106	mg/Kg	1	100	106	64.1 - 164.4

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 104431 | Date Analyzed: 2013-08-27 | Analyzed By: CW
Prep Batch: 88492 | QC Preparation: 2013-08-26 | Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	258	mg/Kg	1	250	14.1	98	53.8 - 129

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	273	mg/Kg	1	250	14.1	104	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	96.4	98.4	mg/Kg	1	100	96	98	61.3 - 170.4

Laboratory Control Spike (LCS-1)

QC Batch: 104452 | Date Analyzed: 2013-08-27 | Analyzed By: AR
Prep Batch: 88453 | QC Preparation: 2013-08-26 | Prepared By: AR

Param	F	C	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	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2530	mg/Kg	1	2500	<3.85	101	89.7 - 115.9	7	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: 104453 | Date Analyzed: 2013-08-27 | Analyzed By: AR
Prep Batch: 88453 | QC Preparation: 2013-08-26 | Prepared By: AR

Param	F	C	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	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2460	mg/Kg	1	2500	<3.85	98	89.7 - 115.9	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: 104454 | Date Analyzed: 2013-08-27 | Analyzed By: AR
Prep Batch: 88453 | QC Preparation: 2013-08-26 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2570	mg/Kg	1	2500	<3.85	103	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			2460	mg/Kg	1	2500	<3.85	98	89.7 - 115.9	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: 104527 | Date Analyzed: 2013-08-29 | Analyzed By: KC
Prep Batch: 88565 | QC Preparation: 2013-08-28 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.06	mg/Kg	1	2.00	<0.00810	103	70 - 130
Toluene		1	2.06	mg/Kg	1	2.00	<0.00750	103	70 - 130
Ethylbenzene		1	1.96	mg/Kg	1	2.00	<0.00730	98	70 - 130

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control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Xylene		1	5.96	mg/Kg	1	6.00	<0.00700	99	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	2.09	mg/Kg	1	2.00	<0.00810	104	70 - 130	1	20
Toluene		1	2.06	mg/Kg	1	2.00	<0.00750	103	70 - 130	0	20
Ethylbenzene		1	1.99	mg/Kg	1	2.00	<0.00730	100	70 - 130	2	20
Xylene		1	5.96	mg/Kg	1	6.00	<0.00700	99	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)	2.06	2.08	mg/Kg	1	2.00	103	104	70 - 130
4-Bromofluorobenzene (4-BFB)	2.08	2.10	mg/Kg	1	2.00	104	105	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 104535 | Date Analyzed: 2013-08-29 | Analyzed By: KC
Prep Batch: 88572 | QC Preparation: 2013-08-28 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	16.0	mg/Kg	1	20.0	<2.32	80	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	15.3	mg/Kg	1	20.0	<2.32	76	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)	1.63	1.60	mg/Kg	1	2.00	82	80	70 - 130
4-Bromofluorobenzene (4-BFB)	1.96	1.85	mg/Kg	1	2.00	98	92	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 104631 | Date Analyzed: 2013-09-03 | Analyzed By: CW
Prep Batch: 88645 | QC Preparation: 2013-08-30 | Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	291	mg/Kg	1	250	16.6	110	53.8 - 129

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	286	mg/Kg	1	250	16.6	108	53.8 - 129	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
n-Tricosane	96.4	98.9	mg/Kg	1	100	96	99	61.3 - 170.4

Laboratory Control Spike (LCS-1)

QC Batch: 104635 | Date Analyzed: 2013-08-30 | Analyzed By: CW
Prep Batch: 88651 | QC Preparation: 2013-08-30 | Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	271	mg/Kg	1	250	10.8	104	53.8 - 129

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	275	mg/Kg	1	250	10.8	106	53.8 - 129	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
n-Tricosane	102	103	mg/Kg	1	100	102	103	61.3 - 170.4

Matrix Spike (MS-1) Spiked Sample: 339617

QC Batch: 104431 | Date Analyzed: 2013-08-27 | Analyzed By: CW
Prep Batch: 88492 | QC Preparation: 2013-08-26 | Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	264	mg/Kg	1	250	35.7	91	29 - 168.5

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	259	mg/Kg	1	250	35.7	89	29 - 168.5	2	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	101	103	mg/Kg	1	100	101	103	59.5 - 168.9

Matrix Spike (MS-1) Spiked Sample: 339579

QC Batch: 104452 | Date Analyzed: 2013-08-27 | Analyzed By: AR
Prep Batch: 88453 | QC Preparation: 2013-08-26 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2510	mg/Kg	5	2500	<19.2	100	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			2400	mg/Kg	5	2500	<19.2	96	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: 339589

QC Batch: 104453 | Date Analyzed: 2013-08-27 | Analyzed By: AR
Prep Batch: 88453 | QC Preparation: 2013-08-26 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2530	mg/Kg	5	2500	212	93	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			2660	mg/Kg	5	2500	212	98	78.9 - 121	5	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: 339617

QC Batch: 104454 | Date Analyzed: 2013-08-27 | Analyzed By: AR
Prep Batch: 88453 | QC Preparation: 2013-08-26 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2420	mg/Kg	5	2500	<19.2	97	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			2290	mg/Kg	5	2500	<19.2	92	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: 338954

QC Batch: 104527 | Date Analyzed: 2013-08-29 | Analyzed By: KC
Prep Batch: 88565 | QC Preparation: 2013-08-28 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.97	mg/Kg	1	2.00	<0.00810	98	70 - 130
Toluene		1	1.94	mg/Kg	1	2.00	<0.00750	97	70 - 130
Ethylbenzene		1	1.94	mg/Kg	1	2.00	<0.00730	97	70 - 130
Xylene		1	5.75	mg/Kg	1	6.00	<0.00700	96	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	2.01	mg/Kg	1	2.00	<0.00810	100	70 - 130	2	20
Toluene		1	2.02	mg/Kg	1	2.00	<0.00750	101	70 - 130	4	20
Ethylbenzene		1	2.03	mg/Kg	1	2.00	<0.00730	102	70 - 130	4	20
Xylene		1	6.11	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)	2.14	2.07	mg/Kg	1	2	107	104	70 - 130
4-Bromofluorobenzene (4-BFB)	1.99	2.04	mg/Kg	1	2	100	102	70 - 130

Matrix Spike (MS-1) Spiked Sample: 338954

QC Batch: 104535 | Date Analyzed: 2013-08-29 | Analyzed By: KC
Prep Batch: 88572 | QC Preparation: 2013-08-28 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	1	10.0	mg/Kg	1	20.0	<2.32	50	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	10.4	mg/Kg	1	20.0	<2.32	52	70 - 130	4	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)	1.50	1.39	mg/Kg	1	2	75	70	70 - 130
4-Bromofluorobenzene (4-BFB)	1.87	1.76	mg/Kg	1	2	94	88	70 - 130

Matrix Spike (MS-1) Spiked Sample: 339762

QC Batch: 104631 | Date Analyzed: 2013-09-03 | Analyzed By: CW
Prep Batch: 88645 | QC Preparation: 2013-08-30 | Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	269	mg/Kg	1	250	<10.2	108	29 - 168.5

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	271	mg/Kg	1	250	<10.2	104	29 - 168.5	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	103	98.8	mg/Kg	1	100	103	99	59.5 - 168.9

Matrix Spike (MS-1) Spiked Sample: 339580

QC Batch: 104635 | Date Analyzed: 2013-08-30 | Analyzed By: CW
Prep Batch: 88651 | QC Preparation: 2013-08-30 | Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	231	mg/Kg	1	250	22.3	83	29 - 168.5

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	236	mg/Kg	1	250	22.3	85	29 - 168.5	2	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	91.2	89.5	mg/Kg	1	100	91	90	59.5 - 168.9

Calibration Standards

Standard (CCV-1)

QC Batch: 104431 | Date Analyzed: 2013-08-27 | Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	256	102	80 - 120	2013-08-27

Standard (CCV-2)

QC Batch: 104431 | Date Analyzed: 2013-08-27 | Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	261	104	80 - 120	2013-08-27

Standard (CCV-3)

QC Batch: 104431 | Date Analyzed: 2013-08-27 | Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	273	109	80 - 120	2013-08-27

Standard (CCV-4)

QC Batch: 104431 | Date Analyzed: 2013-08-27 | Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	258	103	80 - 120	2013-08-27

Standard (CCV-1)

QC Batch: 104452 | Date Analyzed: 2013-08-27 | 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	99.4	99	85 - 115	2013-08-27

Standard (CCV-2)

QC Batch: 104452 | Date Analyzed: 2013-08-27 | 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	101	101	85 - 115	2013-08-27

Standard (CCV-1)

QC Batch: 104453 | Date Analyzed: 2013-08-27 | 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	2013-08-27

Standard (CCV-2)

QC Batch: 104453 | Date Analyzed: 2013-08-27 | 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	2013-08-27

Standard (CCV-1)

QC Batch: 104454 | Date Analyzed: 2013-08-27 | 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	2013-08-27

Standard (CCV-2)

QC Batch: 104454 Date Analyzed: 2013-08-27 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	2013-08-27

Standard (CCV-1)

QC Batch: 104527 Date Analyzed: 2013-08-29 Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.102	102	80 - 120	2013-08-29
Toluene		1	mg/kg	0.100	0.0992	99	80 - 120	2013-08-29
Ethylbenzene		1	mg/kg	0.100	0.0951	95	80 - 120	2013-08-29
Xylene		1	mg/kg	0.300	0.288	96	80 - 120	2013-08-29

Standard (CCV-2)

QC Batch: 104527 Date Analyzed: 2013-08-29 Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.108	108	80 - 120	2013-08-29
Toluene		1	mg/kg	0.100	0.105	105	80 - 120	2013-08-29
Ethylbenzene		1	mg/kg	0.100	0.102	102	80 - 120	2013-08-29
Xylene		1	mg/kg	0.300	0.304	101	80 - 120	2013-08-29

Standard (CCV-1)

QC Batch: 104535 Date Analyzed: 2013-08-29 Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.933	93	80 - 120	2013-08-29

Standard (CCV-2)

QC Batch: 104535 Date Analyzed: 2013-08-29 Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.14	114	80 - 120	2013-08-29

Standard (CCV-3)

QC Batch: 104535 Date Analyzed: 2013-08-29 Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.911	91	80 - 120	2013-08-29

Standard (CCV-1)

QC Batch: 104631 Date Analyzed: 2013-09-03 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	260	104	80 - 120	2013-09-03

Standard (CCV-2)

QC Batch: 104631 Date Analyzed: 2013-09-03 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	278	111	80 - 120	2013-09-03

Standard (CCV-3)

QC Batch: 104631 Date Analyzed: 2013-09-03 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	275	110	80 - 120	2013-09-03

Standard (CCV-4)

QC Batch: 104631 Date Analyzed: 2013-09-03 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	279	112	80 - 120	2013-09-03

Standard (CCV-1)

QC Batch: 104635 Date Analyzed: 2013-08-30 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	280	112	80 - 120	2013-08-30

Standard (CCV-2)

QC Batch: 104635 Date Analyzed: 2013-08-30 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	294	118	80 - 120	2013-08-30

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

Result Comments

1 Surrogate diluted out of the sample.
2 Surrogates were diluted out of the sample.
3 Surrogate diluted out of sample.
4 Sample run out of hold time.
5 Surrogate diluted out of sample.
6 Sample run out of hold time.
7 Surrogate diluted out of sample.
8 Surrogates diluted out of sample.
9 Surrogates diluted out of sample.
10 Surrogates diluted out of sample.
11 Surrogates diluted out of sample.
12 Surrogate diluted out of the sample.
13 Surrogates are diluted out of sample.

Attachments

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

130822238

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.: 112MC05595

PROJECT NAME: COG-Weems #1 TB

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 TX1006 (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
38959	8/14		S		X	AH-1 (0-1)	1				X		X	X											X				
580						(1-1.5)	1				X														X				
581						(2-2.5)	1				X														X				
582						(3-3.5)	1				X														X				
583						(4-4.5)	1				X														X				
584						AH-2 (0-1)	1				X		X	X											X				
585						(1-1.5)	1				X														X				
586						(2-2.5)	1				X														X				
587						(3-3.5)	1				X														X				
588						(4-4.5)	1				X														X				

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature)	Date:	Time:	RECEIVED BY: (Signature)	Date:	Time:
Odessa DARCUS	8/22/13	1535		8/22/13	15:35
RELINQUISHED BY: (Signature)	Date:	Time:	RECEIVED BY: (Signature)	Date:	Time:
RELINQUISHED BY: (Signature)	Date:	Time:	RECEIVED BY: (Signature)	Date:	Time:

SAMPLED BY: (Print & initial) Alan McGonahan — Date: 8/19/13 — Time:

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

AIRBILL #:

OTHER:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

RECEIVING LABORATORY: Trace Lab

ADDRESS:

CITY: Midland STATE: TX ZIP:

CONTACT: PHONE:

RECEIVED BY: (Signature)

DATE: TIME:

SAMPLE CONDITION WHEN RECEIVED: * 5.2°

REMARKS: If TPH is > 1000 Run deeper; If Benzene > 10 or BTEX > 50 run deeper; run all chlorides

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

13082238

Analysis Request of Chain of Custody Record

PAGE: 2 OF: 2

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.: 112MC05595

PROJECT NAME: COG - Weems #2 TB 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. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
589	8/14		S		X	AH-2 (5-5.5)	1				X														X				
590						(6-6.5)	1				X														X				
591						AH-3 (0-1)	1				X		X	X												X				
592						(1-1.5)	1				X														X				
593						(2-2.5)	1				X														X				
594						(3-3.5)	1				X														X				
595						(4-4.5)	1				X														X				
596						(5-5.5)	1				X														X				
597	↓		↓		↓	(6-6.5)	1				X														X				

RELINQUISHED BY: (Signature) Adrian Dan — Date: 8/22/13 Time: 1535

RECEIVED BY: (Signature) — Date: 8/22/13 Time: 15:35

SAMPLED BY: (Print & Initial) Alan McClanahan — Date: 8/14/13 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: Midland Trace Analysis

ADDRESS:

CITY: Midland STATE: TX ZIP:

CONTACT: PHONE:

RECEIVED BY: (Signature)

DATE: TIME:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 5.2°

REMARKS: * IF TPH > 1000 run deeper; if Benzene > 10 or BTEX > 50 run deeper; run all chlorides

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

CARDINAL Laboratories

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

November 12, 2013

IKE TAVAREZ

TETRA TECH

1910 N. BIG SPRING STREET

MIDLAND, TX 79705

RE: WEEMS #1TB

Enclosed are the results of analyses for samples received by the laboratory on 11/11/13 12:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
IKE TAVAREZ
1910 N. BIG SPRING STREET
MIDLAND TX, 79705
Fax To: (432) 682-3946

Received:	11/11/2013	Sampling Date:	11/11/2013
Reported:	11/12/2013	Sampling Type:	Soil
Project Name:	WEEMS #1TB	Sampling Condition:	Cool & Intact
Project Number:	112MC05595	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

Sample ID: T-1 (AH2) 0' (4'EB) (H302741-01)

BTEX 8021B mg/kg Analyzed By: MS S-04

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<5.00	5.00	11/11/2013	ND	1.97	98.4	2.00	0.377	
Toluene*	**57.5**	5.00	11/11/2013	ND	1.99	99.7	2.00	1.22	
Ethylbenzene*	**29.4**	5.00	11/11/2013	ND	2.00	99.8	2.00	1.66	
Total Xylenes*	**349**	15.0	11/11/2013	ND	5.91	98.6	6.00	2.32	
Total BTEX	**436**	30.0	11/11/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID *132 %* *89.4-126*

TPH 8015M mg/kg Analyzed By: MS S-04

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**6840**	10.0	11/11/2013	ND	170	84.9	200	11.6	
DRO >C10-C28	**8670**	10.0	11/11/2013	ND	169	84.5	200	6.55	

Surrogate: 1-Chlorooctane *223 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *173 %* *63.6-154*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

TETRA TECH
IKE TAVAREZ
1910 N. BIG SPRING STREET
MIDLAND TX, 79705
Fax To: (432) 682-3946

Received:	11/11/2013	Sampling Date:	11/11/2013
Reported:	11/12/2013	Sampling Type:	Soil
Project Name:	WEEMS #1TB	Sampling Condition:	Cool & Intact
Project Number:	112MC05595	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

Sample ID: T-1 (AH2) 2' (4'EB) (H302741-02)

BTEX 8021B mg/kg **Analyzed By: MS** **S-04**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.500	0.500	11/11/2013	ND	1.97	98.4	2.00	0.377	
Toluene*	**1.03**	0.500	11/11/2013	ND	1.99	99.7	2.00	1.22	
Ethylbenzene*	**2.25**	0.500	11/11/2013	ND	2.00	99.8	2.00	1.66	
Total Xylenes*	**15.2**	1.50	11/11/2013	ND	5.91	98.6	6.00	2.32	
Total BTEX	**18.4**	3.00	11/11/2013	ND					

Surrogate: 4-Bromofluorobenzene (PIL *154 %* *89.4-126*

TPH 8015M mg/kg **Analyzed By: MS** **S-04**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**444**	10.0	11/11/2013	ND	170	84.9	200	11.6	
DRO >C10-C28	**1510**	10.0	11/11/2013	ND	169	84.5	200	6.55	

Surrogate: 1-Chlorooctane *143 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *114 %* *63.6-154*

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Analytical Results For:

TETRA TECH
IKE TAVAREZ
1910 N. BIG SPRING STREET
MIDLAND TX, 79705
Fax To: (432) 682-3946

Received:	11/11/2013	Sampling Date:	11/11/2013
Reported:	11/12/2013	Sampling Type:	Soil
Project Name:	WEEMS #1TB	Sampling Condition:	Cool & Intact
Project Number:	112MC05595	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

Sample ID: T-1 (AH2) 4' (4'EB) (H302741-03)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/12/2013	ND	1.97	98.4	2.00	0.377	
Toluene*	<0.050	0.050	11/12/2013	ND	1.99	99.7	2.00	1.22	
Ethylbenzene*	<0.050	0.050	11/12/2013	ND	2.00	99.8	2.00	1.66	
Total Xylenes*	<0.150	0.150	11/12/2013	ND	5.91	98.6	6.00	2.32	
Total BTEX	<0.300	0.300	11/12/2013	ND					

Surrogate: 4-Bromofluorobenzene (PIL *107 %* *89.4-126*

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/11/2013	ND	170	84.9	200	11.6	
DRO >C10-C28	<10.0	10.0	11/11/2013	ND	169	84.5	200	6.55	

Surrogate: 1-Chlorooctane *90.5 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *99.3 %* *63.6-154*

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Analytical Results For:

TETRA TECH
IKE TAVAREZ
1910 N. BIG SPRING STREET
MIDLAND TX, 79705
Fax To: (432) 682-3946

Received:	11/11/2013	Sampling Date:	11/11/2013
Reported:	11/12/2013	Sampling Type:	Soil
Project Name:	WEEMS #1TB	Sampling Condition:	Cool & Intact
Project Number:	112MC05595	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

Sample ID: T-1 (AH2) 6' (4'EB) (H302741-04)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/12/2013	ND	1.97	98.4	2.00	0.377	
Toluene*	<0.050	0.050	11/12/2013	ND	1.99	99.7	2.00	1.22	
Ethylbenzene*	<0.050	0.050	11/12/2013	ND	2.00	99.8	2.00	1.66	
Total Xylenes*	<0.150	0.150	11/12/2013	ND	5.91	98.6	6.00	2.32	
Total BTEX	<0.300	0.300	11/12/2013	ND					

Surrogate: 4-Bromofluorobenzene (PIL *106 %* *89.4-126*

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/11/2013	ND	170	84.9	200	11.6	
DRO >C10-C28	<10.0	10.0	11/11/2013	ND	169	84.5	200	6.55	

Surrogate: 1-Chlorooctane *91.9 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *99.4 %* *63.6-154*

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Analytical Results For:

TETRA TECH
IKE TAVAREZ
1910 N. BIG SPRING STREET
MIDLAND TX, 79705
Fax To: (432) 682-3946

Received:	11/11/2013	Sampling Date:	11/11/2013
Reported:	11/12/2013	Sampling Type:	Soil
Project Name:	WEEMS #1TB	Sampling Condition:	Cool & Intact
Project Number:	112MC05595	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

Sample ID: T-1 (AH2) 8' (4'EB) (H302741-05)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/12/2013	ND	1.97	98.4	2.00	0.377	
Toluene*	**0.084**	0.050	11/12/2013	ND	1.99	99.7	2.00	1.22	
Ethylbenzene*	<0.050	0.050	11/12/2013	ND	2.00	99.8	2.00	1.66	
Total Xylenes*	<0.150	0.150	11/12/2013	ND	5.91	98.6	6.00	2.32	
Total BTEX	<0.300	0.300	11/12/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID *107 %* *89.4-126*

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/11/2013	ND	170	84.9	200	11.6	
DRO >C10-C28	<10.0	10.0	11/11/2013	ND	169	84.5	200	6.55	

Surrogate: 1-Chlorooctane *101 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *112 %* *63.6-154*

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Analytical Results For:

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IKE TAVAREZ
1910 N. BIG SPRING STREET
MIDLAND TX, 79705
Fax To: (432) 682-3946

Received:	11/11/2013	Sampling Date:	11/11/2013
Reported:	11/12/2013	Sampling Type:	Soil
Project Name:	WEEMS #1TB	Sampling Condition:	Cool & Intact
Project Number:	112MC05595	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

Sample ID: T-1 (AH2) 10' (4'EB) (H302741-06)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/12/2013	ND	1.97	98.4	2.00	0.377	
Toluene*	<0.050	0.050	11/12/2013	ND	1.99	99.7	2.00	1.22	
Ethylbenzene*	<0.050	0.050	11/12/2013	ND	2.00	99.8	2.00	1.66	
Total Xylenes*	<0.150	0.150	11/12/2013	ND	5.91	98.6	6.00	2.32	
Total BTEX	<0.300	0.300	11/12/2013	ND					

Surrogate: 4-Bromofluorobenzene (PIL *107 %* *89.4-126*

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/11/2013	ND	170	84.9	200	11.6	
DRO >C10-C28	<10.0	10.0	11/11/2013	ND	169	84.5	200	6.55	

Surrogate: 1-Chlorooctane *98.0 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *109 %* *63.6-154*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Notes and Definitions

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

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	COG	**BILL TO**	
Project Manager:	Ike Tavarez	**P.O. #:**	
Address:		**Company:**	
City:	**State:**	**Zip:**	**Attn:**
Phone #:	(432) 250-0680	**Fax #:**	**Address:**
Project #:	Weems #1TB	**Project Owner:**	COG
Project Name:	112mc05595	**City:**	
Project Location:		**State:**	**Zip:**
Sampler Name:	RR	**Phone #:**	
		Fax #:	

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST	
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME	TPH	BTEX
H302741																
1	T-1 (AH2) 0' (4' EB)	G	6										11/1/13		X	X
2	T-1 (AH2) 2' (4' EB)	G	6												X	X
3	T-1 (AH2) 4' (4' EB)	G	6												X	X
4	T-1 (AH2) 6' (4' EB)	G	6												X	X
5	T-1 (AH2) 8' (4' EB)	G	6												X	X
6	T-1 (AH2) 10' (4' EB	G	6												X	X

Relinquished By:	**Date:** 11/1/13	**Received By:**	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 1330		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	**Date:**	**Received By:**	REMARKS: Straight from field
	Time:		ryan.reich@tetratech.com
Delivered By: (Circle One)		**Sample Condition**	**CHECKED BY:** (Initials)
Sampler - UPS - Bus - Other:	5.4°C	Cool: ☑ Yes ☐ No / Intact: ☑ Yes ☐ No	

ike.tavarez@tetratech.com

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

#54