PJXK1033553374

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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 **Pat Ellis**
Address **550 W. Texas, Suite 1300 Midland, Texas 79701**	Telephone No. **(432) 685-4332**
Facility Name GC Federal #13	Facility Type **Well**

Surface Owner: Federal	*Mineral Owner*	*Lease No. NMLC-029405B* (API#)30-025-39109

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
N	19	17S	32E	575	South	1915	West	Lea

Latitude N 32.81443° **Longitude** W 103.80842°

NATURE OF RELEASE

Type of Release: Produced Fluids	Volume of Release **23 bbls**	Volume Recovered **20 bbls**
Source of Release Flowline	Date and Hour of Occurrence 12/23/10	Date and Hour of Discovery 12/23/10 1:00 p.m.
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

N/A

Describe Cause of Problem and Remedial Action Taken.*

The GC Federal #13 flowline ruptured on the pad location. The ruptured part of the flowline had been cut out and replaced with new poly.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech inspected site and collected samples to define spills extents. The impacted soils with elevated chlorides 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: Phone: (432) 686-3023		

* Attach Additional Sheets If Necessary

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Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	COG OPERATING LLC	Contact	Pat Ellis
Address	550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	GC Federal #13	Facility Type	Well

Surface Owner Federal	Mineral Owner	Lease No. NMLC-029405B (API#) 30-025-39109

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
N	19	17S	32E	575	South	1915	West	Lea

Latitude 32 48.872 **Longitude** 103 48.495

NATURE OF RELEASE

Type of Release Produced fluid	Volume of Release 23	Volume Recovered 20
Source of Release Flowline	Date and Hour of Occurrence 12/23/2010	Date and Hour of Discovery 12/23/2010 1:00 p.m.
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
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.*

The GC Federal #13 flowline ruptured on the pad location. The ruptured part of the flowline has been cut out and replaced with new poly.

Describe Area Affected and Cleanup Action Taken.*

Initially 23bbls of produced fluid was released from the ruptured flowline and we were able to recover 20bbls with a vacuum truck. The spill area measured 20 yards x 50 yards all on the pad location. The pad has been scraped and saturated material was hauled to disposal. Tetra Tech will sample the spill site area to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD/BLM for approval prior to any significant remediation work.

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

Signature:	OIL CONSERVATION DIVISION
Printed Name: Josh Russo	Approved by District Supervisor:
Title: HSE Coordinator	Approval Date: / Expiration Date:
E-mail Address: jrusso@conchoresources.com	Conditions of Approval: / Attached ☐
Date: 01/14/2010 Phone: 432-212-2399	

* Attach Additional Sheets If Necessary

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OPERATOR

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Name of Company **COG Operating LLC**	Contact **Pat Ellis**
Address **550 W. Texas, Suite 1300 Midland, Texas 79701**	Telephone No. **(432) 685-4332**
Facility Name GC Federal #13	Facility Type **Well**

Surface Owner: Federal	Mineral Owner	Lease No. NMLC-029405B (API#)30-025-39109

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
N	19	17S	32E	575	South	1915	West	Lea

Latitude N 32.81443° **Longitude** W 103.80842°

NATURE OF RELEASE

Type of Release: Produced Fluids	Volume of Release **12 bbls**	Volume Recovered **10 bbls**
Source of Release Flowline	Date and Hour of Occurrence 7/12/10	Date and Hour of Discovery 7/12/10 11:40 a.m.
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	*If YES, Volume Impacting the Watercourse.* N/A	

If a Watercourse was Impacted, Describe Fully.*

N/A

Describe Cause of Problem and Remedial Action Taken.*

The flowline from the GC Fedeal #13 well ruptured. The flowline has been repaired and put back into service.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech inspected site and collected samples to define spills extents. The impacted soil with elevated chlorides 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: 6-13-11 Phone: (432) 686-3023		

* Attach Additional Sheets If Necessary

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Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	COG OPERATING LLC	Contact	Pat Ellis
Address	550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	GC Federal #13	Facility Type	Well

Surface Owner Federal	Mineral Owner	Lease No. NMLC-029405B API# 30-025-39109

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
N	19	17S	32E	575	South	1915	West	Lea

Latitude 32 48.872 **Longitude** 103 48.495

NATURE OF RELEASE

Type of Release Produced Fluids	Volume of Release 12bbls	Volume Recovered 10bbls
Source of Release Flowline	Date and Hour of Occurrence 07/12/2010	Date and Hour of Discovery 07/12/2010 11:40 a.m.
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
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.*

The flowline from the GC Federal #13 well ruptured. The flowline has been repaired and put back into service.

Describe Area Affected and Cleanup Action Taken.*

Initially 12bbls of produced fluids was released from the ruptured flowline. We were able to recover 10bbls of fluid. All fluid stayed on the COG pad location. The dimensions of the spill area were 15' x 50'. The produced water in this area has the chloride concentration of 135,000 mg/l. The oil gravity of any oil in this release is 37. Tetra Tech will sample the spill site area to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD / BLM for approval prior to any significant remediation work.

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

Signature:	OIL CONSERVATION DIVISION
Printed Name: Josh Russo	Approved by District Supervisor:
Title: HSE Coordinator	Approval Date: / Expiration Date:
E-mail Address: jrusso@conchoresources.com	Conditions of Approval: / Attached ☐
Date: 07/16/2010 Phone: 432-212-2399	

* Attach Additional Sheets If Necessary

SITE INFORMATION

Report Type: Work Plan

General Site Information:		
Site:	GC Federal #13 (Well Site)	
Company:	COG Operating LLC	
Section, Township and Range	Section 19, T17S, R32E, Unit N	
Lease Number:	30-025-39109	
County:	Lea County	
GPS:	32.81443	103.80842
Surface Owner:	Federal	
Mineral Owner:		
Directions:	From the intersection of Hwy 529 and CR 126, go North on CR 126 for 1.8 miles, turn left (west) into lease road and go 2.5 miles to Site.	

Release Data:	Spill #1	Spill #2
Date Released:	7/12/2010	12/23/2010
Type Release:	Produced Water	Produced Water
Source of Contamination:	Flow line	Flow line
Fluid Released:	12 barrels	23 barrels
Fluids Recovered:	10 barrels	20 barrels

Official Communication:			
Name:	Pat Ellis		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	550 W. Texas Ave. Ste. 1300		1910 N. Big Spring
P.O. Box			
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 682-4559
Fax:	(432) 684-7137		
Email:	pellis@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**

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MAR 23 2011
HOBBSOCD

approved Geoffrey Leking NMOCD, HOBBS
04/01/11

TETRA TECH

March 17, 2011

RECEIVED
MAR 23 2011
HOBBSOCD

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

Re: Work Plan for the COG Operating LLC., GC Federal #13 Well Site, Unit N, Section 19, Township 17 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 GC Federal #13 Well Site, Unit N, Section 19, Township 17 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.81443°, W 103.80842°. The site location is shown on Figures 1 and 2.

Background (2 Spills)

According to the State of New Mexico C-141 Initial Reports, the first leak was discovered on July 12, 2010 and released approximately twelve (12) barrels of produced water, due to a flow line rupture. Ten (10) barrels of standing fluids were recovered from the site. The spill was contained on the well pad location measuring approximately 15' x 50'. On December 23, 2010, the second leak occurred on the flow line releasing 23 barrels of produced water and 20 barrels of fluid were recovered. The fluid remained on the pad and measuring approximately 55' x 65', which encompassed the foot print of the first spill. The two initial C-141 forms are enclosed in Appendix C.

Tetra Tech
1910 North Big Spring, Midland,TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

Groundwater

On July 14, 2009, Tetra Tech installed a temporary monitor well in Section 30 to establish a depth to water in the area. The well was installed to a total depth of 180' below surface. The well was gauged and found no groundwater in the well (dry). According to the NMOCD groundwater map, the average depth to groundwater in this area is greater than 100' below surface. The average depth to groundwater and well log are shown in Appendix A.

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

Spill #1

On August 16, 2010, Tetra Tech personnel inspected and sampled the spill area. The spill area measured approximately 15' x 65'. Due to the limited impacted area, two (2) auger holes (AH-1 and AH-3) were installed using a stainless steel hand auger to assess the impacted soils. Select 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 B. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, all of the submitted samples at 0-1' were below the RRAL for TPH and BTEX. Elevated chloride concentrations were detected in the shallow soils (0-1') in both auger holes locations.

TETRA TECH

Spill #2

On December 23, 2010, Tetra Tech inspected and sampled the spill area. The second spill was larger and encompassed the first spill foot print. The spill area measured approximately 55' x 65'. A total of four (4) auger holes were installed to assess the spill area. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B. The sampling results are summarized in Table 2. The auger hole locations are shown on Figure 3.

Referring to Table 2, none of the samples at 0-1' exceeded the TPH and BTEX RRAL. Auger holes AH-1 and AH-3 showed chloride concentrations at 0-1' of 990 mg/kg and 2,160 mg/kg, respectively. The deeper samples were below the laboratory reporting limit. The remaining auger holes AH-2 and AH-4 did not show a chloride impact to the area.

Work Plan

COG proposes to remove the elevated chloride impacted soil. Based on the Spill #2 data, the areas of AH-1 and AH-3 will be excavated to a depth of approximately 1.0' below surface, as shown in Table 2. Once the elevated chlorides are removed, the excavation will be backfilled with clean soil.

If the impacted soil is around oil and gas equipment, structures or lines, the impacted soils may not be feasible or practicable to be removed due to safely concerns. As such, Tetra Tech will excavate the soils to the maximum extent practicable.

Upon completion, a final report will be submitted to the NMOCD. If you have any questions or require any additional information regarding this work plan proposal, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez
Project Manager

cc: Pat Ellis – COG
cc: Jim Amos – BLM
cc: Terry Gregston

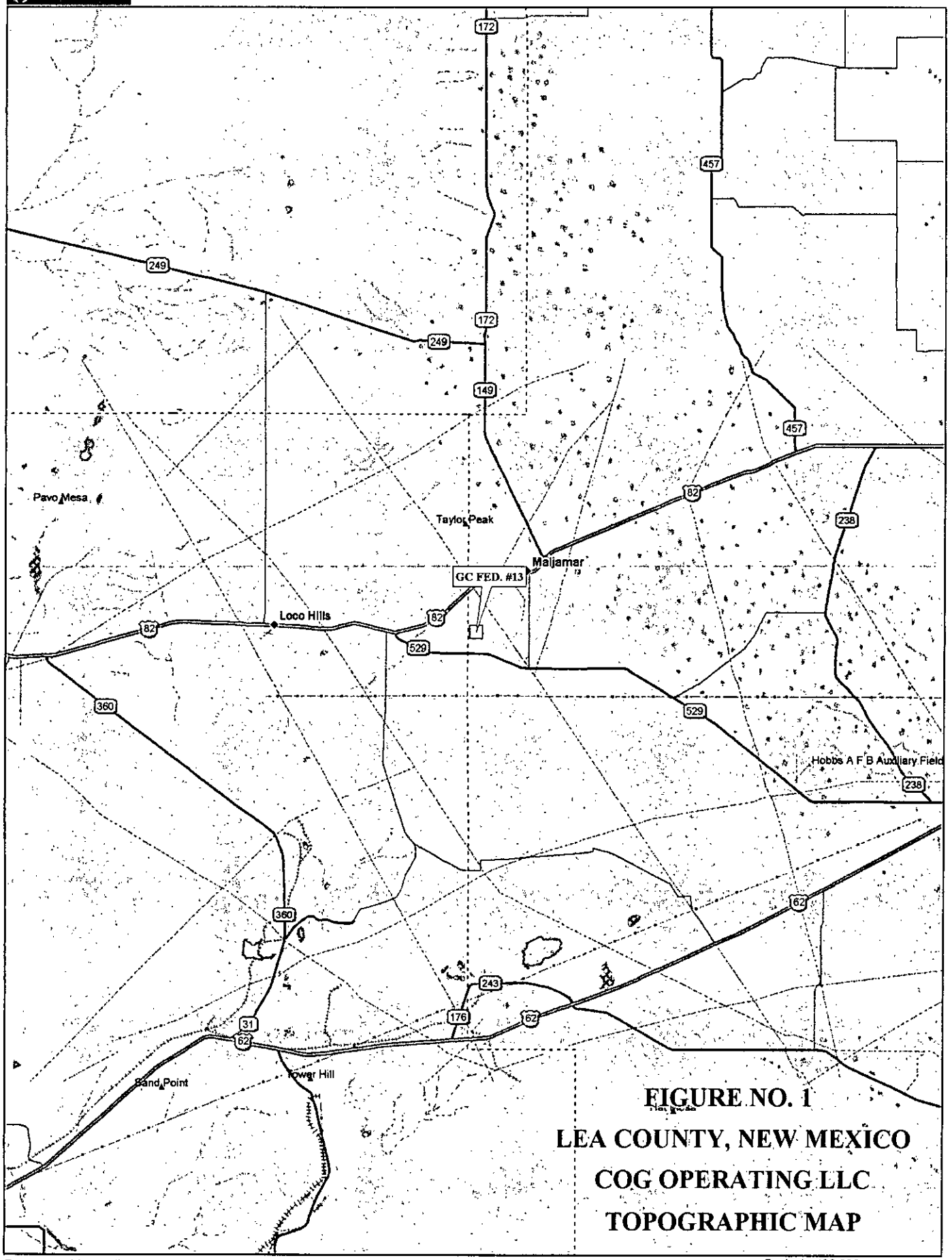


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
COG OPERATING LLC
TOPOGRAPHIC MAP

TN
MN (7.6°E)

Scale 1 : 400,000
1" = 6.31 mi
Data Zoom 9-0

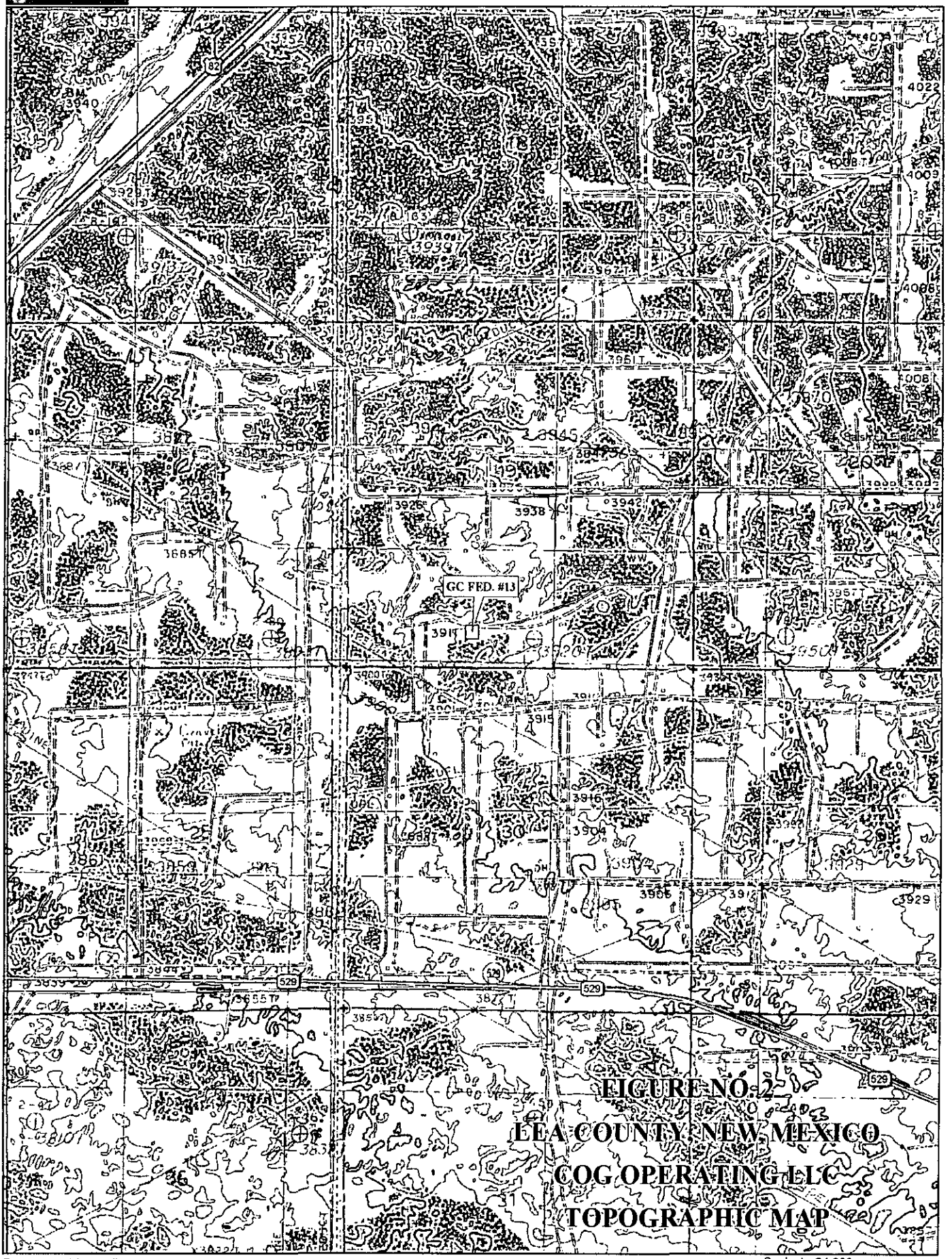


FIGURE NO. 2

LEA COUNTY, NEW MEXICO

COG OPERATING LLC

TOPOGRAPHIC MAP

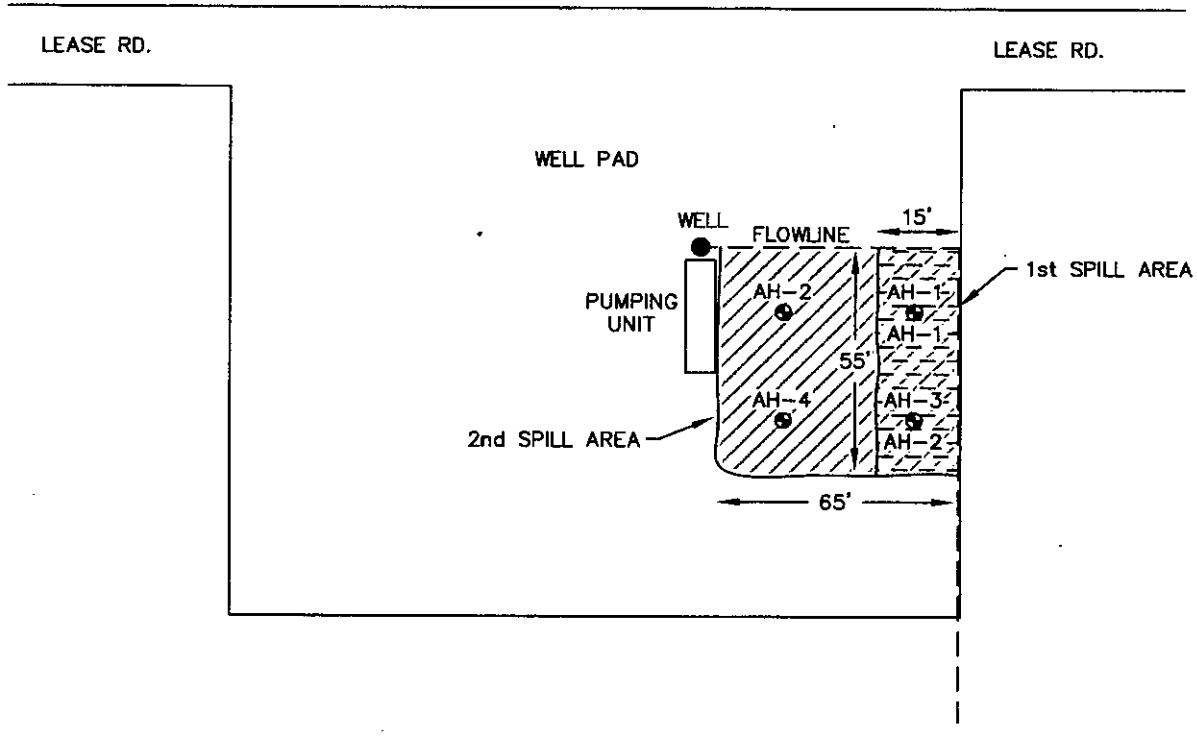
TN

MN (7.6°E)

Scale 1 : 24,000

1" = 2,000.0 ft

Data Zoom 13-0



1st SPILL AREA
2nd SPILL AREA
SAMPLE LOCATIONS 1st SPILL
SAMPLE LOCATIONS 2nd SPILL

NOT TO SCALE

FIGURE NO. 3

LEA COUNTY, NEW MEXICO

COG OPERATING LLC

GC FED #13 WELL

DATE: 2/16/11
DWN. BY: JJ
FILE: H:\COG\84000646 GC FED #13

TETRA TECH, INC.
MIDLAND, TEXAS

Table 1
COG Operating LLC.
GC FEDERAL #13
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-1	8/16/2010	0-1'		X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	**3,920**
	"	1-1.5'		X									**573**
	"	2-2.5'		X									<200
AH-2	8/16/2010	0-1'		X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	**1,440**
	"	1-1.5'		X									**433**
	"	2-2.5'		X									594
	"	3-3.5'		X									<200
	"	4-4.5'		X									<200

BEB Below Excavation Bottom
(–) Not Analyzed

Table 2
COG Operating LLC.
GC FEDERAL #13
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-1	2/16/2011	0-1'		X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	997
	"	1-1.5'		X		-	-	-	-	-	-	-	<200
	"	2-2.5'		X		-	-	-	-	-	-	-	<200
AH-2	2/16/2011	0-1'		X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<200
	"	1-1.5'		X		-	-	-	-	-	-	-	<200
		2-2.5'		X		-	-	-	-	-	-	-	<200
AH-3	2/16/2011	0-1'		X		<2.00	82.7	82.7	<0.0200	<0.0200	<0.0200	<0.0200	2,160
	"	1-1.5'		X		-	-	-	-	-	-	-	<200
		2-2.5'		X		-	-	-	-	-	-	-	<200
AH-4	2/16/2011	0-1'		X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<200
	"	1-1.5'		X		-	-	-	-	-	-	-	<200
		2-2.5'		X		-	-	-	-	-	-	-	233

BEB Below Excavation Bottom
(--) Not Analyzed
[ ] Proposed Excavation Depths

Water Well Data
Average Depth to Groundwater (ft)
COG - GC Federal #13
Lea County, New Mexico

16 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12 **288**
18	17	16	15	14	13 **113**
19	20	21	22	23	24
30	29	28	27	26	25
31 **290**	32	33	34	35	36

16 South 32 East

6	5	4	3 **65**	2 **265**	1 **265**
7	8	9	10	11	12 **215**
18	17	16 **221**	15	14	13 **215**
19 **220**	20	21 **210**	22	23 **210**	24
30	29	28	27	26 **243**	25
31	32	33	34	35	36 **260**

16 South 33 East

6	5 **180**	4 **150**	3 **130**	2 **148**	1 **142**
7	8 **200**	9	10 **182**	11	12 **142**
18	17 **182**	16 **180**	15 **175**	14 **143**	13 **110**
19	20	21	22	23 **120**	24
30 **191**	29	28 **190**	27 **130**	26 **143**	25 **120**
31 **190**	32 **168**	33	34 **160**	35	36

17 South 31 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 **271**	35	36

17 South 32 East

6	5	4 **82**	3 **175**	2 **60**	1 **225**
7	8	9	10	11 **70** **88**	12
18	17	16	15	14	13
19 **Site**	20	21	22	23	24
30 **178**	29	28	27	26	25
31	32	33	34	35	36

17 South 33 East

6 **90**	5	4	3 **155**	2 **158**	1 **150**
7 **167**	8 **173**	9 **161**	10	11	12
18 **188**	17 **180**	16	15	14	13 **165**
19	20 **190**	21	22	23 **115**	24
30	29	28	27	26	25
31	32	33	34	35 **155**	36

18 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12 **400**
18	17	16	15	14 **317**	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 **261**	36

18 South 32 East

6	5	4 **65**	3	2	1
7 **460** **82**	8	9	10	11	12
18	17	16 **84**	15	14	13
19	20 **164**	21	22 **429**	23	24
30	29	28	27	26	25
31	32	33	34 **117**	35	36

18 South 33 East

6	5	4	3	2	1
7	8 **100**	9	10 **62**	11	12 **143** **140**
18	17 **85**	16	15	14 **36**	13 **60**
19 **>140**	20	21	22	23	24 **195**
30 **35**	29	28	27	26	25
31	32	33	34 **177**	35	36

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)

Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data

123 Tetra Tech installed temporary well to establish depth to water

143 NMOCD Groundwater map well location

SAMPLE LOG

Boring/Well: TMW-1 Dry Well in Sec 30 17S- 32E
Project Number: 114-6400224
Client: COG
Site Location: Pronghorn Section 30
Location: Lea County, New Mexico
Total Depth 180
Date Installed: 07/14/09

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
5-6	--	Brown fine grain sand
10-11	--	Buff limestone
15-16	--	Tan to buff calcareous sand with chert intermixed.
20-21	--	Tan calcareous sand
25-26	--	Tan fine grain sand
30-31	--	Tan to yellow sandy clay
35-36	--	Reddish clayey sand with gravel
40-41	--	Red gravelly fine grain sand
45-46	--	Red to buff gravelly calcareous sand
50-51	--	Red fine grain sand
55-56	--	Red sandy silt
60-61	--	Red silty clay (dry)
65-66	--	Red coarse grain sandy clay
70-71	--	Red fine grain sand
75-76	--	Red fine grain sand
80-81	--	Red gravelly sand
85-86	--	Red fine grain silty clay with some sand intermixed
90-91	--	Red fine grain silty clay with some sand intermixed
95-96	--	Red fine grain silty clay with some sand intermixed
100-101	--	Red fine grain silty clay with some sand intermixed
105-106	--	Tan red fine grain sand
110-111	--	Tan fine grain sand
115-116	--	Tan fine grain sand
120-121	--	Tan to red fine grain sand
130-131	--	Red clay of high plasticity (Red bed)
140-141	--	Red clay of high plasticity (Red bed)
150-151	--	Red clay of high plasticity (Red bed) intermixed with gravel
160-161	--	Red clay of high plasticity (Red bed) intermixed with gravel
170-171	--	Red clay of high plasticity (Red bed) intermixed with gravel
180-181	--	Red clay of high plasticity (Red bed)

Total Depth is 181 feet Groundwater was not encountered

Summary Report

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

Report Date: August 25, 2010

Work Order: 10081706

Project Location: Lea County, NM
Project Name: COG/GC Federal #13
Project Number: 114-6400646

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
241460	AH-1 0-1'	soil	2010-08-16	00:00	2010-08-16
241461	AH-1 1-1.5'	soil	2010-08-16	00:00	2010-08-16
241462	AH-1 2-2.5'	soil	2010-08-16	00:00	2010-08-16
241463	AH-2 0-1'	soil	2010-08-16	00:00	2010-08-16
241464	AH-2 1-1.5'	soil	2010-08-16	00:00	2010-08-16
241465	AH-2 2-2.5'	soil	2010-08-16	00:00	2010-08-16
241466	AH-2 3-3.5'	soil	2010-08-16	00:00	2010-08-16
241467	AH-2 4-4.5'	soil	2010-08-16	00:00	2010-08-16

	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)
241460 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
241463 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00

Sample: 241460 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**3920**	mg/Kg	4.00

Sample: 241461 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**573**	mg/Kg	4.00

Sample: 241462 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 241463 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**1440**	mg/Kg	4.00

Sample: 241464 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**433**	mg/Kg	4.00

Sample: 241465 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**594**	mg/Kg	4.00

Sample: 241466 - AH-2 3-3.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 241467 - AH-2 4-4.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

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 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
E-Mail: lab@traceanalysis.com

Certifications

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

NELAP Certifications

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

Analytical and Quality Control Report

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

Report Date: August 25, 2010

Work Order: 10081706

Project Location: Lea County, NM
Project Name: COG/GC Federal #13
Project Number: 114-6400646

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
241460	AH-1 0-1'	soil	2010-08-16	00:00	2010-08-16
241461	AH-1 1-1.5'	soil	2010-08-16	00:00	2010-08-16
241462	AH-1 2-2.5'	soil	2010-08-16	00:00	2010-08-16
241463	AH-2 0-1'	soil	2010-08-16	00:00	2010-08-16
241464	AH-2 1-1.5'	soil	2010-08-16	00:00	2010-08-16
241465	AH-2 2-2.5'	soil	2010-08-16	00:00	2010-08-16
241466	AH-2 3-3.5'	soil	2010-08-16	00:00	2010-08-16
241467	AH-2 4-4.5'	soil	2010-08-16	00:00	2010-08-16

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.

This report consists of a total of 16 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

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

Standard Flags

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

Case Narrative

Samples for project COG/GC Federal #13 were received by TraceAnalysis, Inc. on 2010-08-16 and assigned to work order 10081706. Samples for work order 10081706 were received intact at a temperature of 18.0 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	62423	2010-08-21 at 17:00	72813	2010-08-22 at 10:38
Chloride (Titration)	SM 4500-Cl B	62441	2010-08-23 at 09:03	72832	2010-08-23 at 14:43
Chloride (Titration)	SM 4500-Cl B	62442	2010-08-23 at 09:04	72833	2010-08-23 at 14:44
TPH DRO - NEW	S 8015 D	62428	2010-08-20 at 13:56	72812	2010-08-20 at 13:56
TPH GRO	S 8015 D	62423	2010-08-21 at 17:00	72815	2010-08-22 at 11:05

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 10081706 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.

Samples were received on ice.

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: 241460 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	72813	Date Analyzed:	2010-08-22	Analyzed By:	AG
Prep Batch:	62423	Sample Preparation:	2010-08-21	Prepared By:	AG

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.68	mg/Kg	1	2.00	84	52.8 - 137
4-Bromofluorobenzene (4-BFB)		1.50	mg/Kg	1	2.00	75	38.4 - 157

Sample: 241460 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72832	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62441	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**3920**	mg/Kg	100	4.00

Sample: 241460 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	72812	Date Analyzed:	2010-08-20	Analyzed By:	kg
Prep Batch:	62428	Sample Preparation:	2010-08-20	Prepared By:	kg

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		104	mg/Kg	1	100	104	70 - 130

Sample: 241460 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D.	Prep Method:	S 5035
QC Batch:	72815	Date Analyzed:	2010-08-22	Analyzed By:	AG
Prep Batch:	62423	Sample Preparation:	2010-08-21	Prepared By:	AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<2.00	mg/Kg	1	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.86	mg/Kg	1	2.00	93	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1.59	mg/Kg	1	2.00	80	42 - 159

Sample: 241461 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72832	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62441	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**573**	mg/Kg	50	4.00

Sample: 241462 - AH-1 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72832	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62441	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 241463 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	72813	Date Analyzed:	2010-08-22	Analyzed By:	AG
Prep Batch:	62423	Sample Preparation:	2010-08-21	Prepared By:	AG

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[1]	0.943	mg/Kg	1	2.00	47	52.8 - 137
4-Bromofluorobenzene (4-BFB)		0.847	mg/Kg	1	2.00	42	38.4 - 157

Sample: 241463 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72832	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62441	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**1440**	mg/Kg	100	4.00

Sample: 241463 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	72812	Date Analyzed:	2010-08-20	Analyzed By:	kg
Prep Batch:	62428	Sample Preparation:	2010-08-20	Prepared By:	kg

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

[1]SPECIAL-TFT is out of control limits due to an unknown anomaly. However, 4-BFB is within control limits and shows the method to be in control. •

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		107	mg/Kg	1	100	107	70 - 130

Sample: 241463 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	72815	Date Analyzed:	2010-08-22	Analyzed By:	AG
Prep Batch:	62423	Sample Preparation:	2010-08-21	Prepared By:	AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<2.00	mg/Kg	1	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.05	mg/Kg	1	2.00	52	48.5 - 152
4-Bromofluorobenzene (4-BFB)		0.908	mg/Kg	1	2.00	45	42 - 159

Sample: 241464 - AH-2 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72833	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62442	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**433**	mg/Kg	50	4.00

Sample: 241465 - AH-2 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72833	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62442	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**594**	mg/Kg	50	4.00

Sample: 241466 - AH-2 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72833	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62442	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 241467 - AH-2 4-4.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72833	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62442	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Method Blank (1) QC Batch: 72812

QC Batch:	72812	Date Analyzed:	2010-08-20	Analyzed By:	kg
Prep Batch:	62428	QC Preparation:	2010-08-20	Prepared By:	kg

Parameter	Flag	MDL Result	Units	RL
DRO		<14.5	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		98.6	mg/Kg	1	100	99	70 - 130

Method Blank (1) QC Batch: 72813

QC Batch:	72813	Date Analyzed:	2010-08-22	Analyzed By:	AG
Prep Batch:	62423	QC Preparation:	2010-08-21	Prepared By:	AG

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.0150	mg/Kg	0.02

continued ...

method blank continued ...

Parameter	Flag	MDL Result	Units	RL
Toluene		<0.00950	mg/Kg	0.02
Ethylbenzene		<0.0106	mg/Kg	0.02
Xylene		<0.00930	mg/Kg	0.02

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.83	mg/Kg	1	2.00	92	66.6 - 122
4-Bromofluorobenzene (4-BFB)		1.32	mg/Kg	1	2.00	66	55.4 - 132

Method Blank (1) QC Batch: 72815

QC Batch: 72815 Date Analyzed: 2010-08-22 Analyzed By: AG
Prep Batch: 62423 QC Preparation: 2010-08-21 Prepared By: AG

Parameter	Flag	MDL Result	Units	RL
GRO		<1.65	mg/Kg	2

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.07	mg/Kg	1	2.00	104	67.6 - 150
4-Bromofluorobenzene (4-BFB)		1.43	mg/Kg	1	2.00	72	52.4 - 130

Method Blank (1) QC Batch: 72832

QC Batch: 72832 Date Analyzed: 2010-08-23 Analyzed By: AR
Prep Batch: 62441 QC Preparation: 2010-08-23 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 72833

QC Batch: 72833 Date Analyzed: 2010-08-23 Analyzed By: AR
Prep Batch: 62442 QC Preparation: 2010-08-23 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Laboratory Control Spike (LCS-1)

QC Batch: 72812 | Date Analyzed: 2010-08-20 | Analyzed By: kg
Prep Batch: 62428 | QC Preparation: 2010-08-20 | Prepared By: kg

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	241	mg/Kg	1	250	<14.5	96	57.4 - 133.4

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	234	mg/Kg	1	250	<14.5	94	57.4 - 133.4	3	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	110	108	mg/Kg	1	100	110	108	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 72813 | Date Analyzed: 2010-08-22 | Analyzed By: AG
Prep Batch: 62423 | QC Preparation: 2010-08-21 | Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.98	mg/Kg	1	2.00	<0.0150	99	81.9 - 108
Toluene	1.87	mg/Kg	1	2.00	<0.00950	94	81.9 - 107
Ethylbenzene	1.69	mg/Kg	1	2.00	<0.0106	84	78.4 - 107
Xylene	5.09	mg/Kg	1	6.00	<0.00930	85	79.1 - 107

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	2.06	mg/Kg	1	2.00	<0.0150	103	81.9 - 108	4	20
Toluene	1.95	mg/Kg	1	2.00	<0.00950	98	81.9 - 107	4	20
Ethylbenzene	1.81	mg/Kg	1	2.00	<0.0106	90	78.4 - 107	7	20
Xylene	5.43	mg/Kg	1	6.00	<0.00930	90	79.1 - 107	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
Trifluorotoluene (TFT)	1.66	1.61	mg/Kg	1	2.00	83	80	70.2 - 114
4-Bromofluorobenzene (4-BFB)	1.49	1.43	mg/Kg	1	2.00	74	72	69.8 - 121

Laboratory Control Spike (LCS-1)

QC Batch: 72815 | Date Analyzed: 2010-08-22 | Analyzed By: AG
Prep Batch: 62423 | QC Preparation: 2010-08-21 | Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	14.3	mg/Kg	1	20.0	<1.65	72	69.9 - 95.4

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	14.2	mg/Kg	1	20.0	<1.65	71	69.9 - 95.4	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
Trifluorotoluene (TFT)	2.05	1.86	mg/Kg	1	2.00	102	93	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.64	1.51	mg/Kg	1	2.00	82	76	68.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 72832 | Date Analyzed: 2010-08-23 | Analyzed By: AR
Prep Batch: 62441 | QC Preparation: 2010-08-23 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.5	mg/Kg	1	100	<2.18	98	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	102	mg/Kg	1	100	<2.18	102	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: 72833 | Date Analyzed: 2010-08-23 | Analyzed By: AR
Prep Batch: 62442 | QC Preparation: 2010-08-23 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	96.2	mg/Kg	1	100	<2.18	96	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	102	mg/Kg	1	100	<2.18	102	85 - 115	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: 241463

QC Batch: 72812 | Date Analyzed: 2010-08-20 | Analyzed By: kg
Prep Batch: 62428 | QC Preparation: 2010-08-20 | Prepared By: kg

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	216	mg/Kg	1	250	<14.5	86	35.2 - 167.1

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	226	mg/Kg	1	250	<14.5	90	35.2 - 167.1	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
n-Tricosane	98.4	104	mg/Kg	1	100	98	104	70 - 130

Matrix Spike (MS-1) Spiked Sample: 241471

QC Batch: 72813 | Date Analyzed: 2010-08-22 | Analyzed By: AG
Prep Batch: 62423 | QC Preparation: 2010-08-21 | Prepared By: AG

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	[2]	2.38	mg/Kg	1	2.00	<0.0150	119	80.5 - 112
Toluene	[3]	2.32	mg/Kg	1	2.00	<0.00950	116	82.4 - 113
Ethylbenzene		2.27	mg/Kg	1	2.00	<0.0106	114	83.9 - 114
Xylene		6.80	mg/Kg	1	6.00	<0.00930	113	84 - 114

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	2.16	mg/Kg	1	2.00	<0.0150	108	80.5 - 112	10	20
Toluene	2.13	mg/Kg	1	2.00	<0.00950	106	82.4 - 113	8	20
Ethylbenzene	2.10	mg/Kg	1	2.00	<0.0106	105	83.9 - 114	8	20

continued ...

[2]Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.
[3]Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

matrix spikes continued ...

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Xylene	6.31	mg/Kg	1	6.00	<0.00930	105	84 - 114	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)	1.68	1.43	mg/Kg	1	2	84	72	41.3 - 117
4-Bromofluorobenzene (4-BFB)	1.57	1.28	mg/Kg	1	2	78	64	35.5 - 129

Matrix Spike (MS-1) Spiked Sample: 241593

QC Batch: 72815 | Date Analyzed: 2010-08-22 | Analyzed By: AG
Prep Batch: 62423 | QC Preparation: 2010-08-21 | Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	16.6	mg/Kg	1	20.0	<1.65	83	61.8 - 114

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	16.4	mg/Kg	1	20.0	<1.65	82	61.8 - 114	1	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.70	2.03	mg/Kg	1	2	85	102	50 - 162
4-Bromofluorobenzene (4-BFB)	1.54	1.80	mg/Kg	1	2	77	90	50 - 162

Matrix Spike (MS-1) Spiked Sample: 241463

QC Batch: 72832 | Date Analyzed: 2010-08-23 | Analyzed By: AR
Prep Batch: 62441 | QC Preparation: 2010-08-23 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	11400	mg/Kg	100	10000	1440	100	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	12100	mg/Kg	100	10000	1440	107	85 - 115	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: 241476

QC Batch: 72833 | Date Analyzed: 2010-08-23 | Analyzed By: AR
Prep Batch: 62442 | QC Preparation: 2010-08-23 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	10600	mg/Kg	100	10000	459	101	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	11000	mg/Kg	100	10000	459	105	85 - 115	4	20

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

Standard (CCV-1)

QC Batch: 72812 | Date Analyzed: 2010-08-20 | Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	223	89	80 - 120	2010-08-20

Standard (CCV-2)

QC Batch: 72812 | Date Analyzed: 2010-08-20 | Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	230	92	80 - 120	2010-08-20

Standard (CCV-1)

QC Batch: 72813 | Date Analyzed: 2010-08-22 | Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.101	101	80 - 120	2010-08-22
Toluene		mg/Kg	0.100	0.0964	96	80 - 120	2010-08-22
Ethylbenzene		mg/Kg	0.100	0.0882	88	80 - 120	2010-08-22
Xylene		mg/Kg	0.300	0.266	89	80 - 120	2010-08-22

Standard (CCV-2)

QC Batch: 72813 | Date Analyzed: 2010-08-22 | Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.105	105	80 - 120	2010-08-22
Toluene		mg/Kg	0.100	0.0994	99	80 - 120	2010-08-22
Ethylbenzene		mg/Kg	0.100	0.0915	92	80 - 120	2010-08-22
Xylene		mg/Kg	0.300	0.274	91	80 - 120	2010-08-22

Standard (CCV-1)

QC Batch: 72815 | Date Analyzed: 2010-08-22 | Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.892	89	80 - 120	2010-08-22

Standard (CCV-2)

QC Batch: 72815 | Date Analyzed: 2010-08-22 | Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.860	86	80 - 120	2010-08-22

Standard (ICV-1)

QC Batch: 72832 | Date Analyzed: 2010-08-23 | Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2010-08-23

Standard (CCV-1)

QC Batch: 72832 | Date Analyzed: 2010-08-23 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.3	99	85 - 115	2010-08-23

Standard (ICV-1)

QC Batch: 72833 Date Analyzed: 2010-08-23 Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.4	99	85 - 115	2010-08-23

Standard (CCV-1)

QC Batch: 72833 Date Analyzed: 2010-08-23 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2010-08-23

Order #: 100817016

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:	SITE MANAGER:
COG	Ike Tavarez

PROJECT NO.:	PROJECT NAME:
114-C4000046	COG / G.C. Federal #13 Lea Co, NM

LAB I.D. NUMBER	DATE 2010	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD.	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr 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	TX1005 (Ext. to C35)
24/4600	8/12		S		X	AH-1 0-1'	1				X		X	X											X					
4601						AH-1 1'-1.5'																								
4602						AH-1 2'-2.5'																								
4603						AH-2 0-1'							X	X																
4604						AH-2 1'-1.5'																								
4605						AH-2 2'-2.5'																								
4606						AH-2 3'-3.5'																								
4607	↓		↓		↓	AH-2 4'-4.5'	↓				↓														↓					

RELINQUISHED BY: (Signature)	Date: 8/12/10 Time: 1200	RECEIVED BY: (Signature)	Date: 8/16/10 Time: 17:00
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:

SAMPLED BY: (Print & Initial) JT/EG Date: 8/16/10 Time:

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

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

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 19.6°c intact

REMARKS: If total TPH exceeds 1,000 mg/kg run deeper horizons

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

Summary Report

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

Report Date: February 23, 2011

Work Order: 11021803

Project Location: Lea County, NM
Project Name: COG/GC Federal #13
Project Number: 114-6400646

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
257816	AH-1 0-1'	soil	2011-02-16	00:00	2011-02-17
257817	AH-1 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257818	AH-1 2-2.5'	soil	2011-02-16	00:00	2011-02-17
257819	AH-2 0-1'	soil	2011-02-16	00:00	2011-02-17
257820	AH-2 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257821	AH-2 2-2.5'	soil	2011-02-16	00:00	2011-02-17
257822	AH-3 0-1'	soil	2011-02-16	00:00	2011-02-17
257823	AH-3 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257824	AH-3 2-2.5'	soil	2011-02-16	00:00	2011-02-17
257825	AH-4 0-1'	soil	2011-02-16	00:00	2011-02-17
257826	AH-4 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257827	AH-4 2-2.5'	soil	2011-02-16	00:00	2011-02-17

	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)
257816 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
257819 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
257822 - AH-3 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	**82.7**	<2.00
257825 - AH-4 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00

Sample: 257816 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**997**	mg/Kg	4.00

Sample: 257817 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257818 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257819 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257820 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257821 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257822 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		**2160**	mg/Kg	4.00

Sample: 257823 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257824 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257825 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257826 - AH-4 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257827 - AH-4 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**233**	mg/Kg	4.00

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 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
E-Mail: lab@traceanalysis.com

Certifications

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

NELAP Certifications

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

Analytical and Quality Control Report

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

Report Date: February 23, 2011

Work Order: 11021803

Project Location: Lea County, NM
Project Name: COG/GC Federal #13
Project Number: 114-6400646

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
257816	AH-1 0-1'	soil	2011-02-16	00:00	2011-02-17
257817	AH-1 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257818	AH-1 2-2.5'	soil	2011-02-16	00:00	2011-02-17
257819	AH-2 0-1'	soil	2011-02-16	00:00	2011-02-17
257820	AH-2 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257821	AH-2 2-2.5'	soil	2011-02-16	00:00	2011-02-17
257822	AH-3 0-1'	soil	2011-02-16	00:00	2011-02-17
257823	AH-3 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257824	AH-3 2-2.5'	soil	2011-02-16	00:00	2011-02-17
257825	AH-4 0-1'	soil	2011-02-16	00:00	2011-02-17

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
257826	AH-4 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257827	AH-4 2-2.5'	soil	2011-02-16	00:00	2011-02-17

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

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

Standard Flags

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

Samples for project COG/GC Federal #13 were received by TraceAnalysis, Inc. on 2011-02-17 and assigned to work order 11021803. Samples for work order 11021803 were received intact at a temperature of 7.2 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	66705	2011-02-21 at 12:05	77804	2011-02-21 at 12:05
Chloride (Titration)	SM 4500-Cl B	66703	2011-02-21 at 10:36	77796	2011-02-21 at 13:20
Chloride (Titration)	SM 4500-Cl B	66703	2011-02-21 at 10:36	77797	2011-02-21 at 13:20
TPH DRO - NEW	S 8015 D	66718	2011-02-21 at 09:51	77781	2011-02-21 at 09:51
TPH GRO	S 8015 D	66705	2011-02-21 at 12:05	77805	2011-02-21 at 12:05

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 11021803 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: 257816 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	77804	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.62	mg/Kg	1	2.00	131	51.6 - 149.2
4-Bromofluorobenzene (4-BFB)		3.06	mg/Kg	1	2.00	153	35.7 - 159.6

Sample: 257816 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**997**	mg/Kg	100	4.00

Sample: 257816 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	77781	Date Analyzed:	2011-02-21	Analyzed By:	kg
Prep Batch:	66718	Sample Preparation:	2011-02-21	Prepared By:	kg

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		87.2	mg/Kg	1	100	87	70 - 130

Sample: 257816 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	77805	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<2.00	mg/Kg	1	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.70	mg/Kg	1	2.00	135	36.3 - 158.9
4-Bromofluorobenzene (4-BFB)		2.81	mg/Kg	1	2.00	140	22.2 - 160.2

Sample: 257817 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257818 - AH-1 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257819 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	77804	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.54	mg/Kg	1	2.00	127	51.6 - 149.2
4-Bromofluorobenzene (4-BFB)		2.94	mg/Kg	1	2.00	147	35.7 - 159.6

Sample: 257819 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257819 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	77781	Date Analyzed:	2011-02-21	Analyzed By:	kg
Prep Batch:	66718	Sample Preparation:	2011-02-21	Prepared By:	kg

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		78.7	mg/Kg	1	100	79	70 - 130

Sample: 257819 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	77805	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<2.00	mg/Kg	1	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.55	mg/Kg	1	2.00	128	36.3 - 158.9
4-Bromofluorobenzene (4-BFB)		2.69	mg/Kg	1	2.00	134	22.2 - 160.2

Sample: 257820 - AH-2 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257821 - AH-2 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257822 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	77804	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.28	mg/Kg	1	2.00	114	51.6 - 149.2
4-Bromofluorobenzene (4-BFB)		2.66	mg/Kg	1	2.00	133	35.7 - 159.6

Sample: 257822 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**2160**	mg/Kg	100	4.00

Sample: 257822 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	77781	Date Analyzed:	2011-02-21	Analyzed By:	kg
Prep Batch:	66718	Sample Preparation:	2011-02-21	Prepared By:	kg

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		**82.7**	mg/Kg	1	50.0

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

Sample: 257822 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	77805	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<2.00	mg/Kg	1	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.34	mg/Kg	1	2.00	117	36.3 - 158.9
4-Bromofluorobenzene (4-BFB)		2.48	mg/Kg	1	2.00	124	22.2 - 160.2

Sample: 257823 - AH-3 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257824 - AH-3 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257825 - AH-4 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	77804	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.45	mg/Kg	1	2.00	122	51.6 - 149.2
4-Bromofluorobenzene (4-BFB)		2.78	mg/Kg	1	2.00	139	35.7 - 159.6

Sample: 257825 - AH-4 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257825 - AH-4 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	77781	Date Analyzed:	2011-02-21	Analyzed By:	kg
Prep Batch:	66718	Sample Preparation:	2011-02-21	Prepared By:	kg

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		87.4	mg/Kg	1	100	87	70 - 130

Sample: 257825 - AH-4 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	77805	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<2.00	mg/Kg	1	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.50	mg/Kg	1	2.00	125	36.3 - 158.9
4-Bromofluorobenzene (4-BFB)		2.56	mg/Kg	1	2.00	128	22.2 - 160.2

Sample: 257826 - AH-4 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77797	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257827 - AH-4 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77797	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**233**	mg/Kg	50	4.00

Method Blank (1) QC Batch: 77781

QC Batch:	77781	Date Analyzed:	2011-02-21	Analyzed By:	kg
Prep Batch:	66718	QC Preparation:	2011-02-21	Prepared By:	kg

Parameter	Flag	MDL Result	Units	RL
DRO		<15.7	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		74.8	mg/Kg	1	100	75	70 - 130

Method Blank (1) QC Batch: 77796

QC Batch: 77796 | Date Analyzed: 2011-02-21 | Analyzed By: AR
Prep Batch: 66703 | QC Preparation: 2011-02-21 | Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 77797

QC Batch: 77797 | Date Analyzed: 2011-02-21 | Analyzed By: AR
Prep Batch: 66703 | QC Preparation: 2011-02-21 | Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 77804

QC Batch: 77804 | Date Analyzed: 2011-02-21 | Analyzed By: ME
Prep Batch: 66705 | QC Preparation: 2011-02-21 | Prepared By: ME

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.0118	mg/Kg	0.02
Toluene		<0.00600	mg/Kg	0.02
Ethylbenzene		<0.00850	mg/Kg	0.02
Xylene		<0.00613	mg/Kg	0.02

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.41	mg/Kg	1	2.00	120	70.8 - 123.5
4-Bromofluorobenzene (4-BFB)		2.56	mg/Kg	1	2.00	128	48.8 - 134

Method Blank (1) QC Batch: 77805

QC Batch: 77805 | Date Analyzed: 2011-02-21 | Analyzed By: ME
Prep Batch: 66705 | QC Preparation: 2011-02-21 | Prepared By: ME

Parameter	Flag	MDL Result	Units	RL
GRO		<0.753	mg/Kg	2

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.38	mg/Kg	1	2.00	119	74.6 - 127.8
4-Bromofluorobenzene (4-BFB)		2.50	mg/Kg	1	2.00	125	32.9 - 129.8

Laboratory Control Spike (LCS-1)

QC Batch: 77781 | Date Analyzed: 2011-02-21 | Analyzed By: kg
Prep Batch: 66718 | QC Preparation: 2011-02-21 | Prepared By: kg

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	206	mg/Kg	1	250	<15.7	82	47.5 - 144.1

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	210	mg/Kg	1	250	<15.7	84	47.5 - 144.1	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	99.2	99.7	mg/Kg	1	100	99	100	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 77796 | Date Analyzed: 2011-02-21 | Analyzed By: AR
Prep Batch: 66703 | QC Preparation: 2011-02-21 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	94.9	mg/Kg	1	100	<2.18	95	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	104	mg/Kg	1	100	<2.18	104	85 - 115	9	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: 77797 | Date Analyzed: 2011-02-21 | Analyzed By: AR
Prep Batch: 66703 | QC Preparation: 2011-02-21 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.5	mg/Kg	1	100	<2.18	98	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	103	mg/Kg	1	100	<2.18	103	85 - 115	6	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 77804 | Date Analyzed: 2011-02-21 | Analyzed By: ME
Prep Batch: 66705 | QC Preparation: 2011-02-21 | Prepared By: ME

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.86	mg/Kg	1	2.00	<0.0118	93	76.4 - 118.4
Toluene	1.92	mg/Kg	1	2.00	<0.00600	96	81.8 - 111.9
Ethylbenzene	1.94	mg/Kg	1	2.00	<0.00850	97	81.1 - 112.2
Xylene	5.92	mg/Kg	1	6.00	<0.00613	99	81.7 - 111.5

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	1.88	mg/Kg	1	2.00	<0.0118	94	76.4 - 118.4	1	20
Toluene	1.93	mg/Kg	1	2.00	<0.00600	96	81.8 - 111.9	0	20
Ethylbenzene	1.98	mg/Kg	1	2.00	<0.00850	99	81.1 - 112.2	2	20
Xylene	5.96	mg/Kg	1	6.00	<0.00613	99	81.7 - 111.5	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
Trifluorotoluene (TFT)	2.05	2.03	mg/Kg	1	2.00	102	102	69 - 123.3
4-Bromofluorobenzene (4-BFB)	2.42	2.41	mg/Kg	1	2.00	121	120	64.9 - 131.9

Laboratory Control Spike (LCS-1)

QC Batch: 77805 | Date Analyzed: 2011-02-21 | Analyzed By: ME
Prep Batch: 66705 | QC Preparation: 2011-02-21 | Prepared By: ME

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	17.1	mg/Kg	1	20.0	<0.753	86	61.8 - 97

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	17.0	mg/Kg	1	20.0	<0.753	85	61.8 - 97	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
Trifluorotoluene (TFT)	2.13	2.07	mg/Kg	1	2.00	106	104	74.6 - 124
4-Bromofluorobenzene (4-BFB)	2.29	2.22	mg/Kg	1	2.00	114	111	53.9 - 121.1

Matrix Spike (MS-1) Spiked Sample: 258012

QC Batch: 77781 | Date Analyzed: 2011-02-21 | Analyzed By: kg
Prep Batch: 66718 | QC Preparation: 2011-02-21 | Prepared By: kg

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	595	mg/Kg	1	250	334	104	11.7 - 152.3

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	709	mg/Kg	1	250	334	150	11.7 - 152.3	18	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 [1] [2]	142	161	mg/Kg	1	100	142	161	70 - 130

Matrix Spike (MS-1) Spiked Sample: 257825

QC Batch: 77796 | Date Analyzed: 2011-02-21 | Analyzed By: AR
Prep Batch: 66703 | QC Preparation: 2011-02-21 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	10100	mg/Kg	100	10000	<218	99	85 - 115

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

[1] High surrogate recovery due to peak interference.
[2] High surrogate recovery due to peak interference.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10500	mg/Kg	100	10000	<218	103	85 - 115	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: 257845

QC Batch: 77797 | Date Analyzed: 2011-02-21 | Analyzed By: AR
Prep Batch: 66703 | QC Preparation: 2011-02-21 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	11600	mg/Kg	100	10000	1350	102	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	12000	mg/Kg	100	10000	1350	106	85 - 115	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: 257853

QC Batch: 77804 | Date Analyzed: 2011-02-21 | Analyzed By: ME
Prep Batch: 66705 | QC Preparation: 2011-02-21 | Prepared By: ME

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.93	mg/Kg	1	2.00	<0.0118	96	65.5 - 139.8
Toluene	2.10	mg/Kg	1	2.00	0.2359	93	70.5 - 137.3
Ethylbenzene	2.33	mg/Kg	1	2.00	0.3461	99	66.7 - 151
Xylene	7.35	mg/Kg	1	6.00	1.2225	102	68.7 - 149.5

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	1.91	mg/Kg	1	2.00	<0.0118	96	65.5 - 139.8	1	20
Toluene	2.10	mg/Kg	1	2.00	0.2359	93	70.5 - 137.3	0	20
Ethylbenzene	2.44	mg/Kg	1	2.00	0.3461	105	66.7 - 151	5	20
Xylene	7.52	mg/Kg	1	6.00	1.2225	105	68.7 - 149.5	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
Trifluorotoluene (TFT)	2.55	2.54	mg/Kg	1	2	128	127	50.9 - 152.9

continued ...

matrix spikes continued ...

Surrogate		MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
4-Bromofluorobenzene (4-BFB)	[3] [4]	3.49	3.51	mg/Kg	1	2	174	176	48.5 - 165.8

Matrix Spike (MS-1) Spiked Sample: 257849

QC Batch: 77805 | Date Analyzed: 2011-02-21 | Analyzed By: ME
Prep Batch: 66705 | QC Preparation: 2011-02-21 | Prepared By: ME

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	16.1	mg/Kg	1	20.0	<0.753	80	63 - 108.5

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	17.6	mg/Kg	1	20.0	<0.753	88	63 - 108.5	9	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)	2.63	2.69	mg/Kg	1	2	132	134	54.1 - 154.3
4-Bromofluorobenzene (4-BFB)	2.87	2.93	mg/Kg	1	2	144	146	41.9 - 162.8

Standard (CCV-1)

QC Batch: 77781 | Date Analyzed: 2011-02-21 | Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	208	83	80 - 120	2011-02-21

Standard (CCV-2)

QC Batch: 77781 | Date Analyzed: 2011-02-21 | Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	225	90	80 - 120	2011-02-21

[3] High surrogate recovery due to peak interference.
[4] High surrogate recovery due to peak interference.

Standard (ICV-1)

QC Batch: 77796 Date Analyzed: 2011-02-21 Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	103	103	85 - 115	2011-02-21

Standard (CCV-1)

QC Batch: 77796 Date Analyzed: 2011-02-21 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	97.4	97	85 - 115	2011-02-21

Standard (ICV-1)

QC Batch: 77797 Date Analyzed: 2011-02-21 Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.1	99	85 - 115	2011-02-21

Standard (CCV-1)

QC Batch: 77797 Date Analyzed: 2011-02-21 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2011-02-21

Standard (CCV-1)

QC Batch: 77804 Date Analyzed: 2011-02-21 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.103	103	80 - 120	2011-02-21
Toluene		mg/Kg	0.100	0.106	106	80 - 120	2011-02-21

continued ...

standard continued ...

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Ethylbenzene		mg/Kg	0.100	0.104	104	80 - 120	2011-02-21
Xylene		mg/Kg	0.300	0.317	106	80 - 120	2011-02-21

Standard (CCV-2)

QC Batch: 77804 Date Analyzed: 2011-02-21 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0959	96	80 - 120	2011-02-21
Toluene		mg/Kg	0.100	0.0984	98	80 - 120	2011-02-21
Ethylbenzene		mg/Kg	0.100	0.0988	99	80 - 120	2011-02-21
Xylene		mg/Kg	0.300	0.300	100	80 - 120	2011-02-21

Standard (CCV-3)

QC Batch: 77804 Date Analyzed: 2011-02-21 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0943	94	80 - 120	2011-02-21
Toluene		mg/Kg	0.100	0.0956	96	80 - 120	2011-02-21
Ethylbenzene		mg/Kg	0.100	0.0955	96	80 - 120	2011-02-21
Xylene		mg/Kg	0.300	0.289	96	80 - 120	2011-02-21

Standard (CCV-1)

QC Batch: 77805 Date Analyzed: 2011-02-21 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.10	110	80 - 120	2011-02-21

Standard (CCV-2)

QC Batch: 77805 Date Analyzed: 2011-02-21 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.02	102	80 - 120	2011-02-21

Standard (CCV-3)

QC Batch: 77805 Date Analyzed: 2011-02-21 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.07	107	80 - 120	2011-02-21

X WO #: 11021803

Analysis Request of Chain of Custody Record

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

PAGE: 1 OF: 2

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 114-6400646

PROJECT NAME: GC Federal #13 Lea Co NM

LAB I.D. NUMBER	DATE 2011	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TX1005 (Ext. to C35) TPH 8015 MOD	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. 8240/8260/824	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
257816	2/16		S		X	AH-1 0-1'	1				X		X	X											X				
817						AH-1 1-1.5'																			X				
818						AH-1 2-2.5'																			X				
819						AH-2 0-1'							X	X											X				
820						AH-2 1-1.5'																			X				
821						AH-2 2-2.5'																			X				
822						AH-3 0-1'							X	X											X				
823						AH-3 1-1.5'																			X				
824						AH-3 2-2.5'																			X				
825						AH-4 0-1'							X	X											X				

RELINQUISHED BY: (Signature) Date: 2-17-11 Time: 16:00 RECEIVED BY: (Signature) Date: 2/17/11 Time: 16:00

SAMPLED BY: (Print & Initial) JT TF Date: 2-16-11 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:

RUSH Charges Authorized: Yes No

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

SAMPLE CONDITION WHEN RECEIVED: 7.2°c intact

REMARKS: TPH deep samples if TPH exceed 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.

All tests - Midland

xWO #: 11021803

Analysis Request of Chain of Custody Record

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

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 114-6400646

PROJECT NAME: GC Federal #13 Lea Co NM

LAB I.D. NUMBER	DATE 2011	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
25826	2/16		S		X	AH-4 1-1.5'	1				X	
827						AH-4 2-2.5'						
828						AH-4 3-3.5'						
829						AH-4 1-1.5'						
830						AH-4 5-5.5'						
831						AH-4 6-6.5'						
832						AH-4 7-7.5'						
833	↓		↓		↓	AH-4 8-8.5'	↓				↓	

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. 608/808; Chloride; Gamma Spec.; Alpha Beta (Air); PLM (Asbestos); Major Anions/Cations, pH, TDS

Chloride: X X

RCRA Metals Ag As Ba Cd Cr Pb Hg Se: Hold

TCLP Semi Volatiles: ↓

RELINQUISHED BY (Signature)	Date: 2-17-11 Time: 16:00	RECEIVED BY (Signature)	Date: 2/17/11 Time: 16:00
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:

SAMPLED BY: (Print & Initial) ST TF — Date: 2-16-11 Time:

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

TETRA TECH CONTACT PERSON: Ike Tavarez — Results by:

RUSH Charges Authorized: Yes No

RECEIVING LABORATORY: Trace — RECEIVED BY: (Signature)

ADDRESS: — CITY: Midland STATE: TX ZIP: — CONTACT: — PHONE: — DATE: — TIME:

SAMPLE CONDITION WHEN RECEIVED: 7.2°c intact

REMARKS:

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

SITE INFORMATION

Report Type: Closure

General Site Information:		
Site:	GC Federal #13 (Well Site)	
Company:	COG Operating LLC	
Section, Township and Range	Section 19, T17S, R32E, Unit N	
Lease Number:	30-025-39109	
County:	Lea County	
GPS:	32.81443	103.80842
Surface Owner:	Federal	
Mineral Owner:		
Directions:	From the intersection of Hwy 529 and CR 126, go North on CR 126 for 1.8 miles, turn left (west) into lease road and go 2.5 miles to Site.	

Release Data:	Spill #1	Spill #2
Date Released:	7/12/2010	12/23/2010
Type Release:	Produced Water	Produced Water
Source of Contamination:	Flow line	Flow line
Fluid Released:	12 barrels	23 barrels
Fluids Recovered:	10 barrels	20 barrels

Official Communication:			
Name:	Pat Ellis		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	550 W. Texas Ave. Ste. 1300		1910 N. Big Spring
P.O. Box			
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 682-4559
Fax:	(432) 684-7137		
Email:	pellis@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

HOBBS OCD

JUL 01 2011

RECEIVED

TETRA TECH

June 13, 2011

HOBBS OCD

JUL 01 2011

RECEIVED

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., GC Federal #13 Well Site, Unit N, Section 19, Township 17 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 GC Federal #13 Well Site, Unit N, Section 19, Township 17 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.81443°, W 103.80842°. The site location is shown on Figures 1 and 2.

Background (2 Spills)

According to the State of New Mexico C-141 Initial Reports, the first leak was discovered on July 12, 2010 and released approximately twelve (12) barrels of produced water, due to a flow line rupture. Ten (10) barrels of standing fluids were recovered from the site. The spill was contained on the well pad location measuring approximately 15' x 50'. On December 23, 2010, the second leak occurred on the flow line releasing 23 barrels of produced water and 20 barrels of fluid were recovered. The fluid remained on the pad and measuring approximately 55' x 65', which encompassed the foot print of the first spill. The two initial C-141 forms are enclosed in Appendix C.

Groundwater

On July 14, 2009, Tetra Tech installed a temporary monitor well in Section 30 to establish a depth to water in the area. The well was installed to a total depth of 180' below surface. The well was gauged and found no groundwater in the well (dry). According to the NMOCD groundwater map, the average depth to groundwater in this area is greater than 100' below surface. The average depth to groundwater map and well log are shown in Appendix A.

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

Spill #1

On August 16, 2010, Tetra Tech personnel inspected and sampled the spill area. The spill area measured approximately 15' x 65'. Due to the limited impacted area, two (2) auger holes (AH-1 and AH-2) were installed using a stainless steel hand auger to assess the impacted soils. Select 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 B. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, all of the submitted samples at 0-1' were below the RRAL for TPH and BTEX. Elevated chloride concentrations were detected in the shallow soils (0-1') in both auger holes locations.

Spill #2

On December 23, 2010, Tetra Tech inspected and sampled the spill area. The second spill was larger and encompassed the first spill foot print. The spill area measured approximately 55' x 65'. A total of four (4) auger holes were installed to assess the spill area. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B. The sampling results are summarized in Table 2. The auger hole locations are shown on Figure 3.

Referring to Table 2, none of the samples at 0-1' exceeded the TPH and BTEX RRAL. Auger holes AH-1 and AH-3 showed chloride concentrations at 0-1' of 990 mg/kg and 2,160 mg/kg, respectively. The deeper samples were below the laboratory reporting limit. The remaining auger holes AH-2 and AH-4 did not show a chloride impact to the area.

TETRA TECH

Remedial Work and Closure Request

On April 1, 2011, Tetra Tech personnel oversaw the excavation of the site. The soil remediation was performed according to the approved work plan. The excavation area measured approximately 60' x 30' wide, and included an additional area to the east measuring approximately 20' x 30'. The excavation areas and final depths are shown on Figure 4.

The excavated areas were backfilled with clean material and brought up to surface grade. Approximately 500 yards^3 were removed and hauled to CRI Inc. for proper disposal.

Based on the remedial activities performed at this site, COG request closure of this site. A copies of the C-141 (Final) are included in Appendix C. If you require any additional information or have any questions or comments concerning this report, please call at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Kim Dorey
Staff II Geologist

cc: Pat Ellis – COG
cc: Jim Amos – BLM
cc: Terry Gregston

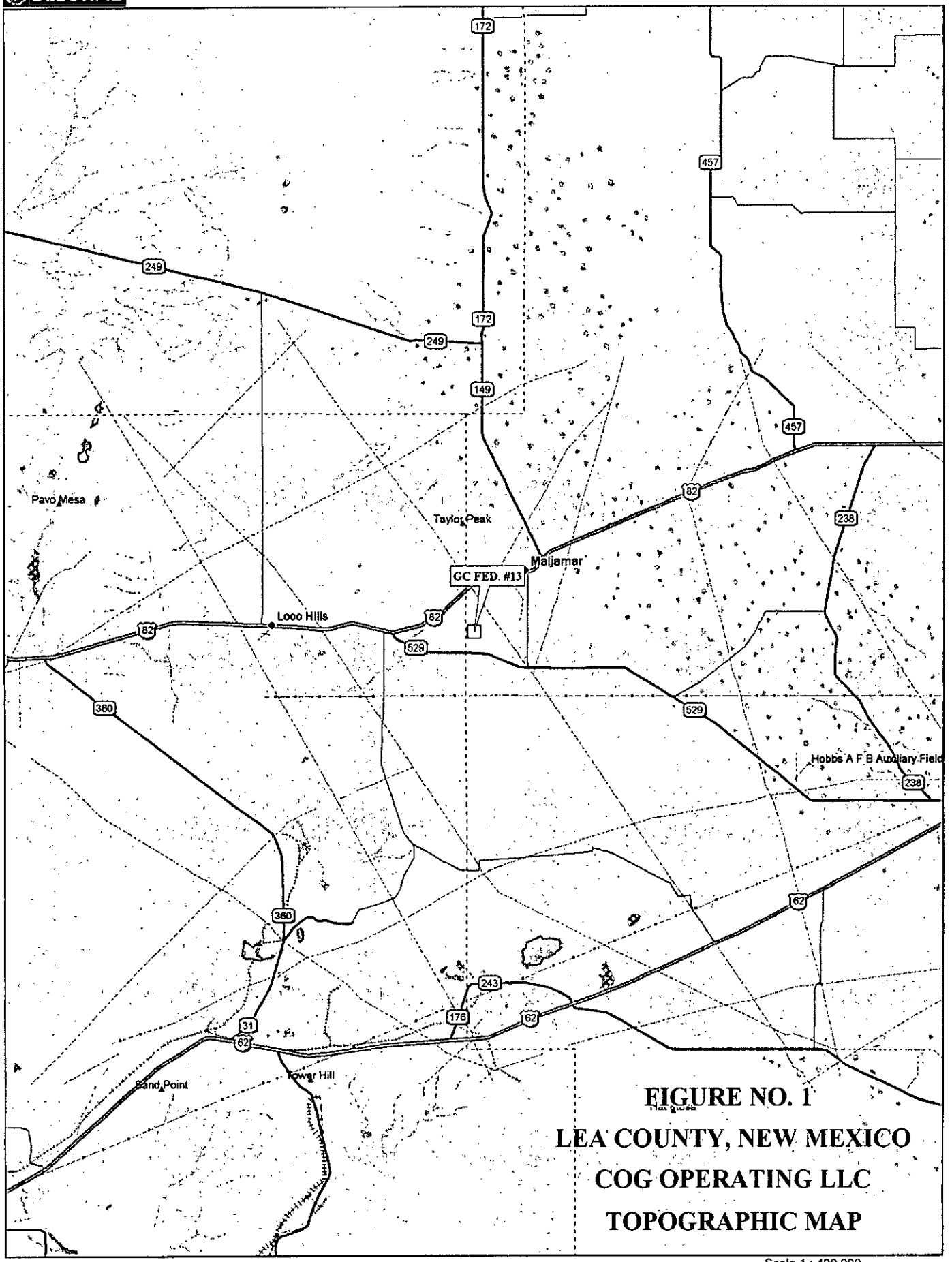


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
COG OPERATING LLC
TOPOGRAPHIC MAP

TN
MN (7.8°E)

Scale 1 : 400,000
1" = 6.31 mi
Data Zoom 9-0

DeLORME

Topo USA® 8

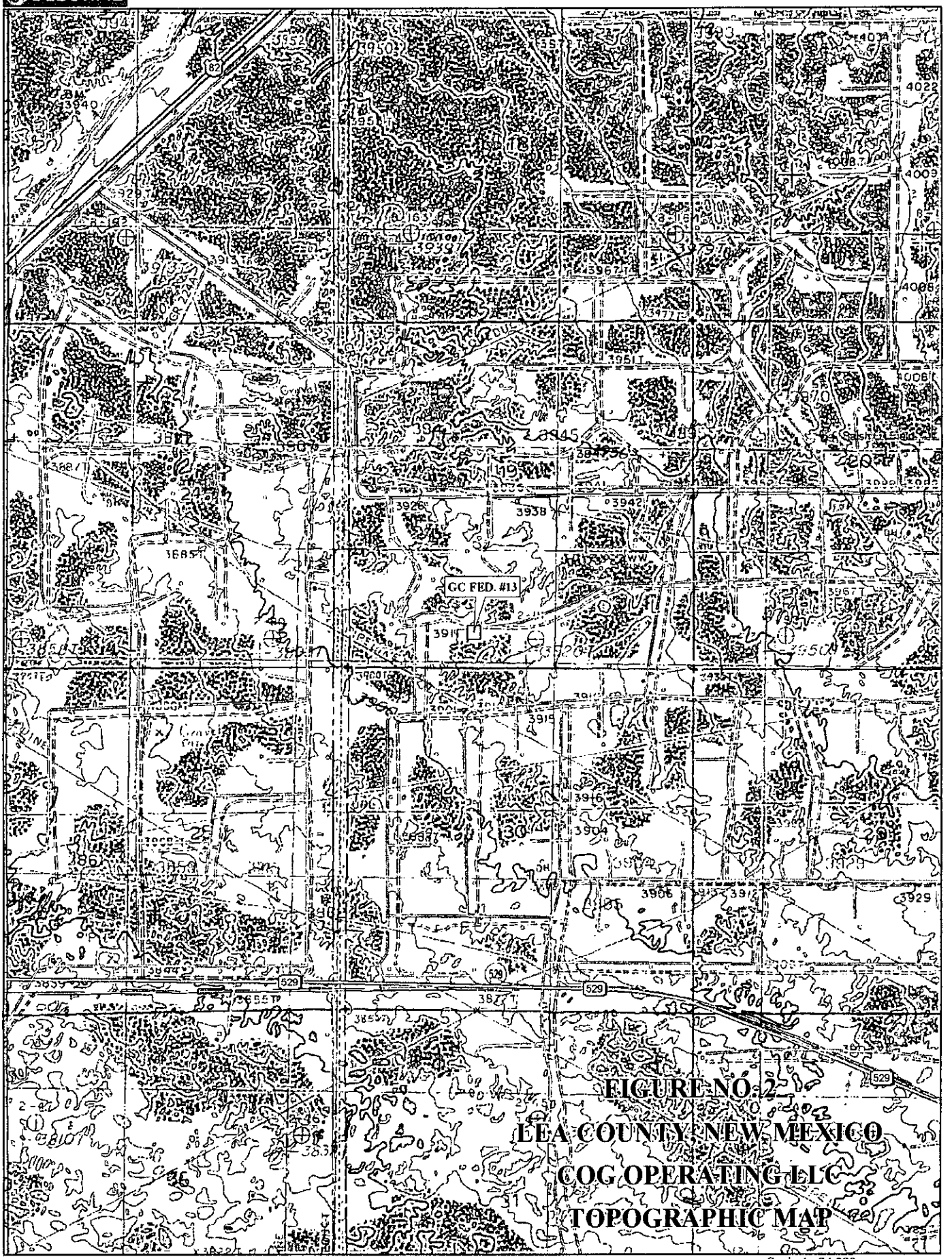


FIGURE NO. 2

LEA COUNTY, NEW MEXICO

COG OPERATING LLC

TOPOGRAPHIC MAP

Data use subject to license.

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www.delorme.com

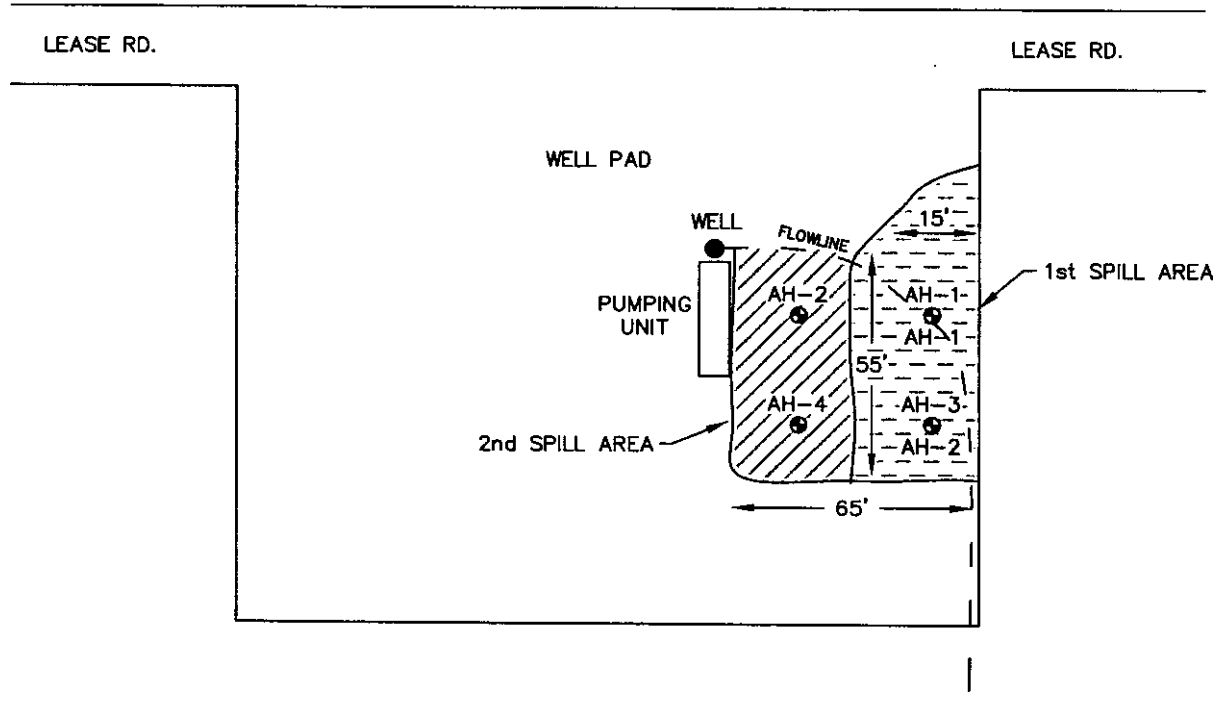
TN

MN (7.6°E)

Scale 1 : 24,000

1" = 2,000.0 ft

Data Zoom 13-0



1st SPILL AREA
2nd SPILL AREA
AUGER HOLE LOCATIONS 1st SPILL
AUGER HOLE LOCATIONS 2nd SPILL

NOT TO SCALE

FIGURE NO. 3

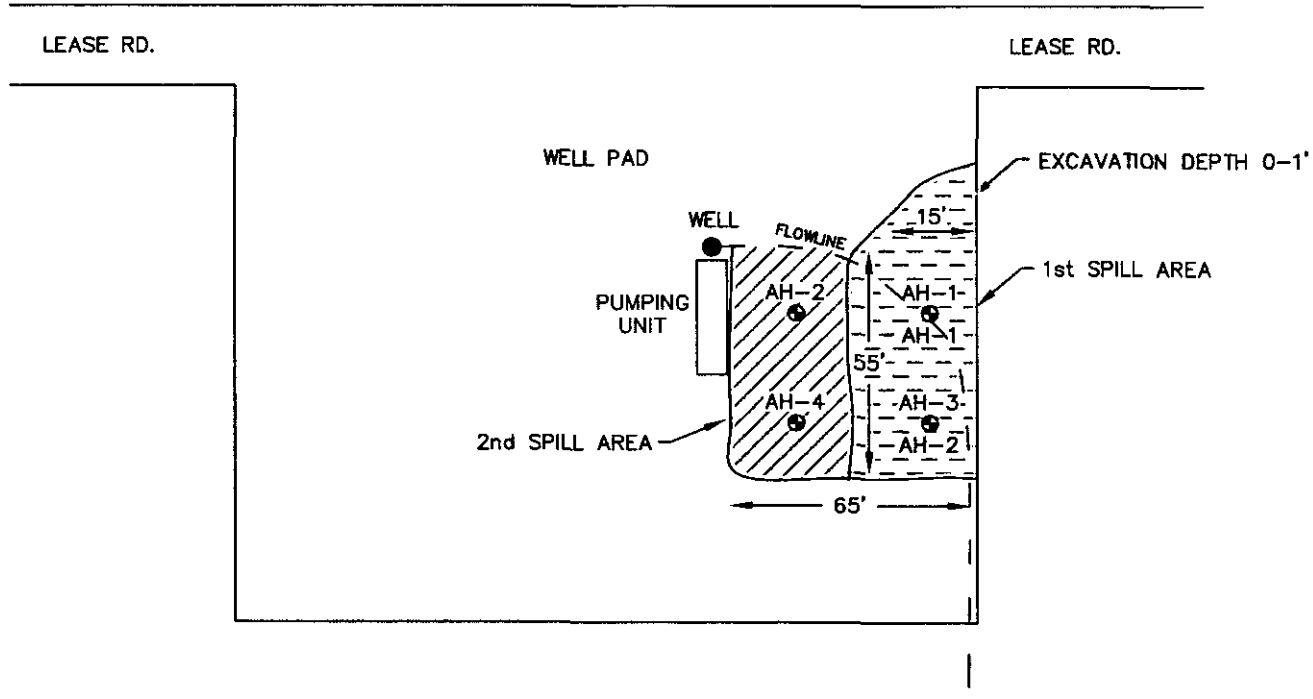
LEA COUNTY, NEW MEXICO

COG OPERATING LLC

GC FED #13 WELL

DATE: 2/16/11
DWN. BY: JJ
FILE: H:\COG\M00048 GC FED #13

TETRA TECH, INC.
MIDLAND, TEXAS



1st SPILL AREA
2nd SPILL AREA
AUGER HOLE LOCATIONS 1st SPILL
AUGER HOLE LOCATIONS 2nd SPILL

NOT TO SCALE

FIGURE NO. 4

LEA COUNTY, NEW MEXICO

COG OPERATING LLC

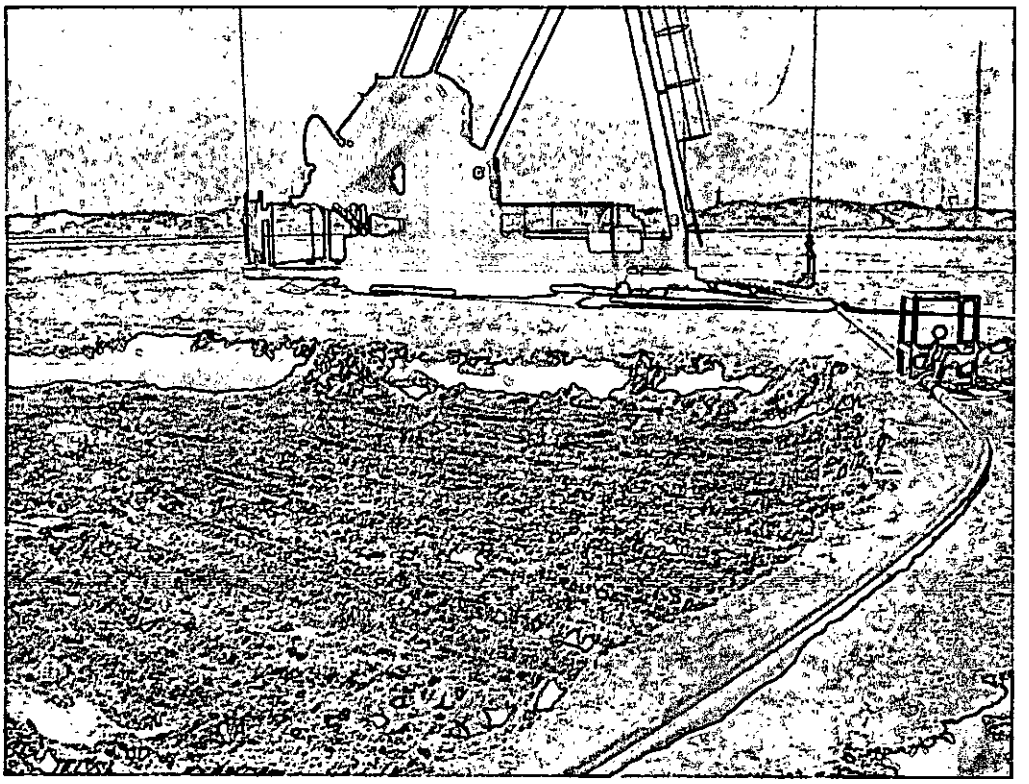
GC FED #13 WELL

DATE: 2/16/11
DWN. BY: JJ
FILE: H:\COG\94C0946 GC FED #13

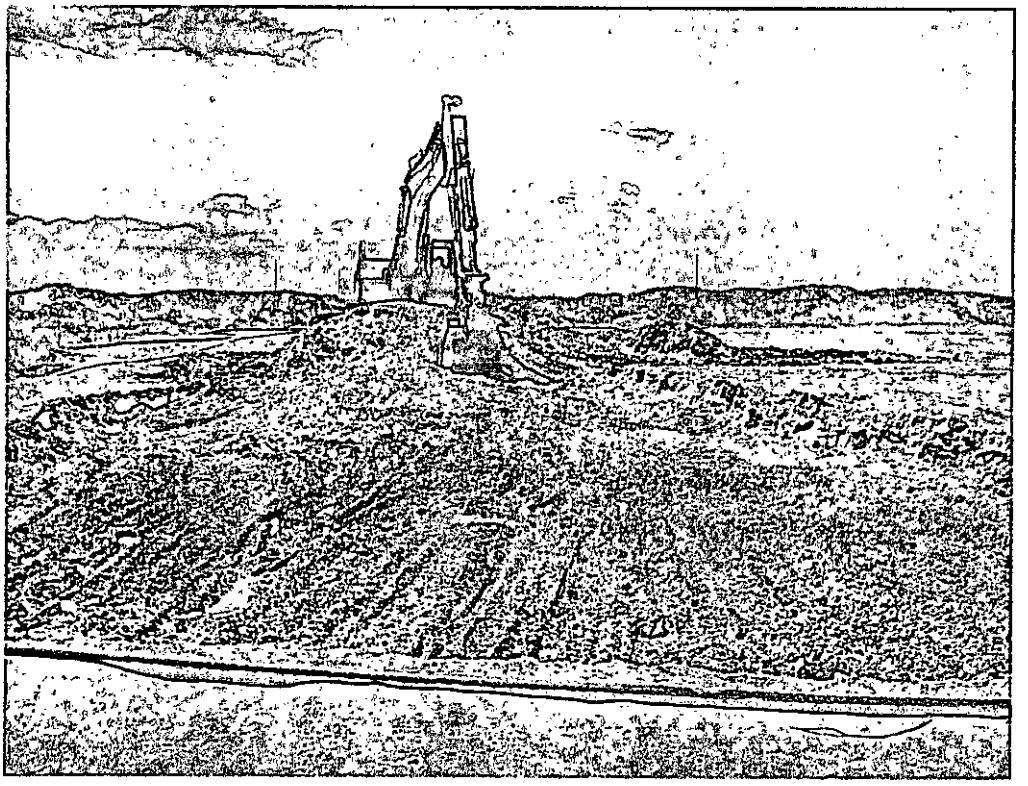
TETRA TECH, INC.
MIDLAND, TEXAS

COG Operating LLC
GC Federal #13 Well
Lea County, New Mexico

TETRA TECH



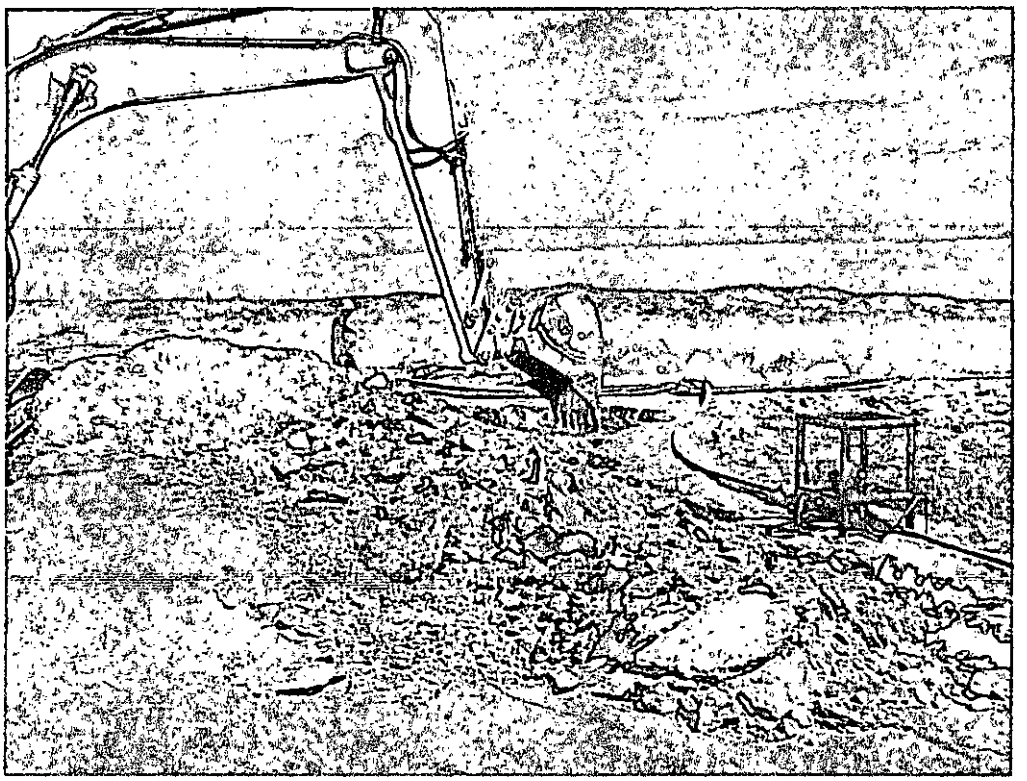
View west – Excavated area near AH-4 and AH-2 (2nd Spill)



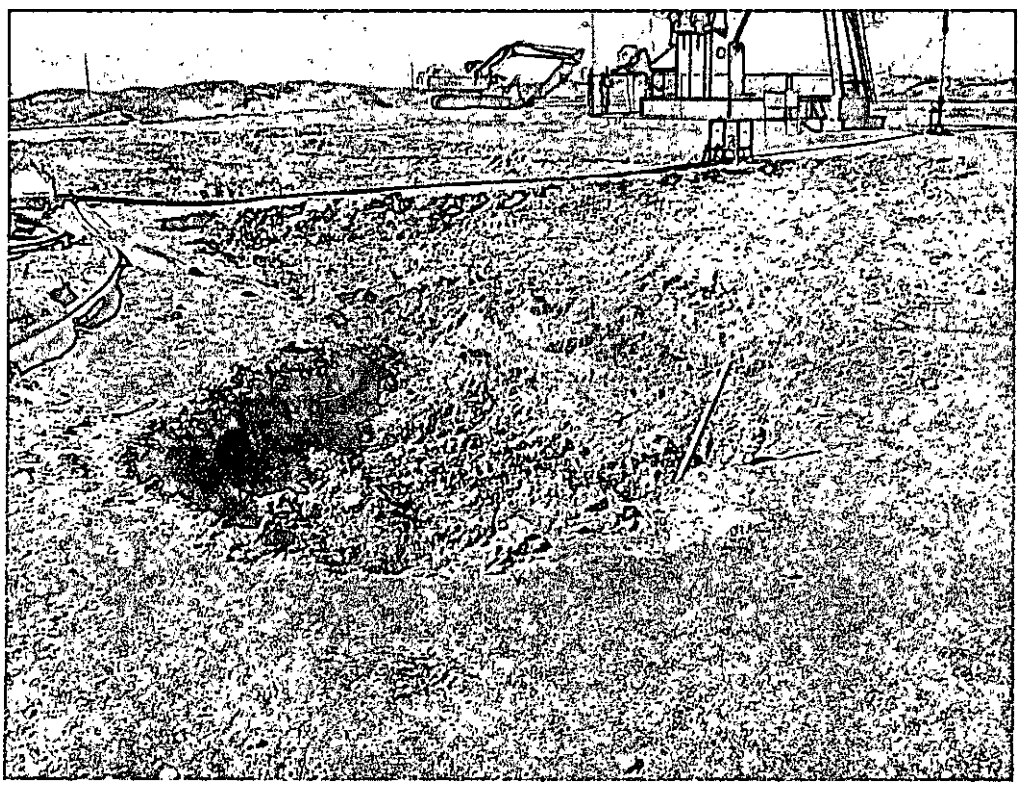
Completed excavation of spill footprint

COG Operating LLC
GC Federal #13 Well
Lea County, New Mexico

TETRA TECH



Excavation additional area as requested by Jim Amos



Completed excavation of additional area

Table 1
COG Operating LLC.
GC FEDERAL #13 (1st Spill)
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-1	8/16/2010	0-1'			X	<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	3,920
	"	1-1.5'		X		-	-	-	-	-	-	-	573
	"	2-2.5'		X		-	-	-	-	-	-	-	<200
AH-2	8/16/2010	0-1'			X	<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	1,440
	"	1-1.5'		X		-	-	-	-	-	-	-	433
	"	2-2.5'		X		-	-	-	-	-	-	-	594
	"	3-3.5'		X		-	-	-	-	-	-	-	<200
	"	4-4.5'		X		-	-	-	-	-	-	-	<200

BEB Below Excavation Bottom
(-) Not Analyzed
Excavation Depths

Table 2
COG Operating LLC.
GC FEDERAL #13 (2nd Spill)
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-1	2/16/2011	0-1'			X	<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	997
	"	1-1.5'		X									<200
	"	2-2.5'		X									<200
AH-2	2/16/2011	0-1'		X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<200
	"	1-1.5'		X									<200
	"	2-2.5'		X									<200
AH-3	2/16/2011	0-1'			X	<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	2,160
	"	1-1.5'		X									<200
	"	2-2.5'		X									<200
AH-4	2/16/2011	0-1'		X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<200
	"	1-1.5'		X									<200
	"	2-2.5'		X									233

BEB Below Excavation Bottom

(-) Not Analyzed

☐ Excavation Depths

Water Well Data
Average Depth to Groundwater (ft)
COG - GC Federal #13
Lea County, New Mexico

16 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12 **288**
18	17	16	15	14	13 **113**
19	20	21	22	23	24
30	29	28	27	26	25
31 **290**	32	33	34	35	36

17 South 31 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 **271**	35	36

18 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12 **400**
18	17	16	15	14 **317**	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 **261**	36

16 South 32 East

6	5	4	3 **65**	2 **265**	1 **265**
7	8	9	10	11	12 **215**
18	17	16 **221**	15	14	13 **215**
19 **220**	20	21 **210**	22	23 **210**	24
30	29	28	27	26 **243**	25
31	32	33	34	35	36 **260**

17 South 32 East

6	5	4 **82**	3 **175**	2 **60**	1 **225**
7	8	9	10	11 **70** **88**	12
18	17	16	15	14	13
19 Site	20	21	22	23	24
30 **178**	29	28	27	26	25
31	32	33	34	35	36

18 South 32 East

6	5	4 **65**	3	2	1
7 **460** **82**	8	9	10	11	12
18	17	16 **84**	15	14	13
19	20 **164**	21	22 **429**	23	24
30	29	28	27	26	25
31	32	33	34 **117**	35	36

16 South 33 East

6	5 **180**	4 **150**	3 **130**	2 **148**	1 **142**
7	8 **200**	9	10 **182**	11	12 **142**
18	17 **182**	16 **180**	15 **175**	14 **143**	13 **110**
19	20	21	22	23 **120**	24
30 **191**	29	28 **190**	27 **130**	26 **143**	25 **120**
31 **190**	32 **168**	33	34 **160**	35	36

17 South 33 East

6 **90**	5	4	3 **155**	2 **158**	1 **150**
7 **167**	8 **173**	9 **161**	10	11	12
18 **188**	17 **180**	16	15	14	13 **165**
19	20 **190**	21	22	23 **115**	24
30	29	28	27	26	25
31	32	33	34	35 **155**	36

18 South 33 East

6	5	4	3	2	1
7	8 **100**	9	10 **62**	11	12 **143** **140**
18	17 **85**	16	15	14 **36**	13 **60**
19 **>140**	20	21	22	23	24 **195**
30 **35**	29	28	27	26	25
31	32	33	34 **177**	35	36

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)

Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data

123 Tetra Tech installed temporary well to establish depth to water

143 NMOCD Groundwater map well location

SAMPLE LOG

Boring/Well: TMW-1 Dry Well in Sec 30 17S- 32E
Project Number: 114-6400224
Client: COG
Site Location: Pronghorn Section 30
Location: Lea County, New Mexico
Total Depth 180
Date Installed: 07/14/09

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
5-6	--	Brown fine grain sand
10-11	--	Buff limestone
15-16	--	Tan to buff calcareous sand with chert intermixed.
20-21	--	Tan calcareous sand
25-26	--	Tan fine grain sand
30-31	--	Tan to yellow sandy clay
35-36	--	Reddish clayey sand with gravel
40-41	--	Red gravelly fine grain sand
45-46	--	Red to buff gravelly calcareous sand
50-51	--	Red fine grain sand
55-56	--	Red sandy silt
60-61	--	Red silty clay (dry)
65-66	--	Red coarse grain sandy clay
70-71	--	Red fine grain sand
75-76	--	Red fine grain sand
80-81	--	Red gravelly sand
85-86	--	Red fine grain silty clay with some sand intermixed
90-91	--	Red fine grain silty clay with some sand intermixed
95-96	--	Red fine grain silty clay with some sand intermixed
100-101	--	Red fine grain silty clay with some sand intermixed
105-106	--	Tan red fine grain sand
110-111	--	Tan fine grain sand
115-116	--	Tan fine grain sand
120-121	--	Tan to red fine grain sand
130-131	--	Red clay of high plasticity (Red bed)
140-141	--	Red clay of high plasticity (Red bed)
150-151	--	Red clay of high plasticity (Red bed) intermixed with gravel
160-161	--	Red clay of high plasticity (Red bed) intermixed with gravel
170-171	--	Red clay of high plasticity (Red bed) intermixed with gravel
180-181	--	Red clay of high plasticity (Red bed)

Total Depth is 181 feet Groundwater was not encountered

Summary Report

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

Report Date: August 25, 2010

Work Order: 10081706

Project Location: Lea County, NM
Project Name: COG/GC Federal #13
Project Number: 114-6400646

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
241460	AH-1 0-1'	soil	2010-08-16	00:00	2010-08-16
241461	AH-1 1-1.5'	soil	2010-08-16	00:00	2010-08-16
241462	AH-1 2-2.5'	soil	2010-08-16	00:00	2010-08-16
241463	AH-2 0-1'	soil	2010-08-16	00:00	2010-08-16
241464	AH-2 1-1.5'	soil	2010-08-16	00:00	2010-08-16
241465	AH-2 2-2.5'	soil	2010-08-16	00:00	2010-08-16
241466	AH-2 3-3.5'	soil	2010-08-16	00:00	2010-08-16
241467	AH-2 4-4.5'	soil	2010-08-16	00:00	2010-08-16

	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)
241460 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
241463 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00

Sample: 241460 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**3920**	mg/Kg	4.00

Sample: 241461 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**573**	mg/Kg	4.00

Sample: 241462 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 241463 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**1440**	mg/Kg	4.00

Sample: 241464 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**433**	mg/Kg	4.00

Sample: 241465 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**594**	mg/Kg	4.00

Sample: 241466 - AH-2 3-3.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 241467 - AH-2 4-4.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

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 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
E-Mail: lab@traceanalysis.com

Certifications

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

NELAP Certifications

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

Analytical and Quality Control Report

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

Report Date: August 25, 2010

Work Order: 10081706

Project Location: Lea County, NM
Project Name: COG/GC Federal #13
Project Number: 114-6400646

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
241460	AH-1 0-1'	soil	2010-08-16	00:00	2010-08-16
241461	AH-1 1-1.5'	soil	2010-08-16	00:00	2010-08-16
241462	AH-1 2-2.5'	soil	2010-08-16	00:00	2010-08-16
241463	AH-2 0-1'	soil	2010-08-16	00:00	2010-08-16
241464	AH-2 1-1.5'	soil	2010-08-16	00:00	2010-08-16
241465	AH-2 2-2.5'	soil	2010-08-16	00:00	2010-08-16
241466	AH-2 3-3.5'	soil	2010-08-16	00:00	2010-08-16
241467	AH-2 4-4.5'	soil	2010-08-16	00:00	2010-08-16

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.

This report consists of a total of 16 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

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

Standard Flags

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

Case Narrative

Samples for project COG/GC Federal #13 were received by TraceAnalysis, Inc. on 2010-08-16 and assigned to work order 10081706. Samples for work order 10081706 were received intact at a temperature of 18.0 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	62423	2010-08-21 at 17:00	72813	2010-08-22 at 10:38
Chloride (Titration)	SM 4500-Cl B	62441	2010-08-23 at 09:03	72832	2010-08-23 at 14:43
Chloride (Titration)	SM 4500-Cl B	62442	2010-08-23 at 09:04	72833	2010-08-23 at 14:44
TPH DRO - NEW	S 8015 D	62428	2010-08-20 at 13:56	72812	2010-08-20 at 13:56
TPH GRO	S 8015 D	62423	2010-08-21 at 17:00	72815	2010-08-22 at 11:05

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 10081706 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.

Samples were received on ice.

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: 241460 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	72813	Date Analyzed:	2010-08-22	Analyzed By:	AG
Prep Batch:	62423	Sample Preparation:	2010-08-21	Prepared By:	AG

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.68	mg/Kg	1	2.00	84	52.8 - 137
4-Bromofluorobenzene (4-BFB)		1.50	mg/Kg	1	2.00	75	38.4 - 157

Sample: 241460 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72832	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62441	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**3920**	mg/Kg	100	4.00

Sample: 241460 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	72812	Date Analyzed:	2010-08-20	Analyzed By:	kg
Prep Batch:	62428	Sample Preparation:	2010-08-20	Prepared By:	kg

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		104	mg/Kg	1	100	104	70 - 130

Sample: 241460 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	72815	Date Analyzed:	2010-08-22	Analyzed By:	AG
Prep Batch:	62423	Sample Preparation:	2010-08-21	Prepared By:	AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<2.00	mg/Kg	1	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.86	mg/Kg	1	2.00	93	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1.59	mg/Kg	1	2.00	80	42 - 159

Sample: 241461 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72832	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62441	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**573**	mg/Kg	50	4.00

Sample: 241462 - AH-1 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72832	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62441	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 241463 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	72813	Date Analyzed:	2010-08-22	Analyzed By:	AG
Prep Batch:	62423	Sample Preparation:	2010-08-21	Prepared By:	AG

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[1]	0.943	mg/Kg	1	2.00	47	52.8 - 137
4-Bromofluorobenzene (4-BFB)		0.847	mg/Kg	1	2.00	42	38.4 - 157

Sample: 241463 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72832	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62441	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**1440**	mg/Kg	100	4.00

Sample: 241463 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	72812	Date Analyzed:	2010-08-20	Analyzed By:	kg
Prep Batch:	62428	Sample Preparation:	2010-08-20	Prepared By:	kg

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

[1]SPECIAL-TFT is out of control limits due to an unknown anomaly. However, 4-BFB is within control limits and shows the method to be in control. •

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		107	mg/Kg	1	100	107	70 - 130

Sample: 241463 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	72815	Date Analyzed:	2010-08-22	Analyzed By:	AG
Prep Batch:	62423	Sample Preparation:	2010-08-21	Prepared By:	AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<2.00	mg/Kg	1	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.05	mg/Kg	1	2.00	52	48.5 - 152
4-Bromofluorobenzene (4-BFB)		0.908	mg/Kg	1	2.00	45	42 - 159

Sample: 241464 - AH-2 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72833	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62442	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**433**	mg/Kg	50	4.00

Sample: 241465 - AH-2 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72833	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62442	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**594**	mg/Kg	50	4.00

Sample: 241466 - AH-2 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72833	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62442	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 241467 - AH-2 4-4.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72833	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62442	Sample Preparation:	2010-08-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Method Blank (1) QC Batch: 72812

QC Batch:	72812	Date Analyzed:	2010-08-20	Analyzed By:	kg
Prep Batch:	62428	QC Preparation:	2010-08-20	Prepared By:	kg

Parameter	Flag	MDL Result	Units	RL
DRO		<14.5	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		98.6	mg/Kg	1	100	99	70 - 130

Method Blank (1) QC Batch: 72813

QC Batch:	72813	Date Analyzed:	2010-08-22	Analyzed By:	AG
Prep Batch:	62423	QC Preparation:	2010-08-21	Prepared By:	AG

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.0150	mg/Kg	0.02

continued ...

method blank continued ...

Parameter	Flag	MDL Result	Units	RL
Toluene		<0.00950	mg/Kg	0.02
Ethylbenzene		<0.0106	mg/Kg	0.02
Xylene		<0.00930	mg/Kg	0.02

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.83	mg/Kg	1	2.00	92	66.6 - 122
4-Bromofluorobenzene (4-BFB)		1.32	mg/Kg	1	2.00	66	55.4 - 132

Method Blank (1) QC Batch: 72815

QC Batch: 72815 | Date Analyzed: 2010-08-22 | Analyzed By: AG
Prep Batch: 62423 | QC Preparation: 2010-08-21 | Prepared By: AG

Parameter	Flag	MDL Result	Units	RL
GRO		<1.65	mg/Kg	2

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.07	mg/Kg	1	2.00	104	67.6 - 150
4-Bromofluorobenzene (4-BFB)		1.43	mg/Kg	1	2.00	72	52.4 - 130

Method Blank (1) QC Batch: 72832

QC Batch: 72832 | Date Analyzed: 2010-08-23 | Analyzed By: AR
Prep Batch: 62441 | QC Preparation: 2010-08-23 | Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 72833

QC Batch: 72833 | Date Analyzed: 2010-08-23 | Analyzed By: AR
Prep Batch: 62442 | QC Preparation: 2010-08-23 | Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Laboratory Control Spike (LCS-1)

QC Batch: 72812 | Date Analyzed: 2010-08-20 | Analyzed By: kg
Prep Batch: 62428 | QC Preparation: 2010-08-20 | Prepared By: kg

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	241	mg/Kg	1	250	<14.5	96	57.4 - 133.4

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	234	mg/Kg	1	250	<14.5	94	57.4 - 133.4	3	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	110	108	mg/Kg	1	100	110	108	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 72813 | Date Analyzed: 2010-08-22 | Analyzed By: AG
Prep Batch: 62423 | QC Preparation: 2010-08-21 | Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.98	mg/Kg	1	2.00	<0.0150	99	81.9 - 108
Toluene	1.87	mg/Kg	1	2.00	<0.00950	94	81.9 - 107
Ethylbenzene	1.69	mg/Kg	1	2.00	<0.0106	84	78.4 - 107
Xylene	5.09	mg/Kg	1	6.00	<0.00930	85	79.1 - 107

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	2.06	mg/Kg	1	2.00	<0.0150	103	81.9 - 108	4	20
Toluene	1.95	mg/Kg	1	2.00	<0.00950	98	81.9 - 107	4	20
Ethylbenzene	1.81	mg/Kg	1	2.00	<0.0106	90	78.4 - 107	7	20
Xylene	5.43	mg/Kg	1	6.00	<0.00930	90	79.1 - 107	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
Trifluorotoluene (TFT)	1.66	1.61	mg/Kg	1	2.00	83	80	70.2 - 114
4-Bromofluorobenzene (4-BFB)	1.49	1.43	mg/Kg	1	2.00	74	72	69.8 - 121

Laboratory Control Spike (LCS-1)

QC Batch: 72815 | Date Analyzed: 2010-08-22 | Analyzed By: AG
Prep Batch: 62423 | QC Preparation: 2010-08-21 | Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	14.3	mg/Kg	1	20.0	<1.65	72	69.9 - 95.4

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	14.2	mg/Kg	1	20.0	<1.65	71	69.9 - 95.4	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
Trifluorotoluene (TFT)	2.05	1.86	mg/Kg	1	2.00	102	93	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.64	1.51	mg/Kg	1	2.00	82	76	68.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 72832 | Date Analyzed: 2010-08-23 | Analyzed By: AR
Prep Batch: 62441 | QC Preparation: 2010-08-23 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.5	mg/Kg	1	100	<2.18	98	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	102	mg/Kg	1	100	<2.18	102	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: 72833 | Date Analyzed: 2010-08-23 | Analyzed By: AR
Prep Batch: 62442 | QC Preparation: 2010-08-23 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	96.2	mg/Kg	1	100	<2.18	96	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	102	mg/Kg	1	100	<2.18	102	85 - 115	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: 241463

QC Batch: 72812 | Date Analyzed: 2010-08-20 | Analyzed By: kg
Prep Batch: 62428 | QC Preparation: 2010-08-20 | Prepared By: kg

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	216	mg/Kg	1	250	<14.5	86	35.2 - 167.1

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	226	mg/Kg	1	250	<14.5	90	35.2 - 167.1	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
n-Tricosane	98.4	104	mg/Kg	1	100	98	104	70 - 130

Matrix Spike (MS-1) Spiked Sample: 241471

QC Batch: 72813 | Date Analyzed: 2010-08-22 | Analyzed By: AG
Prep Batch: 62423 | QC Preparation: 2010-08-21 | Prepared By: AG

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	[2]	2.38	mg/Kg	1	2.00	<0.0150	119	80.5 - 112
Toluene	[3]	2.32	mg/Kg	1	2.00	<0.00950	116	82.4 - 113
Ethylbenzene		2.27	mg/Kg	1	2.00	<0.0106	114	83.9 - 114
Xylene		6.80	mg/Kg	1	6.00	<0.00930	113	84 - 114

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	2.16	mg/Kg	1	2.00	<0.0150	108	80.5 - 112	10	20
Toluene	2.13	mg/Kg	1	2.00	<0.00950	106	82.4 - 113	8	20
Ethylbenzene	2.10	mg/Kg	1	2.00	<0.0106	105	83.9 - 114	8	20

continued ...

[2]Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.
[3]Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

matrix spikes continued ...

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Xylene	6.31	mg/Kg	1	6.00	<0.00930	105	84 - 114	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)	1.68	1.43	mg/Kg	1	2	84	72	41.3 - 117
4-Bromofluorobenzene (4-BFB)	1.57	1.28	mg/Kg	1	2	78	64	35.5 - 129

Matrix Spike (MS-1) Spiked Sample: 241593

QC Batch: 72815 | Date Analyzed: 2010-08-22 | Analyzed By: AG
Prep Batch: 62423 | QC Preparation: 2010-08-21 | Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	16.6	mg/Kg	1	20.0	<1.65	83	61.8 - 114

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	16.4	mg/Kg	1	20.0	<1.65	82	61.8 - 114	1	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.70	2.03	mg/Kg	1	2	85	102	50 - 162
4-Bromofluorobenzene (4-BFB)	1.54	1.80	mg/Kg	1	2	77	90	50 - 162

Matrix Spike (MS-1) Spiked Sample: 241463

QC Batch: 72832 | Date Analyzed: 2010-08-23 | Analyzed By: AR
Prep Batch: 62441 | QC Preparation: 2010-08-23 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	11400	mg/Kg	100	10000	1440	100	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	12100	mg/Kg	100	10000	1440	107	85 - 115	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: 241476

QC Batch: 72833 | Date Analyzed: 2010-08-23 | Analyzed By: AR
Prep Batch: 62442 | QC Preparation: 2010-08-23 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	10600	mg/Kg	100	10000	459	101	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	11000	mg/Kg	100	10000	459	105	85 - 115	4	20

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

Standard (CCV-1)

QC Batch: 72812 | Date Analyzed: 2010-08-20 | Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	223	89	80 - 120	2010-08-20

Standard (CCV-2)

QC Batch: 72812 | Date Analyzed: 2010-08-20 | Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	230	92	80 - 120	2010-08-20

Standard (CCV-1)

QC Batch: 72813 | Date Analyzed: 2010-08-22 | Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.101	101	80 - 120	2010-08-22
Toluene		mg/Kg	0.100	0.0964	96	80 - 120	2010-08-22
Ethylbenzene		mg/Kg	0.100	0.0882	88	80 - 120	2010-08-22
Xylene		mg/Kg	0.300	0.266	89	80 - 120	2010-08-22

Standard (CCV-2)

QC Batch: 72813 | Date Analyzed: 2010-08-22 | Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.105	105	80 - 120	2010-08-22
Toluene		mg/Kg	0.100	0.0994	99	80 - 120	2010-08-22
Ethylbenzene		mg/Kg	0.100	0.0915	92	80 - 120	2010-08-22
Xylene		mg/Kg	0.300	0.274	91	80 - 120	2010-08-22

Standard (CCV-1)

QC Batch: 72815 | Date Analyzed: 2010-08-22 | Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.892	89	80 - 120	2010-08-22

Standard (CCV-2)

QC Batch: 72815 | Date Analyzed: 2010-08-22 | Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.860	86	80 - 120	2010-08-22

Standard (ICV-1)

QC Batch: 72832 | Date Analyzed: 2010-08-23 | Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2010-08-23

Standard (CCV-1)

QC Batch: 72832 | Date Analyzed: 2010-08-23 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.3	99	85 - 115	2010-08-23

Standard (ICV-1)

QC Batch: 72833 Date Analyzed: 2010-08-23 Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.4	99	85 - 115	2010-08-23

Standard (CCV-1)

QC Batch: 72833 Date Analyzed: 2010-08-23 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2010-08-23

Order #: 100817o6

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.: 114-C4B0646

PROJECT NAME: COG / G.C. Federal #13
Lea Co, NM

LAB I.D. NUMBER	DATE 2010	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 8080/808	Pest. 808/808	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
24/4600	9/16		S		X	AH-1 0-1'	1				X		X	X											X				
4601						AH-1 1'-1.5'																							
4602						AH-1 2'-2.5'																							
4603						AH-2 0-1'							X	X															
4604						AH-2 1'-1.5'																							
4605						AH-2 2'-2.5'																							
4606						AH-2 3'-3.5'																							
4607	↓		↓		↓	AH-2 4'-4.5'	↓				↓														↓				

RELINQUISHED BY: (Signature) — Date: 9/16/10 Time: 1700 — RECEIVED BY: (Signature) — Date: 9/16/10 Time: 17:00 — SAMPLED BY: (Print & Initial) JT/EG — Date: 9/16/10 Time:

RELINQUISHED BY: (Signature) — Date: Time: — RECEIVED BY: (Signature) — Date: Time: — SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS — AIRBILL #: OTHER:

RELINQUISHED BY: (Signature) — Date: Time: — RECEIVED BY: (Signature) — Date: Time: — TETRA TECH CONTACT PERSON: Ike Tavarez — Results by:

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

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 19.1°c intact

REMARKS: If total TPH exceeds 1,000 mg/kg run deeper horizons

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

Summary Report

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

Report Date: February 23, 2011

Work Order: 11021803

Project Location: Lea County, NM
Project Name: COG/GC Federal #13
Project Number: 114-6400646

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
257816	AH-1 0-1'	soil	2011-02-16	00:00	2011-02-17
257817	AH-1 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257818	AH-1 2-2.5'	soil	2011-02-16	00:00	2011-02-17
257819	AH-2 0-1'	soil	2011-02-16	00:00	2011-02-17
257820	AH-2 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257821	AH-2 2-2.5'	soil	2011-02-16	00:00	2011-02-17
257822	AH-3 0-1'	soil	2011-02-16	00:00	2011-02-17
257823	AH-3 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257824	AH-3 2-2.5'	soil	2011-02-16	00:00	2011-02-17
257825	AH-4 0-1'	soil	2011-02-16	00:00	2011-02-17
257826	AH-4 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257827	AH-4 2-2.5'	soil	2011-02-16	00:00	2011-02-17

	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)
257816 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
257819 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
257822 - AH-3 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	**82.7**	<2.00
257825 - AH-4 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00

Sample: 257816 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**997**	mg/Kg	4.00

Sample: 257817 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257818 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257819 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257820 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257821 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257822 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		**2160**	mg/Kg	4.00

Sample: 257823 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257824 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257825 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257826 - AH-4 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 257827 - AH-4 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**233**	mg/Kg	4.00

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 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
E-Mail: lab@traceanalysis.com

Certifications

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

NELAP Certifications

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

Analytical and Quality Control Report

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

Report Date: February 23, 2011

Work Order: 11021803

Project Location: Lea County, NM
Project Name: COG/GC Federal #13
Project Number: 114-6400646

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
257816	AH-1 0-1'	soil	2011-02-16	00:00	2011-02-17
257817	AH-1 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257818	AH-1 2-2.5'	soil	2011-02-16	00:00	2011-02-17
257819	AH-2 0-1'	soil	2011-02-16	00:00	2011-02-17
257820	AH-2 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257821	AH-2 2-2.5'	soil	2011-02-16	00:00	2011-02-17
257822	AH-3 0-1'	soil	2011-02-16	00:00	2011-02-17
257823	AH-3 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257824	AH-3 2-2.5'	soil	2011-02-16	00:00	2011-02-17
257825	AH-4 0-1'	soil	2011-02-16	00:00	2011-02-17

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
257826	AH-4 1-1.5'	soil	2011-02-16	00:00	2011-02-17
257827	AH-4 2-2.5'	soil	2011-02-16	00:00	2011-02-17

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

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

Standard Flags

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

Samples for project COG/GC Federal #13 were received by TraceAnalysis, Inc. on 2011-02-17 and assigned to work order 11021803. Samples for work order 11021803 were received intact at a temperature of 7.2 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	66705	2011-02-21 at 12:05	77804	2011-02-21 at 12:05
Chloride (Titration)	SM 4500-Cl B	66703	2011-02-21 at 10:36	77796	2011-02-21 at 13:20
Chloride (Titration)	SM 4500-Cl B	66703	2011-02-21 at 10:36	77797	2011-02-21 at 13:20
TPH DRO - NEW	S 8015 D	66718	2011-02-21 at 09:51	77781	2011-02-21 at 09:51
TPH GRO	S 8015 D	66705	2011-02-21 at 12:05	77805	2011-02-21 at 12:05

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 11021803 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: 257816 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	77804	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.62	mg/Kg	1	2.00	131	51.6 - 149.2
4-Bromofluorobenzene (4-BFB)		3.06	mg/Kg	1	2.00	153	35.7 - 159.6

Sample: 257816 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		**997**		mg/Kg	100	4.00

Sample: 257816 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	77781	Date Analyzed:	2011-02-21	Analyzed By:	kg
Prep Batch:	66718	Sample Preparation:	2011-02-21	Prepared By:	kg

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		87.2	mg/Kg	1	100	87	70 - 130

Sample: 257816 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	77805	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<2.00	mg/Kg	1	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.70	mg/Kg	1	2.00	135	36.3 - 158.9
4-Bromofluorobenzene (4-BFB)		2.81	mg/Kg	1	2.00	140	22.2 - 160.2

Sample: 257817 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257818 - AH-1 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257819 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	77804	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.54	mg/Kg	1	2.00	127	51.6 - 149.2
4-Bromofluorobenzene (4-BFB)		2.94	mg/Kg	1	2.00	147	35.7 - 159.6

Sample: 257819 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257819 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	77781	Date Analyzed:	2011-02-21	Analyzed By:	kg
Prep Batch:	66718	Sample Preparation:	2011-02-21	Prepared By:	kg

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		78.7	mg/Kg	1	100	79	70 - 130

Sample: 257819 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	77805	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<2.00	mg/Kg	1	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.55	mg/Kg	1	2.00	128	36.3 - 158.9
4-Bromofluorobenzene (4-BFB)		2.69	mg/Kg	1	2.00	134	22.2 - 160.2

Sample: 257820 - AH-2 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257821 - AH-2 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257822 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	77804	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.28	mg/Kg	1	2.00	114	51.6 - 149.2
4-Bromofluorobenzene (4-BFB)		2.66	mg/Kg	1	2.00	133	35.7 - 159.6

Sample: 257822 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**2160**	mg/Kg	100	4.00

Sample: 257822 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	77781	Date Analyzed:	2011-02-21	Analyzed By:	kg
Prep Batch:	66718	Sample Preparation:	2011-02-21	Prepared By:	kg

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		**82.7**	mg/Kg	1	50.0

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

Sample: 257822 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	77805	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<2.00	mg/Kg	1	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.34	mg/Kg	1	2.00	117	36.3 - 158.9
4-Bromofluorobenzene (4-BFB)		2.48	mg/Kg	1	2.00	124	22.2 - 160.2

Sample: 257823 - AH-3 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257824 - AH-3 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257825 - AH-4 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	77804	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.45	mg/Kg	1	2.00	122	51.6 - 149.2
4-Bromofluorobenzene (4-BFB)		2.78	mg/Kg	1	2.00	139	35.7 - 159.6

Sample: 257825 - AH-4 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77796	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257825 - AH-4 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	77781	Date Analyzed:	2011-02-21	Analyzed By:	kg
Prep Batch:	66718	Sample Preparation:	2011-02-21	Prepared By:	kg

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		87.4	mg/Kg	1	100	87	70 - 130

Sample: 257825 - AH-4 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	77805	Date Analyzed:	2011-02-21	Analyzed By:	ME
Prep Batch:	66705	Sample Preparation:	2011-02-21	Prepared By:	ME

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<2.00	mg/Kg	1	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.50	mg/Kg	1	2.00	125	36.3 - 158.9
4-Bromofluorobenzene (4-BFB)		2.56	mg/Kg	1	2.00	128	22.2 - 160.2

Sample: 257826 - AH-4 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77797	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 257827 - AH-4 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	77797	Date Analyzed:	2011-02-21	Analyzed By:	AR
Prep Batch:	66703	Sample Preparation:	2011-02-21	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**233**	mg/Kg	50	4.00

Method Blank (1) QC Batch: 77781

QC Batch:	77781	Date Analyzed:	2011-02-21	Analyzed By:	kg
Prep Batch:	66718	QC Preparation:	2011-02-21	Prepared By:	kg

Parameter	Flag	MDL Result	Units	RL
DRO		<15.7	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		74.8	mg/Kg	1	100	75	70 - 130

Method Blank (1) QC Batch: 77796

QC Batch: 77796 | Date Analyzed: 2011-02-21 | Analyzed By: AR
Prep Batch: 66703 | QC Preparation: 2011-02-21 | Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 77797

QC Batch: 77797 | Date Analyzed: 2011-02-21 | Analyzed By: AR
Prep Batch: 66703 | QC Preparation: 2011-02-21 | Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 77804

QC Batch: 77804 | Date Analyzed: 2011-02-21 | Analyzed By: ME
Prep Batch: 66705 | QC Preparation: 2011-02-21 | Prepared By: ME

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.0118	mg/Kg	0.02
Toluene		<0.00600	mg/Kg	0.02
Ethylbenzene		<0.00850	mg/Kg	0.02
Xylene		<0.00613	mg/Kg	0.02

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.41	mg/Kg	1	2.00	120	70.8 - 123.5
4-Bromofluorobenzene (4-BFB)		2.56	mg/Kg	1	2.00	128	48.8 - 134

Method Blank (1) QC Batch: 77805

QC Batch: 77805 | Date Analyzed: 2011-02-21 | Analyzed By: ME
Prep Batch: 66705 | QC Preparation: 2011-02-21 | Prepared By: ME

Parameter	Flag	MDL Result	Units	RL
GRO		<0.753	mg/Kg	2

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.38	mg/Kg	1	2.00	119	74.6 - 127.8
4-Bromofluorobenzene (4-BFB)		2.50	mg/Kg	1	2.00	125	32.9 - 129.8

Laboratory Control Spike (LCS-1)

QC Batch: 77781 | Date Analyzed: 2011-02-21 | Analyzed By: kg
Prep Batch: 66718 | QC Preparation: 2011-02-21 | Prepared By: kg

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	206	mg/Kg	1	250	<15.7	82	47.5 - 144.1

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	210	mg/Kg	1	250	<15.7	84	47.5 - 144.1	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	99.2	99.7	mg/Kg	1	100	99	100	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 77796 | Date Analyzed: 2011-02-21 | Analyzed By: AR
Prep Batch: 66703 | QC Preparation: 2011-02-21 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	94.9	mg/Kg	1	100	<2.18	95	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	104	mg/Kg	1	100	<2.18	104	85 - 115	9	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: 77797 | Date Analyzed: 2011-02-21 | Analyzed By: AR
Prep Batch: 66703 | QC Preparation: 2011-02-21 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.5	mg/Kg	1	100	<2.18	98	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	103	mg/Kg	1	100	<2.18	103	85 - 115	6	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 77804 | Date Analyzed: 2011-02-21 | Analyzed By: ME
Prep Batch: 66705 | QC Preparation: 2011-02-21 | Prepared By: ME

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.86	mg/Kg	1	2.00	<0.0118	93	76.4 - 118.4
Toluene	1.92	mg/Kg	1	2.00	<0.00600	96	81.8 - 111.9
Ethylbenzene	1.94	mg/Kg	1	2.00	<0.00850	97	81.1 - 112.2
Xylene	5.92	mg/Kg	1	6.00	<0.00613	99	81.7 - 111.5

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	1.88	mg/Kg	1	2.00	<0.0118	94	76.4 - 118.4	1	20
Toluene	1.93	mg/Kg	1	2.00	<0.00600	96	81.8 - 111.9	0	20
Ethylbenzene	1.98	mg/Kg	1	2.00	<0.00850	99	81.1 - 112.2	2	20
Xylene	5.96	mg/Kg	1	6.00	<0.00613	99	81.7 - 111.5	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
Trifluorotoluene (TFT)	2.05	2.03	mg/Kg	1	2.00	102	102	69 - 123.3
4-Bromofluorobenzene (4-BFB)	2.42	2.41	mg/Kg	1	2.00	121	120	64.9 - 131.9

Laboratory Control Spike (LCS-1)

QC Batch: 77805 | Date Analyzed: 2011-02-21 | Analyzed By: ME
Prep Batch: 66705 | QC Preparation: 2011-02-21 | Prepared By: ME

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	17.1	mg/Kg	1	20.0	<0.753	86	61.8 - 97

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	17.0	mg/Kg	1	20.0	<0.753	85	61.8 - 97	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
Trifluorotoluene (TFT)	2.13	2.07	mg/Kg	1	2.00	106	104	74.6 - 124
4-Bromofluorobenzene (4-BFB)	2.29	2.22	mg/Kg	1	2.00	114	111	53.9 - 121.1

Matrix Spike (MS-1) Spiked Sample: 258012

QC Batch: 77781 | Date Analyzed: 2011-02-21 | Analyzed By: kg
Prep Batch: 66718 | QC Preparation: 2011-02-21 | Prepared By: kg

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	595	mg/Kg	1	250	334	104	11.7 - 152.3

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	709	mg/Kg	1	250	334	150	11.7 - 152.3	18	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 [1] [2]	142	161	mg/Kg	1	100	142	161	70 - 130

Matrix Spike (MS-1) Spiked Sample: 257825

QC Batch: 77796 | Date Analyzed: 2011-02-21 | Analyzed By: AR
Prep Batch: 66703 | QC Preparation: 2011-02-21 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	10100	mg/Kg	100	10000	<218	99	85 - 115

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

[1] High surrogate recovery due to peak interference.
[2] High surrogate recovery due to peak interference.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10500	mg/Kg	100	10000	<218	103	85 - 115	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: 257845

QC Batch: 77797 | Date Analyzed: 2011-02-21 | Analyzed By: AR
Prep Batch: 66703 | QC Preparation: 2011-02-21 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	11600	mg/Kg	100	10000	1350	102	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	12000	mg/Kg	100	10000	1350	106	85 - 115	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: 257853

QC Batch: 77804 | Date Analyzed: 2011-02-21 | Analyzed By: ME
Prep Batch: 66705 | QC Preparation: 2011-02-21 | Prepared By: ME

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.93	mg/Kg	1	2.00	<0.0118	96	65.5 - 139.8
Toluene	2.10	mg/Kg	1	2.00	0.2359	93	70.5 - 137.3
Ethylbenzene	2.33	mg/Kg	1	2.00	0.3461	99	66.7 - 151
Xylene	7.35	mg/Kg	1	6.00	1.2225	102	68.7 - 149.5

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	1.91	mg/Kg	1	2.00	<0.0118	96	65.5 - 139.8	1	20
Toluene	2.10	mg/Kg	1	2.00	0.2359	93	70.5 - 137.3	0	20
Ethylbenzene	2.44	mg/Kg	1	2.00	0.3461	105	66.7 - 151	5	20
Xylene	7.52	mg/Kg	1	6.00	1.2225	105	68.7 - 149.5	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
Trifluorotoluene (TFT)	2.55	2.54	mg/Kg	1	2	128	127	50.9 - 152.9

continued ...

matrix spikes continued ...

Surrogate		MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
4-Bromofluorobenzene (4-BFB)	[3] [4]	3.49	3.51	mg/Kg	1	2	174	176	48.5 - 165.8

Matrix Spike (MS-1) Spiked Sample: 257849

QC Batch: 77805 | Date Analyzed: 2011-02-21 | Analyzed By: ME
Prep Batch: 66705 | QC Preparation: 2011-02-21 | Prepared By: ME

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	16.1	mg/Kg	1	20.0	<0.753	80	63 - 108.5

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	17.6	mg/Kg	1	20.0	<0.753	88	63 - 108.5	9	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)	2.63	2.69	mg/Kg	1	2	132	134	54.1 - 154.3
4-Bromofluorobenzene (4-BFB)	2.87	2.93	mg/Kg	1	2	144	146	41.9 - 162.8

Standard (CCV-1)

QC Batch: 77781 | Date Analyzed: 2011-02-21 | Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	208	83	80 - 120	2011-02-21

Standard (CCV-2)

QC Batch: 77781 | Date Analyzed: 2011-02-21 | Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	225	90	80 - 120	2011-02-21

[3] High surrogate recovery due to peak interference.
[4] High surrogate recovery due to peak interference.

Standard (ICV-1)

QC Batch: 77796 | Date Analyzed: 2011-02-21 | Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	103	103	85 - 115	2011-02-21

Standard (CCV-1)

QC Batch: 77796 | Date Analyzed: 2011-02-21 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	97.4	97	85 - 115	2011-02-21

Standard (ICV-1)

QC Batch: 77797 | Date Analyzed: 2011-02-21 | Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.1	99	85 - 115	2011-02-21

Standard (CCV-1)

QC Batch: 77797 | Date Analyzed: 2011-02-21 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2011-02-21

Standard (CCV-1)

QC Batch: 77804 | Date Analyzed: 2011-02-21 | Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.103	103	80 - 120	2011-02-21
Toluene		mg/Kg	0.100	0.106	106	80 - 120	2011-02-21

continued ...

standard continued ...

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Ethylbenzene		mg/Kg	0.100	0.104	104	80 - 120	2011-02-21
Xylene		mg/Kg	0.300	0.317	106	80 - 120	2011-02-21

Standard (CCV-2)

QC Batch: 77804 Date Analyzed: 2011-02-21 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0959	96	80 - 120	2011-02-21
Toluene		mg/Kg	0.100	0.0984	98	80 - 120	2011-02-21
Ethylbenzene		mg/Kg	0.100	0.0988	99	80 - 120	2011-02-21
Xylene		mg/Kg	0.300	0.300	100	80 - 120	2011-02-21

Standard (CCV-3)

QC Batch: 77804 Date Analyzed: 2011-02-21 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0943	94	80 - 120	2011-02-21
Toluene		mg/Kg	0.100	0.0956	96	80 - 120	2011-02-21
Ethylbenzene		mg/Kg	0.100	0.0955	96	80 - 120	2011-02-21
Xylene		mg/Kg	0.300	0.289	96	80 - 120	2011-02-21

Standard (CCV-1)

QC Batch: 77805 Date Analyzed: 2011-02-21 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.10	110	80 - 120	2011-02-21

Standard (CCV-2)

QC Batch: 77805 Date Analyzed: 2011-02-21 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.02	102	80 - 120	2011-02-21

Standard (CCV-3)

QC Batch: 77805 Date Analyzed: 2011-02-21 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.07	107	80 - 120	2011-02-21

X WO #: 11021803

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.: 114-6400646

PROJECT NAME: GC Federal #13

Lea Co NM

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE 2011	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH TX1005 (Ext. to C35) / 8015 Mod.	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
257816	2/16		S		X	AH-1 0-1'	1				X		X	X											X				
817						AH-1 1-1.5'																			X				
818						AH-1 2-2.5'																			X				
819						AH-2 0-1'							X	X											X				
820						AH-2 1-1.5'																			X				
821						AH-2 2-2.5'																			X				
822						AH-3 0-1'							X	X											X				
823						AH-3 1-1.5'																			X				
824						AH-3 2-2.5'																			X				
825						AH-4 0-1'							SP	SP											X				

RELINQUISHED BY: (Signature) Date: 2-17-11 Time: 16:00 RECEIVED BY: (Signature) Date: 2/17/11 Time: 1610

SAMPLED BY: (Print & Initial) JT TF Date: 2-16-11 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:

RUSH Charges Authorized: Yes No

RECEIVING LABORATORY: Trace RECEIVED BY: (Signature)

ADDRESS: CITY: Midland STATE: Tx ZIP:

CONTACT: PHONE: DATE: TIME:

SAMPLE CONDITION WHEN RECEIVED: 7.2°c intact

REMARKS: TVH deep samples if TVH exceed 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.

All tests - Midland

xWO #: 11021803

Analysis Request of Chain of Custody Record

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

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 114-6400646

PROJECT NAME: GC Federal #13

Lea Co NM

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE 2011	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
378826	2/16		S		X	AH-4 1-1.5'	1				X													X				
827						AH-4 2-2.5'																		X				
828						AH-4 3-3.5'											Hold											
829						AH-4 4-4.5'																						
830						AH-4 5-5.5'																						
831						AH-4 6-6.5'																						
832						AH-4 7-7.5'																						
833	↓		↓		↓	AH-4 8-8.5'	↓				↓																	

RELINQUISHED BY: (Signature) — Date: 2-17-11 Time: 11:00 — RECEIVED BY: (Signature) — Date: 2/17/11 Time: 10:00

SAMPLED BY: (Print & Initial) JT JE — Date: 2-16-11 Time:

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

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

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

TETRA TECH CONTACT PERSON: Ike Tavarez — Results by:

RECEIVING LABORATORY: Trace — RECEIVED BY: (Signature)

ADDRESS: CITY: Midland STATE: TX ZIP: CONTACT: PHONE: DATE: TIME:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 7.2°c intact

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.