

75XK1535553916

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Form C-141
Revised October 10, 2003

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

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

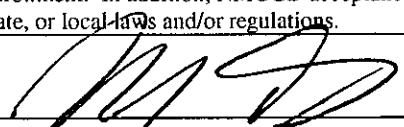
Name of Company COG Operating LLC	Contact Pat Ellis
Address 550 W. Texas, Suite 100 Midland, Texas 79701	Telephone No. (432) 685-4332
Facility Name Falcon Federal #1 Tank Battery	Facility Type Tank Battery
Surface Owner: Federal	Mineral Owner
Lease No. API 30-015-38421	

LOCATION OF RELEASE

Unit Letter E	Section 9	Township 19S	Range 32E	Feet from the	North/South Line	Feet from the	East/West Line	County Lea
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Latitude N 32 40.464° Longitude W 103 46.617°

NATURE OF RELEASE

Type of Release: Produced fluid	Volume of Release 20 bbls	Volume Recovered 18 bbls
Source of Release: sight glass of heater treater	Date and Hour of Occurrence 9/7/11	Date and Hour of Discovery 9/7/11 9:00 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.*		
Describe Cause of Problem and Remedial Action Taken.* Sight glass broke on heater treater causing the release. The sight glass has been replaced.		
Describe Area Affected and Cleanup Action Taken.* Tetra Tech inspected and assessed the spill area for extents. A work plan was prepared and submitted to NMOCD for approval. Soils exceeding the RRAL were removed and transported to proper disposal. Once excavated to the appropriate depths, the excavation was backfilled with clean soil. 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@tetrattech.com	Conditions of Approval:	Attached ☐
Date: 3-26-12 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

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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 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	Falcon Federal #1	Facility Type	Tank Battery

Surface Owner	Federal	Mineral Owner		Lease No. (API#)	30-025-38421
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LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
E	9	19S	32E					Lea

Latitude 32 40.646 Longitude 103 46.671

NATURE OF RELEASE

Type of Release	Produced fluid	Volume of Release	20bbls	Volume Recovered	18bbls
Source of Release	Sight glass on heater treater	Date and Hour of Occurrence	09/07/2011	Date and Hour of Discovery	09/07/2011 9:00 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.*

Sight glass broke on heater treater causing the release. The sight glass has been replaced.

Describe Area Affected and Cleanup Action Taken.*

Initially 20bbls were released from the sight glass at the heater treater and we were able to recover 18bbls with a vacuum truck. All standing fluid has been picked up along with any impacted gravel and impacted soil. Terra 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 BLM/NMOCD 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: 09/20/2011 Phone: 432-212-2399			

* Attach Additional Sheets If Necessary

JAN 27 2012

SITE INFORMATION

JAN 27 2012

Report Type: Work Plan

General Site Information RECEIVED

RECEIVED

Site:	Falcon Federal #1 Tank Battery				
Company:	COG Operating LLC				
Section, Township and Range	Unit E	Sec 9	T19S	R32E	
Lease Number:	API-30-015-38421				
County:	Lea County				
GPS:	32.67757° N			103.77799° W	
Surface Owner:	Federal				
Mineral Owner:					
Directions:	From the intersection of Hwy 62 and CR 243, travel north by north west on CR 243 for (4.5 miles), turn right onto CR 126 and travel (7.6 miles), turn right and travel (1.6 miles), turn right and travel (0.6 miles), turn right and travel (0.5 miles), turn right and travel (150 feet) to location.				

Release Data:	
Date Released:	9/7/2011
Type Release:	Produced Fluid
Source of Contamination:	Sight glass on the Heater Treater
Fluid Released:	20 bbls
Fluids Recovered:	18 bbls

Official Communication:			
Name:	Pat Ellis		Ike Tavaréz
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.tavaréz@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
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Acceptable Soil RRAL (mg/kg)		
Benzene	Total BTEX	TPH
10	50	5,000

Approved.
 Jeff B. Deery
 Env. Specialist
 OCD-HOBBS
 11/30/12



TETRA TECH

January 25, 2011

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., Falcon Federal #1 Tank Battery, Unit E, Section 9, Township 19 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 Falcon Federal #1 Tank Battery, Unit E, Section 9, Township 19 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.67757°, W 103.77799°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on September 7, 2011, and released approximately twenty (20) barrels of produced water, due to a broken sight glass on the heater treater. To alleviate the problem, COG personnel replaced the sight glass. Eighteen (18) barrels of standing fluids were recovered. The spill measured approximately 15' x 150' and contained entirely inside the firewall of the facility. The initial C-141 form is enclosed in Appendix C.

Groundwater

The United States Geological Survey (USGS) Well Reports did not list any wells in Section 9. According to the NMOCD groundwater map, the depth to groundwater in this area is approximately 375' below surface. The groundwater data is shown in Appendix A.

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559 Fax 432.682.1946 www.tetratech.com



Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Soil Assessment and Analytical Results

On November 9, 2011, Tetra Tech personnel inspected and sampled the spill area, which measured approximately 15' x 150'. Four (4) auger holes (AH-1 through AH-4) 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, auger holes (AH-1, AH-3 and AH-4) samples at 0-1' were above the RRAL for total BTEX, with concentrations of 95.3 mg/kg, 195 mg/kg and 338 mg/kg, respectively. The deeper samples at 1-1.5' decline below the RRAL. In addition, AH-2 showed a benzene and total BTEX concentrations above the RRAL at 0-1' and 1.5', but decline below the RRAL at 1.0' to 2.0' below surface. The TPH concentrations exceeded RRAL at AH-2 and AH-4, with concentrations declining below the RRAL at 1.0' to 2.0' below surface. Elevated chloride concentrations were detected in the area of AH-1, with concentrations of 5,970 mg/kg at 0-1' and 4,760 mg/kg at 1-1.5' and declined to <200 mg/kg at 2-2.5' below surface.

Work Plan

Based on the results, COG proposes to remove impacted material as highlighted (green) in Table 1 and shown in Figure 4. The excavated soil will be hauled to proper disposal. Once the areas are excavated to the appropriate depths, the excavation will be backfilled with clean soil. Upon completion, a final report will be submitted to the NMOCD.



TETRA TECH

Based on the location of the spill, the proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines may not be feasible or practicable to be removed due to safety concerns. As such, Tetra Tech will excavate the soils to the maximum extent practicable. Upon completion, a final closure report will be submitted to the NMOCD.

If you have any questions or require any additional information regarding this work plan, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavaréz
Senior Project Manager

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

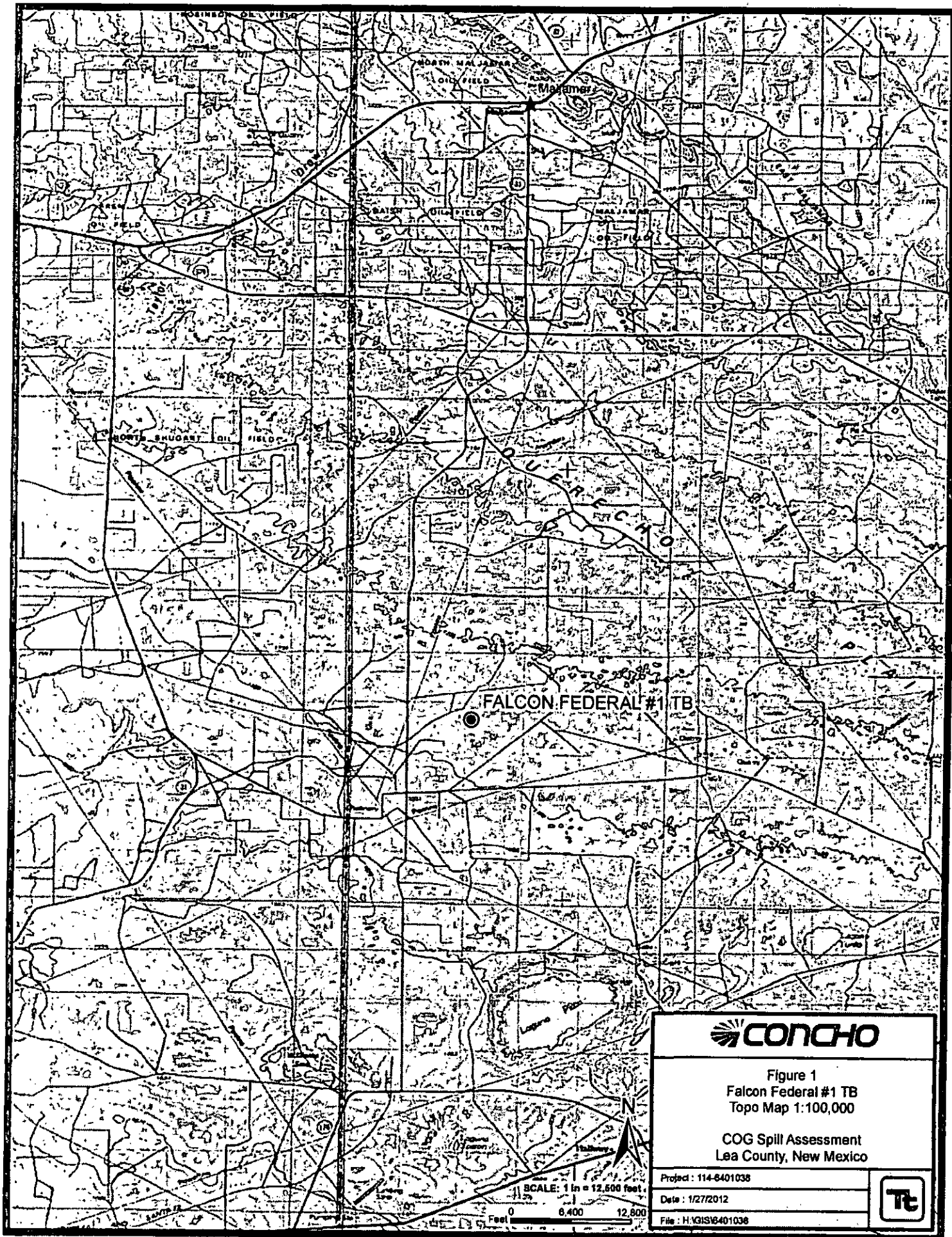


Figure 1
Falcon Federal #1 TB
Topo Map 1:100,000

COG Spill Assessment
Lea County, New Mexico

Project: 114-6401038

Date: 1/27/2012

File: H:\GIS\6401038





PASTURE

PAD

LEASE ROAD

TWO TRACK

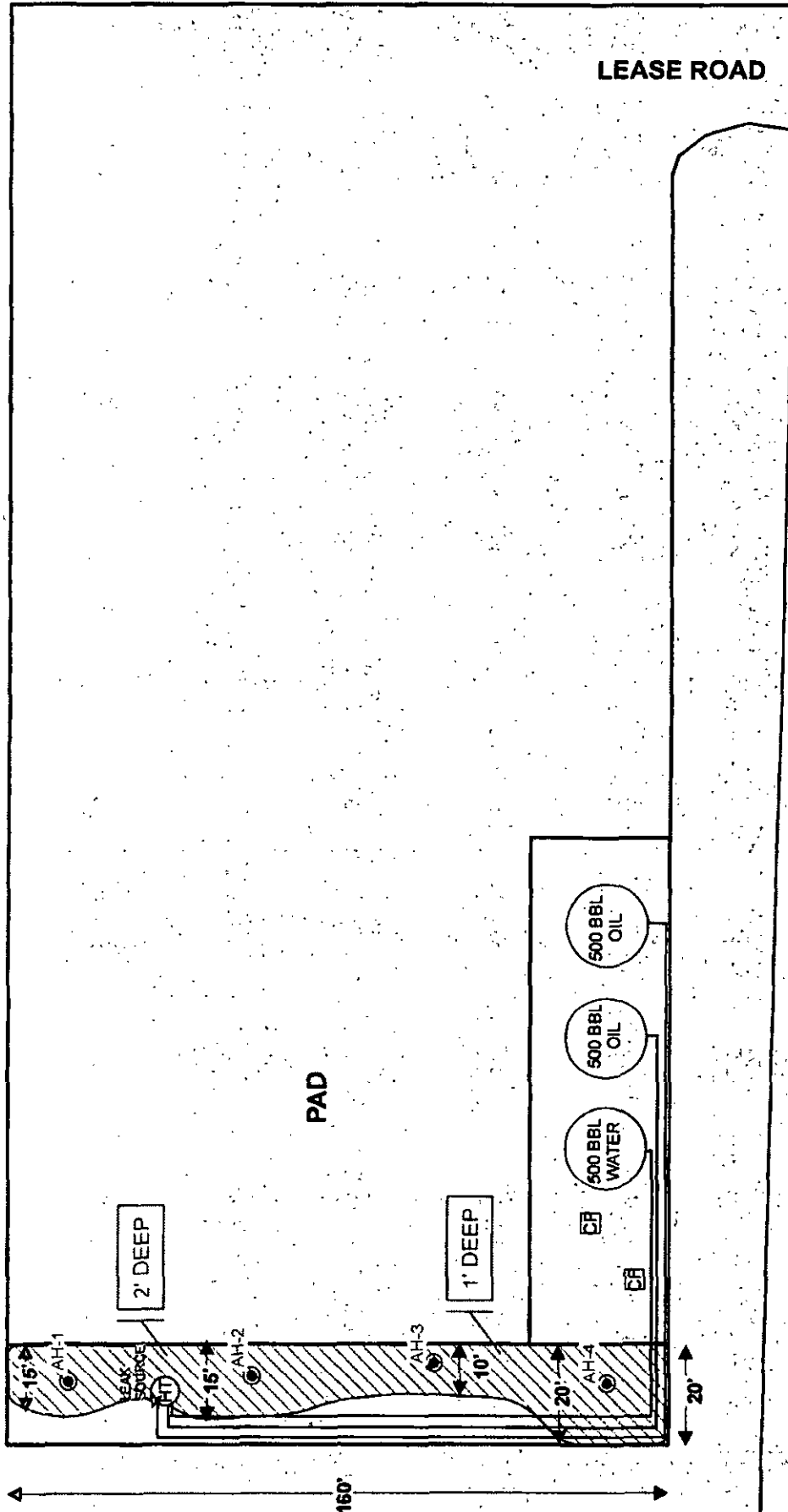


Figure 4

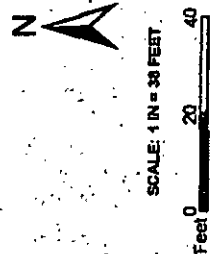
Falcon Federal #1 TB
Proposed Excavation Area & Depths Map

COG Spill Assessment
Lea County, New Mexico

Project: 114-6401083

Date: 1/27/2012

File: NKGIS6401083



EXPLANATION

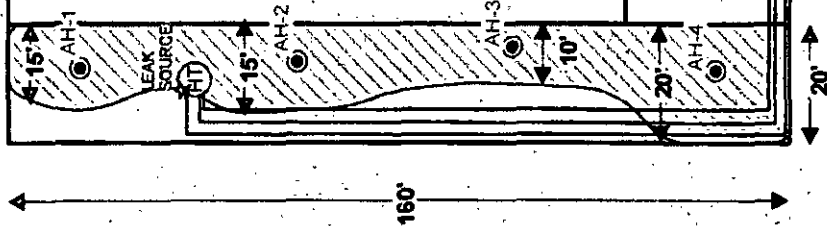
- ★ LEAK SOURCE
- AUGER HOLE SAMPLE LOCATIONS
- ▨ PROPOSED EXCAVATION DEPTHS

PASTURE

PAD

LEASE ROAD

TWO TRACK



500 BBL OIL

500 BBL OIL

500 BBL WATER

CB

CB

EXPLANATION

- ★ LEAK SOURCE
- AUGER HOLE SAMPLE LOCATIONS
- ▨ SPILL AREA



Figure 3

Falcon Federal #1 TB
Spill Assessment Map

COG Spill Assessment
Lea County, New Mexico

Project: 114-6401083

Date: 12/2/2012

File: HUGS-6401083

SCALE: 1 IN = 30 FEET



Table 1
COG Operating LLC
Falcon Federal #1 Tank Battery
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total						
AH-1	11/9/2011	0-1'	-	X		1,520	1,560	3,080	0.275	22.4	24.0	48.6	95.3	5,970
	"	1-1.5'	-	X		-	-	-	<0.0200	<0.0200	<0.0200	0.0517	0.0517	4,760
	"	2-2.5'	-	X		-	-	-	-	-	-	-	-	<200
	"	3-3.5'	-	X		-	-	-	-	-	-	-	-	<200
AH-2	11/9/2011	0-1'	-	X		9,960	15,400	25,360	79.9	395	179	336	990	569
	"	1-1.5'	-	X		3,200	5,740	8,940	21.0	116	53.3	100	290	<200
	"	2-2.5'	-	X		42.5	302	345	<0.0200	0.607	0.596	1.49	2.69	<200
	"	3-3.5'	-	X		-	-	-	-	-	-	-	-	<200
AH-3	11/9/2011	0-1'	-	X		1,420	3,430	4,850	2.78	67.9	42.5	82.0	195	<200
	"	1-1.5'	-	X		-	-	-	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<200
	"	2-2.5'	-	X		-	-	-	-	-	-	-	-	<200
	"	3-3.5'	-	X		-	-	-	-	-	-	-	-	<200
AH-4	11/9/2011	0-1'	-	X		4,920	9,770	14,690	6.76	108	75.6	148	338	<200
	"	1-1.5'	-	X		<50.0	<50.0	<50.0	<0.100	<0.100	<0.100	<0.100	<0.100	<200
	"	2-2.5'	-	X		-	-	-	-	-	-	-	-	<200
	"	3-3.5'	-	X		-	-	-	-	-	-	-	-	<200

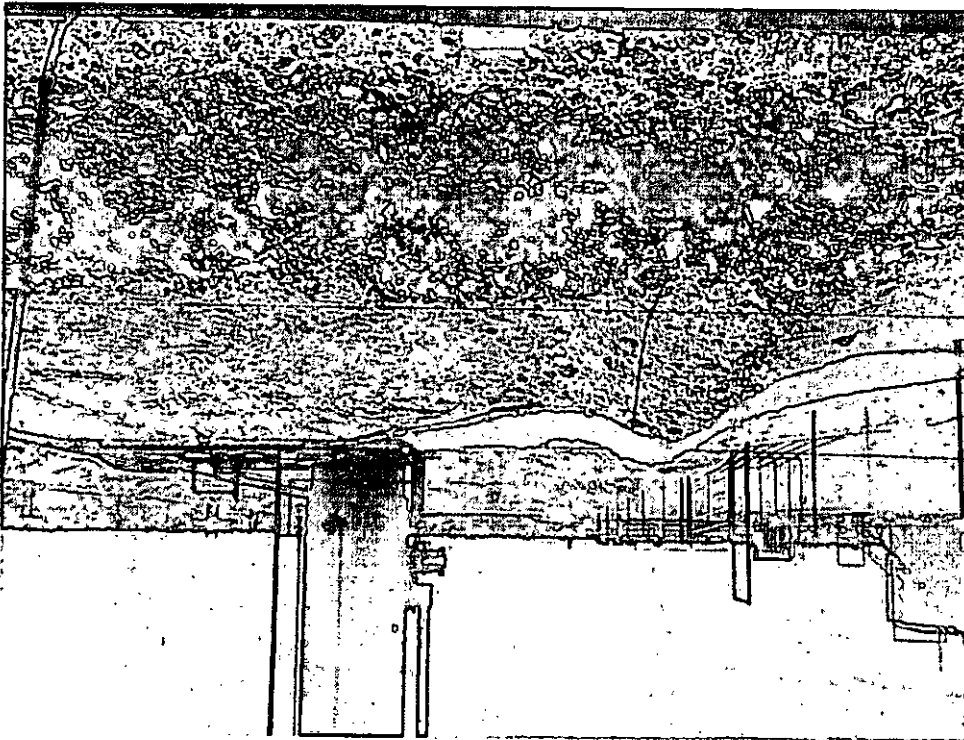
(--) Not Analyzed

☐ Proposed Excavation Depths

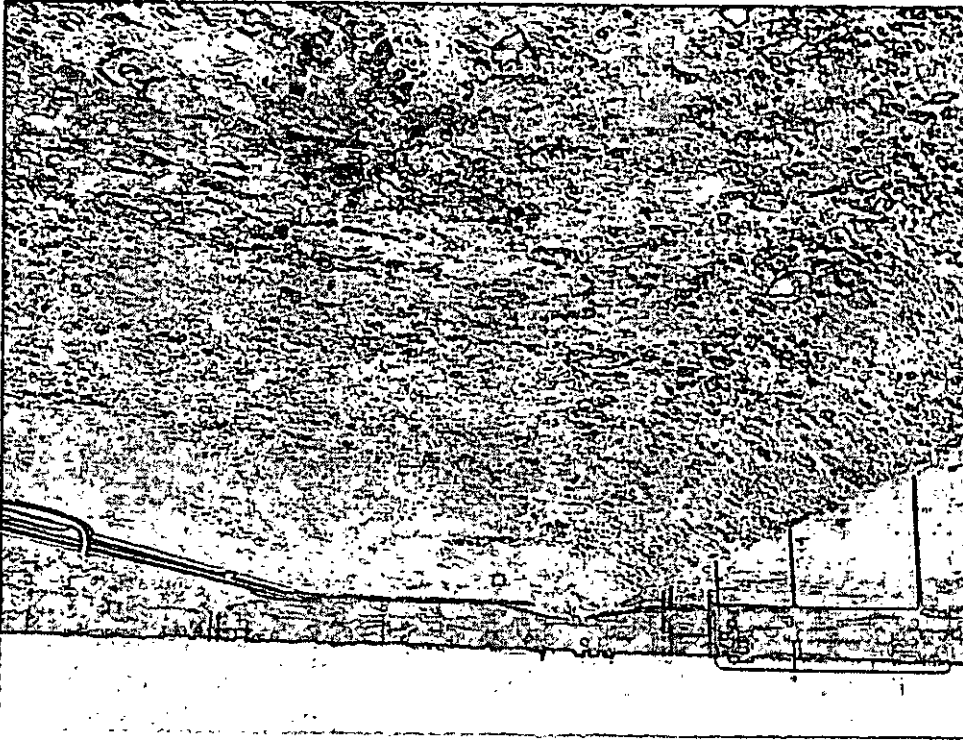


TETRA TECH

COG Operating LLC
Falcon Federal #1
Lea County, New Mexico



View South - AH-1 and 2

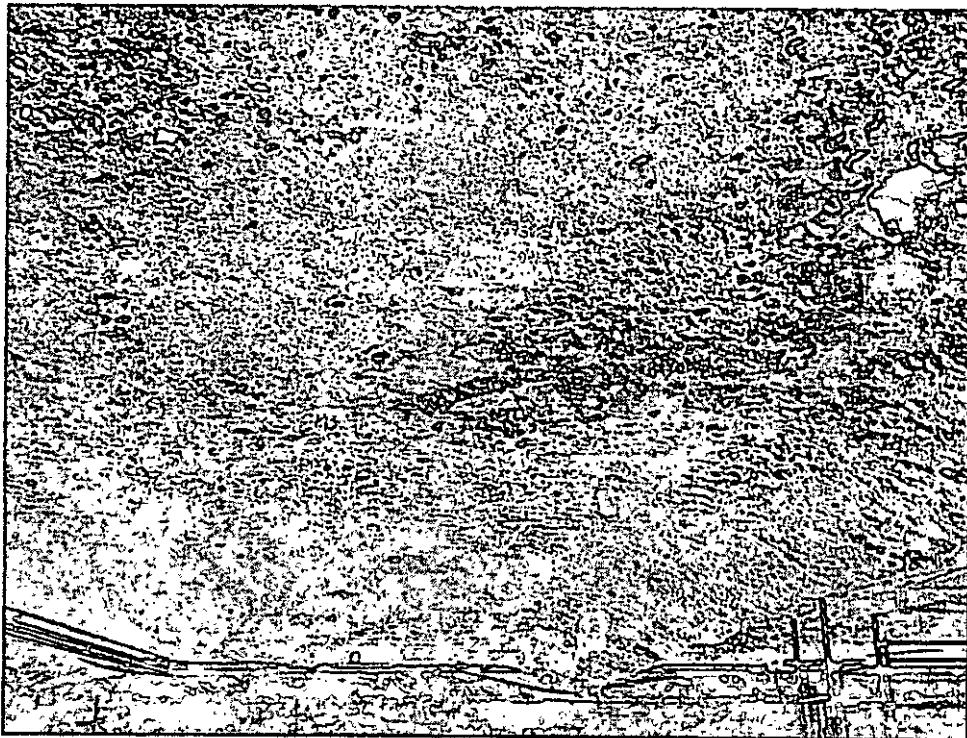


View South - AH-2 and 3



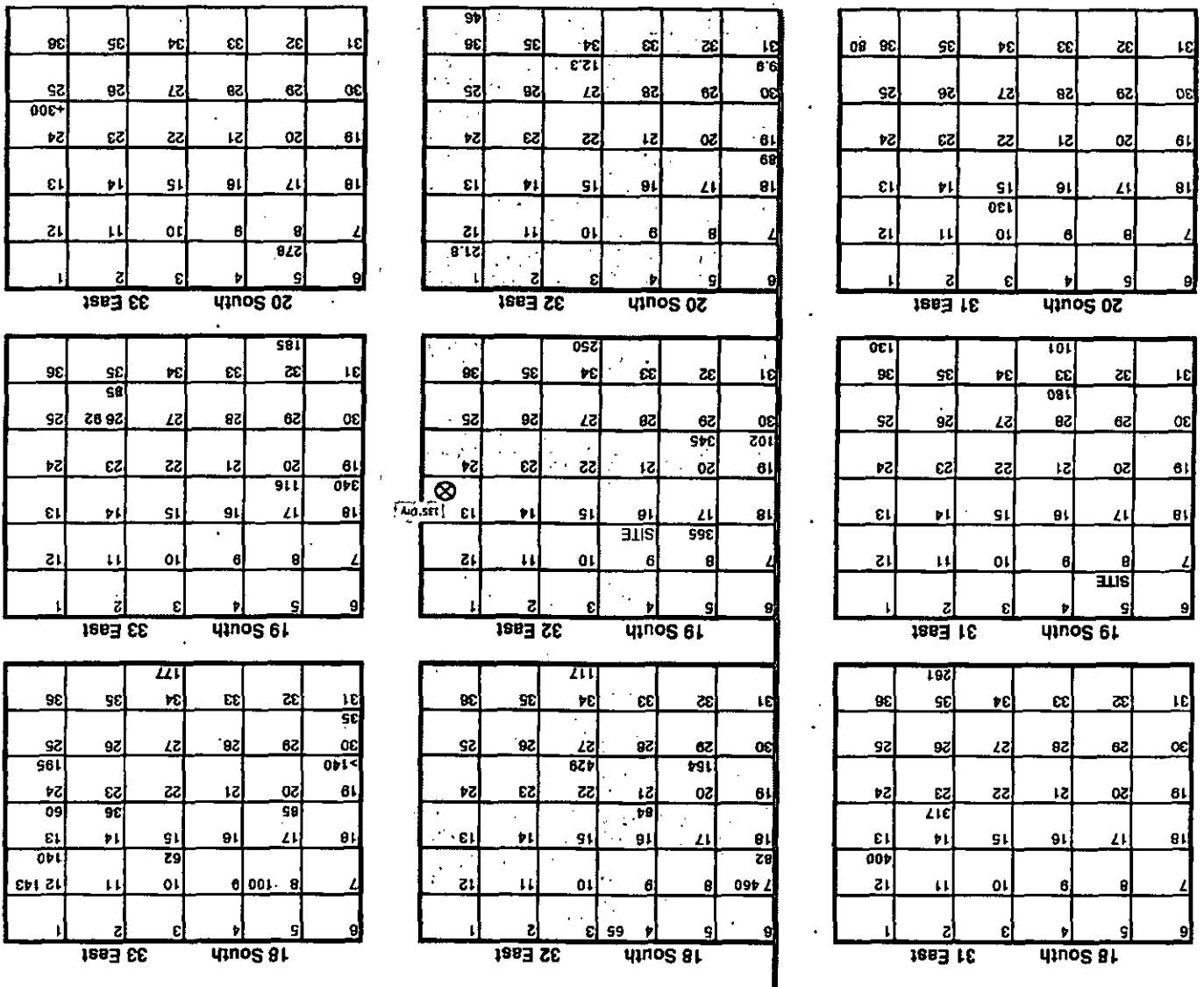
TETRA TECH

COG Operating LLC
Falcon Federal #1
Lea County, New Mexico



View South - AH-3 and 4

Water Well Data COG - Falcon Federal #1 Lea County, New Mexico



- New Mexico State Engineers Well Reports
- USGS Well Reports
- Geology and Groundwater Conditions in Southern Eddy, County, NM
- NMOCD - Groundwater Data
- Field water level
- New Mexico Water and Infrastructure Data System
- Tetra Tech Temporary monitor well (TMW)
- Eddy and Lea County Boundary

Summary Report

Report Date: November 21, 2011

Work Order: 11111123

Project Location: Lea Co., NM
 Project Name: COG/Falcon Federal #1 TB
 Project Number: 114-6401038

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

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
282184	AH-1 0-1'	soil	2011-11-09	00:00	2011-11-11
282185	AH-1 1-1.5'	soil	2011-11-09	00:00	2011-11-11
282186	AH-1 2-2.5'	soil	2011-11-09	00:00	2011-11-11
282187	AH-1 3-3.5'	soil	2011-11-09	00:00	2011-11-11
282194	AH-2 0-1'	soil	2011-11-09	00:00	2011-11-11
282195	AH-2 1-1.5'	soil	2011-11-09	00:00	2011-11-11
282196	AH-2 2-2.5'	soil	2011-11-09	00:00	2011-11-11
282197	AH-2 3-3.5'	soil	2011-11-09	00:00	2011-11-11
282204	AH-3 0-1'	soil	2011-11-09	00:00	2011-11-11
282205	AH-3 1-1.5'	soil	2011-11-09	00:00	2011-11-11
282206	AH-3 2-2.5'	soil	2011-11-09	00:00	2011-11-11
282207	AH-3 3-3.5'	soil	2011-11-09	00:00	2011-11-11
282214	AH-4 0-1'	soil	2011-11-09	00:00	2011-11-11
282215	AH-4 1-1.5'	soil	2011-11-09	00:00	2011-11-11
282216	AH-4 2-2.5'	soil	2011-11-09	00:00	2011-11-11
282217	AH-4 3-3.5'	soil	2011-11-09	00:00	2011-11-11

Sample - Field Code	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	TPH DRO - NEW (mg/Kg)	TPH GRO (mg/Kg)
282184 - AH-1 0-1'	0.275	22.4	24.0	48.6	1560	1520
282185 - AH-1 1-1.5'	<0.0200	<0.0200	<0.0200	0.0517	15400	8960
282186 - AH-2 0-1'	79.9	395	179	336	5740	3200
282195 - AH-2 1-1.5'	21.0	116	53.3	100	302	42.5
282196 - AH-2 2-2.5'	<0.0200	0.607	0.596	1.49	8430	1420
282204 - AH-3 0-1'	2.78	87.9	42.5	82.0	9770	4920
282205 - AH-3 1-1.5'	<0.0200	<0.0200	<0.0200	<0.0200		
282214 - AH-4 0-1'	6.76	108	75.6	148		
282215 - AH-4 1-1.5'	<0.100	<0.100	<0.100	<0.100		
282216 - AH-4 2-2.5'	<0.100	<0.100	<0.100	<0.100		
282217 - AH-4 3-3.5'	<0.100	<0.100	<0.100	<0.100		

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296
 This is only a summary. Please, refer to the complete report package for quality control data.

Sample: 282184 - AH-1 0-1'

Param	Flag	Result	Units	mg/Kg	4
Chloride		5970			

Sample: 282185 - AH-1 1-1.5'

Param	Flag	Result	Units	mg/Kg	4
Chloride		4760			

Sample: 282186 - AH-1 2-2.5'

Param	Flag	Result	Units	mg/Kg	4
Chloride		<200			

Sample: 282187 - AH-1 3-3.5'

Param	Flag	Result	Units	mg/Kg	4
Chloride		<200			

Sample: 282194 - AH-2 0-1'

Param	Flag	Result	Units	mg/Kg	4
Chloride		569			

Sample: 282195 - AH-2 1-1.5'

Param	Flag	Result	Units	mg/Kg	4
Chloride		<200			

Sample: 282196 - AH-2 2-2.5'

Param	Flag	Result	Units	mg/Kg	4
Chloride		<200			

Sample: 282197 - AH-2 3-3.5'

Param	Flag	Result	Units	mg/Kg	4
Chloride		<200			

Sample: 262204 - AH-3 0-1'

Param	Flag	Result	Units	mg/Kg
Chloride		<200	Units	4

Sample: 262205 - AH-3 1-1.5'

Param	Flag	Result	Units	mg/Kg
Chloride		<200	Units	4

Sample: 262206 - AH-3 2-2.5'

Param	Flag	Result	Units	mg/Kg
Chloride		<200	Units	4

Sample: 262207 - AH-3 3-3.5'

Param	Flag	Result	Units	mg/Kg
Chloride		<200	Units	4

Sample: 262214 - AH-4 0-1'

Param	Flag	Result	Units	mg/Kg
Chloride		<200	Units	4

Sample: 262216 - AH-4 1-1.5'

Param	Flag	Result	Units	mg/Kg
Chloride		<200	Units	4

Sample: 262216 - AH-4 2-2.5'

Param	Flag	Result	Units	mg/Kg
Chloride		<200	Units	4

Sample: 262217 - AH-4 3-3.5'

Param	Flag	Result	Units	mg/Kg
Chloride		<200	Units	4

SITE INFORMATION

Report Type: Closure Report

General Site Information:

Site:	Falcon Federal #1 Tank Battery					
Company:	COG Operating LLC					
Section, Township and Range	Unit E	Sec 9	T19S	R32E		
Lease Number:	API-30-015-38421					
County:	Lea County					
GPS:	32.67757° N			103.77799° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From the intersection of Hwy 62 and CR 243, travel north by north west on CR 243 for (4.5 miles), turn right onto CR 126 and travel (7.6 miles), turn right and travel (1.6 miles), turn right and travel (0.6 miles), turn right and travel (0.5 miles), turn right and travel (150 feet) to location.					

Release Data:

Date Released:	9/7/2011
Type Release:	Produced Fluid
Source of Contamination:	Sight glass on the Heater Treater
Fluid Released:	20 bbls
Fluids Recovered:	18 bbls

Official Communication:

Name:	Pat Ellis	Ike Tavaréz
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.tavaréz@tetrattech.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	

HOBBS OCD

MAY 21 2012

RECEIVED

Acceptable Soil RRAL (mg/kg)

Benzene	Total BTEX	TPH
10	50	5,000



TETRA TECH

March 26, 2012

HOBBS OCD

MAY 21 2012

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., Falcon Federal #1
Tank Battery, Unit E, Section 9, Township 19 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 Falcon Federal #1 Tank Battery, Unit E, Section 9, Township 19 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.67757°, W 103.77799°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on September 7, 2011, and released approximately twenty (20) barrels of produced water, due to a broken sight glass on the heater treater. To alleviate the problem, COG personnel replaced the sight glass. Eighteen (18) barrels of standing fluids were recovered. The spill measured approximately 15' x 150' and contained entirely inside the firewall of the facility. The initial C-141 form is enclosed in Appendix A.

Groundwater

The United States Geological Survey (USGS) Well Reports did not list any wells in Section 9. According to the NMOCD groundwater map, the depth to groundwater in this area is approximately 375' below surface. The groundwater data is shown in Appendix B.

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com



Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Soil Assessment and Analytical Results

On November 9, 2011, Tetra Tech personnel inspected and sampled the spill area, which measured approximately 15' x 150'. Four (4) auger holes (AH-1 through AH-4) 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 C. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, auger holes (AH-1, AH-3 and AH-4) samples at 0-1' were above the RRAL for total BTEX, with concentrations of 95.3 mg/kg, 195 mg/kg and 338 mg/kg, respectively. The deeper samples at 1-1.5' decline below the RRAL. In addition, AH-2 showed a benzene and total BTEX concentrations above the RRAL at 0-1' and 1.5', but decline below the RRAL at 1.0' to 2.0' below surface. The TPH concentrations exceeded RRAL at AH-2 and AH-4, with concentrations declining below the RRAL at 1.0' to 2.0' below surface. Elevated chloride concentrations were detected in the area of AH-1, with concentrations of 5,970 mg/kg at 0-1' and 4,760 mg/kg at 1-1.5' and declined to <200 mg/kg at 2-2.5' below surface.

Closure Activities

Based on the approved work plan, Tetra Tech personnel supervised the excavation of the site. The spill foot print and final excavation depths of the soil remediation were met or exceeded as stated in the approved work plan. As requested by the BLM, no confirmation samples were collected from the excavation.



TETRA TECH

A total of 220 cubic yards of soil were excavated and hauled to proper disposal. The excavation depths are highlighted in Table 1 and shown on Figure 4. The excavations were backfilled with clean soil to grade.

Based on the remedial activities performed, COG request closure of the site. A copy of the C-141 (Final) is included in Appendix A. If you have any questions or comments concerning the remedial activities, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavaréz
Senior Project Manager

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

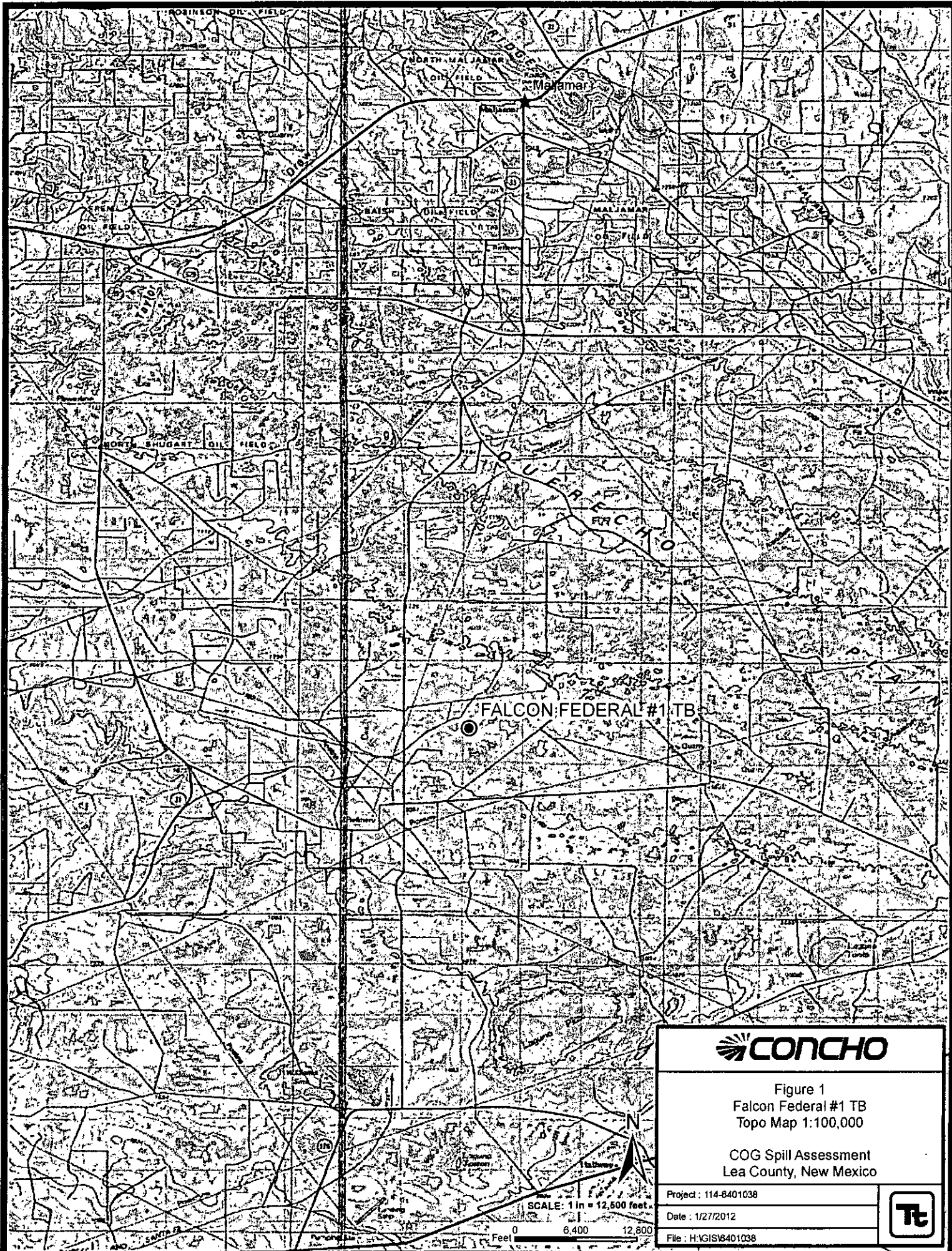


Figure 1
Falcon Federal #1 TB
Topo Map 1:100,000

COG Spill Assessment
Lea County, New Mexico

Project : 114-8401038

Date : 1/27/2012

File : H:\GIS\8401038



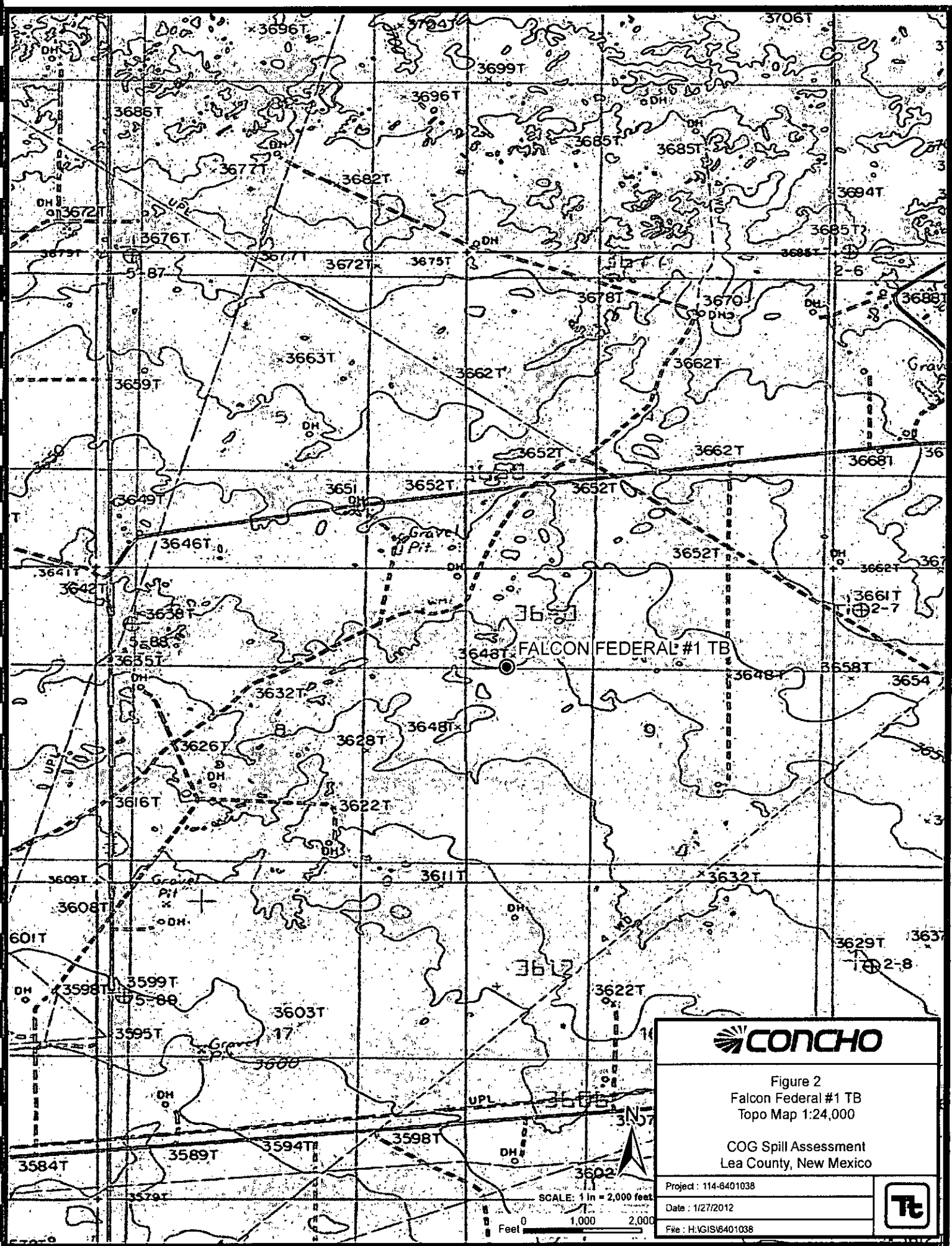


Figure 2
Falcon Federal #1 TB
Topo Map 1:24,000

COG Spill Assessment
Lea County, New Mexico

Project : 114-8401038

Date : 1/27/2012

File : H:\GIS\6401038



SCALE: 1 in = 2,000 feet

0 1,000 2,000
Feet

PASTURE

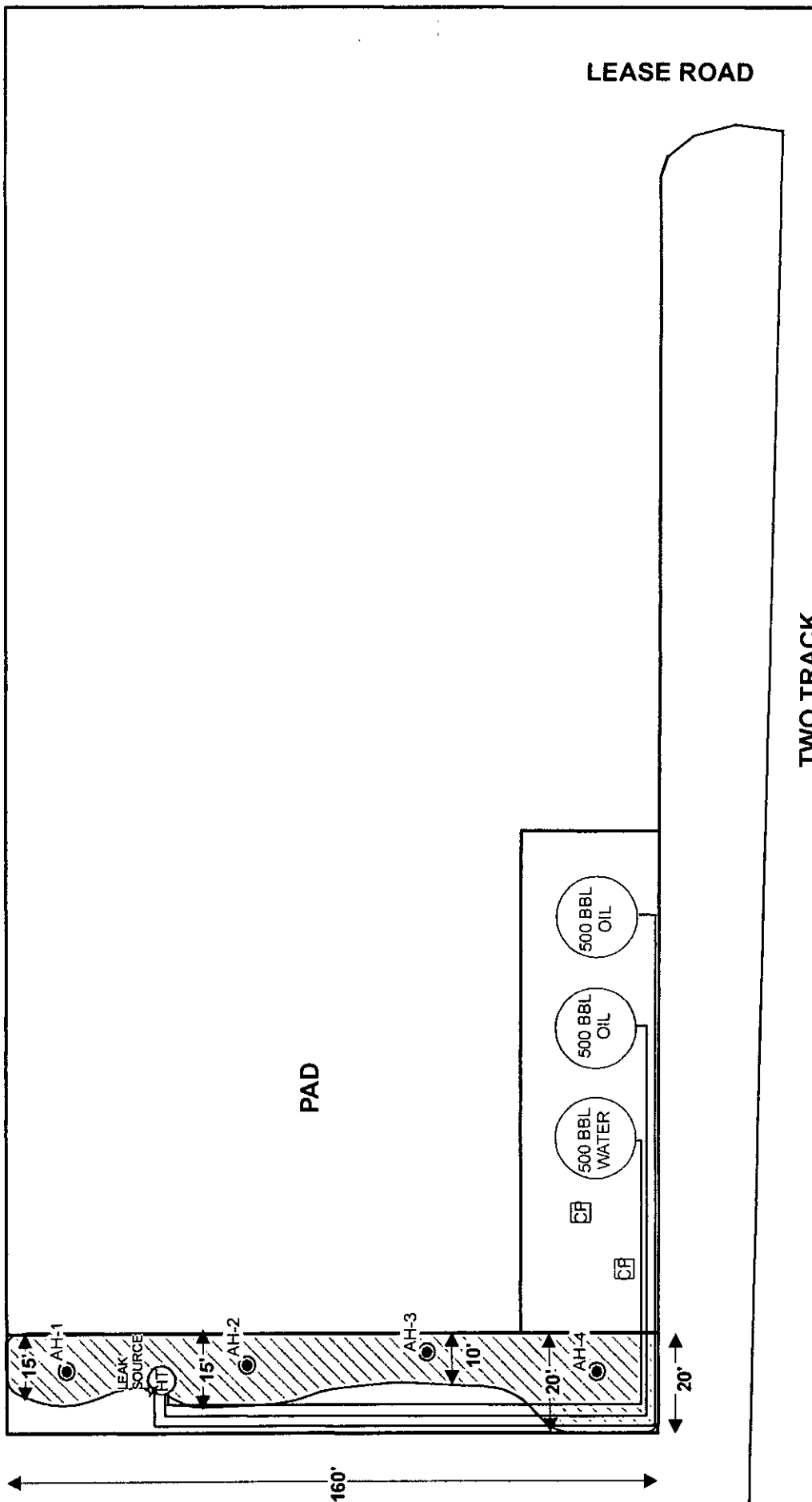


Figure 3

Falcon Federal #1 TB
Spill Assessment Map

COG Spill Assessment
Lea County, New Mexico

Project : 114-6401038
Date : 1/27/2012
File : HIGIS6401038



SCALE: 1 IN = 38 FEET

0 20 40
Feet

EXPLANATION

- ★ LEAK SOURCE
- AUGER HOLE SAMPLE LOCATIONS
- ▨ SPILL AREA

PASTURE

LEASE ROAD

TWO TRACK

PAD

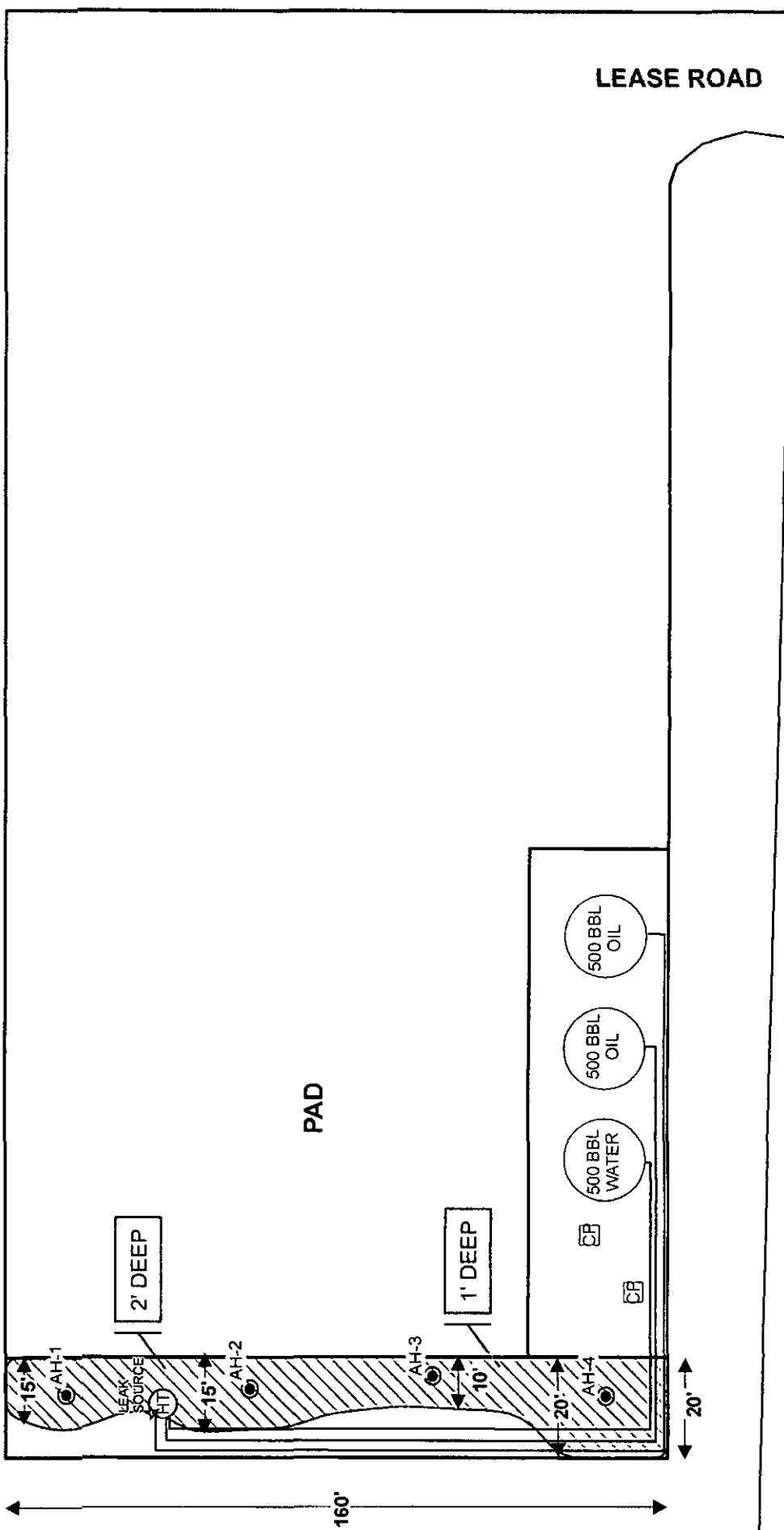


Figure 4

Falcon Federal #1 TB
Excavation Area & Depths Map

COG Spill Assessment
Lea County, New Mexico

Project : 114-5401038

Date : 1/27/2012

File : H:\GIS\6401038



SCALE: 1 IN = 38 FEET



EXPLANATION

- ★ LEAK SOURCE
- AUGER HOLE SAMPLE LOCATIONS
- ▨ EXCAVATED DEPTHS

Table 1
COG Operating LLC
Falcon Federal #1 Tank Battery
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total						
AH-1	11/9/2011	0-1'	-		X	1,520	1,560	3,080	0.275	22.4	24.0	48.6	95.3	5,970
	"	1-1.5'	-		X				<0.0200	<0.0200	<0.0200	0.0517	0.0517	4,760
	"	2-2.5'	-	X					-	-	-	-	-	<200
	"	3-3.5'	-	X					-	-	-	-	-	<200
AH-2	11/9/2011	0-1'	-		X	9,960	15,400	25,360	79.9	395	179	336	990	569
	"	1-1.5'	-		X	3,200	5,740	8,940	21.0	116	53.3	100	290	<200
	"	2-2.5'	-	X		42.5	302	345	<0.0200	0.607	0.596	1.49	2.69	<200
	"	3-3.5'	-	X					-	-	-	-	-	<200
AH-3	11/9/2011	0-1'	-		X	1,420	3,430	4,850	2.78	67.9	42.5	82.0	195	<200
	"	1-1.5'	-	X					<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<200
	"	2-2.5'	-	X					-	-	-	-	-	<200
	"	3-3.5'	-	X					-	-	-	-	-	<200
AH-4	11/9/2011	0-1'	-		X	4,920	9,770	14,690	6.76	108	75.6	148	338	<200
	"	1-1.5'	-	X		<50.0	<50.0	<50.0	<0.100	<0.100	<0.100	<0.100	<0.100	<200
	"	2-2.5'	-	X					-	-	-	-	-	<200
	"	3-3.5'	-	X					-	-	-	-	-	<200

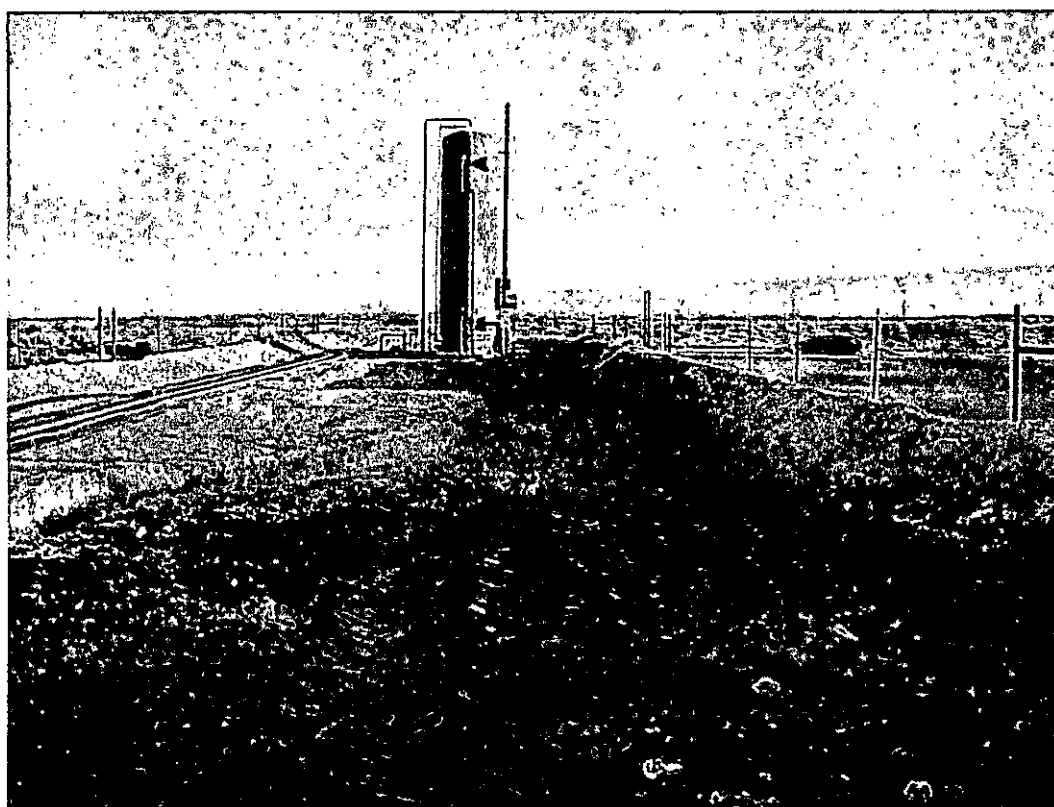
(--) Not Analyzed

☐ Excavation Depths

COG Operating LLC
Falcon Federal #1
Lea County, New Mexico



View South – Excavation

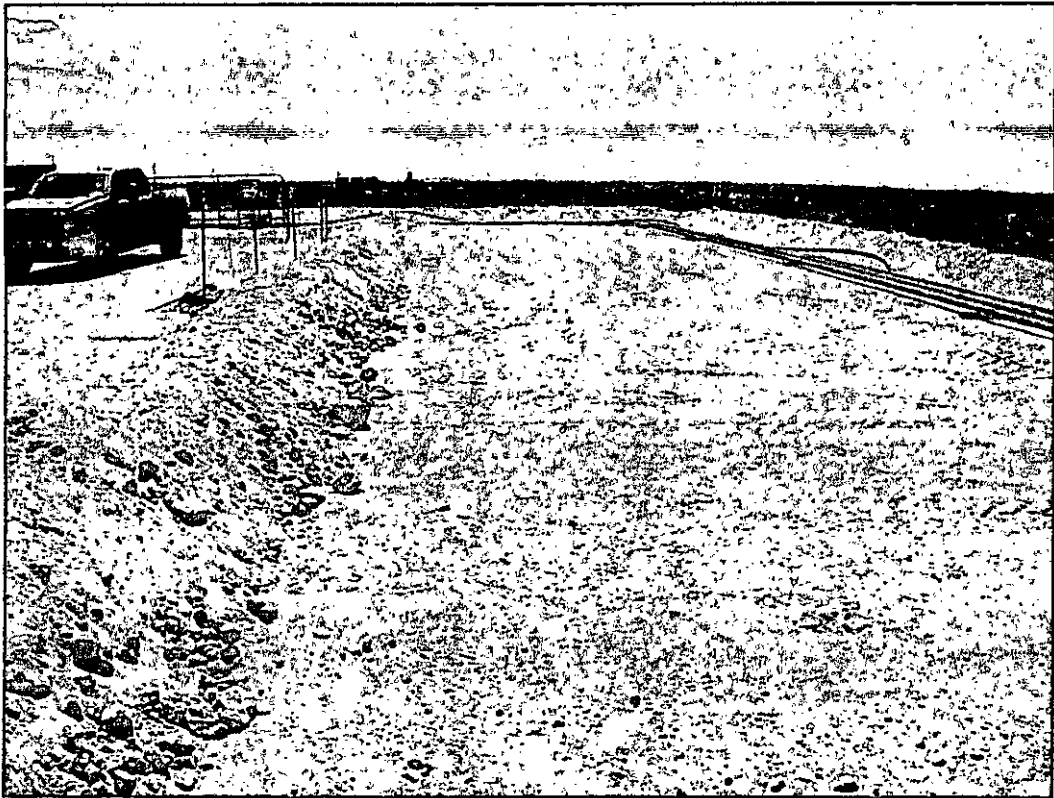


View North – Excavation

COG Operating LLC
Falcon Federal #1
Lea County, New Mexico



TETRA TECH



View North – Backfilled



View South – Backfilled

Water Well Data
Average Depth to Groundwater (ft)
COG - Falcon Federal #1
Lea County, New Mexico

18 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	35	36

19 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	35	36

20 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	35	36

18 South			32 East		
6	5	4	65	3	2
7	460	8	9	10	11
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

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

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

18 South			33 East		
6	5	4	3	2	1
7	8	100	9	10	11
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

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

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

-  New Mexico State Engineers Well Reports
-  USGS Well Reports
-  Geology and Groundwater Conditions in Southern Eddy, County, NM
-  NMOCD - Groundwater Data
-  Field water level
-  New Mexico Water and Infrastructure Data System
-  Tetra Tech Temporary monitor well (TMW)
-  Eddy and Lea County Boundary

Summary Report

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

Report Date: November 21, 2011

Work Order: 11111123



Project Location: Lea Co., NM
Project Name: COG/Falcon Federal #1 TB
Project Number: 114-6401038

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
282184	AH-1 0-1'	soil	2011-11-09	00:00	2011-11-11
282185	AH-1 1-1.5'	soil	2011-11-09	00:00	2011-11-11
282186	AH-1 2-2.5'	soil	2011-11-09	00:00	2011-11-11
282187	AH-1 3-3.5'	soil	2011-11-09	00:00	2011-11-11
282194	AH-2 0-1'	soil	2011-11-09	00:00	2011-11-11
282195	AH-2 1-1.5'	soil	2011-11-09	00:00	2011-11-11
282196	AH-2 2-2.5'	soil	2011-11-09	00:00	2011-11-11
282197	AH-2 3-3.5'	soil	2011-11-09	00:00	2011-11-11
282204	AH-3 0-1'	soil	2011-11-09	00:00	2011-11-11
282205	AH-3 1-1.5'	soil	2011-11-09	00:00	2011-11-11
282206	AH-3 2-2.5'	soil	2011-11-09	00:00	2011-11-11
282207	AH-3 3-3.5'	soil	2011-11-09	00:00	2011-11-11
282214	AH-4 0-1'	soil	2011-11-09	00:00	2011-11-11
282215	AH-4 1-1.5'	soil	2011-11-09	00:00	2011-11-11
282216	AH-4 2-2.5'	soil	2011-11-09	00:00	2011-11-11
282217	AH-4 3-3.5'	soil	2011-11-09	00:00	2011-11-11

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
282184 - AH-1 0-1'	0.275 Qr,Qs	22.4 Qr,Qs	24.0 Qr,Qs	48.6 Qr,Qs	1560 Qs	1520
282185 - AH-1 1-1.5'	<0.0200 Qr,Qs	<0.0200 Qr	<0.0200 Qr	0.0517 Qr		
282194 - AH-2 0-1'	79.9 Qr,Qs	395 Qr,Qs	179 Qr,Qs	336 Qr,Qs	15400 Qs	9960
282195 - AH-2 1-1.5'	21.0 Qr,Qs	116 Qr,Qs	53.3 Qr,Qs	100 Qr,Qs	5740	3200
282196 - AH-2 2-2.5'	<0.0200 Qr,Qs	0.607 Qr	0.596 Qr	1.49 Qr	302	42.5 Qr
282204 - AH-3 0-1'	2.78 Qr,Qs	67.9 Qr,Qs	42.5 Qr,Qs	82.0 Qr,Qs	3430 Qs	1420
282205 - AH-3 1-1.5'	<0.0200 Qr,Qs	<0.0200 Qr	<0.0200 Qr	<0.0200 Qr		
282214 - AH-4 0-1'	6.76 Qr,Qs	108 Qr,Qs	75.6 Qr,Qs	148 Qr,Qs	9770 Qs	4920
282215 - AH-4 1-1.5'	<0.100 Qr,Qs	<0.100 Qr,Qs	<0.100 Qr,Qs	<0.100 Qr,Qs	<50.0	<10.0

Sample: 282184 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		5970	mg/Kg	4

Sample: 282185 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		4760	mg/Kg	4

Sample: 282186 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 282187 - AH-1 3-3.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 282194 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		569	mg/Kg	4

Sample: 282195 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 282196 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 282197 - AH-2 3-3.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 282204 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 282205 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 282206 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 282207 - AH-3 3-3.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 282214 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 282215 - AH-4 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 282216 - AH-4 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 282217 - AH-4 3-3.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 806•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915•585•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
8015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
E-Mail: lab@traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: November 21, 2011

Work Order: 11111123



Project Location: Lea Co., NM
Project Name: COG/Falcon Federal #1 TB
Project Number: 114-6401038

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
282184	AH-1 0-1'	soil	2011-11-09	00:00	2011-11-11
282185	AH-1 1-1.5'	soil	2011-11-09	00:00	2011-11-11
282186	AH-1 2-2.5'	soil	2011-11-09	00:00	2011-11-11
282187	AH-1 3-3.5'	soil	2011-11-09	00:00	2011-11-11
282194	AH-2 0-1'	soil	2011-11-09	00:00	2011-11-11
282195	AH-2 1-1.5'	soil	2011-11-09	00:00	2011-11-11
282196	AH-2 2-2.5'	soil	2011-11-09	00:00	2011-11-11
282197	AH-2 3-3.5'	soil	2011-11-09	00:00	2011-11-11
282204	AH-3 0-1'	soil	2011-11-09	00:00	2011-11-11
282205	AH-3 1-1.5'	soil	2011-11-09	00:00	2011-11-11
282206	AH-3 2-2.5'	soil	2011-11-09	00:00	2011-11-11
282207	AH-3 3-3.5'	soil	2011-11-09	00:00	2011-11-11
282214	AH-4 0-1'	soil	2011-11-09	00:00	2011-11-11
282215	AH-4 1-1.5'	soil	2011-11-09	00:00	2011-11-11
282216	AH-4 2-2.5'	soil	2011-11-09	00:00	2011-11-11
282217	AH-4 3-3.5'	soil	2011-11-09	00:00	2011-11-11

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 40 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink that reads "Michael Abel". The signature is written in a cursive style with a large, stylized 'M' and 'A'.

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

Case Narrative

Samples for project COG/Falcon Federal #1 TB were received by TraceAnalysis, Inc. on 2011-11-11 and assigned to work order 11111123. Samples for work order 11111123 were received intact at a temperature of 5.9 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	73426	2011-11-15 at 08:30	86475	2011-11-15 at 10:53
BTEX	S 8021B	73503	2011-11-17 at 12:00	86561	2011-11-17 at 18:00
Chloride (Titration)	SM 4500-Cl B	73447	2011-11-14 at 12:26	86501	2011-11-16 at 12:29
Chloride (Titration)	SM 4500-Cl B	73447	2011-11-14 at 12:26	86578	2011-11-18 at 10:54
TPH DRO - NEW	S 8015 D	73404	2011-11-14 at 14:09	86448	2011-11-14 at 14:09
TPH DRO - NEW	S 8015 D	73509	2011-11-17 at 14:47	86569	2011-11-17 at 14:47
TPH DRO - NEW	S 8015 D	73540	2011-11-18 at 10:46	86599	2011-11-18 at 10:46
TPH GRO	S 8015 D	73426	2011-11-15 at 08:30	86480	2011-11-15 at 11:20
TPH GRO	S 8015 D	73503	2011-11-17 at 12:00	86562	2011-11-17 at 18:27

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 11111123 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.

Report Date: November 21, 2011
114-6401038

Work Order: 11111123
COG/Falcon Federal #1 TB

Page Number: 6 of 40
Lea Co., NM

Analytical Report

Sample: 282184 - AH-1 0-1'

Laboratory: Midland

Analysis: BTEX

QC Batch: 86475

Prep Batch: 73426

Analytical Method: S 8021B

Date Analyzed: 2011-11-15

Sample Preparation: 2011-11-15

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

		RL					
Parameter		Flag	Cert	Result	Units	Dilution	RL
Benzene	Qr, Qs	Qr, Qs	1	0.275	mg/Kg	10	0.0200
Toluene	Qr, Qs	Qr, Qs	1	22.4	mg/Kg	10	0.0200
Ethylbenzene	Qr, Qs	Qr, Qs	1	24.0	mg/Kg	10	0.0200
Xylene	Qr, Qs	Qr, Qs	1	48.6	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			9.87	mg/Kg	10	10.0	99	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			16.5	mg/Kg	10	10.0	165	70.6 - 179

Sample: 282184 - AH-1 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 86501

Prep Batch: 73447

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-11-16

Sample Preparation: 2011-11-14

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			5970	mg/Kg	50	4.00

Sample: 282184 - AH-1 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 86448

Prep Batch: 73404

Analytical Method: S 8015 D

Date Analyzed: 2011-11-14

Sample Preparation: 2011-11-14

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	1	1560	mg/Kg	1	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	207	mg/Kg	1	100	207	53.5 - 147.1

Sample: 282184 - AH-1 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 86480
Prep Batch: 73426

Analytical Method: S 8015 D
Date Analyzed: 2011-11-15
Sample Preparation: 2011-11-15

Prep Method: S 5035
Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	1520	mg/Kg	10	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			9.80	mg/Kg	10	10.0	98	30 - 134.6
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	20.7	mg/Kg	10	10.0	207	22.4 - 149

Sample: 282185 - AH-1 1-1.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 86561
Prep Batch: 73503

Analytical Method: S 8021B
Date Analyzed: 2011-11-17
Sample Preparation: 2011-11-17

Prep Method: S 5035
Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Qr,Qs,U	Qr,Qs,U	1	<0.0200	mg/Kg	1
Toluene	Qr,U	Qr,U	1	<0.0200	mg/Kg	1
Ethylbenzene	Qr,U	Qr,U	1	<0.0200	mg/Kg	1
Xylene	Qr	Qr	1	0.0517	mg/Kg	1

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.32	mg/Kg	1	2.00	116	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.41	mg/Kg	1	2.00	120	70.6 - 179

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Sample: 282185 - AH-1 1-1.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-11-16	Analyzed By:	AR
QC Batch:	86501	Sample Preparation:	2011-11-14	Prepared By:	AR
Prep Batch:	73447				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			4760	mg/Kg	100	4.00

Sample: 282186 - AH-1 2-2.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-11-16	Analyzed By:	AR
QC Batch:	86501	Sample Preparation:	2011-11-14	Prepared By:	AR
Prep Batch:	73447				

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

Sample: 282187 - AH-1 3-3.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-11-16	Analyzed By:	AR
QC Batch:	86501	Sample Preparation:	2011-11-14	Prepared By:	AR
Prep Batch:	73447				

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

Sample: 282194 - AH-2 0-1'

Laboratory:	Midland	Analytical Method:	S 8021B	Prep Method:	S 5035
Analysis:	BTEX	Date Analyzed:	2011-11-15	Analyzed By:	AG
QC Batch:	86475	Sample Preparation:	2011-11-15	Prepared By:	AG
Prep Batch:	73426				

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Parameter		Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Qr,Qs	Qr,Qs	1	79.9	mg/Kg	100	0.0200
Toluene	Qr,Qs	Qr,Qs	1	395	mg/Kg	100	0.0200
Ethylbenzene	Qr,Qs	Qr,Qs	1	179	mg/Kg	100	0.0200
Xylene	Qr,Qs	Qr,Qs	1	336	mg/Kg	100	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			94.2	mg/Kg	100	100	94	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			134	mg/Kg	100	100	134	70.6 - 179

Sample: 282194 - AH-2 0-1'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 86501 Date Analyzed: 2011-11-16 Analyzed By: AR
Prep Batch: 73447 Sample Preparation: 2011-11-14 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			569	mg/Kg	50	4.00

Sample: 282194 - AH-2 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 86448 Date Analyzed: 2011-11-14 Analyzed By: kg
Prep Batch: 73404 Sample Preparation: 2011-11-14 Prepared By: kg

Parameter		Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	Qs	1	15400	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	1060	mg/Kg	5	100	1060	53.5 - 147.1

Sample: 282194 - AH-2 0-1'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 86480 Date Analyzed: 2011-11-15 Analyzed By: AG
Prep Batch: 73426 Sample Preparation: 2011-11-15 Prepared By: AG

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	9960	mg/Kg	100	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			96.0	mg/Kg	100	100	96	30 - 134.6
4-Bromofluorobenzene (4-BFB)			99.2	mg/Kg	100	100	99	22.4 - 149

Sample: 282195 - AH-2 1-1.5'

Laboratory: Midland

Analysis: BTEX

QC Batch: 86475

Prep Batch: 73426

Analytical Method: S 8021B

Date Analyzed: 2011-11-15

Sample Preparation: 2011-11-15

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

		RL					
Parameter		Flag	Cert	Result	Units	Dilution	RL
Benzene	Qr,Qs	Qr,Qs	1	21.0	mg/Kg	50	0.0200
Toluene	Qr,Qs	Qr,Qs	1	116	mg/Kg	50	0.0200
Ethylbenzene	Qr,Qs	Qr,Qs	1	53.3	mg/Kg	50	0.0200
Xylene	Qr,Qs	Qr,Qs	1	100	mg/Kg	50	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			47.6	mg/Kg	50	50.0	95	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			60.2	mg/Kg	50	50.0	120	70.6 - 179

Sample: 282195 - AH-2 1-1.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 86501

Prep Batch: 73447

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-11-16

Sample Preparation: 2011-11-14

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

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

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Sample: 282195 - AH-2 1-1.5'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 86569

Prep Batch: 73509

Analytical Method: S 8015 D

Date Analyzed: 2011-11-17

Sample Preparation: 2011-11-17

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	5740	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	484	mg/Kg	5	100	484	53.5 - 147.1

Sample: 282195 - AH-2 1-1.5'

Laboratory: Midland

Analysis: TPH GRO

QC Batch: 86480

Prep Batch: 73426

Analytical Method: S 8015 D

Date Analyzed: 2011-11-15

Sample Preparation: 2011-11-15

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	3200	mg/Kg	50	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			47.9	mg/Kg	50	50.0	96	30 - 134.6
4-Bromofluorobenzene (4-BFB)			67.6	mg/Kg	50	50.0	135	22.4 - 149

Sample: 282196 - AH-2 2-2.5'

Laboratory: Midland

Analysis: BTEX

QC Batch: 86561

Prep Batch: 73503

Analytical Method: S 8021B

Date Analyzed: 2011-11-17

Sample Preparation: 2011-11-17

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

Parameter		Flag	Cert	RL	Units	Dilution	RL
				Result			
Benzene	Qr, Qs, U	Qr, Qs, U	1	<0.0200	mg/Kg	1	0.0200
Toluene	Qr	Qr	1	0.607	mg/Kg	1	0.0200
Ethylbenzene	Qr	Qr	1	0.596	mg/Kg	1	0.0200
Xylene	Qr	Qr	1	1.49	mg/Kg	1	0.0200

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	1.27	mg/Kg	1	2.00	64	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			1.50	mg/Kg	1	2.00	75	70.6 - 179

Sample: 282196 - AH-2 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 86501 Date Analyzed: 2011-11-16 Analyzed By: AR
Prep Batch: 73447 Sample Preparation: 2011-11-14 Prepared By: AR

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

Sample: 282196 - AH-2 2-2.5'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 86599 Date Analyzed: 2011-11-18 Analyzed By: kg
Prep Batch: 73540 Sample Preparation: 2011-11-18 Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	302	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			134	mg/Kg	1	100	134	53.5 - 147.1

Sample: 282196 - AH-2 2-2.5'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 86562 Date Analyzed: 2011-11-17 Analyzed By: AG
Prep Batch: 73503 Sample Preparation: 2011-11-17 Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr	Qr	42.5	mg/Kg	1	2.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.24	mg/Kg	1	2.00	62	30 - 134.6
4-Bromofluorobenzene (4-BFB)			1.63	mg/Kg	1	2.00	82	22.4 - 149

Sample: 282197 - AH-2 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 86578 Date Analyzed: 2011-11-18 Analyzed By: AR
Prep Batch: 73447 Sample Preparation: 2011-11-14 Prepared By: AR

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

Sample: 282204 - AH-3 0-1'

Laboratory: Midland
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 86475 Date Analyzed: 2011-11-15 Analyzed By: AG
Prep Batch: 73426 Sample Preparation: 2011-11-15 Prepared By: AG

		RL					
Parameter		Flag	Cert	Result	Units	Dilution	RL
Benzene	Qr,Qs	Qr,Qs	1	2.78	mg/Kg	20	0.0200
Toluene	Qr,Qs	Qr,Qs	1	67.9	mg/Kg	20	0.0200
Ethylbenzene	Qr,Qs	Qr,Qs	1	42.5	mg/Kg	20	0.0200
Xylene	Qr,Qs	Qr,Qs	1	82.0	mg/Kg	20	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			19.0	mg/Kg	20	20.0	95	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			28.2	mg/Kg	20	20.0	141	70.6 - 179

Sample: 282204 - AH-3 0-1'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 86578 Date Analyzed: 2011-11-18 Analyzed By: AR
Prep Batch: 73447 Sample Preparation: 2011-11-14 Prepared By: AR

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

Sample: 282204 - AH-3 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 86448
Prep Batch: 73404

Analytical Method: S 8015 D
Date Analyzed: 2011-11-14
Sample Preparation: 2011-11-14

Prep Method: N/A
Analyzed By: kg
Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	1	3430	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	282	mg/Kg	1	100	282	53.5 - 147.1

Sample: 282204 - AH-3 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 86480
Prep Batch: 73426

Analytical Method: S 8015 D
Date Analyzed: 2011-11-15
Sample Preparation: 2011-11-15

Prep Method: S 5035
Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	1420	mg/Kg	20	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			19.0	mg/Kg	20	20.0	95	30 - 134.6
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	34.4	mg/Kg	20	20.0	172	22.4 - 149

Sample: 282205 - AH-3 1-1.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 86561
Prep Batch: 73503

Analytical Method: S 8021B
Date Analyzed: 2011-11-17
Sample Preparation: 2011-11-17

Prep Method: S 5035
Analyzed By: AG
Prepared By: AG

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.75	mg/Kg	1	2.00	88	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			1.85	mg/Kg	1	2.00	92	70.6 - 179

Sample: 282205 - AH-3 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 86578 Date Analyzed: 2011-11-18 Analyzed By: AR
Prep Batch: 73447 Sample Preparation: 2011-11-14 Prepared By: AR

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

Sample: 282206 - AH-3 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 86578 Date Analyzed: 2011-11-18 Analyzed By: AR
Prep Batch: 73447 Sample Preparation: 2011-11-14 Prepared By: AR

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

Sample: 282207 - AH-3 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 86578 Date Analyzed: 2011-11-18 Analyzed By: AR
Prep Batch: 73447 Sample Preparation: 2011-11-14 Prepared By: AR

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

Sample: 282214 - AH-4 0-1'

Laboratory: Midland

Analysis: BTEX

QC Batch: 86475

Prep Batch: 73426

Analytical Method: S 8021B

Date Analyzed: 2011-11-15

Sample Preparation: 2011-11-15

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

Parameter		Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Qr,Qs	Qr,Qs	1	6.76	mg/Kg	100	0.0200
Toluene	Qr,Qs	Qr,Qs	1	108	mg/Kg	100	0.0200
Ethylbenzene	Qr,Qs	Qr,Qs	1	75.6	mg/Kg	100	0.0200
Xylene	Qr,Qs	Qr,Qs	1	148	mg/Kg	100	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			94.0	mg/Kg	100	100	94	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			116	mg/Kg	100	100	116	70.6 - 179

Sample: 282214 - AH-4 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 86578

Prep Batch: 73447

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-11-18

Sample Preparation: 2011-11-14

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U	U	<200	mg/Kg	150	4.00

Sample: 282214 - AH-4 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 86448

Prep Batch: 73404

Analytical Method: S 8015 D

Date Analyzed: 2011-11-14

Sample Preparation: 2011-11-14

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	1	9770	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	705	mg/Kg	5	100	705	53.5 - 147.1

Sample: 282214 - AH-4 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 86480
Prep Batch: 73426

Analytical Method: S 8015 D
Date Analyzed: 2011-11-15
Sample Preparation: 2011-11-15

Prep Method: S 5035
Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	4920	mg/Kg	100	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			94.6	mg/Kg	100	100	95	30 - 134.6
4-Bromofluorobenzene (4-BFB)			127	mg/Kg	100	100	127	22.4 - 149

Sample: 282215 - AH-4 1-1.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 86475
Prep Batch: 73426

Analytical Method: S 8021B
Date Analyzed: 2011-11-15
Sample Preparation: 2011-11-15

Prep Method: S 5035
Analyzed By: AG
Prepared By: AG

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			4.83	mg/Kg	5	5.00	97	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			4.75	mg/Kg	5	5.00	95	70.6 - 179

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Sample: 282215 - AH-4 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 86578 Date Analyzed: 2011-11-18 Analyzed By: AR
Prep Batch: 73447 Sample Preparation: 2011-11-14 Prepared By: AR

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

Sample: 282215 - AH-4 1-1.5'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 86569 Date Analyzed: 2011-11-17 Analyzed By: kg
Prep Batch: 73509 Sample Preparation: 2011-11-17 Prepared By: kg

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			108	mg/Kg	1	100	108	53.5 - 147.1

Sample: 282215 - AH-4 1-1.5'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 86480 Date Analyzed: 2011-11-15 Analyzed By: AG
Prep Batch: 73426 Sample Preparation: 2011-11-15 Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO			<10.0	mg/Kg	5	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			4.80	mg/Kg	5	5.00	96	30 - 134.6
4-Bromofluorobenzene (4-BFB)			4.56	mg/Kg	5	5.00	91	22.4 - 149

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Sample: 282216 - AH-4 2-2.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-11-18	Analyzed By:	AR
QC Batch:	86578	Sample Preparation:	2011-11-14	Prepared By:	AR
Prep Batch:	73447				

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

Sample: 282217 - AH-4 3-3.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-11-18	Analyzed By:	AR
QC Batch:	86578	Sample Preparation:	2011-11-14	Prepared By:	AR
Prep Batch:	73447				

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

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Method Blanks

Method Blank (1) QC Batch: 86448

QC Batch: 86448
Prep Batch: 73404

Date Analyzed: 2011-11-14
QC Preparation: 2011-11-14

Analyzed By: kg
Prepared By: kg

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<14.5	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			93.2	mg/Kg	1	100	93	52.7 - 133.8

Method Blank (1) QC Batch: 86475

QC Batch: 86475
Prep Batch: 73426

Date Analyzed: 2011-11-15
QC Preparation: 2011-11-15

Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.0118	mg/Kg	0.02
Toluene		1	<0.00600	mg/Kg	0.02
Ethylbenzene		1	<0.00850	mg/Kg	0.02
Xylene		1	<0.00613	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.92	mg/Kg	1	2.00	96	65.9 - 111.8
4-Bromofluorobenzene (4-BFB)			1.67	mg/Kg	1	2.00	84	48.4 - 123.1

Method Blank (1) QC Batch: 86480

QC Batch: 86480
Prep Batch: 73426

Date Analyzed: 2011-11-15
QC Preparation: 2011-11-15

Analyzed By: AG
Prepared By: AG

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Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	0.956	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.92	mg/Kg	1	2.00	96	67.6 - 150
4-Bromofluorobenzene (4-BFB)			1.58	mg/Kg	1	2.00	79	52.4 - 130

Method Blank (1) QC Batch: 86501

QC Batch: 86501
Prep Batch: 73447

Date Analyzed: 2011-11-16
QC Preparation: 2011-11-14

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 86561

QC Batch: 86561
Prep Batch: 73503

Date Analyzed: 2011-11-17
QC Preparation: 2011-11-17

Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.0118	mg/Kg	0.02
Toluene		1	<0.00600	mg/Kg	0.02
Ethylbenzene		1	<0.00850	mg/Kg	0.02
Xylene		1	<0.00613	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.71	mg/Kg	1	2.00	86	65.9 - 111.8
4-Bromofluorobenzene (4-BFB)			1.70	mg/Kg	1	2.00	85	48.4 - 123.1

Method Blank (1) QC Batch: 86562

QC Batch: 86562
Prep Batch: 73503

Date Analyzed: 2011-11-17
QC Preparation: 2011-11-17

Analyzed By: AG
Prepared By: AG

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Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	1.05	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.66	mg/Kg	1	2.00	83	67.6 - 150
4-Bromofluorobenzene (4-BFB)			1.57	mg/Kg	1	2.00	78	52.4 - 130

Method Blank (1) QC Batch: 86569

QC Batch: 86569
Prep Batch: 73509

Date Analyzed: 2011-11-17
QC Preparation: 2011-11-17

Analyzed By: kg
Prepared By: kg

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<14.5	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			114	mg/Kg	1	100	114	52.7 - 133.8

Method Blank (1) QC Batch: 86578

QC Batch: 86578
Prep Batch: 73447

Date Analyzed: 2011-11-18
QC Preparation: 2011-11-14

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 86599

QC Batch: 86599
Prep Batch: 73540

Date Analyzed: 2011-11-18
QC Preparation: 2011-11-18

Analyzed By: kg
Prepared By: kg

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			112	mg/Kg	1	100	112	52.7 - 133.8

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 86448
Prep Batch: 73404

Date Analyzed: 2011-11-14
QC Preparation: 2011-11-14

Analyzed By: kg
Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	259	mg/Kg	1	250	<14.5	104	64.5 - 146.9

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

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	231	mg/Kg	1	250	<14.5	92	64.5 - 146.9	11	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
n-Tricosane	97.8	88.5	mg/Kg	1	100	98	88	65.3 - 135.8

Laboratory Control Spike (LCS-1)

QC Batch: 86475
Prep Batch: 73426

Date Analyzed: 2011-11-15
QC Preparation: 2011-11-15

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.13	mg/Kg	1	2.00	<0.0118	106	77.4 - 121.7
Toluene		1	2.00	mg/Kg	1	2.00	<0.00600	100	88.6 - 121.6
Ethylbenzene		1	1.88	mg/Kg	1	2.00	<0.00850	94	74.3 - 117.9
Xylene		1	5.66	mg/Kg	1	6.00	<0.00613	94	73.4 - 118.8

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

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.23	mg/Kg	1	2.00	<0.0118	112	77.4 - 121.7	5	20
Toluene		1	2.14	mg/Kg	1	2.00	<0.00600	107	88.6 - 121.6	7	20
Ethylbenzene		1	2.01	mg/Kg	1	2.00	<0.00850	100	74.3 - 117.9	7	20
Xylene		1	6.08	mg/Kg	1	6.00	<0.00613	101	73.4 - 118.8	7	20

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

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Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.90	1.94	mg/Kg	1	2.00	95	97	65.5 - 116.7
4-Bromofluorobenzene (4-BFB)	1.87	1.92	mg/Kg	1	2.00	94	96	56.2 - 132.1

Laboratory Control Spike (LCS-1)

QC Batch: 86480
Prep Batch: 73426

Date Analyzed: 2011-11-15
QC Preparation: 2011-11-15

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	18.6	mg/Kg	1	20.0	<0.753	93	60.9 - 105.4

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	18.4	mg/Kg	1	20.0	<0.753	92	60.9 - 105.4	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)	1.98	1.97	mg/Kg	1	2.00	99	98	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.80	1.78	mg/Kg	1	2.00	90	89	56.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 86501
Prep Batch: 73447

Date Analyzed: 2011-11-16
QC Preparation: 2011-11-14

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			95.6	mg/Kg	1	100	<3.85	96	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			104	mg/Kg	1	100	<3.85	104	85 - 115	8	20

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

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Laboratory Control Spike (LCS-1)

QC Batch: 86561
Prep Batch: 73503

Date Analyzed: 2011-11-17
QC Preparation: 2011-11-17

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.99	mg/Kg	1	2.00	<0.0118	100	77.4 - 121.7
Toluene		1	1.91	mg/Kg	1	2.00	<0.00600	96	88.6 - 121.6
Ethylbenzene		1	1.80	mg/Kg	1	2.00	<0.00850	90	74.3 - 117.9
Xylene		1	5.41	mg/Kg	1	6.00	<0.00613	90	73.4 - 118.8

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.93	mg/Kg	1	2.00	<0.0118	96	77.4 - 121.7	3	20
Toluene		1	1.82	mg/Kg	1	2.00	<0.00600	91	88.6 - 121.6	5	20
Ethylbenzene		1	1.74	mg/Kg	1	2.00	<0.00850	87	74.3 - 117.9	3	20
Xylene		1	5.28	mg/Kg	1	6.00	<0.00613	88	73.4 - 118.8	2	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.63	1.58	mg/Kg	1	2.00	82	79	65.5 - 116.7
4-Bromofluorobenzene (4-BFB)	1.75	1.67	mg/Kg	1	2.00	88	84	56.2 - 132.1

Laboratory Control Spike (LCS-1)

QC Batch: 86562
Prep Batch: 73503

Date Analyzed: 2011-11-17
QC Preparation: 2011-11-17

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	19.5	mg/Kg	1	20.0	<0.753	98	60.9 - 105.4

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	18.7	mg/Kg	1	20.0	<0.753	94	60.9 - 105.4	4	20

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

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Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.70	1.63	mg/Kg	1	2.00	85	82	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.67	1.63	mg/Kg	1	2.00	84	82	56.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 86569
Prep Batch: 73509

Date Analyzed: 2011-11-17
QC Preparation: 2011-11-17

Analyzed By: kg
Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	286	mg/Kg	1	250	<14.5	114	64.5 - 146.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	287	mg/Kg	1	250	<14.5	115	64.5 - 146.9	0	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	121	121	mg/Kg	1	100	121	121	65.3 - 135.8

Laboratory Control Spike (LCS-1)

QC Batch: 86578
Prep Batch: 73447

Date Analyzed: 2011-11-18
QC Preparation: 2011-11-14

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			95.4	mg/Kg	1	100	<3.85	95	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			104	mg/Kg	1	100	<3.85	104	85 - 115	9	20

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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: 86599
Prep Batch: 73540

Date Analyzed: 2011-11-18
QC Preparation: 2011-11-18

Analyzed By: kg
Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	291	mg/Kg	1	250	<14.5	116	64.5 - 146.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	277	mg/Kg	1	250	<14.5	111	64.5 - 146.9	5	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	124	116	mg/Kg	1	100	124	116	65.3 - 135.8

Matrix Spike (MS-1) Spiked Sample: 282214

QC Batch: 86448
Prep Batch: 73404

Date Analyzed: 2011-11-14
QC Preparation: 2011-11-14

Analyzed By: kg
Prepared By: kg

Param		F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	Qs	Qs	1	9750	mg/Kg	5	250	9750	0	38.8 - 153.3

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

Param			MSD				Spike	Matrix	Rec.		RPD	
	F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit	
DRO	Qs	Qs	1	8780	mg/Kg	5	250	9750	0	38.8 - 153.3	10	20

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

			MS	MSD			Spike	MS	MSD	Rec.
Surrogate			Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	Qsr	Qsr	598	533	mg/Kg	5	100	598	533	54.6 - 149.8

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Matrix Spike (MS-1) Spiked Sample: 282338

QC Batch: 86475
Prep Batch: 73426

Date Analyzed: 2011-11-15
QC Preparation: 2011-11-15

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	Qs	Qs	1	3.00	mg/Kg	1	2.00	<0.0118	150 69.4 - 123.6
Toluene	Qs	Qs	1	2.99	mg/Kg	1	2.00	<0.00600	150 75.4 - 134.3
Ethylbenzene	Qs	Qs	1	3.04	mg/Kg	1	2.00	<0.00850	152 58.8 - 133.7
Xylene	Qs	Qs	1	9.16	mg/Kg	1	6.00	<0.00613	153 57 - 134.2

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	Qr	Qr	1	2.11	mg/Kg	1	2.00	<0.0118	106 69.4 - 123.6	35	20
Toluene	Qr	Qr	1	2.08	mg/Kg	1	2.00	<0.00600	104 75.4 - 134.3	36	20
Ethylbenzene	Qr	Qr	1	2.10	mg/Kg	1	2.00	<0.00850	105 58.8 - 133.7	37	20
Xylene	Qr	Qr	1	6.32	mg/Kg	1	6.00	<0.00613	105 57 - 134.2	37	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)	1.96	1.85	mg/Kg	1	2	98	92	79.4 - 141.1
4-Bromofluorobenzene (4-BFB)	2.06	1.96	mg/Kg	1	2	103	98	71 - 167

Matrix Spike (MS-1) Spiked Sample: 282338

QC Batch: 86480
Prep Batch: 73426

Date Analyzed: 2011-11-15
QC Preparation: 2011-11-15

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO			1	17.2	mg/Kg	1	20.0	2.56	73 61.8 - 114

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO			1	19.0	mg/Kg	1	20.0	2.56	82 61.8 - 114	10	20

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

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Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.94	1.92	mg/Kg	1	2	97	96	29.4 - 161.7
4-Bromofluorobenzene (4-BFB)	1.92	1.92	mg/Kg	1	2	96	96	37.3 - 162

Matrix Spike (MS-1) Spiked Sample: 282183

QC Batch: 86501
Prep Batch: 73447

Date Analyzed: 2011-11-16
QC Preparation: 2011-11-14

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2640	mg/Kg	25	2500	109	101	79.4 - 120.6

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2720	mg/Kg	25	2500	109	104	79.4 - 120.6	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: 282526

QC Batch: 86561
Prep Batch: 73503

Date Analyzed: 2011-11-17
QC Preparation: 2011-11-17

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.02	mg/Kg	1	2.00	<0.0118	101	69.4 - 123.6
Toluene		1	1.94	mg/Kg	1	2.00	<0.00600	97	75.4 - 134.3
Ethylbenzene		1	1.96	mg/Kg	1	2.00	<0.00850	98	58.8 - 133.7
Xylene		1	5.91	mg/Kg	1	6.00	0.0725	97	57 - 134.2

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

Param	F	C	MSD		Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
			Result	Units							
Benzene	Qr, Qs	Qr, Qs	1	2.53 mg/Kg	1	2.00	<0.0118	126	69.4 - 123.6	22	20
Toluene	Qr	Qr	1	2.44 mg/Kg	1	2.00	<0.00600	122	75.4 - 134.3	23	20

continued ...

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matrix spikes continued ...

Param	F	C	MSD		Dil.	Spike	Matrix	Rec.	Rec. Limit	RPD	
			Result	Units		Amount	Result			RPD	Limit
Ethylbenzene	Qr	Qr	1	2.49 mg/Kg	1	2.00	<0.00850	124	58.8 - 133.7	24	20
Xylene	Qr	Qr	1	7.54 mg/Kg	1	6.00	0.0725	124	57 - 134.2	24	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)	1.97	1.87	mg/Kg	1	2	98	94	79.4 - 141.1
4-Bromofluorobenzene (4-BFB)	2.11	1.96	mg/Kg	1	2	106	98	71 - 167

Matrix Spike (MS-1) Spiked Sample: 282525

QC Batch: 86562
Prep Batch: 73503

Date Analyzed: 2011-11-17
QC Preparation: 2011-11-17

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	25.4	mg/Kg	1	20.0	3.76	108	61.8 - 114

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

Param		F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	qr	Qr	1	19.7	mg/Kg	1	20.0	3.76	80	61.8 - 114	25	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)	2.36	2.83	mg/Kg	1	2	118	142	29.4 - 161.7
4-Bromofluorobenzene (4-BFB)	2.46	2.86	mg/Kg	1	2	123	143	37.3 - 162

Matrix Spike (MS-1) Spiked Sample: 282526

QC Batch: 86569
Prep Batch: 73509

Date Analyzed: 2011-11-17
QC Preparation: 2011-11-17

Analyzed By: kg
Prepared By: kg

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	256	mg/Kg	1	250	<14.5	102	38.8 - 153.3

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

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Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	209	mg/Kg	1	250	<14.5	84	38.8 - 153.3	20	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	104	97.6	mg/Kg	1	100	104	98	54.6 - 149.8

Matrix Spike (MS-1) Spiked Sample: 282217

QC Batch: 86578
Prep Batch: 73447

Date Analyzed: 2011-11-18
QC Preparation: 2011-11-14

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10100	mg/Kg	100	10000	<385	101	79.4 - 120.6

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			10500	mg/Kg	100	10000	<385	105	79.4 - 120.6	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: 282642

QC Batch: 86599
Prep Batch: 73540

Date Analyzed: 2011-11-18
QC Preparation: 2011-11-18

Analyzed By: kg
Prepared By: kg

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	337	mg/Kg	1	250	62.7	110	38.8 - 153.3

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	312	mg/Kg	1	250	62.7	100	38.8 - 153.3	8	20

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

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Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	117	100	mg/Kg	1	100	117	100	54.6 - 149.8

Calibration Standards

Standard (CCV-1)

QC Batch: 86448

Date Analyzed: 2011-11-14

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	258	103	80 - 120	2011-11-14

Standard (CCV-2)

QC Batch: 86448

Date Analyzed: 2011-11-14

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	256	102	80 - 120	2011-11-14

Standard (CCV-1)

QC Batch: 86475

Date Analyzed: 2011-11-15

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.0990	99	80 - 120	2011-11-15
Toluene		1	mg/Kg	0.100	0.0947	95	80 - 120	2011-11-15
Ethylbenzene		1	mg/Kg	0.100	0.0915	92	80 - 120	2011-11-15
Xylene		1	mg/Kg	0.300	0.275	92	80 - 120	2011-11-15

Standard (CCV-2)

QC Batch: 86475

Date Analyzed: 2011-11-15

Analyzed By: AG

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.103	103	80 - 120	2011-11-15
Toluene		1	mg/Kg	0.100	0.0971	97	80 - 120	2011-11-15
Ethylbenzene		1	mg/Kg	0.100	0.0930	93	80 - 120	2011-11-15
Xylene		1	mg/Kg	0.300	0.279	93	80 - 120	2011-11-15

Standard (CCV-3)

QC Batch: 86475

Date Analyzed: 2011-11-15

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.103	103	80 - 120	2011-11-15
Toluene		1	mg/Kg	0.100	0.0983	98	80 - 120	2011-11-15
Ethylbenzene		1	mg/Kg	0.100	0.0927	93	80 - 120	2011-11-15
Xylene		1	mg/Kg	0.300	0.280	93	80 - 120	2011-11-15

Standard (CCV-1)

QC Batch: 86480

Date Analyzed: 2011-11-15

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.06	106	80 - 120	2011-11-15

Standard (CCV-2)

QC Batch: 86480

Date Analyzed: 2011-11-15

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.09	109	80 - 120	2011-11-15

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Standard (CCV-3)

QC Batch: 86480

Date Analyzed: 2011-11-15

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.15	115	80 - 120	2011-11-15

Standard (ICV-1)

QC Batch: 86501

Date Analyzed: 2011-11-16

Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2011-11-16

Standard (CCV-1)

QC Batch: 86501

Date Analyzed: 2011-11-16

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2011-11-16

Standard (CCV-1)

QC Batch: 86561

Date Analyzed: 2011-11-17

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.107	107	80 - 120	2011-11-17
Toluene		1	mg/Kg	0.100	0.100	100	80 - 120	2011-11-17
Ethylbenzene		1	mg/Kg	0.100	0.0944	94	80 - 120	2011-11-17
Xylene		1	mg/Kg	0.300	0.288	96	80 - 120	2011-11-17

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Standard (CCV-2)

QC Batch: 86561

Date Analyzed: 2011-11-17

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.0969	97	80 - 120	2011-11-17
Toluene		1	mg/Kg	0.100	0.0905	90	80 - 120	2011-11-17
Ethylbenzene		1	mg/Kg	0.100	0.0833	83	80 - 120	2011-11-17
Xylene		1	mg/Kg	0.300	0.253	84	80 - 120	2011-11-17

Standard (CCV-1)

QC Batch: 86562

Date Analyzed: 2011-11-17

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.11	111	80 - 120	2011-11-17

Standard (CCV-2)

QC Batch: 86562

Date Analyzed: 2011-11-17

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.11	111	80 - 120	2011-11-17

Standard (CCV-1)

QC Batch: 86569

Date Analyzed: 2011-11-17

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	283	113	80 - 120	2011-11-17

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Standard (CCV-2)

QC Batch: 86569

Date Analyzed: 2011-11-17

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	286	114	80 - 120	2011-11-17

Standard (ICV-1)

QC Batch: 86578

Date Analyzed: 2011-11-18

Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	102	102	85 - 115	2011-11-18

Standard (CCV-1)

QC Batch: 86578

Date Analyzed: 2011-11-18

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	98.4	98	85 - 115	2011-11-18

Standard (CCV-1)

QC Batch: 86599

Date Analyzed: 2011-11-18

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	283	113	80 - 120	2011-11-18

Standard (CCV-2)

QC Batch: 86599

Date Analyzed: 2011-11-18

Analyzed By: kg

Report Date: November 21, 2011
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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	276	110	80 - 120	2011-11-18

Appendix

Report Definitions

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

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-10-TX	Midland

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

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

WO# 1111123

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: <u>2061</u>		SITE MANAGER: <u>Iké Tavares</u>			
PROJECT NO.: <u>114-6401038</u>		PROJECT NAME: <u>6061 Falcon Federal to 1 TB</u>			
LAB I.D. NUMBER	DATE	TIME	SAMPLE IDENTIFICATION		
			MATRIX	COMP.	GRAB
<u>202184</u>	<u>2011</u>	<u>11/9</u>	<u>5</u>	<u>X</u>	<u>1</u>
<u>185</u>					
<u>186</u>					
<u>187</u>					
<u>188</u>					
<u>189</u>					
<u>190</u>					
<u>191</u>					
<u>192</u>					
<u>193</u>					

NUMBER OF CONTAINERS	PRELIMINARY METHOD	DATE	TIME
1	HCL	<u>11/11</u>	<u>13:20</u>
	HNO3		
	ICE		
	NONE		

PAH 8270	TCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCRP Metals Ag As Ba Cd Vr Pd Hg Se	TCRP Volatiles	TCRP Semi Volatiles	RCI	GC/MS Vol. 8240/8260/824	GC/MS Semi. Vol. 8270/825	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
<u>PH 8015 MDD. TX1005 (Ext. to C35)</u>														
<u>BTEX 8021B</u>														
<u>PH 8015 MDD. TX1005 (Ext. to C35)</u>														

RELINQUISHED BY: (Signature) <u>[Signature]</u>	RECEIVED BY: (Signature) <u>[Signature]</u>	DATE: <u>11-11-11</u>	TIME: <u>13:20</u>
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE:	TIME:
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE:	TIME:
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE:	TIME:
RECEIVING LABORATORY: <u>Trace</u>	RECEIVED BY: (Signature)	DATE:	TIME:
ADDRESS: <u>Midland</u>	STATE: <u>TX</u>	ZIP: <u>79705</u>	DATE:
CONTACT: <u>Iké Tavares</u>	PHONE: <u>682-4559</u>		

SAMPLE CONDITION WHEN RECEIVED: It total TPH exceeds 5000 mg/kg run deeper samples

REMARKS: tests Midland

W0 #1111123

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 Tavaroz				
PROJECT NO.: 114-001038		PROJECT NAME: COG / Falcon Federal #1 TB				
LAB I.D. NUMBER	DATE	TIME	SAMPLE IDENTIFICATION			
			MATRIX	COMP	GRAB	
194	11/9		S		X	AH-2 0-1'
195						AH-2 1-1.5'
196						AH-2 2-2.5'
197						AH-2 3-3.5'
198						AH-2 4-4.5'
199						AH-2 5-5.5'
200						AH-2 6-6.5'
201						AH-2 7-7.5'
202						AH-2 8-8.5'
203						AH-2 9-9.5'

RELINQUISHED BY: (Signature)	Date: 11/11/11	Time: 1320	RECEIVED BY: (Signature)	Date: 11/11/11	Time: 1320
RELINQUISHED BY: (Signature)	Date:	Time:	RECEIVED BY: (Signature)	Date:	Time:
RELINQUISHED BY: (Signature)	Date:	Time:	RECEIVED BY: (Signature)	Date:	Time:
RECEIVING LABORATORY:	11/11/11				
ADDRESS: Midland	STATE: TX	ZIP:	PHONE:	DATE:	
CONTACT:					

CLIENT NAME: COG	PROJECT NO.: 114-001038	PROJECT NAME: COG / Falcon Federal #1 TB	DATE: 11/11/11	TIME: 1320
SAMPLE CONDITION WHEN RECEIVED: 5.9% intact			REMARKS: If total TPH exceeds mg/kg run deeper samples	

CLIENT NAME: COG	PROJECT NO.: 114-001038	PROJECT NAME: COG / Falcon Federal #1 TB	DATE: 11/11/11	TIME: 1320
SAMPLE CONDITION WHEN RECEIVED: 5.9% intact			REMARKS: If total TPH exceeds mg/kg run deeper samples	

CLIENT NAME: COG	PROJECT NO.: 114-001038	PROJECT NAME: COG / Falcon Federal #1 TB	DATE: 11/11/11	TIME: 1320
SAMPLE CONDITION WHEN RECEIVED: 5.9% intact			REMARKS: If total TPH exceeds mg/kg run deeper samples	

CLIENT NAME: COG	PROJECT NO.: 114-001038	PROJECT NAME: COG / Falcon Federal #1 TB	DATE: 11/11/11	TIME: 1320
SAMPLE CONDITION WHEN RECEIVED: 5.9% intact			REMARKS: If total TPH exceeds mg/kg run deeper samples	

CLIENT NAME: COG	PROJECT NO.: 114-001038	PROJECT NAME: COG / Falcon Federal #1 TB	DATE: 11/11/11	TIME: 1320
SAMPLE CONDITION WHEN RECEIVED: 5.9% intact			REMARKS: If total TPH exceeds mg/kg run deeper samples	

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

Analysis Request of Chain of Custody Record

ANALYSIS REQUEST
(Circle or Specify Method No.)

TETRA TECH

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

[illegible]

REMARKS:	total	kg	run deeper samples
If 17th exceeds		kg	

SAMPLE CONDITION WHEN RECEIVED:

Lab # 1111123

Analysis Request of Chain of Custody Record

PAGE: 4 OF: 4

ANALYSIS REQUEST
(Circle or Specify Method No.)



TETRA TECH

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

CLIENT NAME: 001		SITE MANAGER: Ik Tavariz	
PROJECT NO.: 14-4101038		PROJECT NAME: COG/ Falcon Federal #1 TIS	
LAB I.D. NUMBER	DATE	TIME	SAMPLE IDENTIFICATION
202214	11/4	2011	LA 6, NM
215			
216			
217			
218			
219			
220			
221			
222			
223			

NUMBER OF CONTAINERS	1
PREPARED (Y/N)	
PRESERVATIVE METHOD	
HCL	
HNO3	
ICE	X
NONE	

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 Cr Pb 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	X
Gamma Spec.	
Alpha Beta (Al)	
PLM (Asbestos)	
Major Anions/Cations, pH, TDS	

RECEIVING LABORATORY: **11/14/11**
ADDRESS: **Midland** STATE: **TX** ZIP: PHONE: DATE:
CONTACT:

SAMPLE CONDITION WHEN RECEIVED: **5.96 intact**

REMARKS: **If total TPH exceeds mg/kg run deeper samples**

RESULTS BY: **Ik Tavariz**

RUSH CHARGES AUTHORIZED: Yes No

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