

SITE INFORMATION

Report Type: Work Plan

General Site Information:

Site:	BKU Central Tank Battery					
Company:	COG Operating LLC					
Section, Township and Range	Unit P	Sec 23	T17S	R29E		
Lease Number:	API-30-015-29809					
County:	Eddy County					
GPS:	32.81926° N			104.02614° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	In Loco Hills, from the intersection of CR 217 and Hwy 82, travel west on 82 (2.1 miles), turn south (300 feet), turn left (400 feet) to location.					

Release Data:

Date Released:	12/3/2011
Type Release:	Oil
Source of Contamination:	Oil Tank
Fluid Released:	120 bbls
Fluids Recovered:	115 bbls

Official Communication:

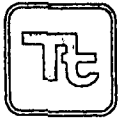
Name:	Pat Ellis	Ike Tavaréz
Company:	COG Operating, LLC	Tetra Tech
Address:	550 W. Texas Ave. Ste. 1300	1910 N. Big Spring
P.O. Box		
City:	Midland Texas, 79701	Midland, Texas
Phone number:	(432) 686-3023	(432) 682-4559
Fax:	(432) 684-7137	
Email:	pellis@conchoresources.com	ike.tavarez@tetrattech.com

Ranking Criteria

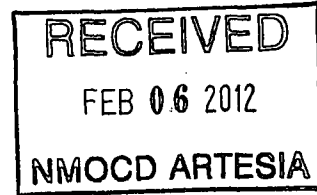
Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	0
Wellhead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
Total Ranking Score:		0

Acceptable Soil RRAL (mg/kg)

Benzene	Total BTEX	TPH
10	50	5,000



TETRA TECH



January 19, 2012

Mr. Mike Bratcher
Environmental Engineer Specialist
Oil Conservation Division, District 2
1301 West Grand Avenue
Artesia, New Mexico 88210

Re: Revised - Work Plan for the COG Operating LLC., BKU Central Tank Battery, Unit P, Section 24, Township 17 South, Range 29 East, Eddy County, New Mexico.

Mr. Bratcher:

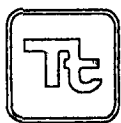
Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the BKU Central Tank Battery located in Unit P, Section 24, Township 17 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.81926°, W 104.02614°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on December 3, 2011, and released approximately ten (120) barrels of oil from a hole in an oil tank. To alleviate the problem, COG personnel have isolated the tank and repaired it. One hundred fifteen (115) barrels of standing fluids were recovered. The spill was contained within the firewalls of the tank battery, measuring 105' X 165'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 23. According to the NMOCD groundwater map, the depth to groundwater in this area is approximately 125' below surface. The groundwater data is shown in Figure B.



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 December 20, 2011, Tetra Tech personnel inspected and sampled the spill area. Seven (7) auger holes (AH-1 through AH-7) 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 results of the sampling are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, none of the samples exceeded the TPH RRAL, AH-2, AH-3 and AH-4 were above the RRAL for total BTEX but declined at 0-1', showing concentrations of 196 mg/kg, 118 mg/kg and 109 mg/kg, respectively. The deeper samples at 1.0-1.5' declined below the RRAL. A shallow chloride impact was detected in the areas of AH-1, AH-4 and AH-7, but declined at a depth of 1.0-1.5' below surface.

Work Plan

COG proposes to remove impacted material as highlighted (green) in Table 1 and shown on Figure 4. 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.

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.

If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call me at (432) 682-4559.

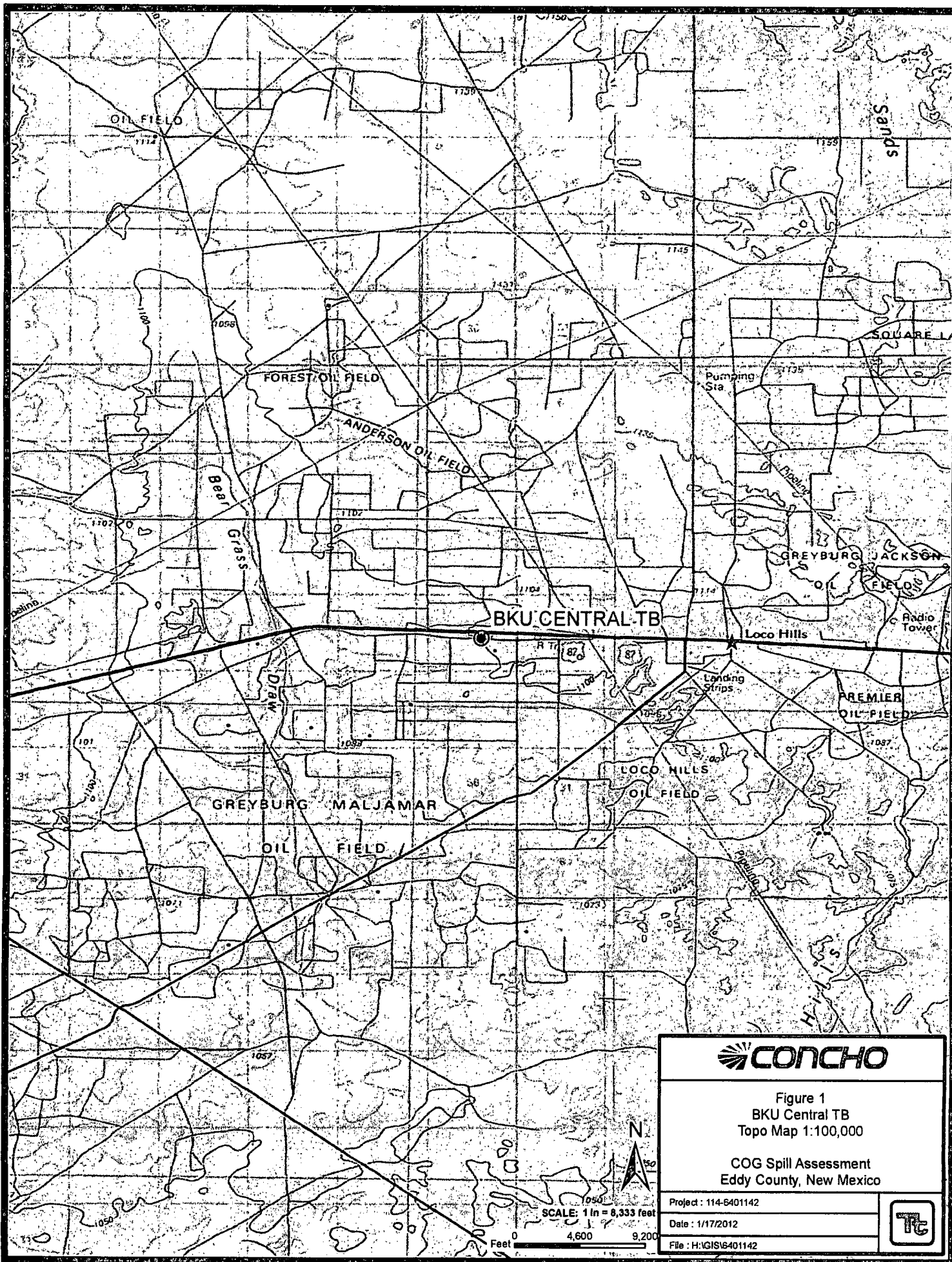
Respectfully submitted,
TETRA TECH

A handwritten signature in black ink, appearing to read 'Ike Tavaraz', written over the printed name and title.

Ike Tavaraz
Project Manager

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

Figures



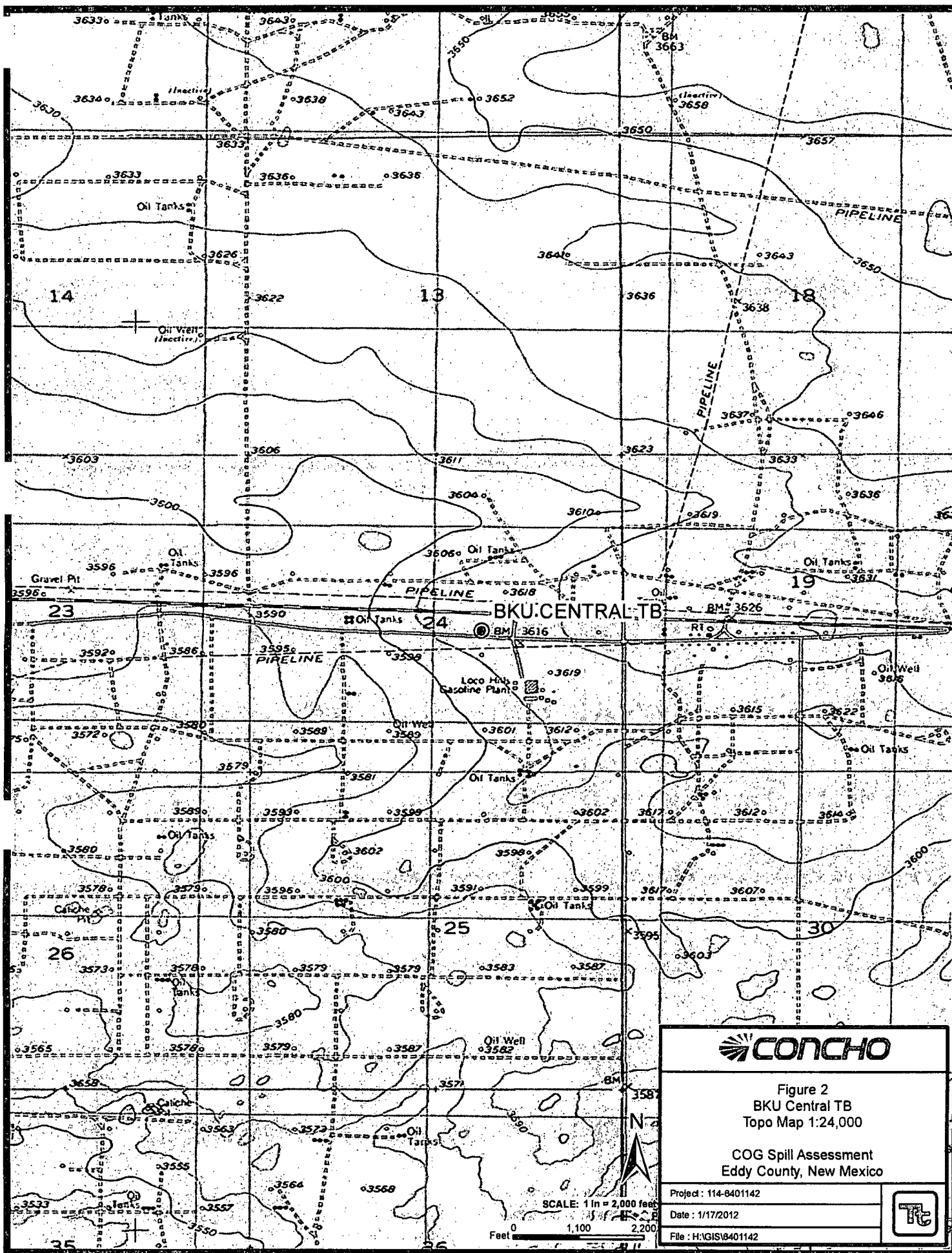


Figure 2
BKU Central TB
Topo Map 1:24,000

COG Spill Assessment
Eddy County, New Mexico

Project : 114-8401142

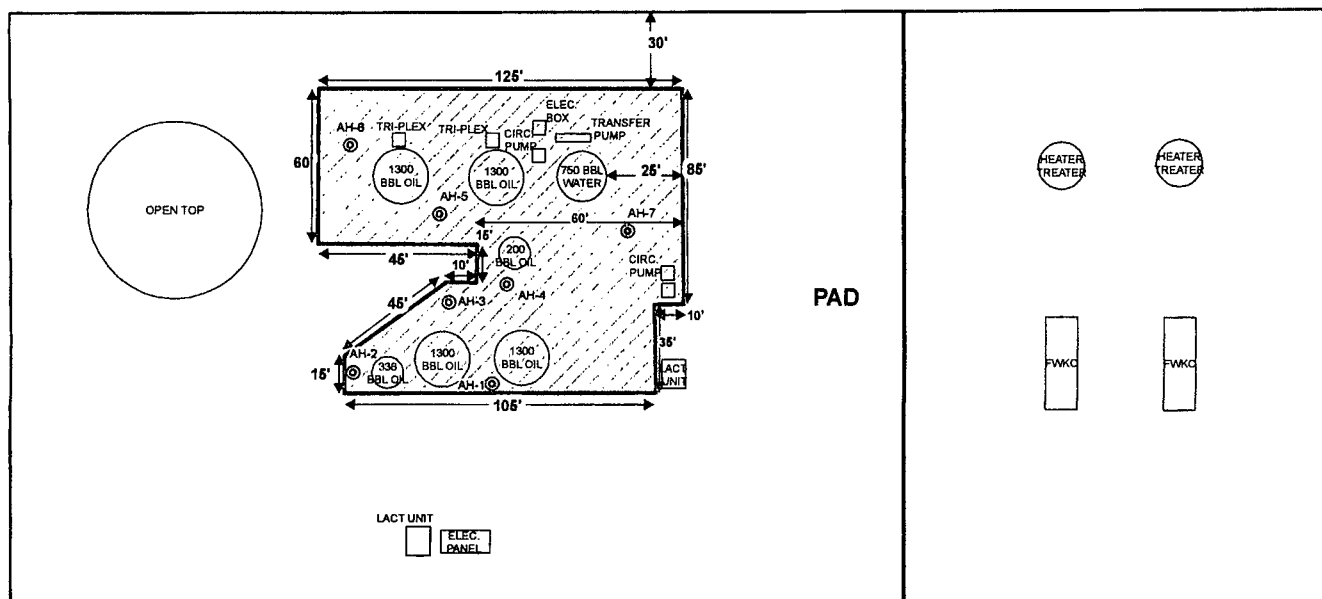
Date : 1/17/2012

File : H:\GIS\8401142



US HIGHWAY 82

PASTURE



LEASE ROAD

EXPLANATION

- ⊙ AUGER HOLE SAMPLE LOCATIONS
- SPILL AREA



Figure 3

BKU Central TB
Spill Assessment Map

COG Spill Assessment
Eddy County, New Mexico

Project : 114-6401142

Date : 1/17/2012

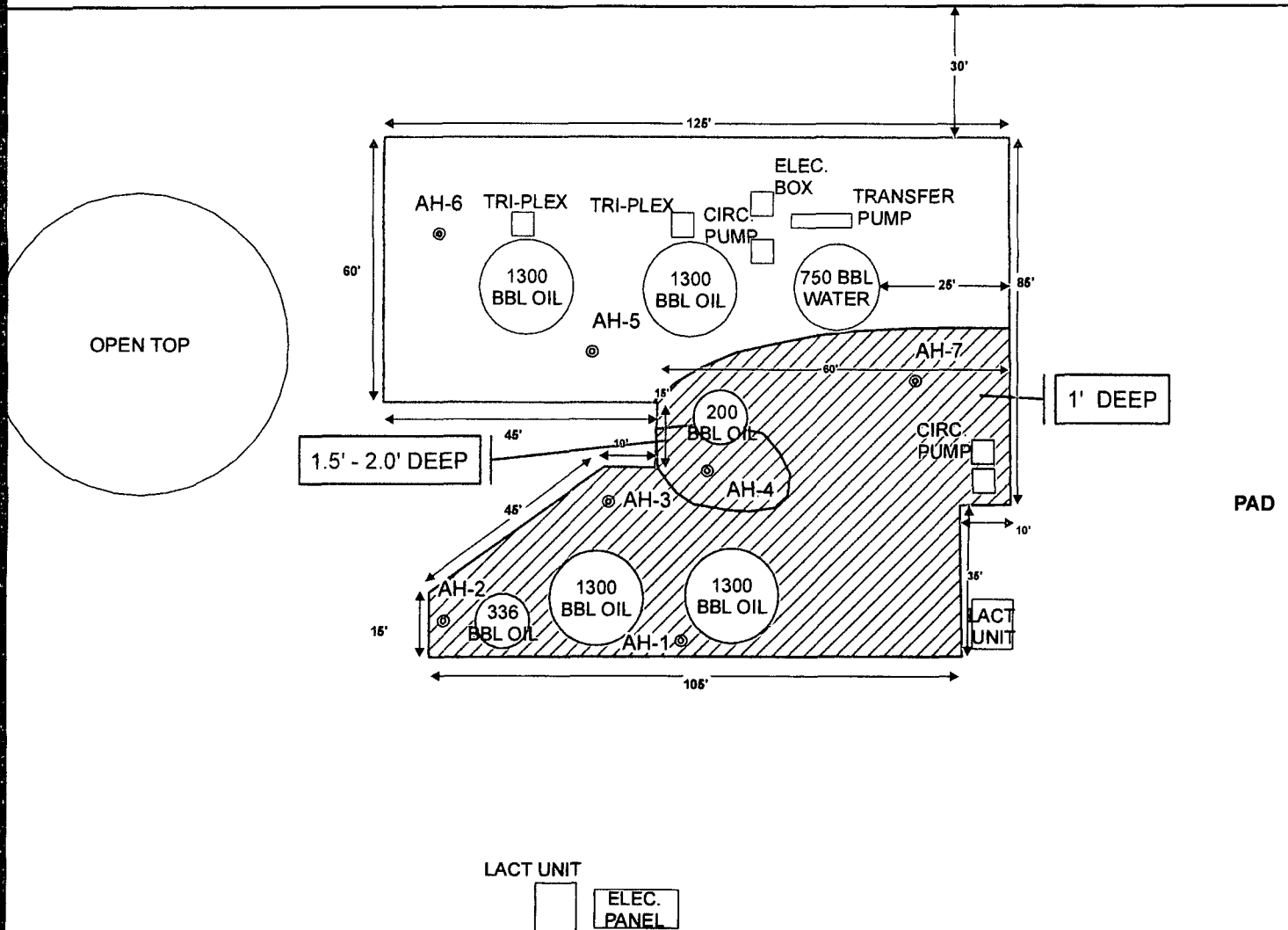
File : HIGIS6401142



SCALE: 1 IN = 74 FEET

Feet 0 40 80

PASTURE



LEASE ROAD



Figure 4

BKU Central TB
Proposed Excavation Area & Depths Map

COG Spill Assessment
Eddy County, New Mexico

Project : 114-6401142

Date : 1/17/2012

File : H:\GIS\6401142



EXPLANATION

⊙ AUGER HOLE SAMPLE LOCATIONS

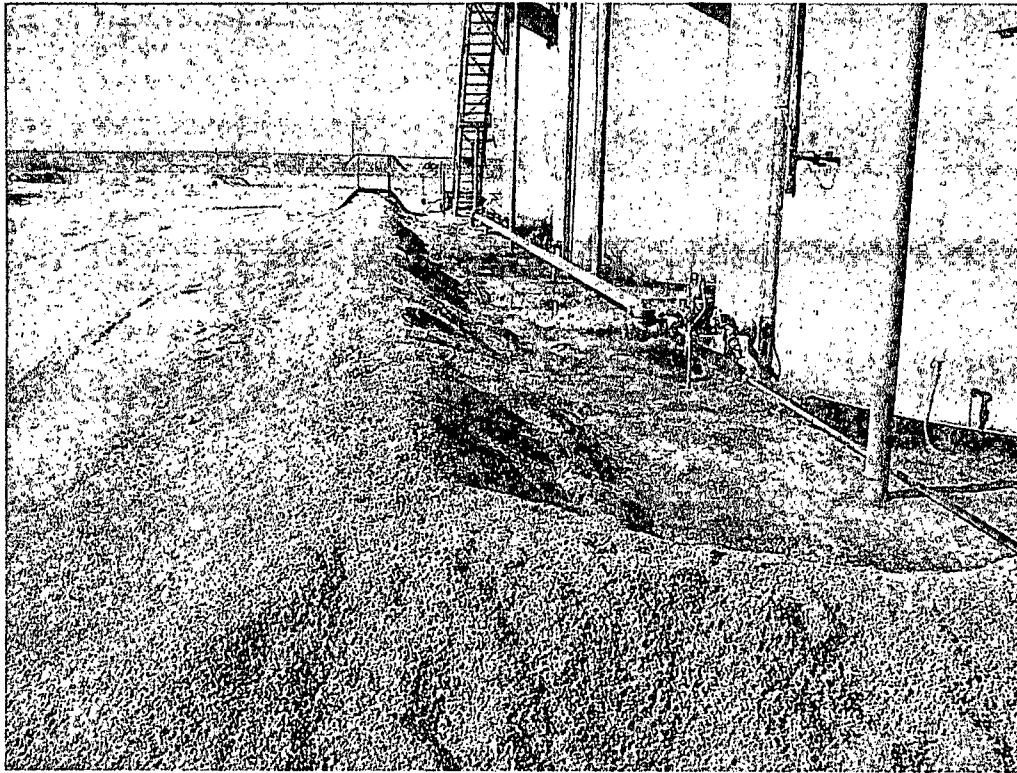
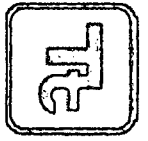
PROPOSED EXCAVATION DEPTHS

SCALE: 1 IN = 38 FEET

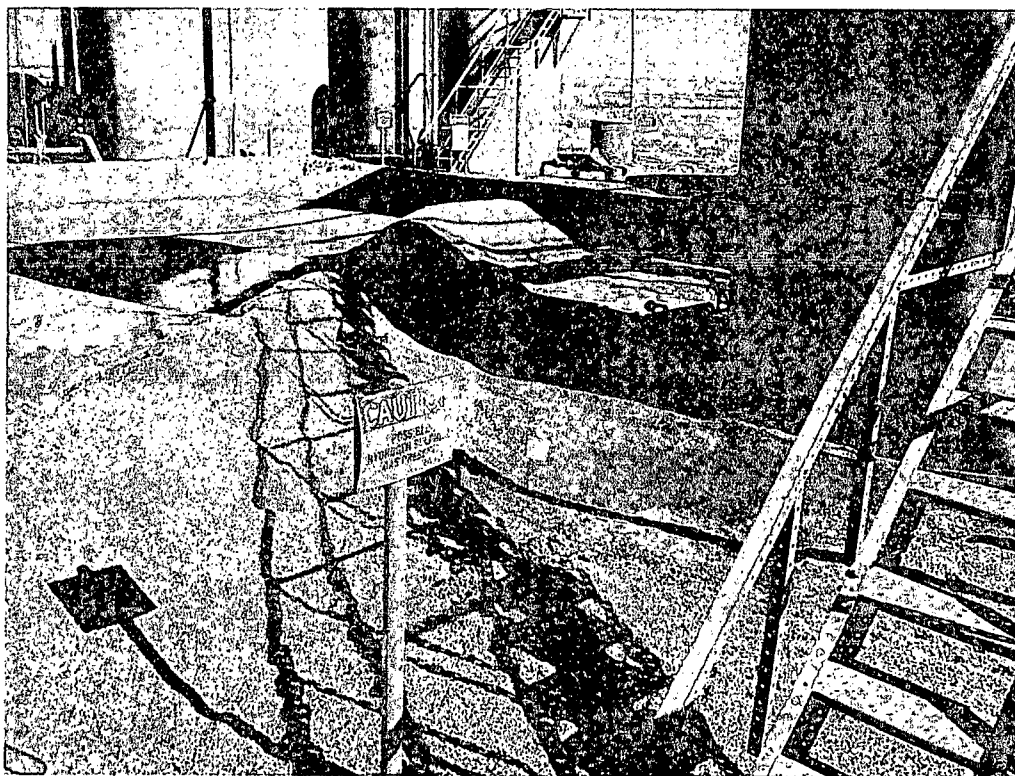
0 10 20
Feet



Photos



View West – AH-1

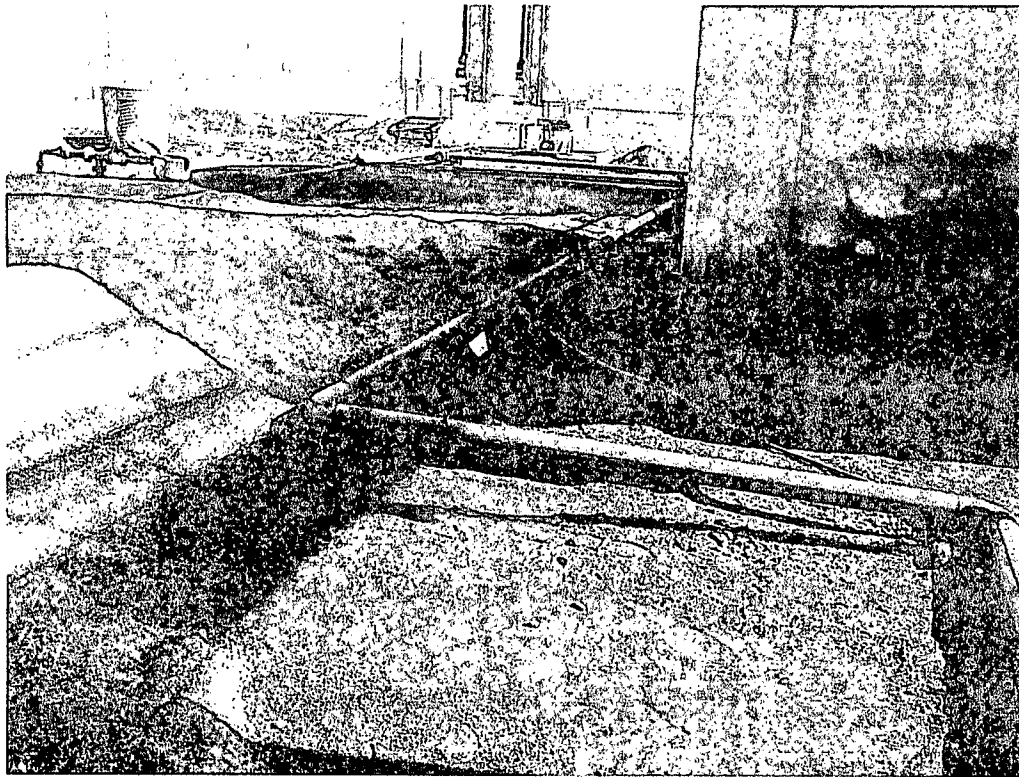


View North – AH-2

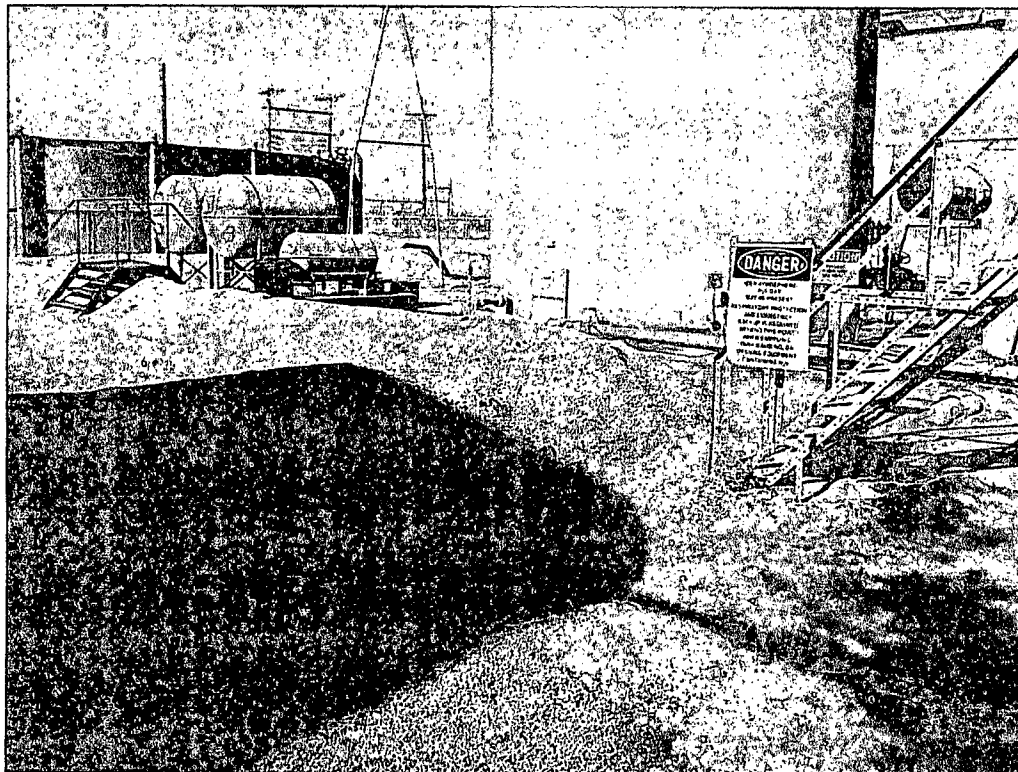
COG Operating LLC
BKU Central TB
Eddy County, New Mexico



TETRA TECH



View North East – AH-3, 4 and 7



View North West – AH-5 and 6

Tables

Table 1
COG Operating LLC
BKU Central Tank Battery
Eddy County, New Mexico

[illegible]

Table 1
COG Operating LLC
BKU Central 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)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total						
AH-5	12/20/2011	0-1	-	X		192	<50.0	192	<0.100	<0.100	0.120	0.140	0.260	258
	"	1-1.5	-	X		-	-	-	-	-	-	-	-	214
	"	2-2.5	-	X		-	-	-	-	-	-	-	-	238
	"	3-3.5	-	X		-	-	-	-	-	-	-	-	248
AH-6	12/20/2011	0-1	-	X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	311
	"	1-1.5	-	X		-	-	-	-	-	-	-	-	<200
	"	2-2.5	-	X		-	-	-	-	-	-	-	-	250
	"	3-3.5	-	X		-	-	-	-	-	-	-	-	<200
AH-7	12/20/2011	0-1	-	X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,970
	"	1-1.5	-	X		-	-	-	-	-	-	-	-	791
	"	2-2.5	-	X		-	-	-	-	-	-	-	-	861
	"	3-3.5	-	X		-	-	-	-	-	-	-	-	871
	"	4-4.5	-	X		-	-	-	-	-	-	-	-	716

(--) Not Analyzed

 Proposed Excavation Depths

(BEB) Below Excavation Bottom

Appendix A

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on back
side of form

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	COG OPERATING LLC	Contact	Pat Ellis
Address	550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	BKU Central Tank Battery	Facility Type	Tank Battery
Surface Owner	Federal	Mineral Owner	
		Lease No.	(30-015-29809)

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	23	17S	29E					Eddy

Latitude 32 49.161 Longitude 104 01.546

NATURE OF RELEASE

Type of Release	Oil	Volume of Release	120bbls	Volume Recovered	115bbls
Source of Release	Oil tank	Date and Hour of Occurrence	12/03/2011	Date and Hour of Discovery	12/03/2011 6:00 a.m.
Was Immediate Notice Given?	☒ Yes ☐ No ☐ Not Required	If YES, To Whom?	Mike Bratcher-OCD Jim Amos-BLM Terry Gregston-BLM		
By Whom?	Josh Russo	Date and Hour	12/05/2011 8:48 a.m.		
Was a Watercourse Reached?	☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.*

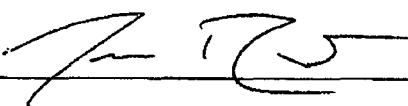
Describe Cause of Problem and Remedial Action Taken.*

A hole developed in an oil tank at the facility causing the release. The tank was isolated and has been prepared for repairs.

Describe Area Affected and Cleanup Action Taken.*

Initially 120bbls of crude oil were released from the oil tank with the hole in it. We were able to recover 115bbls with a vacuum truck. The entire release was completely contained inside the facility walls of the tank battery. All free fluid has been recovered and the contaminated soil will be scraped and hauled to a 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: 12/12/2011 Phone: 432-212-2399			

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - BKU Central Tank Battery
Eddy County, New Mexico

16 South 28 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

16 South 29 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
110	30	29	28	27	26
31	32	33	34	35	36

16 South 30 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

17 South 28 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	79	26	25
31	32	33	53	35	36

17 South 29 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	SITE	25
31	32	33	34	35	36

17 South 30 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 28 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	65	36

18 South 29 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 30 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
-  Site Location - State S-19

Appendix C

Summary Report

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

Report Date: January 5, 2012

Work Order: 11122302



Project Location: Eddy Co., NM
Project Name: COG/BKU Central Tank Battery
Project Number: 114-6401142

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
285134	AH-1 0-1'	soil	2011-12-20	00:00	2011-12-22
285135	AH-1 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285136	AH-1 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285137	AH-1 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285138	AH-2 0-1'	soil	2011-12-20	00:00	2011-12-22
285139	AH-2 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285140	AH-2 2.-2.5'	soil	2011-12-20	00:00	2011-12-22
285141	AH-2 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285142	AH-2 4-4.5'	soil	2011-12-20	00:00	2011-12-22
285143	AH-3 0-1'	soil	2011-12-20	00:00	2011-12-22
285144	AH-3 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285145	AH-3 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285146	AH-3 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285147	AH-3 4-4.5'	soil	2011-12-20	00:00	2011-12-22
285148	AH-3 5-5.5'	soil	2011-12-20	00:00	2011-12-22
285149	AH-4 0-1'	soil	2011-12-20	00:00	2011-12-22
285150	AH-4 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285151	AH-4 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285152	AH-4 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285153	AH-4 4-4.5'	soil	2011-12-20	00:00	2011-12-22
285154	AH-5 0-1'	soil	2011-12-20	00:00	2011-12-22
285155	AH-5 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285156	AH-5 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285157	AH-5 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285158	AH-6 0-1'	soil	2011-12-20	00:00	2011-12-22
285159	AH-6 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285160	AH-6 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285161	AH-6 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285162	AH-7 0-1'	soil	2011-12-20	00:00	2011-12-22
285163	AH-7 1-1.5'	soil	2011-12-20	00:00	2011-12-22

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
285164	AH-7 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285165	AH-7 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285166	AH-7 4-4.5'	soil	2011-12-20	00:00	2011-12-22

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)
285134 - AH-1 0-1'	0.724	2.43	1.59	1.85	310	107 _{Qr,Qs}
285138 - AH-2 0-1'	17.6	78.8	42.4	57.5	681	2430 _{Qs}
285139 - AH-2 1-1.5'	<0.0200	<0.0200	<0.0200	<0.0200		
285143 - AH-3 0-1'	2.12	38.3	31.9	45.2	1040	2540 _{Qs}
285144 - AH-3 1-1.5'	<0.0200	<0.0200	<0.0200	<0.0200		
285149 - AH-4 0-1'	7.68	41.6	29.6	30.5	1300	2960 _{Qs}
285150 - AH-4 1-1.5'	<0.100	0.482	0.509	0.910		
285154 - AH-5 0-1'	<0.100 ¹ _{Qr}	<0.100 _{Qr,Qs}	0.120 _{Qr,Qs}	0.140 _{Qr,Qs}	<50.0	192 _{Qr,Qs}
285158 - AH-6 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00 _{Qr,Qs}
285162 - AH-7 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00 _{Qr,Qs}

Sample: 285134 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		2100	mg/Kg	4

Sample: 285135 - AH-1 1-1.5'

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

Sample: 285136 - AH-1 2-2.5'

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

Sample: 285137 - AH-1 3-3.5'

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

Sample: 285138 - AH-2 0-1'

¹Sample dilution due to hydrocarbons.

Param	Flag	Result	Units	RL
Chloride		276	mg/Kg	4

Sample: 285139 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		420	mg/Kg	4

Sample: 285140 - AH-2 2.-2.5'

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

Sample: 285141 - AH-2 3-3.5'

Param	Flag	Result	Units	RL
Chloride		240	mg/Kg	4

Sample: 285142 - AH-2 4-4.5'

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

Sample: 285143 - AH-3 0-1'

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

Sample: 285144 - AH-3 1-1.5'

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

Sample: 285145 - AH-3 2-2.5'

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

Sample: 285146 - AH-3 3-3.5'

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

Sample: 285147 - AH-3 4-4.5'

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

Sample: 285148 - AH-3 5-5.5'

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

Sample: 285149 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		2300	mg/Kg	4

Sample: 285150 - AH-4 1-1.5'

Param	Flag	Result	Units	RL
Chloride		2140	mg/Kg	4

Sample: 285151 - AH-4 2-2.5'

Param	Flag	Result	Units	RL
Chloride		1010	mg/Kg	4

Sample: 285152 - AH-4 3-3.5'

Param	Flag	Result	Units	RL
Chloride		749	mg/Kg	4

Sample: 285153 - AH-4 4-4.5'

Param	Flag	Result	Units	RL
Chloride		938	mg/Kg	4

Sample: 285154 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		258	mg/Kg	4

Sample: 285155 - AH-5 1-1.5'

Param	Flag	Result	Units	RL
Chloride		214	mg/Kg	4

Sample: 285156 - AH-5 2-2.5'

Param	Flag	Result	Units	RL
Chloride		238	mg/Kg	4

Sample: 285157 - AH-5 3-3.5'

Param	Flag	Result	Units	RL
Chloride		248	mg/Kg	4

Sample: 285158 - AH-6 0-1'

Param	Flag	Result	Units	RL
Chloride		311	mg/Kg	4

Sample: 285159 - AH-6 1-1.5'

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

Sample: 285160 - AH-6 2-2.5'

Param	Flag	Result	Units	RL
Chloride		250	mg/Kg	4

Sample: 285161 - AH-6 3-3.5'

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

Sample: 285162 - AH-7 0-1'

Param	Flag	Result	Units	RL
Chloride		2970	mg/Kg	4

Sample: 285163 - AH-7 1-1.5'

Param	Flag	Result	Units	RL
Chloride		791	mg/Kg	4

Sample: 285164 - AH-7 2-2.5'

Param	Flag	Result	Units	RL
Chloride		861	mg/Kg	4

Sample: 285165 - AH-7 3-3.5'

Param	Flag	Result	Units	RL
Chloride		871	mg/Kg	4

Sample: 285166 - AH-7 4-4.5'

Param	Flag	Result	Units	RL
Chloride		716	mg/Kg	4

APPENDIX C



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Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report (Corrected Report)

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

Report Date: January 5, 2012

Work Order: 11122302



Project Location: Eddy Co., NM
 Project Name: COG/BKU Central Tank Battery
 Project Number: 114-6401142

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
285134	AH-1 0-1'	soil	2011-12-20	00:00	2011-12-22
285135	AH-1 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285136	AH-1 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285137	AH-1 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285138	AH-2 0-1'	soil	2011-12-20	00:00	2011-12-22
285139	AH-2 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285140	AH-2 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285141	AH-2 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285142	AH-2 4-4.5'	soil	2011-12-20	00:00	2011-12-22
285143	AH-3 0-1'	soil	2011-12-20	00:00	2011-12-22
285144	AH-3 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285145	AH-3 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285146	AH-3 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285147	AH-3 4-4.5'	soil	2011-12-20	00:00	2011-12-22
285148	AH-3 5-5.5'	soil	2011-12-20	00:00	2011-12-22

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
285149	AH-4 0-1'	soil	2011-12-20	00:00	2011-12-22
285150	AH-4 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285151	AH-4 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285152	AH-4 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285153	AH-4 4-4.5'	soil	2011-12-20	00:00	2011-12-22
285154	AH-5 0-1'	soil	2011-12-20	00:00	2011-12-22
285155	AH-5 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285156	AH-5 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285157	AH-5 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285158	AH-6 0-1'	soil	2011-12-20	00:00	2011-12-22
285159	AH-6 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285160	AH-6 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285161	AH-6 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285162	AH-7 0-1'	soil	2011-12-20	00:00	2011-12-22
285163	AH-7 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285164	AH-7 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285165	AH-7 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285166	AH-7 4-4.5'	soil	2011-12-20	00:00	2011-12-22

Report Corrections (Work Order 11122302)

- BTEX results removed for samples 285140, 285145, and 285151. 1/5/12

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 47 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

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Case Narrative

Samples for project COG/BKU Central Tank Battery were received by TraceAnalysis, Inc. on 2011-12-22 and assigned to work order 11122302. Samples for work order 11122302 were received intact at a temperature of 7.7 C. Samples were received on ice.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	74262	2011-12-28 at 07:25	87453	2011-12-28 at 07:25
BTEX	S 8021B	74291	2011-12-29 at 13:50	87485	2011-12-29 at 13:50
BTEX	S 8021B	74348	2012-01-02 at 14:50	87557	2012-01-02 at 18:27
Chloride (Titration)	SM 4500-Cl B	74275	2011-12-28 at 09:55	87488	2011-12-29 at 14:17
Chloride (Titration)	SM 4500-Cl B	74275	2011-12-28 at 09:55	87489	2011-12-29 at 14:18
Chloride (Titration)	SM 4500-Cl B	74275	2011-12-28 at 09:55	87490	2011-12-29 at 14:19
Chloride (Titration)	SM 4500-Cl B	74275	2011-12-28 at 09:55	87491	2011-12-29 at 14:20
TPH DRO - NEW	S 8015 D	74279	2011-12-28 at 14:36	87474	2011-12-28 at 14:36
TPH GRO	S 8015 D	74262	2011-12-28 at 07:25	87454	2011-12-28 at 07:25
TPH GRO	S 8015 D	74291	2011-12-29 at 13:50	87486	2011-12-29 at 13:50

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 11122302 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.

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114-6401142

Work Order: 11122302
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Eddy Co., NM

Analytical Report

Sample: 285134 - AH-1 0-1'

Laboratory: Lubbock

Analysis: BTEX

QC Batch: 87453

Prep Batch: 74262

Analytical Method: S 8021B

Date Analyzed: 2011-12-28

Sample Preparation: 2011-12-28

Prep Method: S 5035

Analyzed By: MT

Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	0.724	mg/Kg	20	0.0200
Toluene		1	2.43	mg/Kg	20	0.0200
Ethylbenzene		1	1.59	mg/Kg	20	0.0200
Xylene		1	1.85	mg/Kg	20	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.50	mg/Kg	20	2.00	75	70 - 130
4-Bromofluorobenzene (4-BFB)			2.54	mg/Kg	20	2.00	127	70 - 130

Sample: 285134 - AH-1 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87488

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2100	mg/Kg	100	4.00

Sample: 285134 - AH-1 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 87474

Prep Batch: 74279

Analytical Method: S 8015 D

Date Analyzed: 2011-12-28

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	310	mg/Kg	1	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			109	mg/Kg	1	100	109	53.5 - 147.1

Sample: 285134 - AH-1 0-1'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 87454
Prep Batch: 74262

Analytical Method: S 8015 D
Date Analyzed: 2011-12-28
Sample Preparation: 2011-12-28

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr, Qs	1	107	mg/Kg	20	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.60	mg/Kg	20	2.00	80	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	3.90	mg/Kg	20	2.00	195	70 - 130

Sample: 285135 - AH-1 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 87488
Prep Batch: 74275

Analytical Method: SM 4500-Cl B
Date Analyzed: 2011-12-29
Sample Preparation: 2011-12-28

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

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

Sample: 285136 - AH-1 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 87488
Prep Batch: 74275

Analytical Method: SM 4500-Cl B
Date Analyzed: 2011-12-29
Sample Preparation: 2011-12-28

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

continued ...

Report Date: January 5, 2012
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sample 285136 continued ...

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

Sample: 285137 - AH-1 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 87488
Prep Batch: 74275

Analytical Method: SM 4500-Cl B
Date Analyzed: 2011-12-29
Sample Preparation: 2011-12-28

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

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

Sample: 285138 - AH-2 0-1'

Laboratory: Lubbock
Analysis: BTEX
QC Batch: 87453
Prep Batch: 74262

Analytical Method: S 8021B
Date Analyzed: 2011-12-28
Sample Preparation: 2011-12-28

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	17.6	mg/Kg	20	0.0200
Toluene		1	78.8	mg/Kg	20	0.0200
Ethylbenzene		1	42.4	mg/Kg	20	0.0200
Xylene		1	57.5	mg/Kg	20	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	1.13	mg/Kg	20	2.00	56	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	17.4	mg/Kg	20	2.00	870	70 - 130

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Eddy Co., NM

Sample: 285138 - AH-2 0-1'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87488 Date Analyzed: 2011-12-29 Analyzed By: AR
Prep Batch: 74275 Sample Preparation: 2011-12-28 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			276	mg/Kg	50	4.00

Sample: 285138 - AH-2 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 87474 Date Analyzed: 2011-12-28 Analyzed By: kg
Prep Batch: 74279 Sample Preparation: 2011-12-28 Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	681	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			120	mg/Kg	1	100	120	53.5 - 147.1

Sample: 285138 - AH-2 0-1'

Laboratory: Lubbock
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 87486 Date Analyzed: 2011-12-29 Analyzed By: MT
Prep Batch: 74291 Sample Preparation: 2011-12-29 Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qa	1	2430	mg/Kg	50	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qar	Qar	0.822	mg/Kg	50	2.00	41	70 - 130
4-Bromofluorobenzene (4-BFB)	Qar	Qar	34.0	mg/Kg	50	2.00	1700	70 - 130

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Eddy Co., NM

Sample: 285139 - AH-2 1-1.5'

Laboratory: Midland

Analysis: BTEX

QC Batch: 87557

Prep Batch: 74348

Analytical Method: S 8021B

Date Analyzed: 2012-01-02

Sample Preparation: 2012-01-02

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	2	<0.0200	mg/Kg	1	0.0200
Toluene	u	2	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	u	2	<0.0200	mg/Kg	1	0.0200
Xylene	u	2	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Q _{sr}	Q _{sr}	3.02	mg/Kg	1	2.00	151	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			3.00	mg/Kg	1	2.00	150	70.6 - 179

Sample: 285139 - AH-2 1-1.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87488

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			420	mg/Kg	50	4.00

Sample: 285140 - AH-2 2.-2.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87489

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

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

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Eddy Co., NM

Sample: 285141 - AH-2 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87489 Date Analyzed: 2011-12-29 Analyzed By: AR
Prep Batch: 74275 Sample Preparation: 2011-12-28 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			240	mg/Kg	50	4.00

Sample: 285142 - AH-2 4-4.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87489 Date Analyzed: 2011-12-29 Analyzed By: AR
Prep Batch: 74275 Sample Preparation: 2011-12-28 Prepared By: AR

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

Sample: 285143 - AH-3 0-1'

Laboratory: Lubbock
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 87453 Date Analyzed: 2011-12-28 Analyzed By: MT
Prep Batch: 74262 Sample Preparation: 2011-12-28 Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	2.12	mg/Kg	20	0.0200
Toluene		1	38.3	mg/Kg	20	0.0200
Ethylbenzene		1	31.9	mg/Kg	20	0.0200
Xylene		1	45.2	mg/Kg	20	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	1.20	mg/Kg	20	2.00	60	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	16.7	mg/Kg	20	2.00	835	70 - 130

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Sample: 285143 - AH-3 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 87489
Prep Batch: 74275

Analytical Method: SM 4500-Cl B
Date Analyzed: 2011-12-29
Sample Preparation: 2011-12-28

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

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

Sample: 285143 - AH-3 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 87474
Prep Batch: 74279

Analytical Method: S 8015 D
Date Analyzed: 2011-12-28
Sample Preparation: 2011-12-28

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	1040	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			128	mg/Kg	1	100	128	53.5 - 147.1

Sample: 285143 - AH-3 0-1'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 87486
Prep Batch: 74291

Analytical Method: S 8015 D
Date Analyzed: 2011-12-29
Sample Preparation: 2011-12-29

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs	1	2540	mg/Kg	50	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	0.770	mg/Kg	50	2.00	38	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	36.5	mg/Kg	50	2.00	1825	70 - 130

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Sample: 285144 - AH-3 1-1.5'

Laboratory: Midland

Analysis: BTEX

QC Batch: 87557

Prep Batch: 74348

Analytical Method: S 8021B

Date Analyzed: 2012-01-02

Sample Preparation: 2012-01-02

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	2	<0.0200	mg/Kg	1	0.0200
Toluene	u	2	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	u	2	<0.0200	mg/Kg	1	0.0200
Xylene	u	2	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.40	mg/Kg	1	2.00	120	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.24	mg/Kg	1	2.00	112	70.6 - 179

Sample: 285144 - AH-3 1-1.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87489

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

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

Sample: 285145 - AH-3 2-2.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87489

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

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

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Sample: 285146 - AH-3 3-3.5

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-12-29	Analyzed By:	AR
QC Batch:	87489	Sample Preparation:	2011-12-28	Prepared By:	AR
Prep Batch:	74275				

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

Sample: 285147 - AH-3 4-4.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-12-29	Analyzed By:	AR
QC Batch:	87489	Sample Preparation:	2011-12-28	Prepared By:	AR
Prep Batch:	74275				

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

Sample: 285148 - AH-3 5-5.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-12-29	Analyzed By:	AR
QC Batch:	87489	Sample Preparation:	2011-12-28	Prepared By:	AR
Prep Batch:	74275				

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

Sample: 285149 - AH-4 0-1'

Laboratory:	Lubbock	Analytical Method:	S 8021B	Prep Method:	S 5035
Analysis:	BTEX	Date Analyzed:	2011-12-28	Analyzed By:	MT
QC Batch:	87453	Sample Preparation:	2011-12-28	Prepared By:	MT
Prep Batch:	74262				

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	7.68	mg/Kg	20	0.0200
Toluene		1	41.6	mg/Kg	20	0.0200
Ethylbenzene		1	29.6	mg/Kg	20	0.0200
Xylene		1	30.5	mg/Kg	20	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qor	Qor	1.36	mg/Kg	20	2.00	68	70 - 130
4-Bromofluorobenzene (4-BFB)	Qor	Qor	18.5	mg/Kg	20	2.00	925	70 - 130

Sample: 285149 - AH-4 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87489

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2300	mg/Kg	100	4.00

Sample: 285149 - AH-4 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 87474

Prep Batch: 74279

Analytical Method: S 8015 D

Date Analyzed: 2011-12-28

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	1300	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			145	mg/Kg	1	100	145	53.5 - 147.1

Sample: 285149 - AH-4 0-1'

Laboratory: Lubbock

Analysis: TPH GRO

QC Batch: 87486

Prep Batch: 74291

Analytical Method: S 8015 D

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-29

Prep Method: S 5035

Analyzed By: MT

Prepared By: MT

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Q _{sr}	1	2960	mg/Kg	50	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Q _{sr}	Q _{sr}	0.725	mg/Kg	50	2.00	36	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	51.8	mg/Kg	50	2.00	2590	70 - 130

Sample: 285150 - AH-4 1-1.5'

Laboratory: Midland

Analysis: BTEX

QC Batch: 87557

Prep Batch: 74348

Analytical Method: S 8021B

Date Analyzed: 2012-01-02

Sample Preparation: 2012-01-02

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	2	<0.100	mg/Kg	5	0.0200
Toluene		2	0.482	mg/Kg	5	0.0200
Ethylbenzene		2	0.509	mg/Kg	5	0.0200
Xylene		2	0.910	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			5.76	mg/Kg	5	5.00	115	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			5.92	mg/Kg	5	5.00	118	70.6 - 179

Sample: 285150 - AH-4 1-1.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87490

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2140	mg/Kg	100	4.00

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Sample: 285151 - AH-4 2-2.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-12-29	Analyzed By:	AR
QC Batch:	87490	Sample Preparation:	2011-12-28	Prepared By:	AR
Prep Batch:	74275				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1010	mg/Kg	100	4.00

Sample: 285152 - AH-4 3-3.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-12-29	Analyzed By:	AR
QC Batch:	87490	Sample Preparation:	2011-12-28	Prepared By:	AR
Prep Batch:	74275				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			749	mg/Kg	100	4.00

Sample: 285153 - AH-4 4-4.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-12-29	Analyzed By:	AR
QC Batch:	87490	Sample Preparation:	2011-12-28	Prepared By:	AR
Prep Batch:	74275				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			938	mg/Kg	50	4.00

Sample: 285154 - AH-5 0-1'

Laboratory:	Lubbock	Analytical Method:	S 8021B	Prep Method:	S 5035
Analysis:	BTEX	Date Analyzed:	2011-12-29	Analyzed By:	MT
QC Batch:	87485	Sample Preparation:	2011-12-29	Prepared By:	MT
Prep Batch:	74291				

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Qr, U	1	<0.100	mg/Kg	5	0.0200
Toluene	Qr, Qs	1	<0.100	mg/Kg	5	0.0200
Ethylbenzene	Qr, Qs	1	0.120	mg/Kg	5	0.0200
Xylene	Qr, Qs	1	0.140	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.46	mg/Kg	5	2.00	73	70 - 130
4-Bromofluorobenzene (4-BFB)			1.83	mg/Kg	5	2.00	92	70 - 130

Sample: 285154 - AH-5 0-1'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87490 Date Analyzed: 2011-12-29 Analyzed By: AR
Prep Batch: 74275 Sample Preparation: 2011-12-28 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			258	mg/Kg	50	4.00

Sample: 285154 - AH-5 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 87474 Date Analyzed: 2011-12-28 Analyzed By: kg
Prep Batch: 74279 Sample Preparation: 2011-12-28 Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			98.2	mg/Kg	1	100	98	53.5 - 147.1

Sample: 285154 - AH-5 0-1'

Laboratory: Lubbock
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 87454 Date Analyzed: 2011-12-28 Analyzed By: MT
Prep Batch: 74262 Sample Preparation: 2011-12-28 Prepared By: MT

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr, Qs	1	192	mg/Kg	20	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.16	mg/Kg	20	2.00	58	70 - 130
4-Bromofluorobenzene (4-BFB)			6.05	mg/Kg	20	2.00	302	70 - 130

Sample: 285155 - AH-5 1-1.5'

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	87490	Date Analyzed:	2011-12-29
Prep Batch:	74275	Sample Preparation:	2011-12-28
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			214	mg/Kg	50	4.00

Sample: 285156 - AH-5 2-2.5'

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	87490	Date Analyzed:	2011-12-29
Prep Batch:	74275	Sample Preparation:	2011-12-28
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			238	mg/Kg	50	4.00

Sample: 285157 - AH-5 3-3.5'

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	87490	Date Analyzed:	2011-12-29
Prep Batch:	74275	Sample Preparation:	2011-12-28
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			248	mg/Kg	50	4.00

Sample: 285158 - AH-6 0-1'

Laboratory: Lubbock

Analysis: BTEX

QC Batch: 87453

Prep Batch: 74262

Analytical Method: S 8021B

Date Analyzed: 2011-12-28

Sample Preparation: 2011-12-28

Prep Method: S 5035

Analyzed By: MT

Prepared By: MT

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.74	mg/Kg	1	2.00	87	70 - 130
4-Bromofluorobenzene (4-BFB)			1.81	mg/Kg	1	2.00	90	70 - 130

Sample: 285158 - AH-6 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87490

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			311	mg/Kg	50	4.00

Sample: 285158 - AH-6 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 87474

Prep Batch: 74279

Analytical Method: S 8015 D

Date Analyzed: 2011-12-28

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	2	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			90.4	mg/Kg	1	100	90	53.5 - 147.1

Sample: 285158 - AH-6 0-1'

Laboratory: Lubbock

Analysis: TPH GRO

QC Batch: 87454

Prep Batch: 74262

Analytical Method: S 8015 D

Date Analyzed: 2011-12-28

Sample Preparation: 2011-12-28

Prep Method: S 5035

Analyzed By: MT

Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr, Qs, U	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.21	mg/Kg	1	2.00	110	70 - 130
4-Bromofluorobenzene (4-BFB)			2.16	mg/Kg	1	2.00	108	70 - 130

Sample: 285159 - AH-6 1-1.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87490

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

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

Sample: 285160 - AH-6 2-2.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87491

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			250	mg/Kg	50	4.00

Sample: 285161 - AH-6 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87491 Date Analyzed: 2011-12-29 Analyzed By: AR
Prep Batch: 74275 Sample Preparation: 2011-12-28 Prepared By: AR

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

Sample: 285162 - AH-7 0-1'

Laboratory: Lubbock
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 87453 Date Analyzed: 2011-12-28 Analyzed By: MT
Prep Batch: 74262 Sample Preparation: 2011-12-28 Prepared By: MT

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.73	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			1.74	mg/Kg	1	2.00	87	70 - 130

Sample: 285162 - AH-7 0-1'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87491 Date Analyzed: 2011-12-29 Analyzed By: AR
Prep Batch: 74275 Sample Preparation: 2011-12-28 Prepared By: AR

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2970	mg/Kg	100	4.00

Sample: 285162 - AH-7 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 87474
Prep Batch: 74279

Analytical Method: S 8015 D
Date Analyzed: 2011-12-28
Sample Preparation: 2011-12-28

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	2	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			93.2	mg/Kg	1	100	93	53.5 - 147.1

Sample: 285162 - AH-7 0-1'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 87454
Prep Batch: 74262

Analytical Method: S 8015 D
Date Analyzed: 2011-12-28
Sample Preparation: 2011-12-28

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr, Qs, U	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.23	mg/Kg	1	2.00	112	70 - 130
4-Bromofluorobenzene (4-BFB)			2.11	mg/Kg	1	2.00	106	70 - 130

Sample: 285163 - AH-7 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 87491
Prep Batch: 74275

Analytical Method: SM 4500-Cl B
Date Analyzed: 2011-12-29
Sample Preparation: 2011-12-28

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

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			791	mg/Kg	50	4.00

Sample: 285164 - AH-7 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87491 Date Analyzed: 2011-12-29 Analyzed By: AR
Prep Batch: 74275 Sample Preparation: 2011-12-28 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			861	mg/Kg	50	4.00

Sample: 285165 - AH-7 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87491 Date Analyzed: 2011-12-29 Analyzed By: AR
Prep Batch: 74275 Sample Preparation: 2011-12-28 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			871	mg/Kg	50	4.00

Sample: 285166 - AH-7 4-4.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87491 Date Analyzed: 2011-12-29 Analyzed By: AR
Prep Batch: 74275 Sample Preparation: 2011-12-28 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			716	mg/Kg	50	4.00

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Method Blanks

Method Blank (1) QC Batch: 87453

QC Batch: 87453
Prep Batch: 74262

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00335	mg/Kg	0.02
Toluene		1	<0.00471	mg/Kg	0.02
Ethylbenzene		1	<0.00440	mg/Kg	0.02
Xylene		1	<0.00557	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.70	mg/Kg	1	2.00	85	70 - 130
4-Bromofluorobenzene (4-BFB)			1.70	mg/Kg	1	2.00	85	70 - 130

Method Blank (1) QC Batch: 87454

QC Batch: 87454
Prep Batch: 74262

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.446	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.20	mg/Kg	1	2.00	110	70 - 130
4-Bromofluorobenzene (4-BFB)			2.08	mg/Kg	1	2.00	104	70 - 130

Method Blank (1) QC Batch: 87474

QC Batch: 87474
Prep Batch: 74279

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: kg
Prepared By: kg

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Parameter	Flag	Cert	MDL Result	Units	RL
DRO		2	<14.5	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			97.4	mg/Kg	1	100	97	52.7 - 133.8

Method Blank (1) QC Batch: 87485

QC Batch: 87485
Prep Batch: 74291

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-29

Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00335	mg/Kg	0.02
Toluene		1	<0.00471	mg/Kg	0.02
Ethylbenzene		1	<0.00440	mg/Kg	0.02
Xylene		1	<0.00557	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.58	mg/Kg	1	2.00	79	70 - 130
4-Bromofluorobenzene (4-BFB)			1.64	mg/Kg	1	2.00	82	70 - 130

Method Blank (1) QC Batch: 87486

QC Batch: 87486
Prep Batch: 74291

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-29

Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.446	mg/Kg	2

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

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Method Blank (1) QC Batch: 87488

QC Batch: 87488
Prep Batch: 74275

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-28

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 87489

QC Batch: 87489
Prep Batch: 74275

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-28

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 87490

QC Batch: 87490
Prep Batch: 74275

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-28

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 87491

QC Batch: 87491
Prep Batch: 74275

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-28

Analyzed By: AR
Prepared By: AR

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

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Method Blank (1) QC Batch: 87557

QC Batch: 87557
Prep Batch: 74348

Date Analyzed: 2012-01-02
QC Preparation: 2012-01-02

Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		2	<0.0118	mg/Kg	0.02
Toluene		2	<0.00600	mg/Kg	0.02
Ethylbenzene		2	<0.00850	mg/Kg	0.02
Xylene		2	<0.00613	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.03	mg/Kg	1	2.00	102	65.9 - 111.8
4-Bromofluorobenzene (4-BFB)			1.66	mg/Kg	1	2.00	83	48.4 - 123.1

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 87453
Prep Batch: 74262

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.79	mg/Kg	1	2.00	<0.00335	89	70 - 130
Toluene		1	1.80	mg/Kg	1	2.00	<0.00471	90	70 - 130
Ethylbenzene		1	1.84	mg/Kg	1	2.00	<0.00440	92	70 - 130
Xylene		1	5.48	mg/Kg	1	6.00	<0.00557	91	70 - 130

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	1.79	mg/Kg	1	2.00	<0.00335	90	70 - 130	0	20
Toluene		1	1.80	mg/Kg	1	2.00	<0.00471	90	70 - 130	0	20
Ethylbenzene		1	1.86	mg/Kg	1	2.00	<0.00440	93	70 - 130	1	20
Xylene		1	5.55	mg/Kg	1	6.00	<0.00557	92	70 - 130	1	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
Trifluorotoluene (TFT)	1.80	1.81	mg/Kg	1	2.00	90	90	70 - 130
4-Bromofluorobenzene (4-BFB)	1.77	1.80	mg/Kg	1	2.00	89	90	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 87454
Prep Batch: 74262

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	18.8	mg/Kg	1	20.0	<0.446	94	70 - 130

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	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	19.8	mg/Kg	1	20.0	<0.446	99	70 - 130	5	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.00	2.05	mg/Kg	1	2.00	100	103	70 - 130
4-Bromofluorobenzene (4-BFB)	2.13	2.16	mg/Kg	1	2.00	106	108	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 87474
Prep Batch: 74279

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: kg
Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	205	mg/Kg	1	250	<14.5	82	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		2	210	mg/Kg	1	250	<14.5	84	64.5 - 146.9	2	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	104	105	mg/Kg	1	100	104	105	65.3 - 135.8

Laboratory Control Spike (LCS-1)

QC Batch: 87485
Prep Batch: 74291

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-29

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.79	mg/Kg	1	2.00	<0.00335	90	70 - 130

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control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Toluene		1	1.74	mg/Kg	1	2.00	<0.00471	87	70 - 130
Ethylbenzene		1	1.77	mg/Kg	1	2.00	<0.00440	88	70 - 130
Xylene		1	5.26	mg/Kg	1	6.00	<0.00557	88	70 - 130

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	1.68	mg/Kg	1	2.00	<0.00335	84	70 - 130	6	20
Toluene		1	1.62	mg/Kg	1	2.00	<0.00471	81	70 - 130	7	20
Ethylbenzene		1	1.65	mg/Kg	1	2.00	<0.00440	82	70 - 130	7	20
Xylene		1	4.90	mg/Kg	1	6.00	<0.00557	82	70 - 130	7	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
Trifluorotoluene (TFT)	1.69	1.66	mg/Kg	1	2.00	84	83	70 - 130
4-Bromofluorobenzene (4-BFB)	1.69	1.56	mg/Kg	1	2.00	84	78	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 87486
Prep Batch: 74291

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-29

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	18.0	mg/Kg	1	20.0	<0.446	90	70 - 130

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
GRO		1	18.2	mg/Kg	1	20.0	<0.446	91	70 - 130	1	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
Trifluorotoluene (TFT)	1.94	1.87	mg/Kg	1	2.00	97	94	70 - 130
4-Bromofluorobenzene (4-BFB)	2.14	2.17	mg/Kg	1	2.00	107	108	70 - 130

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Laboratory Control Spike (LCS-1)

QC Batch: 87488
Prep Batch: 74275

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-28

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

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: 87489
Prep Batch: 74275

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-28

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			96.1	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.

Laboratory Control Spike (LCS-1)

QC Batch: 87490
Prep Batch: 74275

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-28

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			96.2	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.

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Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec. Rec.	Rec. Limit	RPD	RPD Limit
Chloride			103	mg/Kg	1	100	<3.85	103	85 - 115	7	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 87491
Prep Batch: 74275

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-28

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			97.4	mg/Kg	1	100	<3.85	97	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			106	mg/Kg	1	100	<3.85	106	85 - 115	8	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: 87557
Prep Batch: 74348

Date Analyzed: 2012-01-02
QC Preparation: 2012-01-02

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		2	2.08	mg/Kg	1	2.00	<0.0118	104	77.4 - 121.7
Toluene		2	2.02	mg/Kg	1	2.00	<0.00600	101	88.6 - 121.6
Ethylbenzene		2	1.92	mg/Kg	1	2.00	<0.00850	96	74.3 - 117.9
Xylene		2	5.75	mg/Kg	1	6.00	<0.00613	96	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		2	2.20	mg/Kg	1	2.00	<0.0118	110	77.4 - 121.7	6	20
Toluene		2	2.12	mg/Kg	1	2.00	<0.00600	106	88.6 - 121.6	5	20
Ethylbenzene		2	2.03	mg/Kg	1	2.00	<0.00850	102	74.3 - 117.9	6	20
Xylene		2	6.08	mg/Kg	1	6.00	<0.00613	101	73.4 - 118.8	6	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)	2.02	2.06	mg/Kg	1	2.00	101	103	65.5 - 116.7
4-Bromofluorobenzene (4-BFB)	1.93	2.02	mg/Kg	1	2.00	96	101	56.2 - 132.1

Matrix Spike (MS-1) Spiked Sample: 285158

QC Batch: 87453
Prep Batch: 74262

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: MT
Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.58	mg/Kg	1	2.00	<0.00335	79	70 - 130
Toluene		1	1.70	mg/Kg	1	2.00	<0.00471	85	70 - 130
Ethylbenzene		1	1.85	mg/Kg	1	2.00	<0.00440	92	70 - 130
Xylene		1	5.49	mg/Kg	1	6.00	<0.00557	92	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.61	mg/Kg	1	2.00	<0.00335	80	70 - 130	2	20
Toluene		1	1.73	mg/Kg	1	2.00	<0.00471	86	70 - 130	2	20
Ethylbenzene		1	1.90	mg/Kg	1	2.00	<0.00440	95	70 - 130	3	20
Xylene		1	5.63	mg/Kg	1	6.00	<0.00557	94	70 - 130	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)	1.78	1.82	mg/Kg	1	2	89	91	70 - 130
4-Bromofluorobenzene (4-BFB)	1.69	1.77	mg/Kg	1	2	84	88	70 - 130

Matrix Spike (MS-1) Spiked Sample: 285158

QC Batch: 87454
Prep Batch: 74262

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: MT
Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Q _s	Q _s	11.2	mg/Kg	1	20.0	<0.446	56	70 - 130

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

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Param				MSD			Spike	Matrix		Rec.		RPD
	F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit	
GRO	Q _r	Q _r	1	17.1	mg/Kg	1	20.0	<0.446	86	70 - 130	42	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
Trifluorotoluene (TFT)	Q _{sr}	Q _{sr}	1.28	2.00	mg/Kg	1	2	64	100	70 - 130
4-Bromofluorobenzene (4-BFB)			1.50	2.12	mg/Kg	1	2	75	106	70 - 130

Matrix Spike (MS-1) Spiked Sample: 285309

QC Batch: 87474
Prep Batch: 74279

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: kg
Prepared By: kg

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	186	mg/Kg	1	250	<14.5	74	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		2	195	mg/Kg	1	250	<14.5	78	38.8 - 153.3	5	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	85.3	93.5	mg/Kg	1	100	85	94	54.6 - 149.8

Matrix Spike (MS-1) Spiked Sample: 285289

QC Batch: 87485
Prep Batch: 74291

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-29

Analyzed By: MT
Prepared By: MT

Param			F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene				1	2.68	mg/Kg	50	2.00	0.684	100	70 - 130
Toluene	Q _s	Q _s		1	51.9	mg/Kg	50	2.00	38.8	655	70 - 130
Ethylbenzene	Q _s	Q _s		1	54.5	mg/Kg	50	2.00	41.4	655	70 - 130
Xylene	Q _s	Q _s		1	71.5	mg/Kg	50	6.00	52.3	320	70 - 130

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

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Param			MSD		Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit	
	F	C	Result	Units								
Benzene	Q _r	Q _r	1	2.19	mg/Kg	50	2.00	0.684	75	70 - 130	20	20
Toluene	Q _r , Q _s	Q _r , Q _s	1	31.8	mg/Kg	50	2.00	38.8	-350	70 - 130	48	20
Ethylbenzene	Q _r , Q _s	Q _r , Q _s	1	35.2	mg/Kg	50	2.00	41.4	-310	70 - 130	43	20
Xylene	Q _r , Q _s	Q _r , Q _s	1	48.8	mg/Kg	50	6.00	52.3	-58	70 - 130	38	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)	1.92	1.91	mg/Kg	50	2	96	96	70 - 130
4-Bromofluorobenzene (4-BFB)	22.1	15.0	mg/Kg	50	2	1105	750	70 - 130

Matrix Spike (MS-1) Spiked Sample: 285289

QC Batch: 87486
Prep Batch: 74291

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-29

Analyzed By: MT
Prepared By: MT

Param				MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Q _s	Q _s	1	2020	mg/Kg	50	20.0	1920	500	70 - 130

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
GRO	Q ^s	Q ^s	1	2420	mg/Kg	50	20.0	1920	2500	70 - 130	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
Trifluorotoluene (TFT)	11.0	19.8	mg/Kg	50	2	550	990	70 - 130
4-Bromofluorobenzene (4-BFB)	29.0	42.6	mg/Kg	50	2	1450	2130	70 - 130

Matrix Spike (MS-1) Spiked Sample: 285139

QC Batch: 87488
Prep Batch: 74275

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-28

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10600	mg/Kg	100	10000	420	102	79.4 - 120.6

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COG/BKU Central Tank Battery

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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			11200	mg/Kg	100	10000	420	108	79.4 - 120.6	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: 285149

QC Batch: 87489
Prep Batch: 74275

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-28

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			11700	mg/Kg	100	10000	2300	94	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			12500	mg/Kg	100	10000	2300	102	79.4 - 120.6	7	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: 285159

QC Batch: 87490
Prep Batch: 74275

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-28

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10200	mg/Kg	100	10000	<385	102	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	3	20

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

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Matrix Spike (MS-1) Spiked Sample: 285166

QC Batch: 87491
Prep Batch: 74275

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-28

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			11100	mg/Kg	100	10000	716	104	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			11800	mg/Kg	100	10000	716	111	79.4 - 120.6	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: 285290

QC Batch: 87557
Prep Batch: 74348

Date Analyzed: 2012-01-02
QC Preparation: 2012-01-02

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		2	2.24	mg/Kg	1	2.00	<0.0118	112	69.4 - 123.6
Toluene		2	2.21	mg/Kg	1	2.00	<0.00600	110	75.4 - 134.3
Ethylbenzene		2	2.16	mg/Kg	1	2.00	<0.00850	108	58.8 - 133.7
Xylene		2	6.50	mg/Kg	1	6.00	<0.00613	108	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		2	1.99	mg/Kg	1	2.00	<0.0118	100	69.4 - 123.6	12	20
Toluene		2	1.96	mg/Kg	1	2.00	<0.00600	98	75.4 - 134.3	12	20
Ethylbenzene		2	1.96	mg/Kg	1	2.00	<0.00850	98	58.8 - 133.7	10	20
Xylene		2	5.87	mg/Kg	1	6.00	<0.00613	98	57 - 134.2	10	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)	2.12	2.49	mg/Kg	1	2	106	124	79.4 - 141.1
4-Bromofluorobenzene (4-BFB)	2.07	2.47	mg/Kg	1	2	104	124	71 - 167

Calibration Standards

Standard (CCV-1)

QC Batch: 87453

Date Analyzed: 2011-12-28

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.0913	91	80 - 120	2011-12-28
Toluene		1	mg/Kg	0.100	0.0920	92	80 - 120	2011-12-28
Ethylbenzene		1	mg/Kg	0.100	0.0950	95	80 - 120	2011-12-28
Xylene		1	mg/Kg	0.300	0.283	94	80 - 120	2011-12-28

Standard (CCV-2)

QC Batch: 87453

Date Analyzed: 2011-12-28

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.0876	88	80 - 120	2011-12-28
Toluene		1	mg/Kg	0.100	0.0901	90	80 - 120	2011-12-28
Ethylbenzene		1	mg/Kg	0.100	0.0919	92	80 - 120	2011-12-28
Xylene		1	mg/Kg	0.300	0.278	92	80 - 120	2011-12-28

Standard (CCV-3)

QC Batch: 87453

Date Analyzed: 2011-12-28

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.0889	89	80 - 120	2011-12-28
Toluene		1	mg/Kg	0.100	0.0873	87	80 - 120	2011-12-28
Ethylbenzene		1	mg/Kg	0.100	0.0892	89	80 - 120	2011-12-28
Xylene		1	mg/Kg	0.300	0.268	89	80 - 120	2011-12-28

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Standard (CCV-1)

QC Batch: 87454

Date Analyzed: 2011-12-28

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.948	95	80 - 120	2011-12-28

Standard (CCV-2)

QC Batch: 87454

Date Analyzed: 2011-12-28

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.10	110	80 - 120	2011-12-28

Standard (CCV-3)

QC Batch: 87454

Date Analyzed: 2011-12-28

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.975	97	80 - 120	2011-12-28

Standard (CCV-1)

QC Batch: 87474

Date Analyzed: 2011-12-28

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	228	91	80 - 120	2011-12-28

Standard (CCV-2)

QC Batch: 87474

Date Analyzed: 2011-12-28

Analyzed By: kg

Report Date: January 5, 2012
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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	223	89	80 - 120	2011-12-28

Standard (CCV-1)

QC Batch: 87485

Date Analyzed: 2011-12-29

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.0874	87	80 - 120	2011-12-29
Toluene		1	mg/Kg	0.100	0.0858	86	80 - 120	2011-12-29
Ethylbenzene		1	mg/Kg	0.100	0.0875	88	80 - 120	2011-12-29
Xylene		1	mg/Kg	0.300	0.260	87	80 - 120	2011-12-29

Standard (CCV-2)

QC Batch: 87485

Date Analyzed: 2011-12-29

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.0882	88	80 - 120	2011-12-29
Toluene		1	mg/Kg	0.100	0.0868	87	80 - 120	2011-12-29
Ethylbenzene		1	mg/Kg	0.100	0.0869	87	80 - 120	2011-12-29
Xylene		1	mg/Kg	0.300	0.260	87	80 - 120	2011-12-29

Standard (CCV-1)

QC Batch: 87486

Date Analyzed: 2011-12-29

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.927	93	80 - 120	2011-12-29

Report Date: January 5, 2012
114-6401142

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COG/BKU Central Tank Battery

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Eddy Co., NM

Standard (CCV-2)

QC Batch: 87486

Date Analyzed: 2011-12-29

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.979	98	80 - 120	2011-12-29

Standard (ICV-1)

QC Batch: 87488

Date Analyzed: 2011-12-29

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	97.9	98	85 - 115	2011-12-29

Standard (CCV-1)

QC Batch: 87488

Date Analyzed: 2011-12-29

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	102	102	85 - 115	2011-12-29

Standard (ICV-1)

QC Batch: 87489

Date Analyzed: 2011-12-29

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	94.3	94	85 - 115	2011-12-29

Standard (CCV-1)

QC Batch: 87489

Date Analyzed: 2011-12-29

Analyzed By: AR

Report Date: January 5, 2012
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Eddy Co., NM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	106	106	85 - 115	2011-12-29

Standard (ICV-1)

QC Batch: 87490

Date Analyzed: 2011-12-29

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	101	101	85 - 115	2011-12-29

Standard (CCV-1)

QC Batch: 87490

Date Analyzed: 2011-12-29

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.3	99	85 - 115	2011-12-29

Standard (ICV-1)

QC Batch: 87491

Date Analyzed: 2011-12-29

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	95.4	95	85 - 115	2011-12-29

Standard (CCV-1)

QC Batch: 87491

Date Analyzed: 2011-12-29

Analyzed By: AR

Report Date: January 5, 2012
114-6401142

Work Order: 11122302
COG/BKU Central Tank Battery

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Eddy Co., NM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	105	105	85 - 115	2011-12-29

Standard (CCV-1)

QC Batch: 87557

Date Analyzed: 2012-01-02

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		2	mg/Kg	0.100	0.100	100	80 - 120	2012-01-02
Toluene		2	mg/Kg	0.100	0.0964	96	80 - 120	2012-01-02
Ethylbenzene		2	mg/Kg	0.100	0.0928	93	80 - 120	2012-01-02
Xylene		2	mg/Kg	0.300	0.278	93	80 - 120	2012-01-02

Standard (CCV-2)

QC Batch: 87557

Date Analyzed: 2012-01-02

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		2	mg/Kg	0.100	0.111	111	80 - 120	2012-01-02
Toluene		2	mg/Kg	0.100	0.106	106	80 - 120	2012-01-02
Ethylbenzene		2	mg/Kg	0.100	0.102	102	80 - 120	2012-01-02
Xylene		2	mg/Kg	0.300	0.303	101	80 - 120	2012-01-02

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
SQL	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	T104704219-11-5	Lubbock
2	NELAP	T104704392-11-3	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 SQL. 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

Result Comments

- 1 Sample dilution due to hydrocarbons.

Attachments

Report Date: January 5, 2012
114-6401142

Work Order: 11122302
COG/BKU Central Tank Battery

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Eddy Co., NM

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

#11122002

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

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 ANALYSIS REQUEST
 (Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tavaroz

PROJECT NO.:

114-6401142

PROJECT NAME:

BKU Central Tank Battery

Eddy Co NM

SAMPLE IDENTIFICATION

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP

GRAB

NUMBER OF CONTAINERS

FILTERED (Y/N)

PRESERVATIVE
METHOD

HCL

HNO3

ICE

NONE

 BTEX 8024B
 TPH 8015 MDD. TX1005 (Ext. to C35)
 PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCPLP Metals Ag As Ba Cd Vt Pd Hg Se

TCPLP Volatiles

TCPLP 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

285134

12/20

S

X

AH-1

0-1'

1

XX

135

1-1.5'

136

2-2.5'

137

3-3.5'

138

AH-2

0-1'

XX

139

1-1.5'

XX

140

2-2.5'

141

3-3.5'

142

4-4.5'

143

AH-3

0-1'

XX

RELINQUISHED BY: (Signature)

Date: 12-22-11

Time: 11:45

RECEIVED BY: (Signature)

Date: 12/21/11

Time: 11:44

SAMPLED BY: (Print & Initial)

ST TF

Date: 12-20-11

Time:

RELINQUISHED BY: (Signature)

Date: 12/23/11

Time: 10:00

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX BUS

HAND DELIVERED UPS

AIRBILL #:

OTHER:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

TETRA TECH CONTACT PERSON:

Results by:

RECEIVING LABORATORY: Trice

RECEIVED BY: (Signature)

ADDRESS:

CITY: Midland

STATE: TX

ZIP:

CONTACT:

PHONE:

DATE: 12/28/11

TIME: 8:50

38/3.9

Ike Tavaroz

RUSH Charges

Authorized:

Yes

No

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

7.7° Contact

1st deeper sample of TPH exceeds 5,000 m/kg. in

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

Benzene exceeds 10 m/kg in total BTEX exceeds 50 m/kg.

*Midland
TPH - DRO/CH
BTEX - DRO/CH

11122302

Analysis Request of Chain of Custody Record

PAGE: 2

**TETRA TECH**

1910 N. Big Spring St.

Midland, Texas 79705

(432) 682-4559 • Fax (432) 682-3946

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tamarce

PROJECT NO.:

114-6401142

PROJECT NAME:

BLU Central Tank Battery

Edly Co NM

SAMPLE IDENTIFICATION

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP

GRAB

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE
METHODBTEX 8027B
TEPH 8015 MOD. TX1005 (Ext. to C35)
PAH 8270RCRA Metals Ag As Ba Cd Cr Pb Hg Se
TCLP Metals Ag As Ba Cd Vr Pd Hg SeTCLP Volatiles
TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/824

GC/MS Semi. Vol. 8270/825

PCB's 8080/608

Pest. 808/608

Chloride
Cyanide Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

145/44

2011

S

X

AH-3

1-1.5'

1

X

BTEX 8027B

TEPH 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. 8240/8260/824

GC/MS Semi. Vol. 8270/825

PCB's 8080/608

Pest. 808/608

Chloride

Cyanide Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

145

2-2.5'

146

3-3.5'

147

4-4.5'

148

5-5.5'

149

AH-4

0-1'

150

1-1.5'

151

2-2.5'

152

3-3.5'

153

4-4.5'

RELINQUISHED BY: (Signature)

Date: 12-22-11

Time: 16:45

RECEIVED BY: (Signature)

Date: 12/22/11

Time: 16:44

SAMPLED BY: (Print & Initial)

TF / JT

Date: 12-20-11

Time:

RELINQUISHED BY: (Signature)

Date: 12-22-11

Time: 16:45

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX BUS

AIRBILL #:

OTHER:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

TETRA TECH CONTACT PERSON:

Ike Tamarce

Results by:

RUSH Charges

Authorized:

Yes No

RECEIVING LABORATORY: Trace

RECEIVED BY

112202

Analysis Request of Chain of Custody Record

PAGE: 3

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**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:

Ile Tavaroz

PROJECT NO.:

114-6401142

PROJECT NAME:

BKU Central Tank Battery

Eddy Co NM

SAMPLE IDENTIFICATION

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMF

GRAB

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE
METHODBTX 8021B
TPH 8015 MOD. TX1005 (Ext. to C35)

PAH 8270

HCRA 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

RELINQUISHED BY: (Signature)

Date: 12-22-11

Time: 16:45

RECEIVED BY: (Signature)

Date: 12/22/11

Time: 16:44

SAMPLED BY: (Print & Initial)

Date: 12-20-11

Time:

RELINQUISHED BY: (Signature)

Date: 12/25/11

Time: 10:00

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

AIRBILL #:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

FEDEX

BUS

OTHER:

HAND DELIVERED

TETRA TECH CONTACT PERSON:

Results by:

RECEIVING LABORATORY:

RECEIVED BY: (Signature)

ADDRESS:

CITY:

STATE:

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

Ile Tavaroz

RUSH Charges

Authorized:

Yes No

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

9.7° intact

*Midland - TPH-DRO/CL
*Dallas - TPH-GRO/BTEX

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



TETRA TECH

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

PAGE: 4 4

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tavaraz

PROJECT NO.:

114-6401142

PROJECT NAME:

BKII Central Tank Battery

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP

GRAB

Eddy Co NM
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 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

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

RELINQUISHED BY: (Signature)

[Signature]

Date: 12-22-11

Time: 10:45

RECEIVED BY: (Signature)

[Signature]

Date: 12/22/11

Time: 10:45

SAMPLED BY: (Print & Initial)

TF / ST

Date: 12-20-11

Time:

RELINQUISHED BY: (Signature)

RELINQUISHED BY: (Signature)

Date: 12/21/11

Time: 10:00

RECEIVED BY: (Signature)

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX BUS
HAND DELIVERED UPS

AIRBILL #:

OTHER:

RECEIVING LABORATORY: Trace

ADDRESS:

CITY: Midland STATE: TX ZIP:

CONTACT: PHONE: DATE: TIME:

RECEIVED BY: (Signature)

SAMPLE CONDITION WHEN RECEIVED:

7.7' intact

REMARKS:

* Midland - TPH-DRO/CI
* Lubbock - TPH-GRO/BTEX

TETRA TECH CONTACT PERSON:

Ike Tavaraz

Results by:

RUSH Charges

Authorized:

Yes No

Bratcher, Mike, EMNRD

From: Tavarez, Ike <Ike.Tavarez@tetrattech.com>
Sent: Wednesday, February 22, 2012 3:22 PM
To: Bratcher, Mike, EMNRD; Gregston, Terry G
Cc: Pat Ellis; Joshua Russo; Grubbs, Robert; Schavee, Brian; James_Amos@blm.gov
Subject: COG Operating - BKU Central Tank Battery - Soil Remediation Notification

COG Operating
BKU Central Tank Battery
Section 23, T17S, R29E
Eddy County, NM

Mike and Terry,

Tetra Tech is preparing to start the soil remediation on the above reference site on 2-23-12. The remediation will be performed according to the approved work plan. Tetra Tech will also notify you during each phase of the remediation. We will call if the schedule changes or have any delays on the project. Let me know if you need additional information, thanks

Ike Tavarez, PG | Senior Project Manager

Main: 432.682.4559 | Fax: 432.682.3948 | Cell: 432.425.3878

Ike.Tavarez@tetrattech.com

Tetra Tech | Complex World, Clear Solutions™

1910 North Big Spring | Midland, TX 79705 | www.tetrattech.com

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