

3136

Form C-141
Revised October 10, 2003Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on back
side of form

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

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) 230-0077
Facility Name	BC Federal #21	Facility Type	Well
Surface Owner:	Federal	Mineral Owner	
		Lease No. (API#) 30-025-38726	

LOCATION OF RELEASE

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

Latitude N 32 51.393° Longitude W 103 45.798°

NATURE OF RELEASE

Type of Release: Oil and Produced Water	Volume of Release 10 bbls oil 5 bbls pw	Volume Recovered 9 bbls oil 4 bbls pw
Source of Release: Well Head	Date and Hour of Occurrence 04/06/2012	Date and Hour of Discovery 04/06/2012 9:00 a.m.
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom? Michelle Mullins	Date and Hour 07/06/2012 10:46 a.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

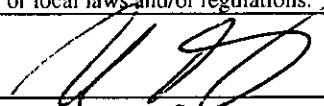
Describe Cause of Problem and Remedial Action Taken.*

The rod rotator cable wrapped around a 1" nipple and broke. The 1" nipple has been replaced.

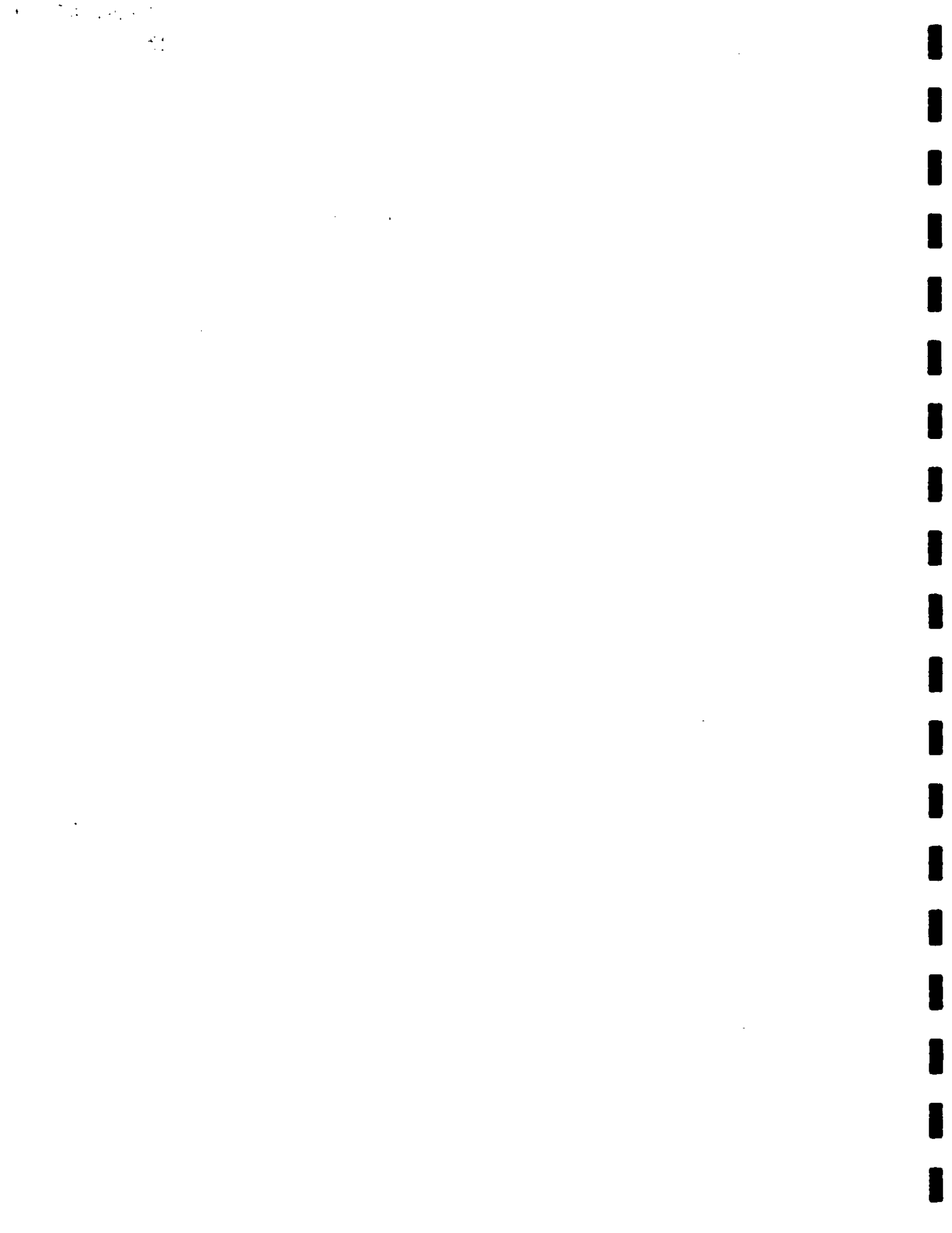
Describe Area Affected and Cleanup Action Taken.*

Tetra Tech personnel inspected the site and collected samples to define the spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. The site was then brought up to surface grade with clean backfill material. Tetra Tech prepared a closure report and submitted it 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: 	<u>OIL CONSERVATION DIVISION</u>		
Printed Name: Ike Tavarez (Agent for COG)	Approved by District Supervisor:		
Title: Project Manager	Approval Date:	Expiration Date:	
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:		Attached ☐
Date: 10-22-12 Phone: (432) 682-4559			

* Attach Additional Sheets If Necessary



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☒ Initial Report ☐ Final Report

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Address	550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	BC Federal #21	Facility Type	Well
Surface Owner	Federal	Mineral Owner	
		Lease No. (API#)	30-025-38726

LOCATION OF RELEASE

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

Latitude 32 51.393 Longitude 103 45.798

NATURE OF RELEASE

Type of Release	Oil and produced water	Volume of Release	10bbls oil 5bbls pw	Volume Recovered	9bbls oil 4bbls pw
Source of Release	Well head	Date and Hour of Occurrence	04/06/2012	Date and Hour of Discovery	04/06/2012 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.*

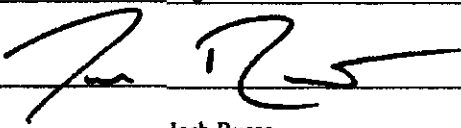
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The rod rotator cable wrapped around a 1" nipple and broke. The 1" nipple has been replaced.

Describe Area Affected and Cleanup Action Taken.*

Initially 15bbls of produced fluid was released from the well head and we were able to recover 13bbls with a vacuum truck. The fluid traveled from on the location to the pasture area in a 1' stream. Minimal impact occurred on the location. The location has been scraped. From the location the fluid streamed into the pasture to a 10' x 10' area. Terra Tech will sample the spill area in the pasture 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: 04/20/2012	Phone: 432-212-2399		

* Attach Additional Sheets If Necessary



SITE INFORMATION

Report Type: Work Plan

General Site Information:

Site:	BC Federal #21				
Company:	COG Operating LLC				
Section, Township and Range	Unit F	Sec. 19	T-17-S	R-32-E	
Lease Number:	API-30-025-38726				
County:	Lea County				
GPS:	32.82087° N			103.80783° W	
Surface Owner:	Federal				
Mineral Owner:					
Directions:	Intersection of CR-126 and Conoco Road (South of Maljamar), travel west on Conoco Road 1.6 mi, turn right 0.2 mi, turn left 1.0, turn right 500' to well location.				

Release Data:

Date Released:	4/6/2012
Type Release:	Oil and produced water
Source of Contamination:	Rod rotator cable broke off 1" nipple
Fluid Released:	10 bbls oil and 5 bbls of produced water
Fluids Recovered:	9 bbls oil and 4 bbls of produced water

Official Communication:

Name:	Pat Ellis	Ike Taravez
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

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SEP 06 2012

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DEC 22 2015

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1/1/67

Page 1

1/1/67



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July 2, 2012

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SEP 06 2012

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

RECEIVED

**Re: Work Plan for the COG Operating LLC., BC Federal #21 Well,
Located Unit F, Section 19, Township 17 South, Range 32 East,
Lea County, New Mexico.**

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from BC Federal #21 Well, Located Unit F, Section 19, Township 17 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.82087°, W 103.80783°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico Oil Conservation Division (NMOCD) Form C-141 Initial Report, the leak was discovered on April 6, 2012. The spill from the well head released approximately ten (10) barrels (bbls) of oil and five (5) bbls of produced water. COG was able to recover approximately nine (9) bbls of oil and four (4) bbls of produced water with a vacuum truck. To alleviate the problem, COG repaired the well head.

The spill impacted an area on the pad and migrated off location into the pasture area. The impacted area on the pad measured approximately 5' x 210'. The spill migrated off the pad into meandering narrow native wash measuring a length of approximately 220', with a width of approximately 1' to 3' and pooled in a low lying area measuring approximately 25' x 25'. The spill areas are shown on Figures 3. The initial Form C-141 is enclosed in Appendix A.

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559

Fax 432.682.3946

www.tetrattech.com

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Groundwater

No water wells records were found in Section 19. Previously, Tetra Tech installed a temporary monitor well (TMW-1) in Section 30 to a depth of 180' below grade surface to established depth to groundwater in the area. Groundwater was not encountered in TMW-1. According to the NMOCD groundwater map, the average depth to groundwater is approximately 225' below surface. The groundwater data and the TMW drilling log are shown in Appendix B.

Regulatory

A risk-based evaluation was performed for the Site in accordance with the 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

On May 31, 2012, Tetra Tech personnel inspected and sampled the spill area. A total of ten (10) auger holes (AH-1 through AH-10) were installed using a stainless steel hand auger to assess the impacted areas. Auger holes (AH-1 through AH-5) were installed on the caliche pad area and AH-6 through AH-10 were installed in the pasture area. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Analytical Results

Referring to Table 1, all of the auger hole samples were below the RRAL for TPH and BTEX, with the exception of AH-6 and AH-10. Auger holes (AH-6 and AH-10) showed TPH concentrations of 6,052 mg/kg (0-1') and 9,110 mg/kg (0-1'), respectively. The TPH concentrations declined below the RRAL at 1-1.5' below surface. In addition, auger hole (AH-10) did





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show a total BTEX of 57.3 mg/kg, but declined to <0.02 mg/kg at 1-1.5' below surface.

A shallow chloride impact was detected in the areas of AH-1, AH-2, AH-4, and AH-6 and significantly declined at 1.0' to 2.0' below surface. The chloride impact was deeper in the area of AH-10 showing chloride concentrations of 6,980 mg/kg (2-2.5'), 7,500 mg/kg (3-3.5') and 2,980 mg/kg (4-4.5'). The chloride impact declined with depth to 39 mg/kg at 5-5.5' below surface.

Work Plan

COG proposes to remove impacted material as highlighted (green) in Table 1 and shown in Figure 4. Impacted soil around oil and gas equipment, structures or lines may not be feasible or practical to be removed due to safety concerns. In the area of AH-10, the excavation depth is proposed at 5.0' below surface. A utility power pole is located on the edge of the spill area that may hinder the excavation near the pole. Due to the unstable nature of sand dunes and subsurface lithology, Tetra Tech will excavate the soils to the maximum extent practicable. If the impacted soil cannot be excavated, the soils will be deferred until abandonment. Once excavated to the appropriate depths, the excavation will be backfilled with clean soil. The excavated soil will be hauled to proper disposal.

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

Respectfully submitted,
TETRA TECH

Ike Tavarez
Senior Project Manager

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



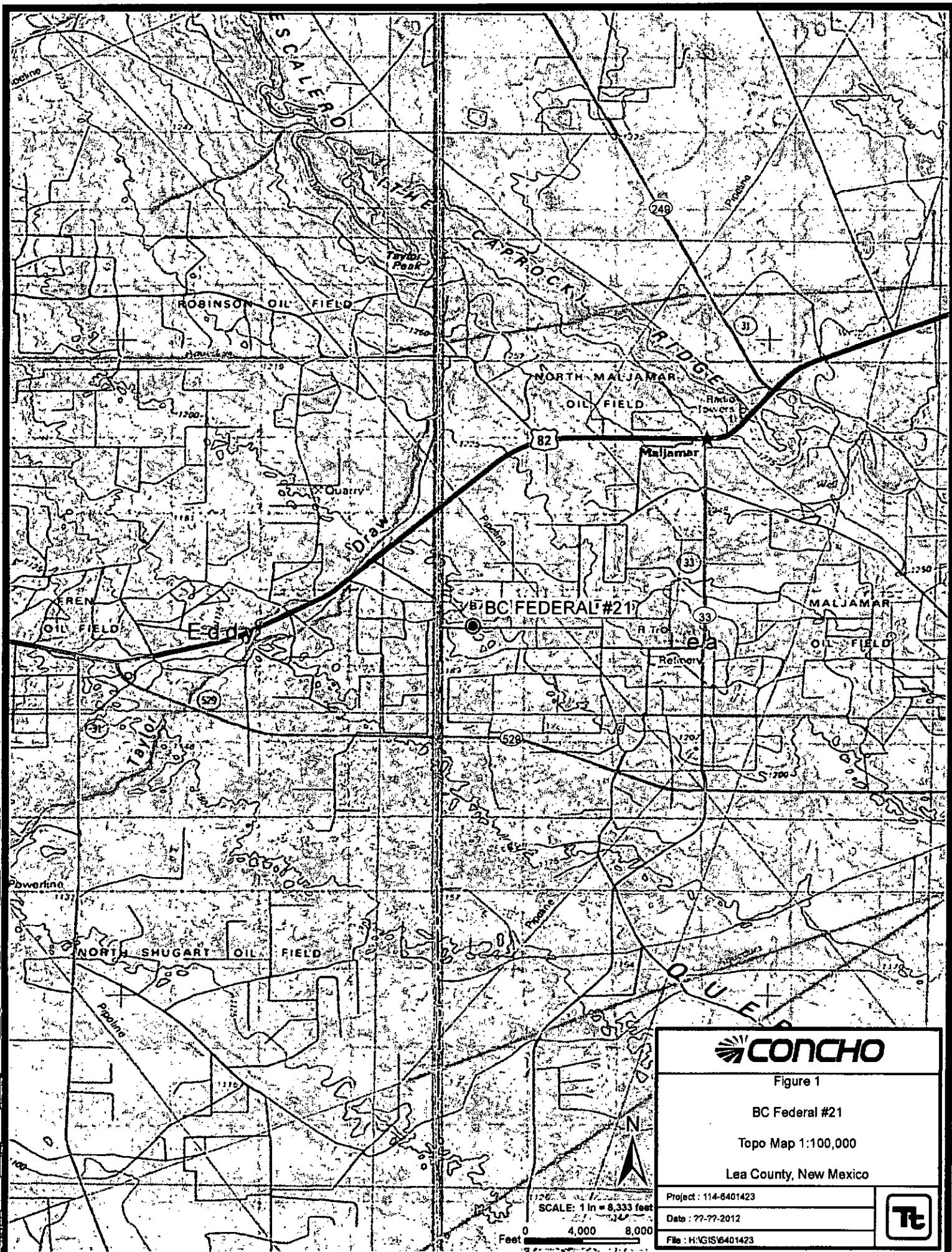


Figure 1

BC Federal #21

Topo Map 1:100,000

Lea County, New Mexico

Project : 114-6401423

Date : ??-??-2012

File : H:\GIS\6401423





Figure 2

BC Federal #21

Topo Map 1:24,000

Lea County, New Mexico

Project : 114-6401423

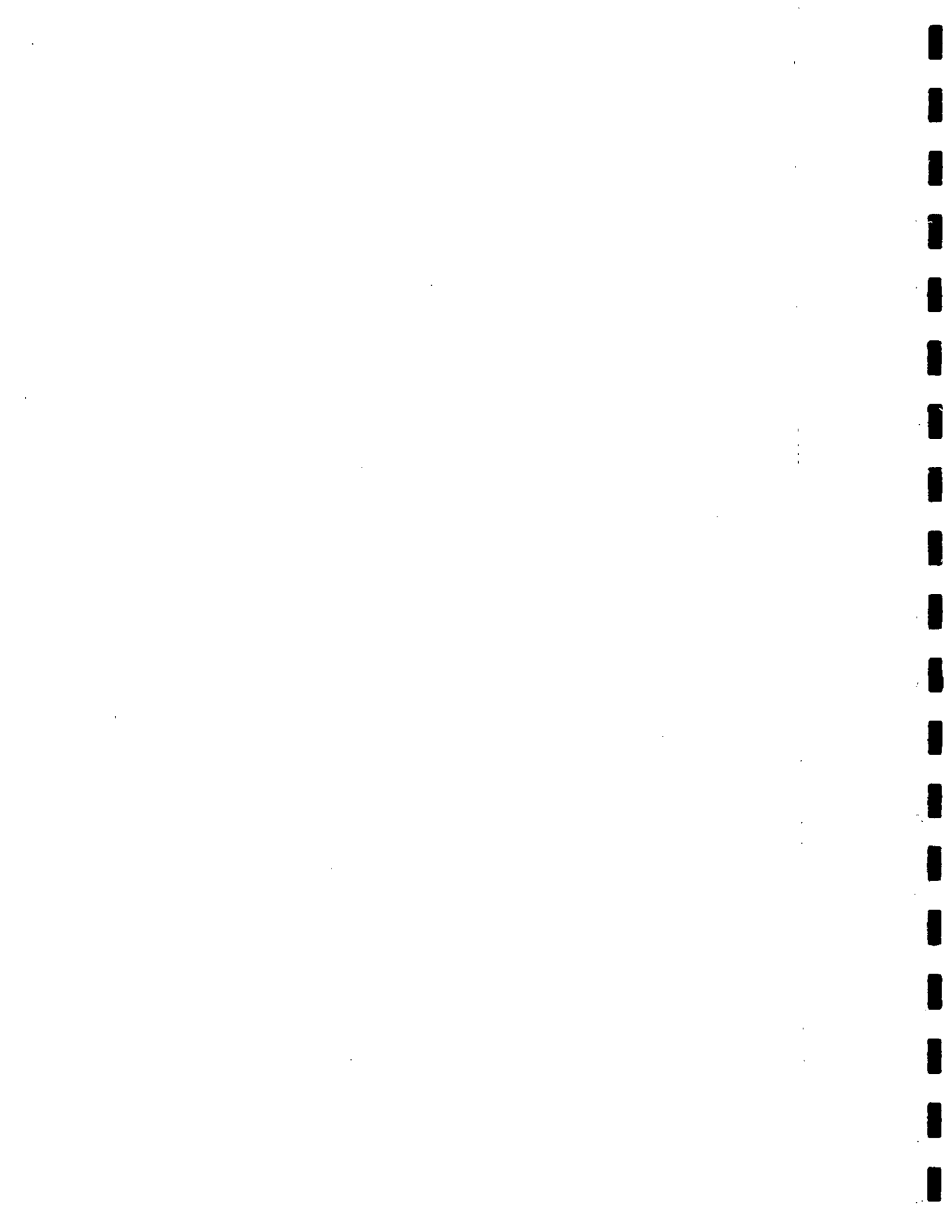
Date : 5/29/2012

File : H:\GIS\6401423



SCALE: 1 in = 2,000 feet

0 1,000 2,000 Feet



PASTURE

PAD

PJ

1' - 3' WIDE

120'

90'

AH-3

AH-4

AH-5

AH-2

AH-1

AH-6

50'

AH-7

130'

AH-8

POWER
POLE

AH-10

25'

AH-9

25'

60'

PASTURE

EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- ▲ POWER POLE
- ▨ SPILL AREA

SCALE: 1 IN = 47 FEET

Feet 0 20 40



Figure 3

BC Federal #21

Spill Assessment Map

Lea County, New Mexico

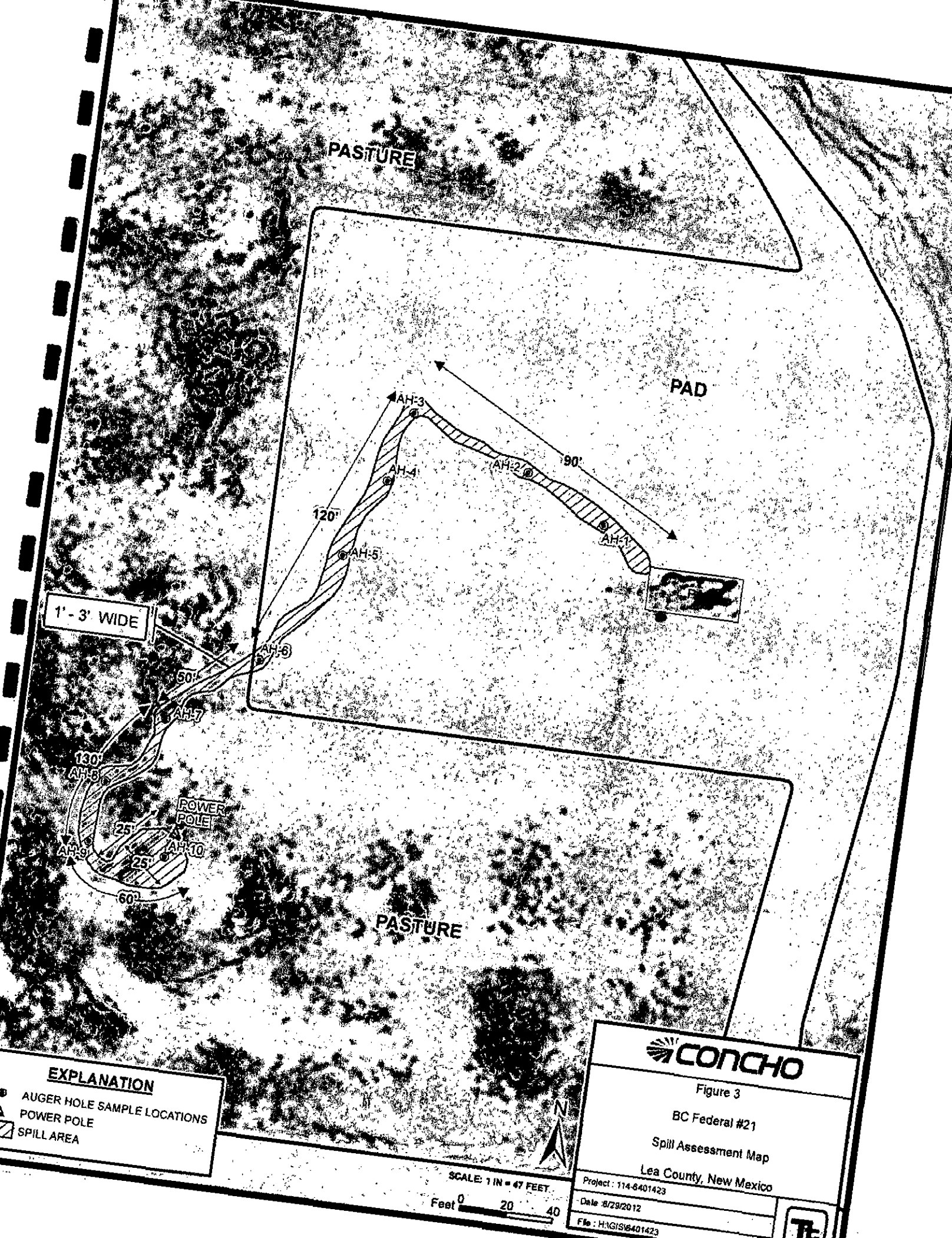
Project : 114-6401423

Date : 8/29/2012

File : H3GIS\6401423

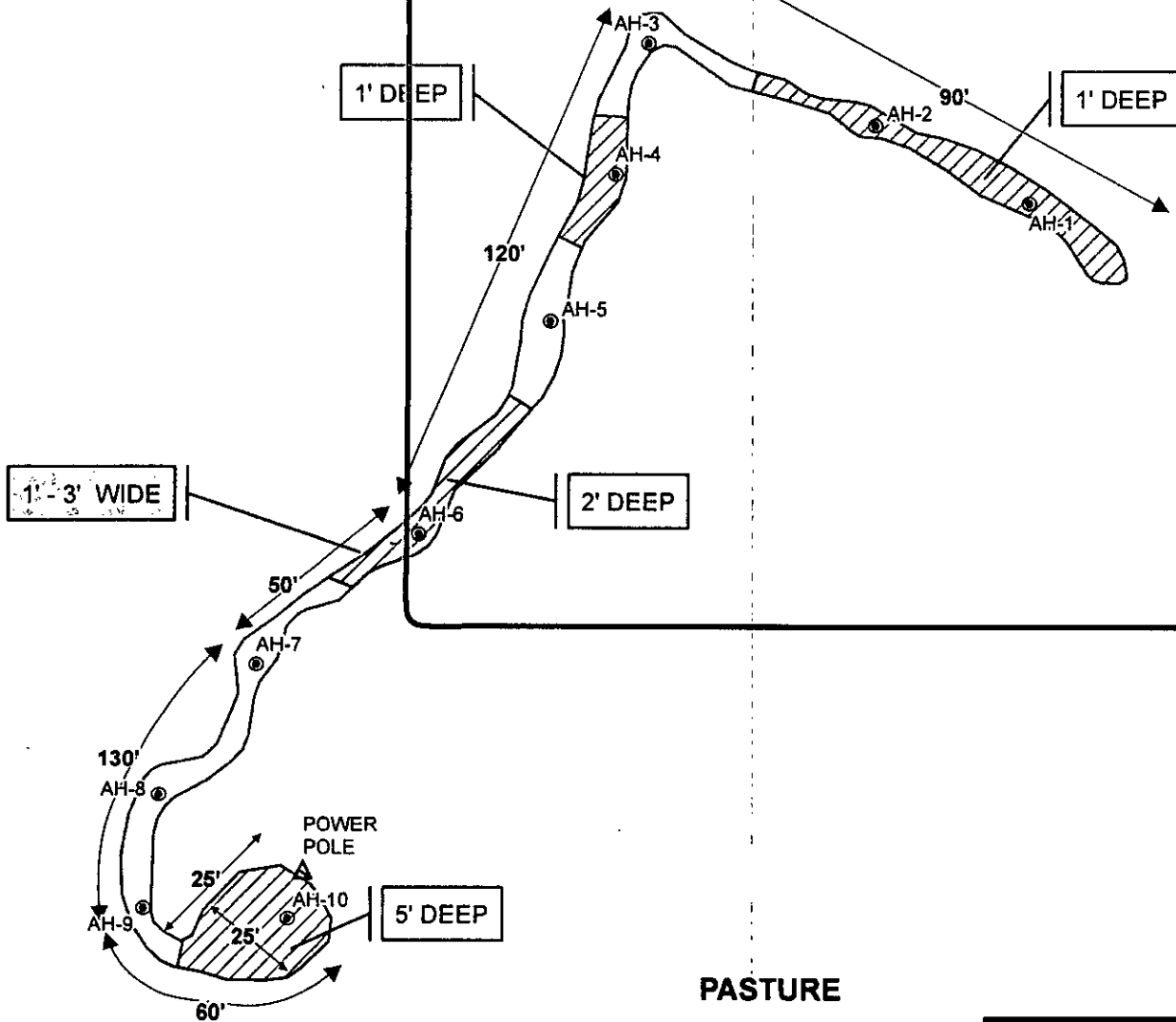






PASTURE

PAD



PASTURE

EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- ▲ POWER POLE
- ▨ PROPOSED EXCAVATION AREAS



SCALE: 1 IN = 41 FEET

Feet 0 20 40



Figure 4

BC Federal #21

Proposed Excavation Areas & Depths Map

Lea County, New Mexico

Project : 114-6401423

Date : 6/29/2012

File : H:\GIS\6401423





Table 1

[illegible]

Table 1

[illegible]

1000



Table 1
COG Operating LLC.
BC Federal #21
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
Pasture Area Samples AH-6 through AH-10													
AH-9	5/31/2012	0-1	X		<10.0	<50.0	<50.0	<0.100	<0.100	<0.100	<0.100	<0.100	<20.0
	"	1-1.5	X		-	-	-	-	-	-	-	-	57.6
	"	2-2.5	X		-	-	-	-	-	-	-	-	<20.0
	"	3-3.5	X		-	-	-	-	-	-	-	-	<20.0
AH-10	5/31/2012	0-1	X		1,090	8,020	9,110	<0.400	4.50	5.70	47.1	57.3	<20.0
	"	1-1.5	X		<2.00	95.2	95.2	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	434
	"	2-2.5	X		-	-	-	-	-	-	-	-	6,980
	"	3-3.5	X		-	-	-	-	-	-	-	-	7,500
	"	4-4.5	X		-	-	-	-	-	-	-	-	2,980
	"	5-5.5	X		-	-	-	-	-	-	-	-	39.0
	"	6-6.5	X		-	-	-	-	-	-	-	-	92.6

(-) Not Analyzed

Proposed Excavation Depth



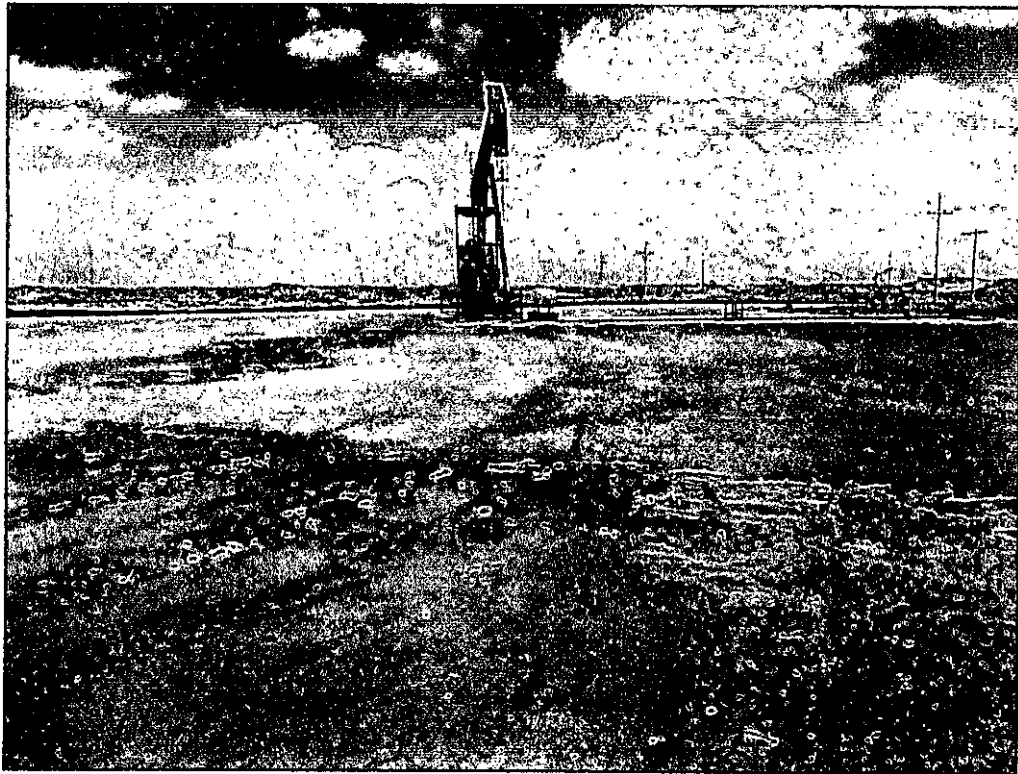
Photos



COG Operating LLC
BC Federal #21 Well
Lea County, New Mexico



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View east – Impact on caliche pad, photo near AH-4



View south – Spill migrated off pad into pasture, photo near AH-5



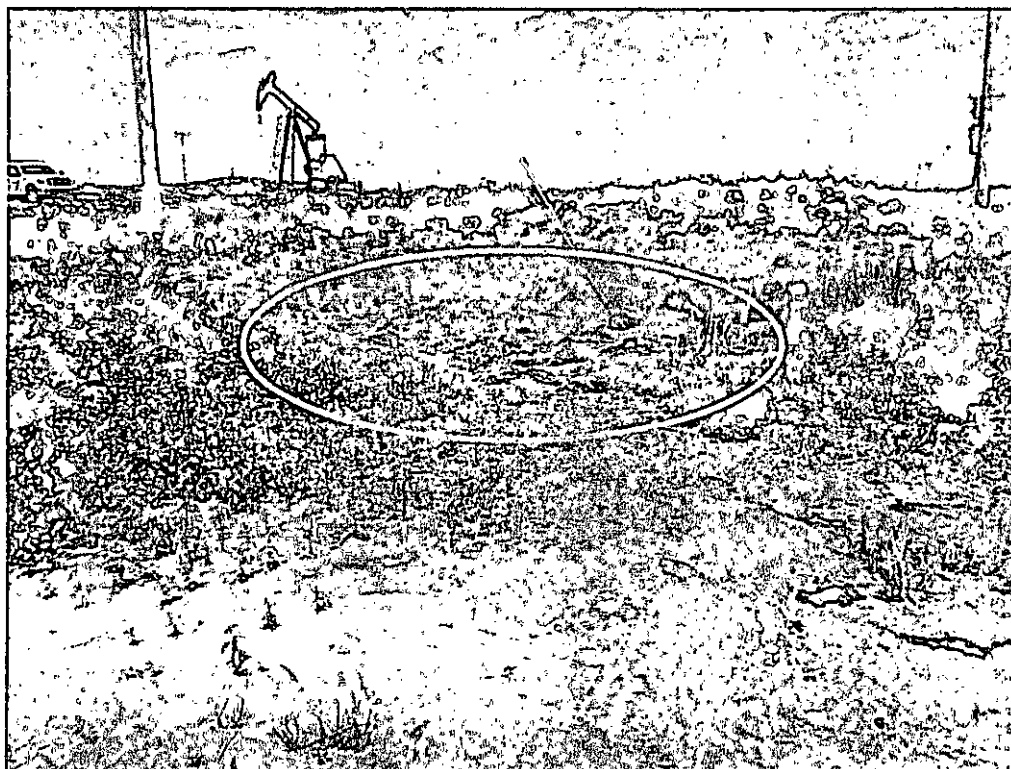
COG Operating LLC
BC Federal #21 Well
Lea County, New Mexico



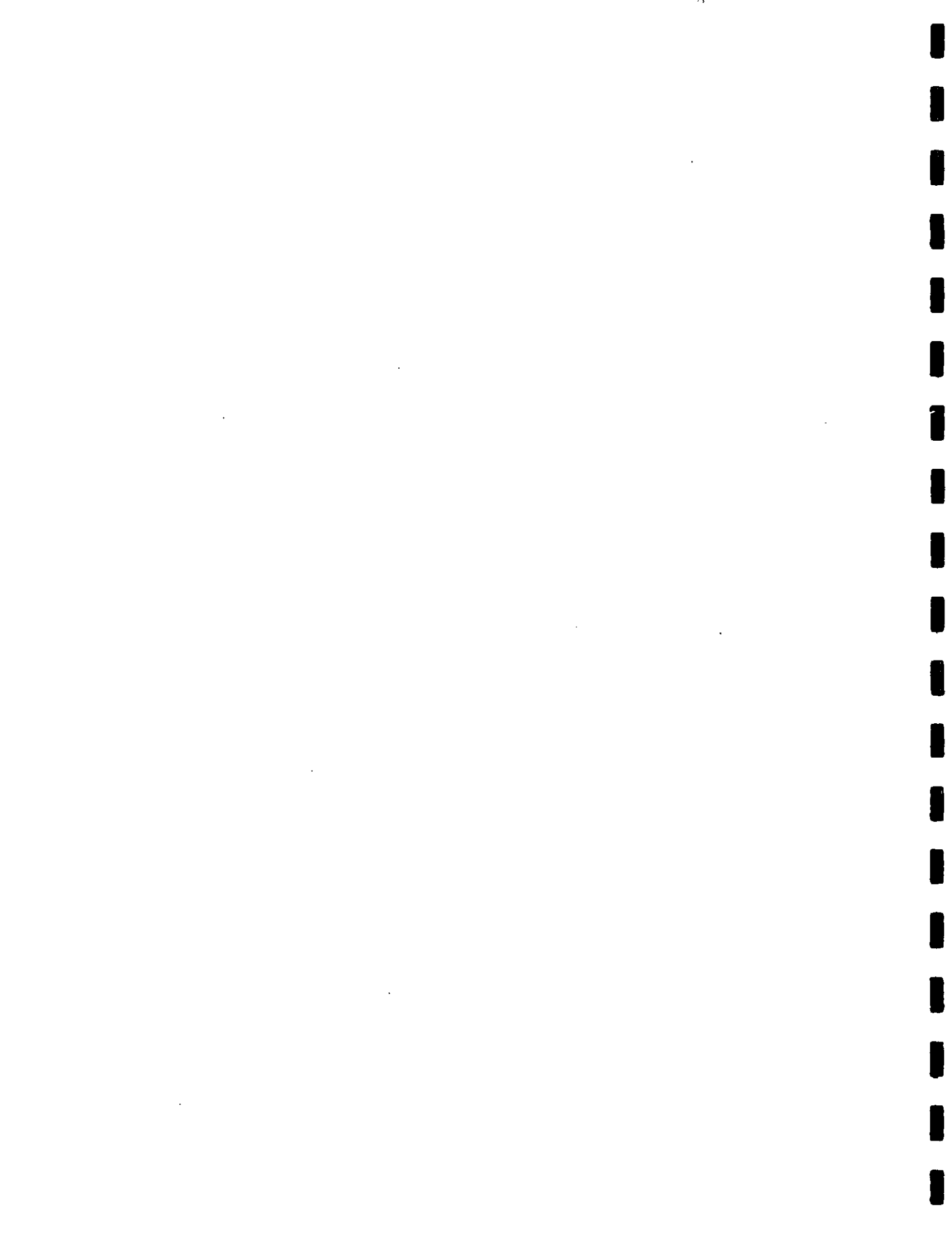
TETRA TECH



View south – Near AH-8 along 2'-3' wide spill path



View north east – Pooled area, near AH-10



Appendix A

சென்னை, 15 சூன் (ஐ.வி.என்) -

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Energy Minerals and Natural Resources

HOBBS OCD

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Address	550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	BC Federal #21	Facility Type	Well
Surface Owner	Federal	Mineral Owner	
		Lease No. (API#)	30-025-38726

LOCATION OF RELEASE

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By Whom?		Date and Hour			
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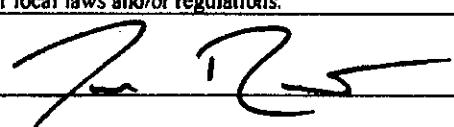
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OIL CONSERVATION DIVISION

Signature:		Approved by District Supervisor:	
Printed Name:	Josh Russo		
Title:	HSE Coordinator	Approval Date:	Expiration Date:
E-mail Address:	jrusso@conchoresources.com	Conditions of Approval:	Attached ☐
Date:	04/20/2012	Phone:	432-212-2399

* Attach Additional Sheets If Necessary

01000000

01000000

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Water Well Data
Average Depth to Groundwater (ft)
COG - BC Federal #21
Lea County, New Mexico

16 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
290					

17 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
					271

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
					281

16 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
					260

17 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
					130' Dry

18 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
					117

16 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
190	168		160		

17 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
					155

18 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
					177

-  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 - BC Federal #21
-  Tetra Tech Temporary well



SAMPLE LOG

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

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

Total Depth 181' Groundwater was not encountered



Summary Report

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

Report Date: June 13, 2012

Work Order: 12060503

Project Location: Lea Co., NM
Project Name: COG/BC Federal #21
Project Number: 114-6401423

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
299930	AH-1 0-1'	soil	2012-05-31	00:00	2012-06-04
299931	AH-1 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299932	AH-1 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299933	AH-2 0-1'	soil	2012-05-31	00:00	2012-06-04
299934	AH-2 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299935	AH-2 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299936	AH-3 0-1'	soil	2012-05-31	00:00	2012-06-04
299937	AH-3 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299938	AH-3 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299939	AH-3 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299940	AH-4 0-1'	soil	2012-05-31	00:00	2012-06-04
299941	AH-4 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299942	AH-4 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299943	AH-5 0-1'	soil	2012-05-31	00:00	2012-06-04
299944	AH-5 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299945	AH-6 0-1'	soil	2012-05-31	00:00	2012-06-04
299946	AH-6 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299947	AH-6 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299948	AH-6 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299949	AH-6 4-4.5'	soil	2012-05-31	00:00	2012-06-04
299950	AH-7 0-1'	soil	2012-05-31	00:00	2012-06-04
299951	AH-7 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299952	AH-7 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299953	AH-7 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299954	AH-8 0-1'	soil	2012-05-31	00:00	2012-06-04
299955	AH-8 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299956	AH-8 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299957	AH-8 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299958	AH-9 0-1'	soil	2012-05-31	00:00	2012-06-04
299959	AH-9 1-1.5'	soil	2012-05-31	00:00	2012-06-04

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
299960	AH-9 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299961	AH-9 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299962	AH-10 0-1'	soil	2012-05-31	00:00	2012-06-04
299963	AH-10 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299964	AH-10 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299965	AH-10 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299966	AH-10 4-4.5'	soil	2012-05-31	00:00	2012-06-04
299967	AH-10 5-5.5'	soil	2012-05-31	00:00	2012-06-04
299968	AH-10 6-6.5'	soil	2012-05-31	00:00	2012-06-04

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)
299930 - AH-1 0-1'	<0.100	<0.100	0.315	0.737	1270	48.0
299933 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	568	5.15
299936 - AH-3 0-1'	<0.200	0.238	5.16	8.69	2150	192
299940 - AH-4 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
299943 - AH-5 0-1'	<0.0200	<0.0200	0.0666	0.213	397	23.4
299945 - AH-6 0-1'	<0.100	<0.100	<0.100	0.222	6020	31.7
299946 - AH-6 1-1.5'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
299950 - AH-7 0-1'	<0.100	<0.100	<0.100	<0.100	843	<10.0
299954 - AH-8 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	73.9	<2.00
299958 - AH-9 0-1'	<0.100	<0.100	<0.100	<0.100	<50.0	<10.0
299962 - AH-10 0-1'	<0.400	4.50	5.70	47.1	8020	1090
299963 - AH-10 1-1.5'	<0.0200	<0.0200	<0.0200	<0.0200	95.2	<2.00

Sample: 299930 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		1080	mg/Kg	4

Sample: 299931 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		48.3	mg/Kg	4

Sample: 299932 - AH-1 2-2.5'

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

Sample: 299933 - AH-2 0-1'



Report Date: June 13, 2012

Work Order: 12060503

Page Number: 3 of 7

Param	Flag	Result	Units	RL
Chloride		1230	mg/Kg	4

Sample: 299934 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		726	mg/Kg	4

Sample: 299935 - AH-2 2-2.5'

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

Sample: 299936 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		731	mg/Kg	4

Sample: 299937 - AH-3 1-1.5'

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

Sample: 299938 - AH-3 2-2.5'

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

Sample: 299939 - AH-3 3-3.5'

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

Sample: 299940 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		2660	mg/Kg	4



Sample: 299941 - AH-4 1-1.5'

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

Sample: 299942 - AH-4 2-2.5'

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

Sample: 299943 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		76.9	mg/Kg	4

Sample: 299944 - AH-5 1-1.5'

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

Sample: 299945 - AH-6 0-1'

Param	Flag	Result	Units	RL
Chloride		980	mg/Kg	4

Sample: 299946 - AH-6 1-1.5'

Param	Flag	Result	Units	RL
Chloride		1410	mg/Kg	4

Sample: 299947 - AH-6 2-2.5'

Param	Flag	Result	Units	RL
Chloride		91.3	mg/Kg	4

Sample: 299948 - AH-6 3-3.5'

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



Sample: 299949 - AH-6 4-4.5'

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

Sample: 299950 - AH-7 0-1'

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

Sample: 299951 - AH-7 1-1.5'

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

Sample: 299952 - AH-7 2-2.5'

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

Sample: 299953 - AH-7 3-3.5'

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

Sample: 299954 - AH-8 0-1'

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

Sample: 299955 - AH-8 1-1.5'

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

Sample: 299956 - AH-8 2-2.5'

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



Sample: 299957 - AH-8 3-3.5'

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

Sample: 299958 - AH-9 0-1'

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

Sample: 299959 - AH-9 1-1.5'

Param	Flag	Result	Units	RL
Chloride		57.6	mg/Kg	4

Sample: 299960 - AH-9 2-2.5'

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

Sample: 299961 - AH-9 3-3.5'

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

Sample: 299962 - AH-10 0-1'

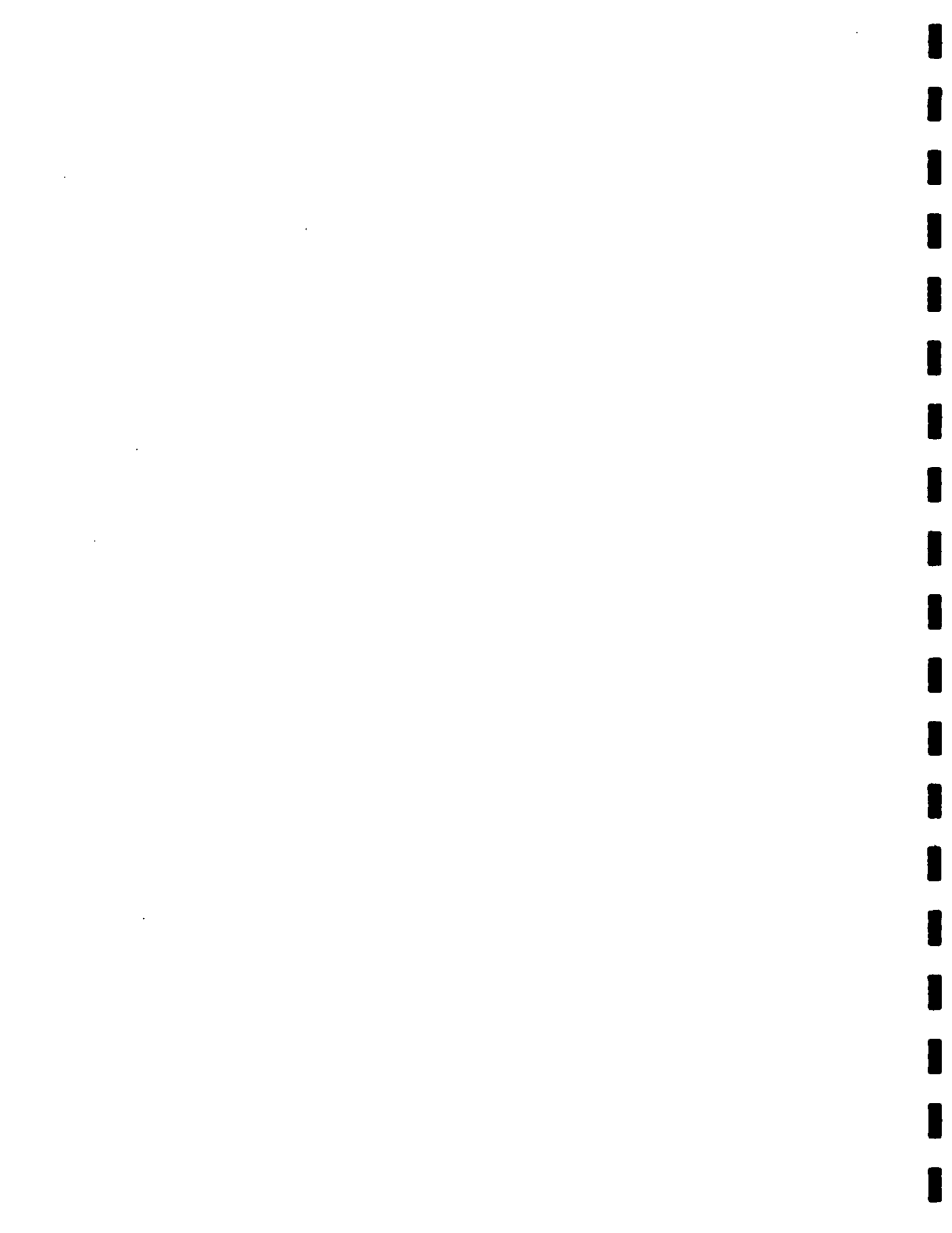
Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 299963 - AH-10 1-1.5'

Param	Flag	Result	Units	RL
Chloride		434	mg/Kg	4

Sample: 299964 - AH-10 2-2.5'

Param	Flag	Result	Units	RL
Chloride		6980	mg/Kg	4



Sample: 299965 - AH-10 3-3.5'

Param	Flag	Result	Units	RL
Chloride		7500	mg/Kg	4

Sample: 299966 - AH-10 4-4.5'

Param	Flag	Result	Units	RL
Chloride		2980	mg/Kg	4

Sample: 299967 - AH-10 5-5.5'

Param	Flag	Result	Units	RL
Chloride		39.0	mg/Kg	4

Sample: 299968 - AH-10 6-6.5'

Param	Flag	Result	Units	RL
Chloride		92.6	mg/Kg	4



SITE INFORMATION

Report Type: Closure Report

General Site Information:

Site:	BC Federal #21				
Company:	COG Operating LLC				
Section, Township and Range	Unit F	Sec. 19	T-17-S	R-32-E	
Lease Number:	API-30-025-38726				
County:	Lea County				
GPS:	32.82087° N			103.80783° W	
Surface Owner:	Federal				
Mineral Owner:					
Directions:	Intersection of CR-126 and Conoco Road (South of Maljamar), travel west on Conoco Road 1.6 mi, turn right 0.2 mi, turn left 1.0, turn right 500' to well location.				

Release Data:

Date Released:	4/6/2012
Type Release:	Oil and produced water
Source of Contamination:	Rod rotator cable broke off 1" nipple
Fluid Released:	10 bbls oil and 5 bbls of produced water
Fluids Recovered:	9 bbls oil and 4 bbls of produced water

Official Communication:

Name:	Pat Ellis		Ike Taravez
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

HOBBS OCD

NOV 01 2012

RECEIVED



TETRA TECH

October 22, 2012

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., BC Federal #21 Well,
Located Unit F, Section 19, Township 17 South, Range 32 East,
Lea County, New Mexico.**

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from BC Federal #21 Well, Located Unit F, Section 19, Township 17 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.82087°, W 103.80783°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico Oil Conservation Division (NMOCD) Form C-141 Initial Report, the leak was discovered on April 6, 2012. The spill from the well head released approximately ten (10) barrels (bbls) of oil and five (5) bbls of produced water. COG was able to recover approximately nine (9) bbls of oil and four (4) bbls of produced water with a vacuum truck. To alleviate the problem, COG repaired the well head.

The spill impacted an area on the pad and migrated off location into the pasture area. The impacted area on the pad measured approximately 5' x 210'. The spill migrated off the pad into meandering narrow native wash measuring a length of approximately 220', with a width of approximately 1' to 3' and pooled in a low lying area measuring approximately 25' x 25'. The spill areas are shown on Figures 3. The initial Form C-141 is enclosed in Appendix A.

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559 Fax 432.682.3946 www.tetrattech.com





Groundwater

No water wells records were found in Section 19. Previously, Tetra Tech installed a temporary monitor well (TMW-1) in Section 30 to a depth of 180' below grade surface to established depth to groundwater in the area. Groundwater was not encountered in TMW-1. According to the NMOCD groundwater map, the average depth to groundwater is approximately 225' below surface. The groundwater data and the TMW drilling log are shown in Appendix B.

Regulatory

A risk-based evaluation was performed for the Site in accordance with the 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

On May 31, 2012, Tetra Tech personnel inspected and sampled the spill area. A total of ten (10) auger holes (AH-1 through AH-10) were installed using a stainless steel hand auger to assess the impacted areas. Auger holes (AH-1 through AH-5) were installed on the caliche pad area and AH-6 through AH-10 were installed in the pasture area. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Analytical Results

Referring to Table 1, all of the auger hole samples were below the RRAL for TPH and BTEX, with the exception of AH-6 and AH-10. Auger holes (AH-6 and AH-10) showed TPH concentrations of 6,052 mg/kg (0-1') and 9,110 mg/kg (0-1'), respectively. The TPH concentrations declined below the RRAL at 1-1.5' below surface. In addition, auger hole (AH-10) did





TETRA TECH

show a total BTEX of 57.3 mg/kg, but declined to <0.02 mg/kg at 1-1.5' below surface.

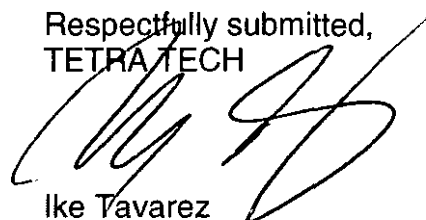
A shallow chloride impact was detected in the areas of AH-1, AH-2, AH-4, and AH-6 and significantly declined at 1.0' to 2.0' below surface. The chloride impact was deeper in the area of AH-10 showing chloride concentrations of 6,980 mg/kg (2-2.5'), 7,500 mg/kg (3-3.5') and 2,980 mg/kg (4-4.5'). The chloride impact declined with depth to 39 mg/kg at 5-5.5' below surface.

Remediation and Conclusion

Tetra Tech personnel supervised the excavation of the spill area. The spill foot print and final excavation depths of the soil remediation were met as stated in the approved work plan. In order to remove the elevated hydrocarbon and chloride concentrations, the proposed excavation depths ranged from 1.0' to 10.0' below surface. Approximately 160 cubic yards were removed and disposed of at R360 facility. The excavated area was then backfilled with clean material to grade.

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

Respectfully submitted,
TETRA TECH



Ike Tavaraz
Senior Project Manager

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



FIGURES



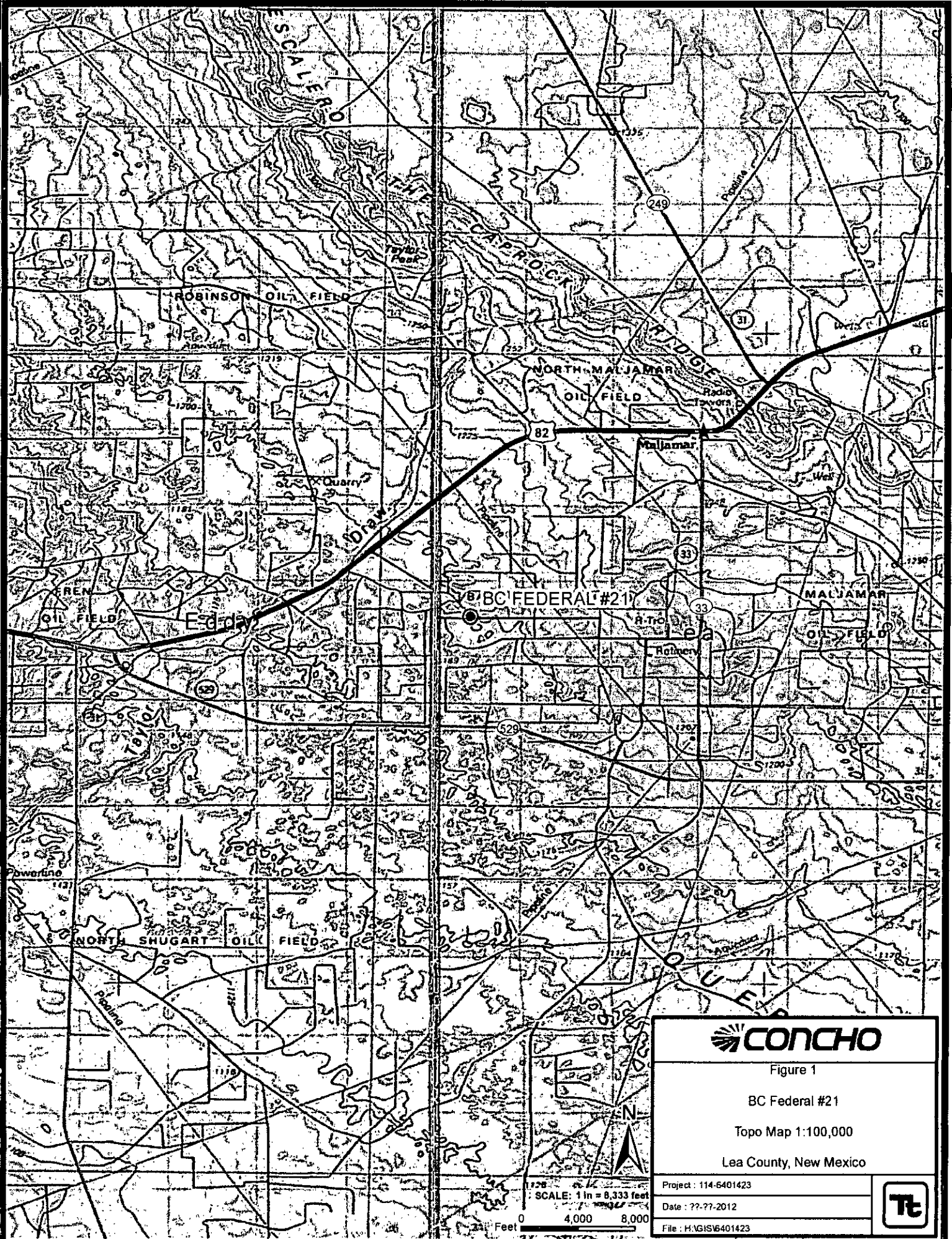


Figure 1

BC Federal #21

Topo Map 1:100,000

Lea County, New Mexico

Project : 114-6401423

Date : ??-??-2012

File : H:\GIS\6401423





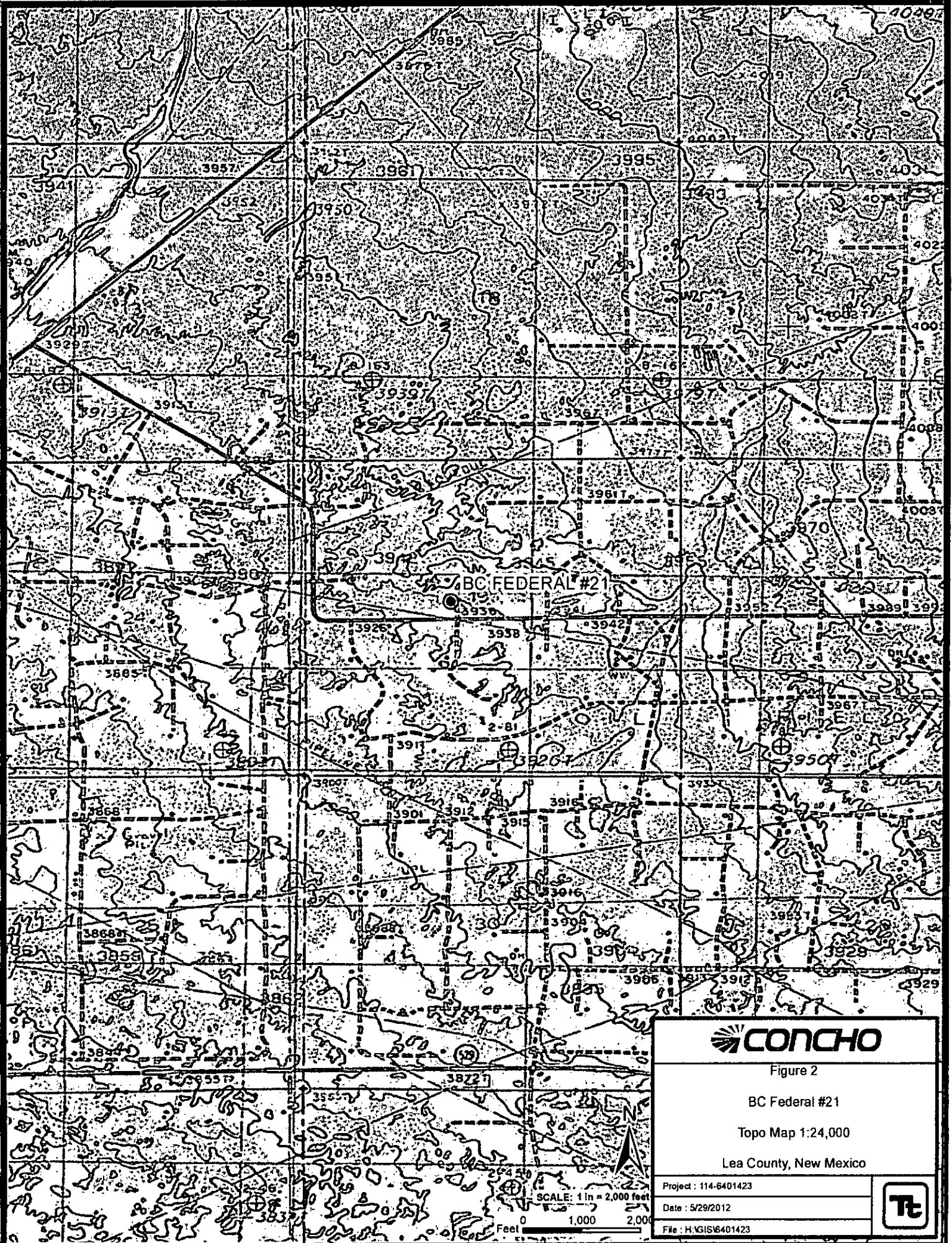


Figure 2

BC Federal #21

Topo Map 1:24,000

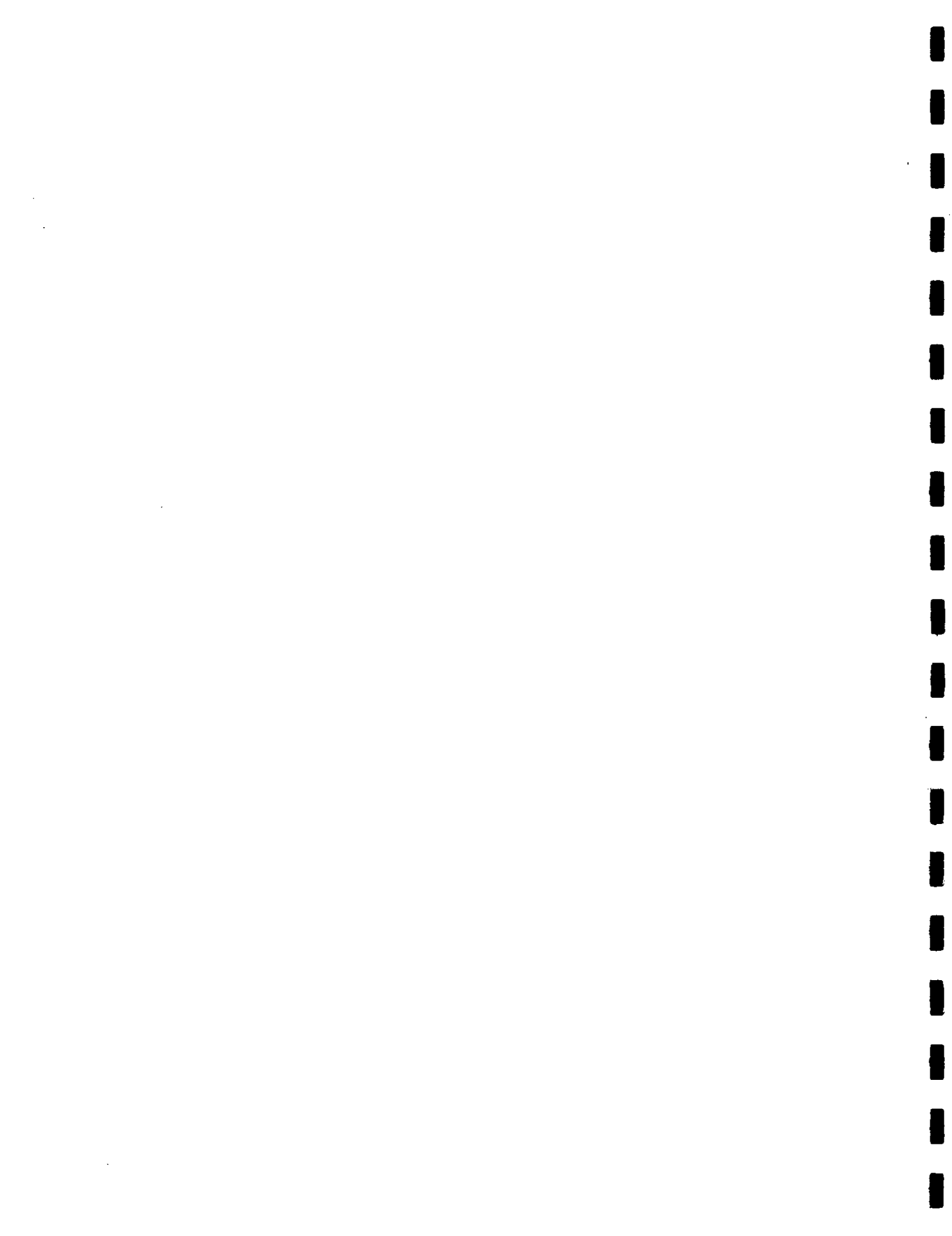
Lea County, New Mexico

Project : 114-6401423

Date : 5/29/2012

File : H:\GIS\6401423





PASTURE

PAD

PJ

1' - 3' WIDE

120'

90'

AH-3

AH-4

AH-5

AH-2

AH-1

AH-6

AH-7

AH-8

POWER
POLE

AH-10

AH-9

PASTURE

EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- ▲ POWER POLE
- ▨ SPILL AREA

SCALE: 1 IN = 47 FEET

Feet 0 20 40



Figure 3

BC Federal #21

Spill Assessment Map

Lea County, New Mexico

Project : 114-6401423

Date : 6/29/2012

File : H:\GIS\6401423







PASTURE

PAD

PASTURE

1' - 3' WIDE

AH-3
AH-4
AH-5
AH-6
AH-7
AH-8
AH-9
AH-10
POWER POLE
120°
90°
50°
130°
25°
25°
60°

EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- ▲ POWER POLE
- ▨ SPILL AREA

SCALE: 1 IN = 47 FEET
Feet 0 20 40



Figure 3

BC Federal #21

Spill Assessment Map

Lea County, New Mexico

Project: 114-6401423

Date: 6/29/2012

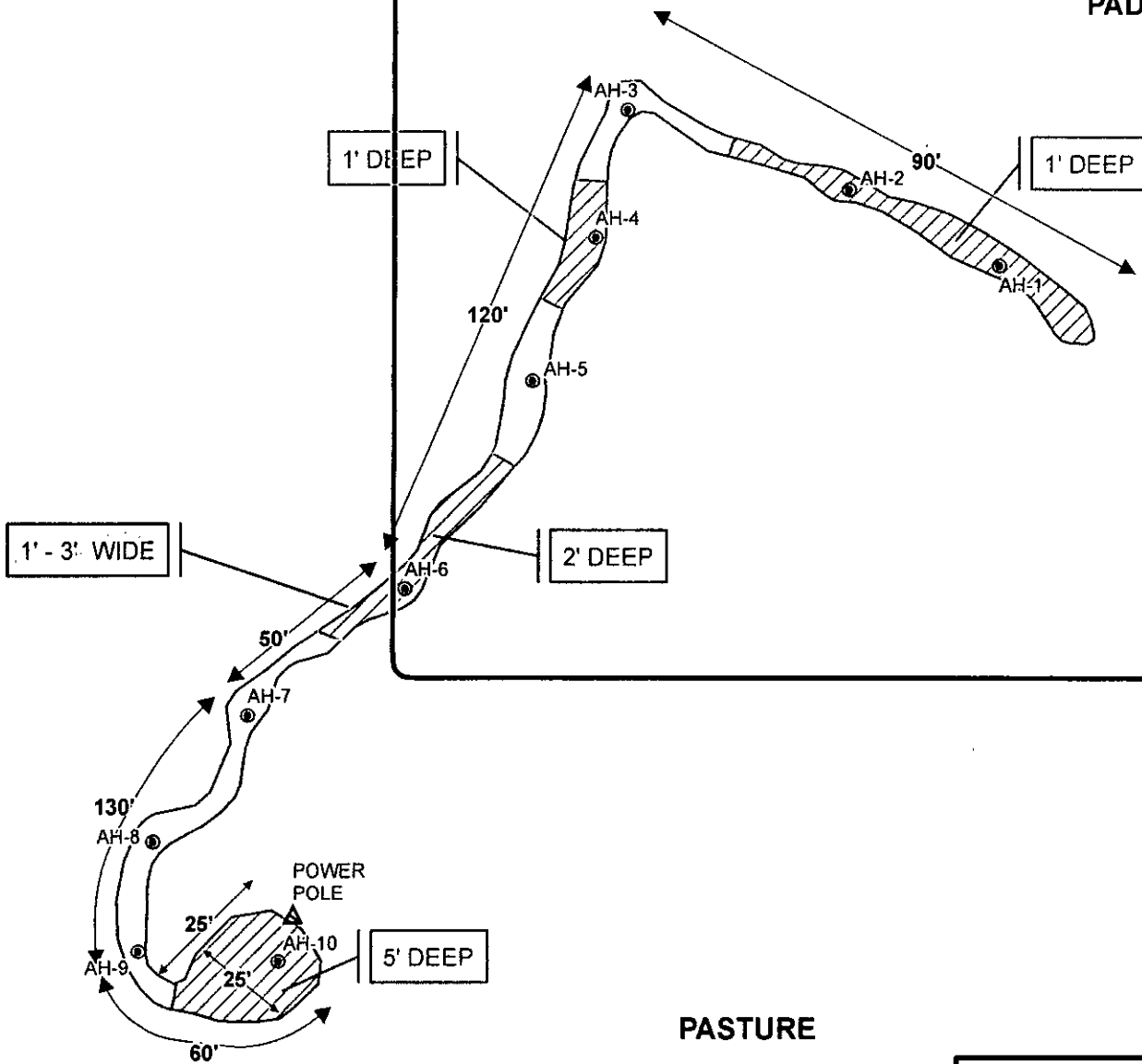
File: H:\GIS\16401423

TR



PASTURE

PAD



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- ▲ POWER POLE
- ▨ EXCAVATED AREAS



SCALE: 1 IN = 41 FEET

Feet 0 20 40



Figure 4

BC Federal #21

Excavation Areas & Depths Map

Lea County, New Mexico

Project : 114-6401423

Date : 10/22/2012

File : H:\GIS\6401423





Table 1

[illegible]



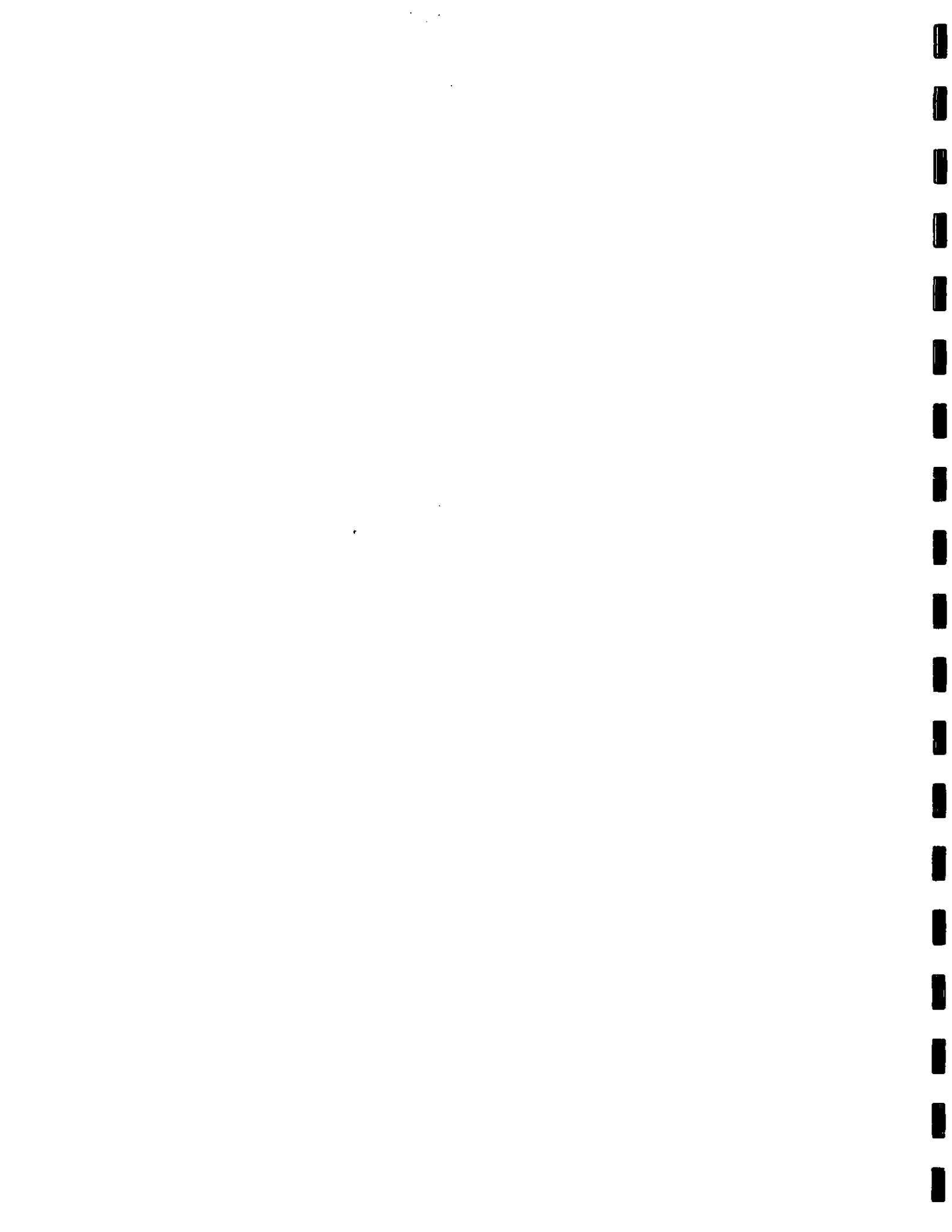


Table 1
COG Operating LLC.
BC Federal #21
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
Pasture Area Samples AH-6 through AH-10													
AH-9	5/31/2012	0-1	X		<10.0	<50.0	<50.0	<0.100	<0.100	<0.100	<0.100	<0.100	<20.0
	"	1-1.5	X		-	-	-	-	-	-	-	-	57.6
	"	2-2.5	X		-	-	-	-	-	-	-	-	<20.0
	"	3-3.5	X		-	-	-	-	-	-	-	-	<20.0
AH-10	5/31/2012	0-1		X	1,090	8,020	9,110	<0.400	4.50	5.70	47.1	57.3	<20.0
	"	1-1.5		X	<2.00	95.2	95.2	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	434
	"	2-2.5		X	-	-	-	-	-	-	-	-	6,980
	"	3-3.5		X	-	-	-	-	-	-	-	-	7,500
	"	4-4.5		X	-	-	-	-	-	-	-	-	2,980
	"	5-5.5	X		-	-	-	-	-	-	-	-	39.0
	"	6-6.5	X		-	-	-	-	-	-	-	-	92.6

(-) Not Analyzed
☐ Excavation Depth

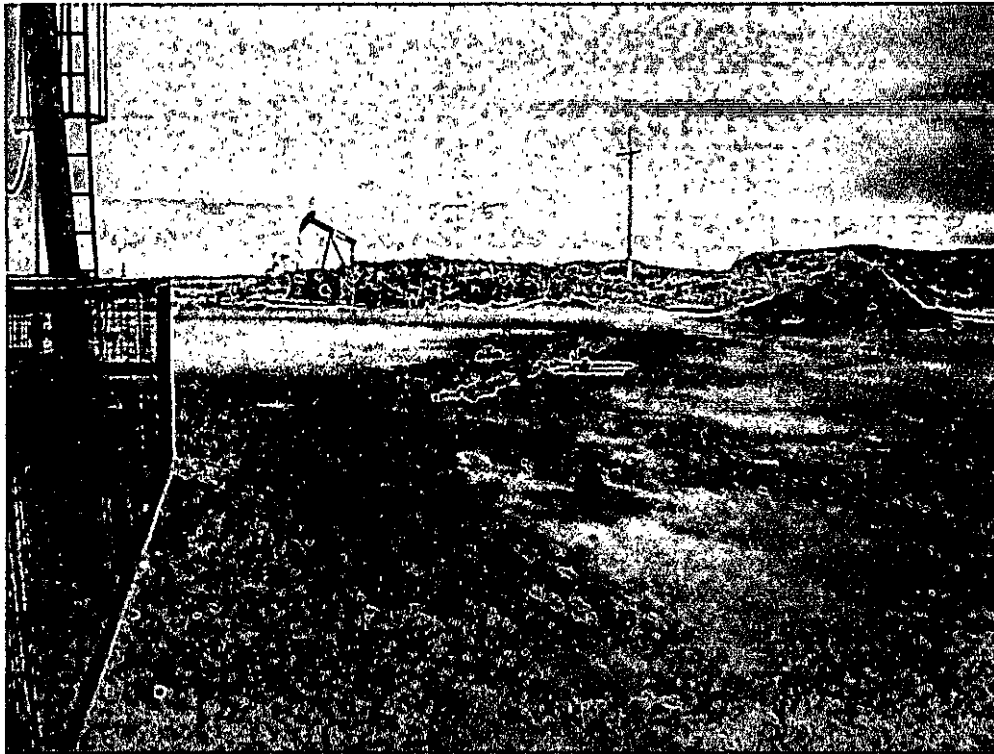
PHOTOGRAPHS



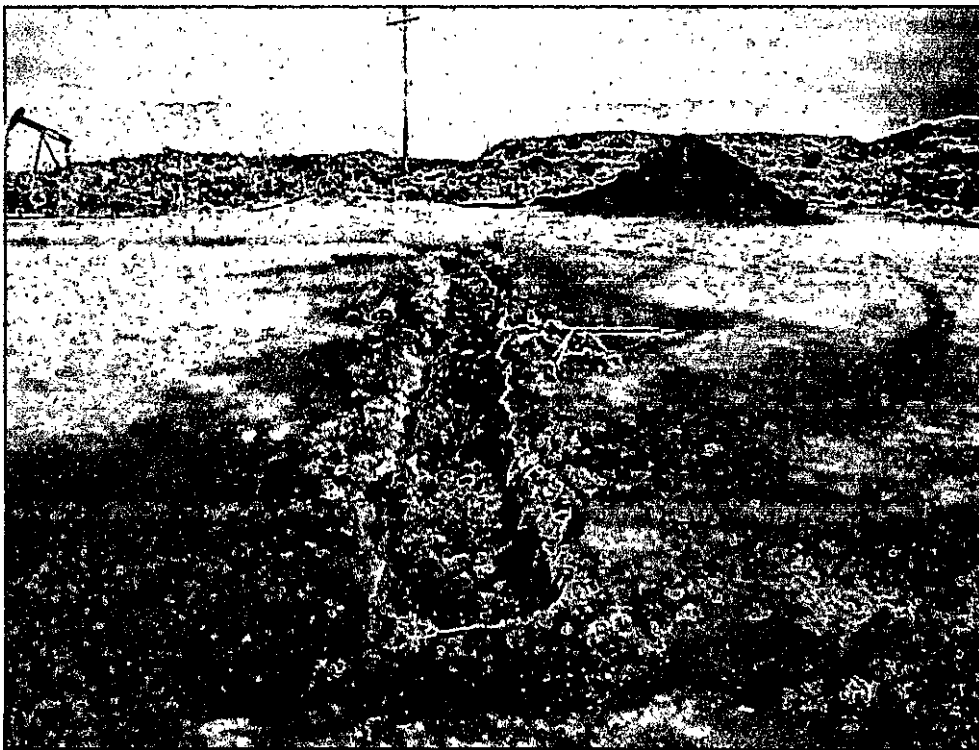
COG Operating LLC
BC Federal #21 Well
Lea County, New Mexico



TETRA TECH



View Southwest- Excavation of AH-1 and AH-2 from well.



View West - Excavation of AH-1 and AH-2.



View West – Excavation of AH-4.



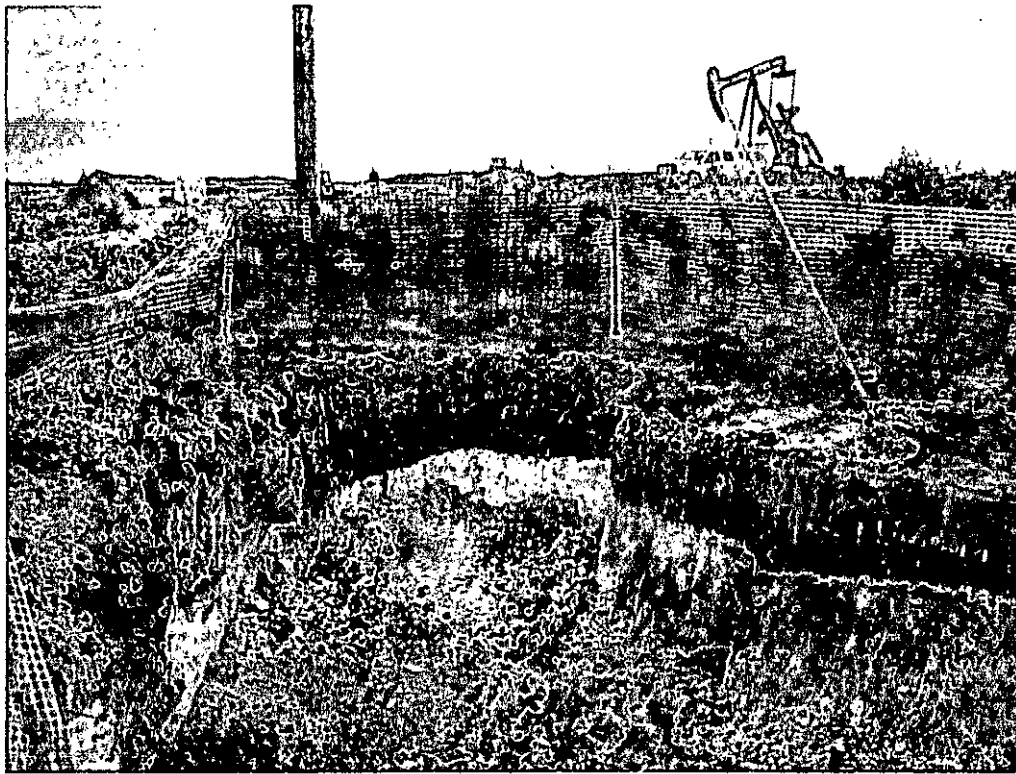
View South – Excavation of AH-6.



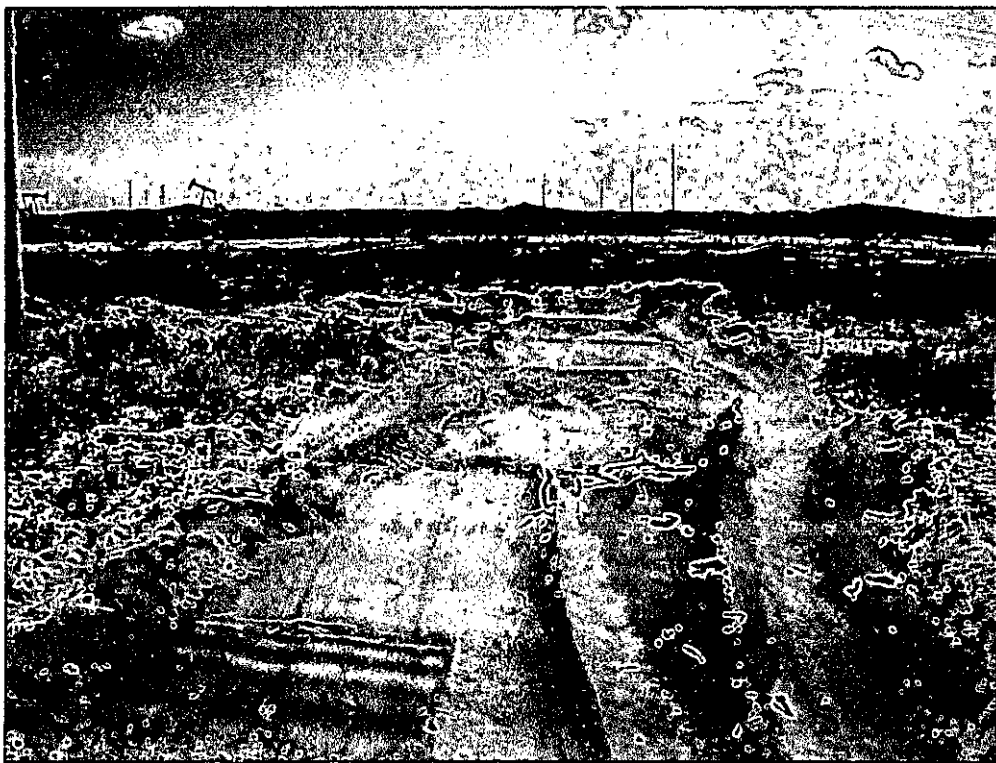
COG Operating LLC
BC Federal #21 Well
Lea County, New Mexico



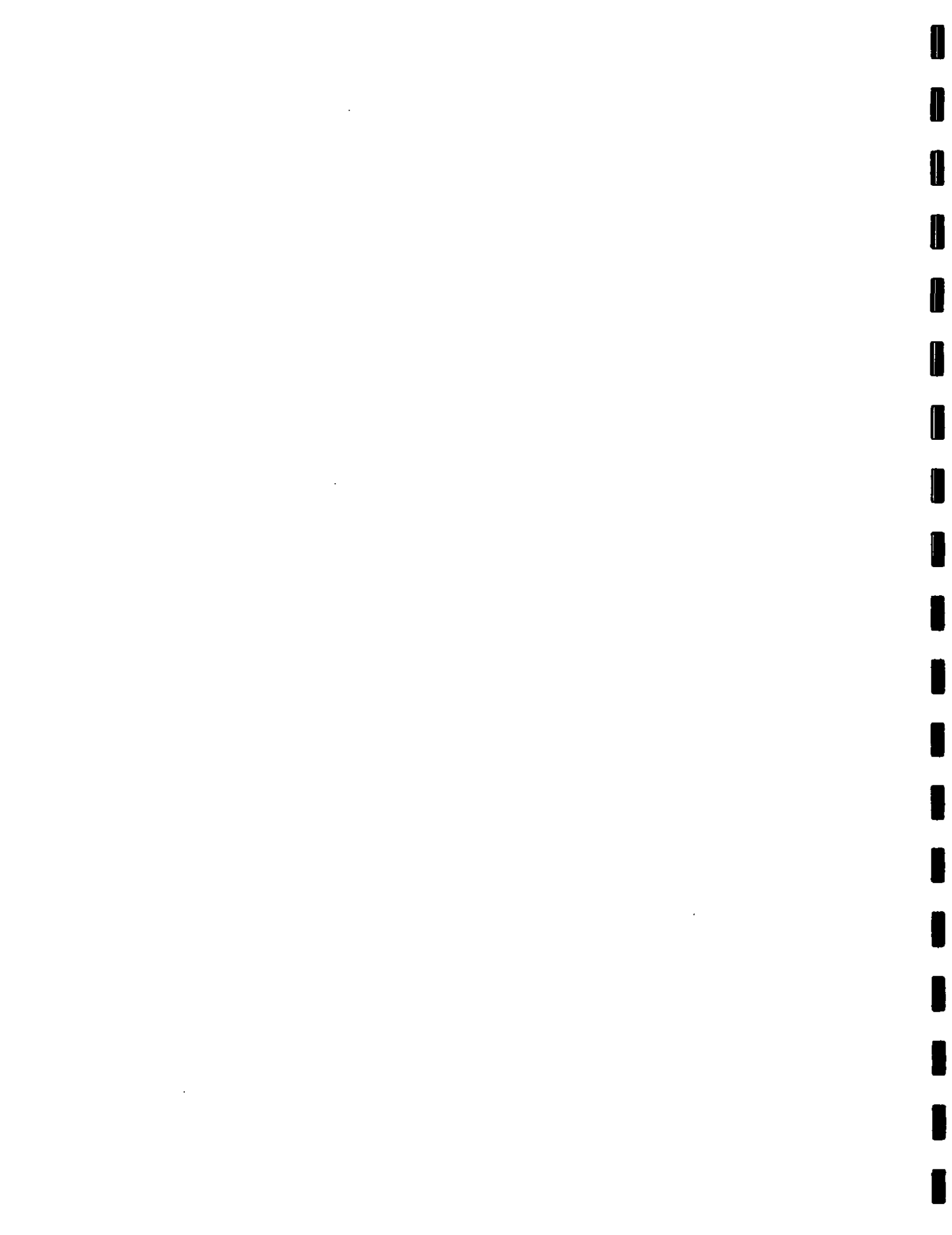
TETRA TECH



View North – Excavation of AH-10.



View South– Backfill



Water Well Data
Average Depth to Groundwater (ft)
COG - BC Federal #21
Lea County, New Mexico

16 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
290					

17 South 31 East					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
					271

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
					261

16 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
					260

17 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 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

16 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
190	168	160			

17 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

18 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
-  Site - BC Federal #21
-  Tetra Tech Temporary well

APPENDIX C



Summary Report

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

Report Date: June 13, 2012

Work Order: 12060503

Project Location: Lea Co., NM
Project Name: COG/BC Federal #21
Project Number: 114-6401423

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
299930	AH-1 0-1'	soil	2012-05-31	00:00	2012-06-04
299931	AH-1 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299932	AH-1 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299933	AH-2 0-1'	soil	2012-05-31	00:00	2012-06-04
299934	AH-2 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299935	AH-2 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299936	AH-3 0-1'	soil	2012-05-31	00:00	2012-06-04
299937	AH-3 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299938	AH-3 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299939	AH-3 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299940	AH-4 0-1'	soil	2012-05-31	00:00	2012-06-04
299941	AH-4 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299942	AH-4 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299943	AH-5 0-1'	soil	2012-05-31	00:00	2012-06-04
299944	AH-5 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299945	AH-6 0-1'	soil	2012-05-31	00:00	2012-06-04
299946	AH-6 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299947	AH-6 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299948	AH-6 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299949	AH-6 4-4.5'	soil	2012-05-31	00:00	2012-06-04
299950	AH-7 0-1'	soil	2012-05-31	00:00	2012-06-04
299951	AH-7 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299952	AH-7 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299953	AH-7 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299954	AH-8 0-1'	soil	2012-05-31	00:00	2012-06-04
299955	AH-8 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299956	AH-8 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299957	AH-8 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299958	AH-9 0-1'	soil	2012-05-31	00:00	2012-06-04
299959	AH-9 1-1.5'	soil	2012-05-31	00:00	2012-06-04



Sample	Description	Matrix	Date Taken	Time Taken	Date Received
299960	AH-9 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299961	AH-9 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299962	AH-10 0-1'	soil	2012-05-31	00:00	2012-06-04
299963	AH-10 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299964	AH-10 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299965	AH-10 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299966	AH-10 4-4.5'	soil	2012-05-31	00:00	2012-06-04
299967	AH-10 5-5.5'	soil	2012-05-31	00:00	2012-06-04
299968	AH-10 6-6.5'	soil	2012-05-31	00:00	2012-06-04

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)
299930 - AH-1 0-1'	<0.100	<0.100	0.315	0.737	1270	48.0
299933 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	568	5.15
299936 - AH-3 0-1'	<0.200	0.238	5.16	8.69	2150	192
299940 - AH-4 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
299943 - AH-5 0-1'	<0.0200	<0.0200	0.0666	0.213	397	23.4
299945 - AH-6 0-1'	<0.100	<0.100	<0.100	0.222	6020	31.7
299946 - AH-6 1-1.5'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
299950 - AH-7 0-1'	<0.100	<0.100	<0.100	<0.100	843	<10.0
299954 - AH-8 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	73.9	<2.00
299958 - AH-9 0-1'	<0.100	<0.100	<0.100	<0.100	<50.0	<10.0
299962 - AH-10 0-1'	<0.400	4.50	5.70	47.1	8020	1090
299963 - AH-10 1-1.5'	<0.0200	<0.0200	<0.0200	<0.0200	95.2	<2.00

Sample: 299930 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		1080	mg/Kg	4

Sample: 299931 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		48.3	mg/Kg	4

Sample: 299932 - AH-1 2-2.5'

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

Sample: 299933 - AH-2 0-1'

Report Date: June 13, 2012

Work Order: 12060503

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Param	Flag	Result	Units	RL
Chloride		1230	mg/Kg	4

Sample: 299934 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		726	mg/Kg	4

Sample: 299935 - AH-2 2-2.5'

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

Sample: 299936 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		731	mg/Kg	4

Sample: 299937 - AH-3 1-1.5'

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

Sample: 299938 - AH-3 2-2.5'

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

Sample: 299939 - AH-3 3-3.5'

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

Sample: 299940 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		2660	mg/Kg	4

Report Date: June 13, 2012

Work Order: 12060503

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Sample: 299941 - AH-4 1-1.5'

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

Sample: 299942 - AH-4 2-2.5'

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

Sample: 299943 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		76.9	mg/Kg	4

Sample: 299944 - AH-5 1-1.5'

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

Sample: 299945 - AH-6 0-1'

Param	Flag	Result	Units	RL
Chloride		980	mg/Kg	4

Sample: 299946 - AH-6 1-1.5'

Param	Flag	Result	Units	RL
Chloride		1410	mg/Kg	4

Sample: 299947 - AH-6 2-2.5'

Param	Flag	Result	Units	RL
Chloride		91.3	mg/Kg	4

Sample: 299948 - AH-6 3-3.5'

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



Sample: 299949 - AH-6 4-4.5'

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

Sample: 299950 - AH-7 0-1'

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

Sample: 299951 - AH-7 1-1.5'

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

Sample: 299952 - AH-7 2-2.5'

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

Sample: 299953 - AH-7 3-3.5'

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

Sample: 299954 - AH-8 0-1'

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

Sample: 299955 - AH-8 1-1.5'

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

Sample: 299956 - AH-8 2-2.5'

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

Sample: 299957 - AH-8 3-3.5'

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

Sample: 299958 - AH-9 0-1'

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

Sample: 299959 - AH-9 1-1.5'

Param	Flag	Result	Units	RL
Chloride		57.6	mg/Kg	4

Sample: 299960 - AH-9 2-2.5'

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

Sample: 299961 - AH-9 3-3.5'

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

Sample: 299962 - AH-10 0-1'

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

Sample: 299963 - AH-10 1-1.5'

Param	Flag	Result	Units	RL
Chloride		434	mg/Kg	4

Sample: 299964 - AH-10 2-2.5'

Param	Flag	Result	Units	RL
Chloride		6980	mg/Kg	4



Report Date: June 13, 2012

Work Order: 12060503

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Sample: 299965 - AH-10 3-3.5'

Param	Flag	Result	Units	RL
Chloride		7500	mg/Kg	4

Sample: 299966 - AH-10 4-4.5'

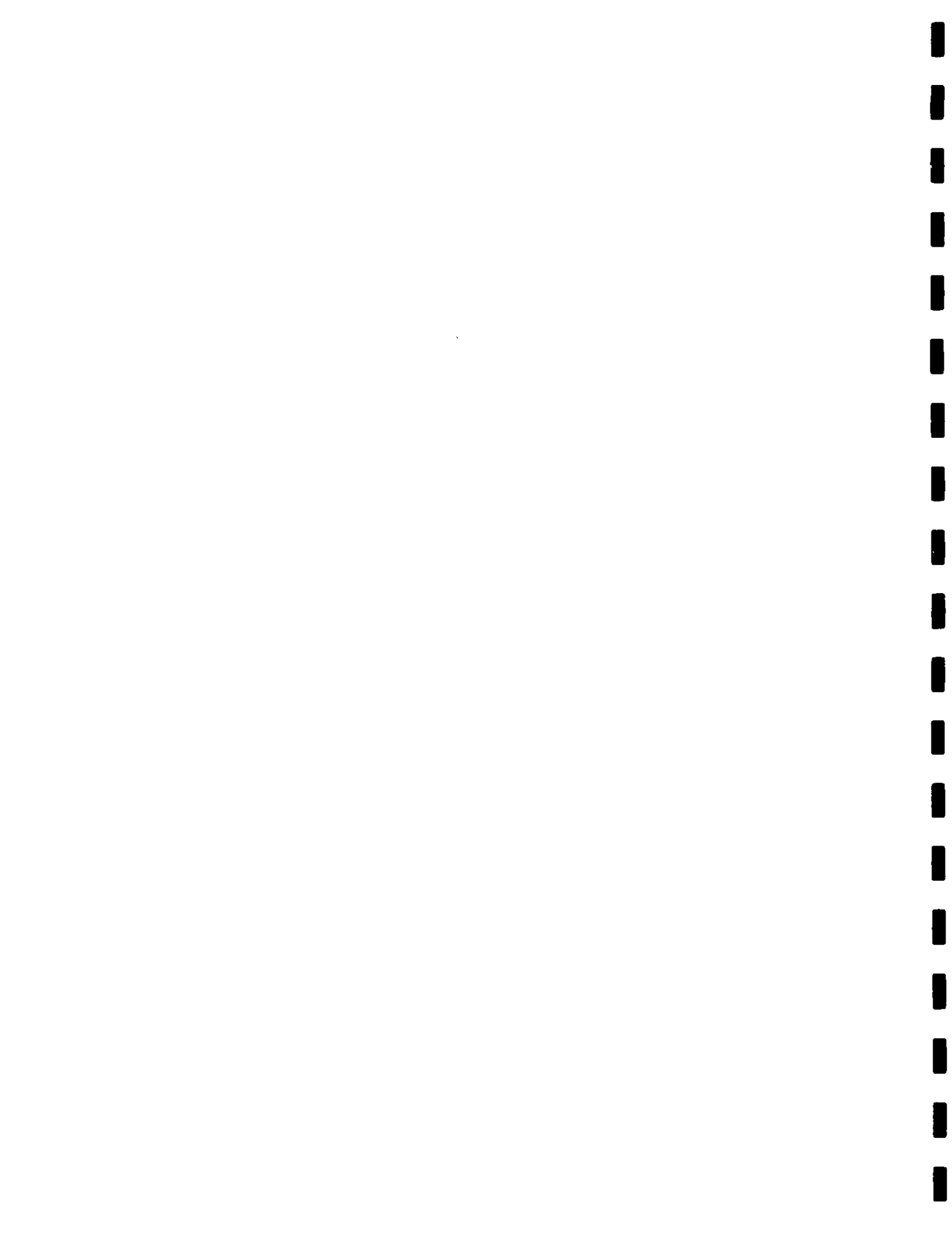
Param	Flag	Result	Units	RL
Chloride		2980	mg/Kg	4

Sample: 299967 - AH-10 5-5.5'

Param	Flag	Result	Units	RL
Chloride		39.0	mg/Kg	4

Sample: 299968 - AH-10 6-6.5'

Param	Flag	Result	Units	RL
Chloride		92.6	mg/Kg	4



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Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: June 13, 2012

Work Order: 12060503

Project Location: Lea Co., NM
Project Name: COG/BC Federal #21
Project Number: 114-6401423

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
299930	AH-1 0-1'	soil	2012-05-31	00:00	2012-06-04
299931	AH-1 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299932	AH-1 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299933	AH-2 0-1'	soil	2012-05-31	00:00	2012-06-04
299934	AH-2 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299935	AH-2 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299936	AH-3 0-1'	soil	2012-05-31	00:00	2012-06-04
299937	AH-3 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299938	AH-3 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299939	AH-3 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299940	AH-4 0-1'	soil	2012-05-31	00:00	2012-06-04
299941	AH-4 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299942	AH-4 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299943	AH-5 0-1'	soil	2012-05-31	00:00	2012-06-04
299944	AH-5 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299945	AH-6 0-1'	soil	2012-05-31	00:00	2012-06-04
299946	AH-6 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299947	AH-6 2-2.5'	soil	2012-05-31	00:00	2012-06-04



Sample	Description	Matrix	Date Taken	Time Taken	Date Received
299948	AH-6 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299949	AH-6 4-4.5'	soil	2012-05-31	00:00	2012-06-04
299950	AH-7 0-1'	soil	2012-05-31	00:00	2012-06-04
299951	AH-7 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299952	AH-7 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299953	AH-7 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299954	AH-8 0-1'	soil	2012-05-31	00:00	2012-06-04
299955	AH-8 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299956	AH-8 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299957	AH-8 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299958	AH-9 0-1'	soil	2012-05-31	00:00	2012-06-04
299959	AH-9 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299960	AH-9 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299961	AH-9 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299962	AH-10 0-1'	soil	2012-05-31	00:00	2012-06-04
299963	AH-10 1-1.5'	soil	2012-05-31	00:00	2012-06-04
299964	AH-10 2-2.5'	soil	2012-05-31	00:00	2012-06-04
299965	AH-10 3-3.5'	soil	2012-05-31	00:00	2012-06-04
299966	AH-10 4-4.5'	soil	2012-05-31	00:00	2012-06-04
299967	AH-10 5-5.5'	soil	2012-05-31	00:00	2012-06-04
299968	AH-10 6-6.5'	soil	2012-05-31	00:00	2012-06-04

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 57 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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Sample 299936 (AH-3 0-1')	11
Sample 299937 (AH-3 1-1.5')	12
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Sample 299944 (AH-5 1-1.5')	16
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Sample 299946 (AH-6 1-1.5')	18
Sample 299947 (AH-6 2-2.5')	20
Sample 299948 (AH-6 3-3.5')	20
Sample 299949 (AH-6 4-4.5')	20
Sample 299950 (AH-7 0-1')	20
Sample 299951 (AH-7 1-1.5')	22
Sample 299952 (AH-7 2-2.5')	22
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Sample 299955 (AH-8 1-1.5')	24
Sample 299956 (AH-8 2-2.5')	24
Sample 299957 (AH-8 3-3.5')	25
Sample 299958 (AH-9 0-1')	25
Sample 299959 (AH-9 1-1.5')	26
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Case Narrative

Samples for project COG/BC Federal #21 were received by TraceAnalysis, Inc. on 2012-06-04 and assigned to work order 12060503. Samples for work order 12060503 were received intact at a temperature of 2.6 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	78016	2012-06-08 at 14:30	91972	2012-06-08 at 15:06
BTEX	S 8021B	78029	2012-06-09 at 11:00	91974	2012-06-09 at 12:49
Chloride (Titration)	SM 4500-Cl B	78015	2012-06-08 at 09:59	91959	2012-06-08 at 15:01
Chloride (Titration)	SM 4500-Cl B	78015	2012-06-08 at 09:59	92013	2012-06-12 at 08:25
Chloride (Titration)	SM 4500-Cl B	78015	2012-06-08 at 09:59	92014	2012-06-12 at 08:26
Chloride (Titration)	SM 4500-Cl B	78015	2012-06-08 at 09:59	92031	2012-06-12 at 13:36
Chloride (Titration)	SM 4500-Cl B	78015	2012-06-08 at 09:59	92033	2012-06-12 at 13:40
TPH DRO - NEW	S 8015 D	78010	2012-06-07 at 15:30	91950	2012-06-07 at 15:00
TPH DRO - NEW	S 8015 D	78010	2012-06-07 at 15:30	91952	2012-06-07 at 15:00
TPH DRO - NEW	S 8015 D	78030	2012-06-09 at 11:00	91976	2012-06-09 at 14:05
TPH GRO	S 8015 D	78016	2012-06-08 at 14:30	91973	2012-06-08 at 15:32
TPH GRO	S 8015 D	78029	2012-06-09 at 11:00	91975	2012-06-09 at 13:15

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 12060503 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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Analytical Report

Sample: 299930 - AH-1 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 91972
Prep Batch: 78016

Analytical Method: S 8021B
Date Analyzed: 2012-06-08
Sample Preparation: 2012-06-08

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	1	<0.100	mg/Kg	5	0.0200
Toluene	u	1	<0.100	mg/Kg	5	0.0200
Ethylbenzene		1	0.315	mg/Kg	5	0.0200
Xylene		1	0.737	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			5.55	mg/Kg	5	5.00	111	70 - 135.4
4-Bromofluorobenzene (4-BFB)			6.14	mg/Kg	5	5.00	123	53.6 - 158.9

Sample: 299930 - AH-1 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 92013
Prep Batch: 78015

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-06-12
Sample Preparation: 2012-06-11

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1080	mg/Kg	5	4.00

Sample: 299930 - AH-1 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 91950
Prep Batch: 78010

Analytical Method: S 8015 D
Date Analyzed: 2012-06-07
Sample Preparation: 2012-06-07

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	1270	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	164	mg/Kg	1	100	164	55.1 - 135.7

Sample: 299930 - AH-1 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 91973
Prep Batch: 78016

Analytical Method: S 8015 D
Date Analyzed: 2012-06-08
Sample Preparation: 2012-06-08

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO			48.0	mg/Kg	5	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			4.83	mg/Kg	5	5.00	97	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			4.13	mg/Kg	5	5.00	83	45.1 - 162.2

Sample: 299931 - AH-1 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 92013
Prep Batch: 78015

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-06-12
Sample Preparation: 2012-06-11

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			48.3	mg/Kg	5	4.00

Sample: 299932 - AH-1 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 92013
Prep Batch: 78015

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-06-12
Sample Preparation: 2012-06-11

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

continued ...



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sample 299932 continued ...

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

Sample: 299933 - AH-2 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 91972
Prep Batch: 78016

Analytical Method: S 8021B
Date Analyzed: 2012-06-08
Sample Preparation: 2012-06-08

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

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)			2.48	mg/Kg	1	2.00	124	70 - 135.4
4-Bromofluorobenzene (4-BFB)			2.96	mg/Kg	1	2.00	148	53.6 - 158.9

Sample: 299933 - AH-2 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 92014
Prep Batch: 78015

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-06-12
Sample Preparation: 2012-06-11

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1230	mg/Kg	5	4.00



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Sample: 299933 - AH-2 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 91950
Prep Batch: 78010

Analytical Method: S 8015 D
Date Analyzed: 2012-06-07
Sample Preparation: 2012-06-07

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	568	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{NT}	Q _{NT}	137	mg/Kg	1	100	137	55.1 - 135.7

Sample: 299933 - AH-2 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 91973
Prep Batch: 78016

Analytical Method: S 8015 D
Date Analyzed: 2012-06-08
Sample Preparation: 2012-06-08

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	5.15	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.15	mg/Kg	1	2.00	108	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			2.58	mg/Kg	1	2.00	129	45.1 - 162.2

Sample: 299934 - AH-2 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 92014
Prep Batch: 78015

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-06-12
Sample Preparation: 2012-06-11

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			726	mg/Kg	5	4.00

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Sample: 299935 - AH-2 2-2.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-12	Analyzed By:	AR
QC Batch:	92014	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

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

Sample: 299936 - AH-3 0-1'

Laboratory:	Midland	Analytical Method:	S 8021B	Prep Method:	S 5035
Analysis:	BTEX	Date Analyzed:	2012-06-08	Analyzed By:	AG
QC Batch:	91972	Sample Preparation:	2012-06-08	Prepared By:	AG
Prep Batch:	78016				

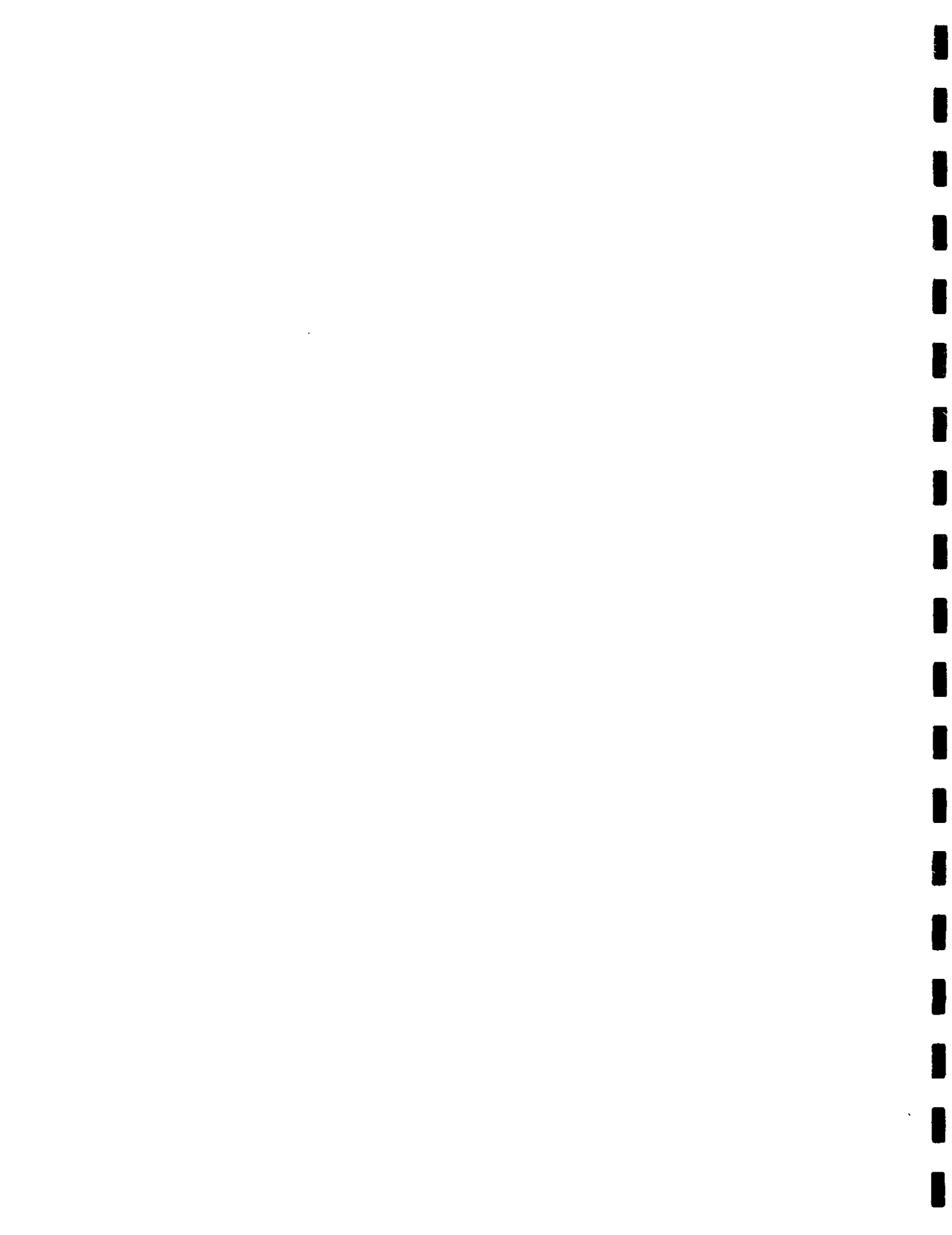
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	1	<0.200	mg/Kg	10	0.0200
Toluene		1	0.238	mg/Kg	10	0.0200
Ethylbenzene		1	5.16	mg/Kg	10	0.0200
Xylene		1	8.69	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			10.3	mg/Kg	10	10.0	103	70 - 135.4
4-Bromofluorobenzene (4-BFB)			14.4	mg/Kg	10	10.0	144	53.6 - 158.9

Sample: 299936 - AH-3 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-12	Analyzed By:	AR
QC Batch:	92014	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			731	mg/Kg	5	4.00



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Sample: 299936 - AH-3 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 91952
Prep Batch: 78010

Analytical Method: S 8015 D
Date Analyzed: 2012-06-07
Sample Preparation: 2012-06-07

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	2150	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{SR}	Q _{SR}	211	mg/Kg	1	100	211	49.3 - 157.5

Sample: 299936 - AH-3 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 91973
Prep Batch: 78016

Analytical Method: S 8015 D
Date Analyzed: 2012-06-08
Sample Preparation: 2012-06-08

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	192	mg/Kg	10	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			9.08	mg/Kg	10	10.0	91	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			9.29	mg/Kg	10	10.0	93	45.1 - 162.2

Sample: 299937 - AH-3 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 92014
Prep Batch: 78015

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-06-12
Sample Preparation: 2012-06-11

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

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



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Sample: 299938 - AH-3 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 92014 Date Analyzed: 2012-06-12 Analyzed By: AR
Prep Batch: 78015 Sample Preparation: 2012-06-11 Prepared By: AR

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

Sample: 299939 - AH-3 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 92014 Date Analyzed: 2012-06-12 Analyzed By: AR
Prep Batch: 78015 Sample Preparation: 2012-06-11 Prepared By: AR

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

Sample: 299940 - AH-4 0-1'

Laboratory: Midland
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 91972 Date Analyzed: 2012-06-08 Analyzed By: AG
Prep Batch: 78016 Sample Preparation: 2012-06-08 Prepared By: AG

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)			2.31	mg/Kg	1	2.00	116	70 - 135.4
4-Bromofluorobenzene (4-BFB)			2.35	mg/Kg	1	2.00	118	53.6 - 158.9

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Sample: 299940 - AH-4 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-12	Analyzed By:	AR
QC Batch:	92014	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2660	mg/Kg	10	4.00

Sample: 299940 - AH-4 0-1'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2012-06-07	Analyzed By:	AG
QC Batch:	91952	Sample Preparation:	2012-06-07	Prepared By:	AG
Prep Batch:	78010				

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			93.4	mg/Kg	1	100	93	49.3 - 157.5

Sample: 299940 - AH-4 0-1'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2012-06-08	Analyzed By:	AG
QC Batch:	91973	Sample Preparation:	2012-06-08	Prepared By:	AG
Prep Batch:	78016				

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.04	mg/Kg	1	2.00	102	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			1.76	mg/Kg	1	2.00	88	45.1 - 162.2

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Sample: 299941 - AH-4 1-1.5'

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	92014	Date Analyzed:	2012-06-12
Prep Batch:	78015	Sample Preparation:	2012-06-11
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

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

Sample: 299942 - AH-4 2-2.5'

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	92014	Date Analyzed:	2012-06-12
Prep Batch:	78015	Sample Preparation:	2012-06-11
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

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

Sample: 299943 - AH-5 0-1'

Laboratory:	Midland		
Analysis:	BTEX	Analytical Method:	S 8021B
QC Batch:	91972	Date Analyzed:	2012-06-08
Prep Batch:	78016	Sample Preparation:	2012-06-08
		Prep Method:	S 5035
		Analyzed By:	AG
		Prepared By:	AG

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		1	0.0666	mg/Kg	1	0.0200
Xylene		1	0.213	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.34	mg/Kg	1	2.00	117	70 - 135.4
4-Bromofluorobenzene (4-BFB)			2.87	mg/Kg	1	2.00	144	53.6 - 158.9



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Sample: 299943 - AH-5 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-12	Analyzed By:	AR
QC Batch:	92031	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			76.9	mg/Kg	5	4.00

Sample: 299943 - AH-5 0-1'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2012-06-07	Analyzed By:	AG
QC Batch:	91952	Sample Preparation:	2012-06-07	Prepared By:	AG
Prep Batch:	78010				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	397	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			130	mg/Kg	1	100	130	49.3 - 157.5

Sample: 299943 - AH-5 0-1'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2012-06-08	Analyzed By:	AG
QC Batch:	91973	Sample Preparation:	2012-06-08	Prepared By:	AG
Prep Batch:	78016				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	23.4	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.06	mg/Kg	1	2.00	103	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			2.06	mg/Kg	1	2.00	103	45.1 - 162.2



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Sample: 299944 - AH-5 1-1.5'

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	92031	Date Analyzed:	2012-06-12
Prep Batch:	78015	Sample Preparation:	2012-06-11
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

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

Sample: 299945 - AH-6 0-1'

Laboratory:	Midland		
Analysis:	BTEX	Analytical Method:	S 8021B
QC Batch:	91972	Date Analyzed:	2012-06-08
Prep Batch:	78016	Sample Preparation:	2012-06-08
		Prep Method:	S 5035
		Analyzed By:	AG
		Prepared By:	AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	i	<0.100	mg/Kg	5	0.0200
Toluene	u	i	<0.100	mg/Kg	5	0.0200
Ethylbenzene		i	<0.100	mg/Kg	5	0.0200
Xylene		i	0.222	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			5.71	mg/Kg	5	5.00	114	70 - 135.4
4-Bromofluorobenzene (4-BFB)			6.99	mg/Kg	5	5.00	140	53.6 - 158.9

Sample: 299945 - AH-6 0-1'

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	92031	Date Analyzed:	2012-06-12
Prep Batch:	78015	Sample Preparation:	2012-06-11
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			980	mg/Kg	5	4.00



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Sample: 299945 - AH-6 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 91952
Prep Batch: 78010

Analytical Method: S 8015 D
Date Analyzed: 2012-06-07
Sample Preparation: 2012-06-07

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	6020	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{or}	Q _{or}	477	mg/Kg	5	100	477	49.3 - 157.5

Sample: 299945 - AH-6 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 91973
Prep Batch: 78016

Analytical Method: S 8015 D
Date Analyzed: 2012-06-08
Sample Preparation: 2012-06-08

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	31.7	mg/Kg	5	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			5.09	mg/Kg	5	5.00	102	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			4.61	mg/Kg	5	5.00	92	45.1 - 162.2

Sample: 299946 - AH-6 1-1.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 91974
Prep Batch: 78029

Analytical Method: S 8021B
Date Analyzed: 2012-06-09
Sample Preparation: 2012-06-09

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

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



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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.23	mg/Kg	1	2.00	112	70 - 135.4
4-Bromofluorobenzene (4-BFB)			2.19	mg/Kg	1	2.00	110	53.6 - 158.9

Sample: 299946 - AH-6 1-1.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-12	Analyzed By:	AR
QC Batch:	92031	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1410	mg/Kg	5	4.00

Sample: 299946 - AH-6 1-1.5'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2012-06-09	Analyzed By:	AG
QC Batch:	91976	Sample Preparation:	2012-06-09	Prepared By:	AG
Prep Batch:	78030				

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			103	mg/Kg	1	100	103	55.1 - 135.7

Sample: 299946 - AH-6 1-1.5'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2012-06-09	Analyzed By:	AG
QC Batch:	91975	Sample Preparation:	2012-06-09	Prepared By:	AG
Prep Batch:	78029				

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



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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.95	mg/Kg	1	2.00	98	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			1.58	mg/Kg	1	2.00	79	45.1 - 162.2

Sample: 299947 - AH-6 2-2.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-12	Analyzed By:	AR
QC Batch:	92031	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			91.3	mg/Kg	5	4.00

Sample: 299948 - AH-6 3-3.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-12	Analyzed By:	AR
QC Batch:	92031	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

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

Sample: 299949 - AH-6 4-4.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-12	Analyzed By:	AR
QC Batch:	92031	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

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



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Sample: 299950 - AH-7 0-1'

Laboratory: Midland

Analysis: BTEX

QC Batch: 91972

Prep Batch: 78016

Analytical Method: S 8021B

Date Analyzed: 2012-06-08

Sample Preparation: 2012-06-08

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			5.34	mg/Kg	5	5.00	107	70 - 135.4
4-Bromofluorobenzene (4-BFB)			5.28	mg/Kg	5	5.00	106	53.6 - 158.9

Sample: 299950 - AH-7 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 92031

Prep Batch: 78015

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-06-12

Sample Preparation: 2012-06-11

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

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

Sample: 299950 - AH-7 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 91952

Prep Batch: 78010

Analytical Method: S 8015 D

Date Analyzed: 2012-06-07

Sample Preparation: 2012-06-07

Prep Method: N/A

Analyzed By: AG

Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	843	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			158	mg/Kg	1	100	158	49.3 - 157.5



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Sample: 299950 - AH-7 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 91973
Prep Batch: 78016

Analytical Method: S 8015 D
Date Analyzed: 2012-06-08
Sample Preparation: 2012-06-08

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			4.68	mg/Kg	5	5.00	94	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			4.18	mg/Kg	5	5.00	84	45.1 - 162.2

Sample: 299951 - AH-7 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 92031
Prep Batch: 78015

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-06-12
Sample Preparation: 2012-06-11

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

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

Sample: 299952 - AH-7 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 92031
Prep Batch: 78015

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-06-12
Sample Preparation: 2012-06-11

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

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



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Sample: 299953 - AH-7 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 92033 Date Analyzed: 2012-06-12 Analyzed By: AR
Prep Batch: 78015 Sample Preparation: 2012-06-11 Prepared By: AR

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

Sample: 299954 - AH-8 0-1'

Laboratory: Midland
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 91972 Date Analyzed: 2012-06-08 Analyzed By: AG
Prep Batch: 78016 Sample Preparation: 2012-06-08 Prepared By: AG

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 (TF* ^T)			2.36	mg/Kg	1	2.00	118	70 - 135.4
4-Bromofluorobenzene (4-BFB)			2.37	mg/Kg	1	2.00	118	53.6 - 158.9

Sample: 299954 - AH-8 0-1'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 92033 Date Analyzed: 2012-06-12 Analyzed By: AR
Prep Batch: 78015 Sample Preparation: 2012-06-11 Prepared By: AR

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



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Sample: 299954 - AH-8 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 91952
Prep Batch: 78010

Analytical Method: S 8015 D
Date Analyzed: 2012-06-07
Sample Preparation: 2012-06-07

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	73.9	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			150	mg/Kg	1	100	150	49.3 - 157.5

Sample: 299954 - AH-8 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 91973
Prep Batch: 78016

Analytical Method: S 8015 D
Date Analyzed: 2012-06-08
Sample Preparation: 2012-06-08

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.05	mg/Kg	1	2.00	102	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			1.93	mg/Kg	1	2.00	96	45.1 - 162.2

Sample: 299955 - AH-8 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 92033
Prep Batch: 78015

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-06-12
Sample Preparation: 2012-06-11

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

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



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Sample: 299956 - AH-8 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 92033 Date Analyzed: 2012-06-12 Analyzed By: AR
Prep Batch: 78015 Sample Preparation: 2012-06-11 Prepared By: AR

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

Sample: 299957 - AH-8 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 92033 Date Analyzed: 2012-06-12 Analyzed By: AR
Prep Batch: 78015 Sample Preparation: 2012-06-11 Prepared By: AR

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

Sample: 299958 - AH-9 0-1'

Laboratory: Midland
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 91972 Date Analyzed: 2012-06-08 Analyzed By: AG
Prep Batch: 78016 Sample Preparation: 2012-06-08 Prepared By: AG

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			4.84	mg/Kg	5	5.00	97	70 - 135.4
4-Bromofluorobenzene (4-BFB)			4.32	mg/Kg	5	5.00	86	53.6 - 158.9



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Sample: 299958 - AH-9 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-12	Analyzed By:	AR
QC Batch:	92033	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

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

Sample: 299958 - AH-9 0-1'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2012-06-07	Analyzed By:	AG
QC Batch:	91952	Sample Preparation:	2012-06-07	Prepared By:	AG
Prep Batch:	78010				

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			102	mg/Kg	1	100	102	49.3 - 157.5

Sample: 299958 - AH-9 0-1'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2012-06-08	Analyzed By:	AG
QC Batch:	91973	Sample Preparation:	2012-06-08	Prepared By:	AG
Prep Batch:	78016				

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			4.28	mg/Kg	5	5.00	86	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			3.06	mg/Kg	5	5.00	61	45.1 - 162.2



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Sample: 299959 - AH-9 1-1.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-12	Analyzed By:	AR
QC Batch:	92033	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			57.6	mg/Kg	5	4.00

Sample: 299960 - AH-9 2-2.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-12	Analyzed By:	AR
QC Batch:	92033	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

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

Sample: 299961 - AH-9 3-3.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-12	Analyzed By:	AR
QC Batch:	92033	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

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

Sample: 299962 - AH-10 0-1'

Laboratory:	Midland	Analytical Method:	S 8021B	Prep Method:	S 5035
Analysis:	BTEX	Date Analyzed:	2012-06-08	Analyzed By:	AG
QC Batch:	91972	Sample Preparation:	2012-06-08	Prepared By:	AG
Prep Batch:	78016				



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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	1	<0.400	mg/Kg	20	0.0200
Toluene		1	4.50	mg/Kg	20	0.0200
Ethylbenzene		1	5.70	mg/Kg	20	0.0200
Xylene		1	47.1	mg/Kg	20	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			20.3	mg/Kg	20	20.0	102	70 - 135.4
4-Bromofluorobenzene (4-BFB)	Qar	Qar	34.3	mg/Kg	20	20.0	172	53.6 - 158.9

Sample: 299962 - AH-10 0-1'

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	92033	Date Analyzed:	2012-06-12	Analyzed By: AR
Prep Batch:	78015	Sample Preparation:	2012-06-11	Prepared By: AR

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

Sample: 299962 - AH-10 0-1'

Laboratory:	Midland			
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method: N/A
QC Batch:	91952	Date Analyzed:	2012-06-07	Analyzed By: AG
Prep Batch:	78010	Sample Preparation:	2012-06-07	Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	8020	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qar	Qar	583	mg/Kg	5	100	583	49.3 - 157.5

Sample: 299962 - AH-10 0-1'

Laboratory:	Midland			
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method: S 5035
QC Batch:	91973	Date Analyzed:	2012-06-08	Analyzed By: AG
Prep Batch:	78016	Sample Preparation:	2012-06-08	Prepared By: AG



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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	1090	mg/Kg	20	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			17.4	mg/Kg	20	20.0	87	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	59.2	mg/Kg	20	20.0	296	45.1 - 162.2

Sample: 299963 - AH-10 1-1.5'

Laboratory: Midland

Analysis: BTEX

QC Batch: 91974

Prep Batch: 78029

Analytical Method: S 8021B

Date Analyzed: 2012-06-09

Sample Preparation: 2012-06-09

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

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)			2.23	mg/Kg	1	2.00	112	70 - 135.4
4-Bromofluorobenzene (4-BFB)			2.04	mg/Kg	1	2.00	102	53.6 - 158.9

Sample: 299963 - AH-10 1-1.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 91959

Prep Batch: 78015

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-06-08

Sample Preparation: 2012-06-11

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			434	mg/Kg	5	4.00



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Sample: 299963 - AH-10 1-1.5'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2012-06-09	Analyzed By:	AG
QC Batch:	91976	Sample Preparation:	2012-06-09	Prepared By:	AG
Prep Batch:	78030				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	95.2	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			112	mg/Kg	1	100	112	55.1 - 135.7

Sample: 299963 - AH-10 1-1.5'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2012-06-09	Analyzed By:	AG
QC Batch:	91975	Sample Preparation:	2012-06-09	Prepared By:	AG
Prep Batch:	78029				

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			1.56	mg/Kg	1	2.00	78	45.1 - 162.2

Sample: 299964 - AH-10 2-2.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-08	Analyzed By:	AR
QC Batch:	91959	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			6980	mg/Kg	10	4.00



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Sample: 299965 - AH-10 3-3.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-08	Analyzed By:	AR
QC Batch:	91959	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			7500	mg/Kg	10	4.00

Sample: 299966 - AH-10 4-4.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-08	Analyzed By:	AR
QC Batch:	91959	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2980	mg/Kg	10	4.00

Sample: 299967 - AH-10 5-5.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-08	Analyzed By:	AR
QC Batch:	91959	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			39.0	mg/Kg	5	4.00

Sample: 299968 - AH-10 6-6.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-06-08	Analyzed By:	AR
QC Batch:	91959	Sample Preparation:	2012-06-11	Prepared By:	AR
Prep Batch:	78015				



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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			92.6	mg/Kg	5	4.00



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Method Blanks

Method Blank (1) QC Batch: 91950

QC Batch: 91950
Prep Batch: 78010

Date Analyzed: 2012-06-07
QC Preparation: 2012-06-07

Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<15.7	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			119	mg/Kg	1	100	119	61.6 - 141.2

Method Blank (1) QC Batch: 91952

QC Batch: 91952
Prep Batch: 78010

Date Analyzed: 2012-06-07
QC Preparation: 2012-06-07

Analyzed By: AG
Prepared By: AG

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			122	mg/Kg	1	100	122	52 - 140.8

Method Blank (1) QC Batch: 91959

QC Batch: 91959
Prep Batch: 78015

Date Analyzed: 2012-06-08
QC Preparation: 2012-06-08

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: 91972

QC Batch: 91972
Prep Batch: 78016

Date Analyzed: 2012-06-08
QC Preparation: 2012-06-08

Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00470	mg/Kg	0.02
Toluene		1	<0.00980	mg/Kg	0.02
Ethylbenzene		1	<0.00500	mg/Kg	0.02
Xylene		1	<0.0170	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.86	mg/Kg	1	2.00	93	78 - 123.6
4-Bromofluorobenzene (4-BFB)			1.52	mg/Kg	1	2.00	76	51.3 - 122.4

Method Blank (1) QC Batch: 91973

QC Batch: 91973
Prep Batch: 78016

Date Analyzed: 2012-06-08
QC Preparation: 2012-06-08

Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<1.22	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.64	mg/Kg	1	2.00	82	78.6 - 131
4-Bromofluorobenzene (4-BFB)			1.11	mg/Kg	1	2.00	56	51 - 130

Method Blank (1) QC Batch: 91974

QC Batch: 91974
Prep Batch: 78029

Date Analyzed: 2012-06-09
QC Preparation: 2012-06-09

Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00470	mg/Kg	0.02
Toluene		1	<0.00980	mg/Kg	0.02
Ethylbenzene		1	<0.00500	mg/Kg	0.02

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Parameter	Flag	Cert	MDL Result	Units	RL
Xylene		1	<0.0170	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.93	mg/Kg	1	2.00	96	78 - 123.6
4-Bromofluorobenzene (4-BFB)			1.44	mg/Kg	1	2.00	72	51.3 - 122.4

Method Blank (1) QC Batch: 91975

QC Batch: 91975 Date Analyzed: 2012-06-09 Analyzed By: AG
Prep Batch: 78029 QC Preparation: 2012-06-09 Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<1.22	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.62	mg/Kg	1	2.00	81	78.6 - 131
4-Bromofluorobenzene (4-BFB)			1.11	mg/Kg	1	2.00	56	51 - 130

Method Blank (1) QC Batch: 91976

QC Batch: 91976 Date Analyzed: 2012-06-09 Analyzed By: AG
Prep Batch: 78030 QC Preparation: 2012-06-09 Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<15.7	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			137	mg/Kg	1	100	137	61.6 - 141.2

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Method Blank (1) QC Batch: 92013

QC Batch: 92013 Date Analyzed: 2012-06-12 Analyzed By: AR
Prep Batch: 78015 QC Preparation: 2012-06-08 Prepared By: AR

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

Method Blank (1) QC Batch: 92014

QC Batch: 92014 Date Analyzed: 2012-06-12 Analyzed By: AR
Prep Batch: 78015 QC Preparation: 2012-06-08 Prepared By: AR

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

Method Blank (1) QC Batch: 92031

QC Batch: 92031 Date Analyzed: 2012-06-12 Analyzed By: AR
Prep Batch: 78015 QC Preparation: 2012-06-08 Prepared By: AR

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

Method Blank (1) QC Batch: 92033

QC Batch: 92033 Date Analyzed: 2012-06-12 Analyzed By: AR
Prep Batch: 78015 QC Preparation: 2012-06-08 Prepared By: AR

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

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 91950
Prep Batch: 78010

Date Analyzed: 2012-06-07
QC Preparation: 2012-06-07

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	246	mg/Kg	1	250	<15.7	98	66.9 - 119.9

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	249	mg/Kg	1	250	<15.7	100	66.9 - 119.9	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	94.0	94.4	mg/Kg	1	100	94	94	76.8 - 140.2

Laboratory Control Spike (LCS-1)

QC Batch: 91952
Prep Batch: 78010

Date Analyzed: 2012-06-07
QC Preparation: 2012-06-07

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	246	mg/Kg	1	250	<14.5	98	62 - 128.3

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	246	mg/Kg	1	250	<14.5	98	62 - 128.3	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	90.7	92.2	mg/Kg	1	100	91	92	58.6 - 149.6



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Laboratory Control Spike (LCS-1)

QC Batch: 91959
Prep Batch: 78015

Date Analyzed: 2012-06-08
QC Preparation: 2012-06-08

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2590	mg/Kg	1	2500	<3.85	104	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2680	mg/Kg	1	2500	<3.85	107	85 - 115	3	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: 91972
Prep Batch: 78016

Date Analyzed: 2012-06-08
QC Preparation: 2012-06-08

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene			2.00	mg/Kg	1	2.00	<0.00470	100	86.5 - 124.9
Toluene			1.95	mg/Kg	1	2.00	<0.00980	98	84.7 - 122.5
Ethylbenzene			1.97	mg/Kg	1	2.00	<0.00500	98	79.4 - 118.9
Xylene			5.80	mg/Kg	1	6.00	<0.0170	97	77.5 - 119

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			2.02	mg/Kg	1	2.00	<0.00470	101	86.5 - 124.9	1	20
Toluene			2.02	mg/Kg	1	2.00	<0.00980	101	84.7 - 122.5	4	20
Ethylbenzene			2.03	mg/Kg	1	2.00	<0.00500	102	79.4 - 118.9	3	20
Xylene			5.97	mg/Kg	1	6.00	<0.0170	100	77.5 - 119	3	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.02	2.08	mg/Kg	1	2.00	101	104	73.9 - 127
4-Bromofluorobenzene (4-BFB)	2.23	2.34	mg/Kg	1	2.00	112	117	65.4 - 149.9



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Laboratory Control Spike (LCS-1)

QC Batch: 91973
Prep Batch: 78016

Date Analyzed: 2012-06-08
QC Preparation: 2012-06-08

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	14.7	mg/Kg	1	20.0	<1.22	74	65.3 - 105.7

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	14.3	mg/Kg	1	20.0	<1.22	72	65.3 - 105.7	3	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.85	1.81	mg/Kg	1	2.00	92	90	79 - 131.2
4-Bromofluorobenzene (4-BFB)	1.65	1.54	mg/Kg	1	2.00	82	77	56.4 - 136.6

Laboratory Control Spike (LCS-1)

QC Batch: 91974
Prep Batch: 78029

Date Analyzed: 2012-06-09
QC Preparation: 2012-06-09

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.89	mg/Kg	1	2.00	<0.00470	94	86.5 - 124.9
Toluene		1	1.88	mg/Kg	1	2.00	<0.00980	94	84.7 - 122.5
Ethylbenzene		1	1.82	mg/Kg	1	2.00	<0.00500	91	79.4 - 118.9
Xylene		1	5.41	mg/Kg	1	6.00	<0.0170	90	77.5 - 119

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.03	mg/Kg	1	2.00	<0.00470	102	86.5 - 124.9	7	20
Toluene		1	2.07	mg/Kg	1	2.00	<0.00980	104	84.7 - 122.5	10	20
Ethylbenzene		1	2.07	mg/Kg	1	2.00	<0.00500	104	79.4 - 118.9	13	20
Xylene		1	6.30	mg/Kg	1	6.00	<0.0170	105	77.5 - 119	15	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)	1.99	2.13	mg/Kg	1	2.00	100	106	73.9 - 127
4-Bromofluorobenzene (4-BFB)	2.14	2.53	mg/Kg	1	2.00	107	126	65.4 - 149.9

Laboratory Control Spike (LCS-1)

QC Batch: 91975
Prep Batch: 78029

Date Analyzed: 2012-06-09
QC Preparation: 2012-06-09

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO			17.6	mg/Kg	1	20.0	<1.22	88	65.3 - 105.7

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			18.2	mg/Kg	1	20.0	<1.22	91	65.3 - 105.7	3	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.88	1.87	mg/Kg	1	2.00	94	94	79 - 131.2
4-Bromofluorobenzene (4-BFB)	1.67	1.70	mg/Kg	1	2.00	84	85	56.4 - 136.6

Laboratory Control Spike (LCS-1)

QC Batch: 91976
Prep Batch: 78030

Date Analyzed: 2012-06-09
QC Preparation: 2012-06-09

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO			256	mg/Kg	1	250	<15.7	102	66.9 - 119.9

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
Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO			264	mg/Kg	1	250	<15.7	106	66.9 - 119.9	3	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	103	mg/Kg	1	100	104	103	76.8 - 140.2

Laboratory Control Spike (LCS-1)

QC Batch: 92013
Prep Batch: 78015

Date Analyzed: 2012-06-12
QC Preparation: 2012-06-08

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2500	mg/Kg	1	2500	<3.85	100	85 - 115

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
Chloride			2620	mg/Kg	1	2500	<3.85	105	85 - 115	5	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: 92014
Prep Batch: 78015

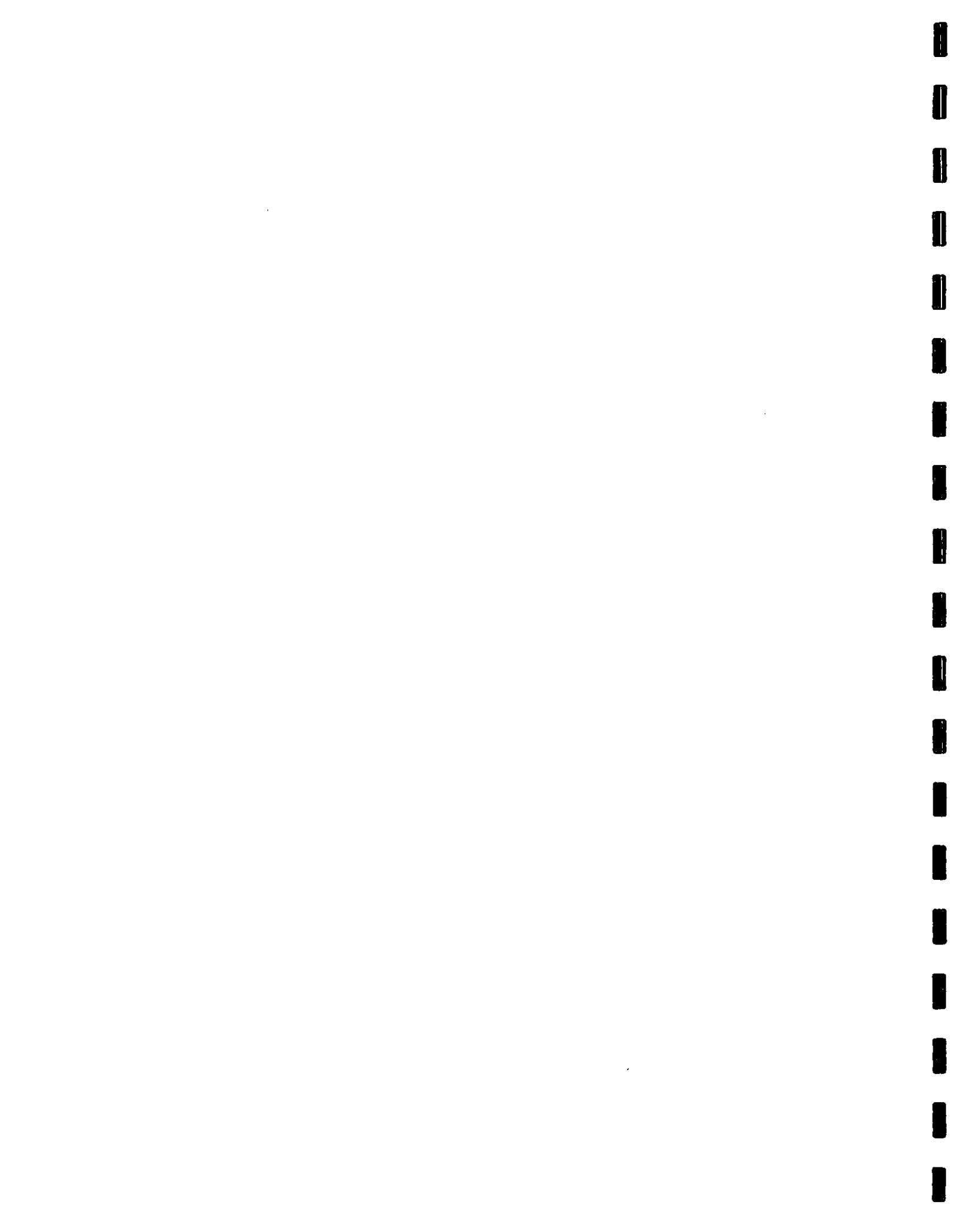
Date Analyzed: 2012-06-12
QC Preparation: 2012-06-08

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2500	mg/Kg	1	2500	<3.85	100	85 - 115

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
Chloride			2630	mg/Kg	1	2500	<3.85	105	85 - 115	5	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: 92031
Prep Batch: 78015

Date Analyzed: 2012-06-12
QC Preparation: 2012-06-08

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2500	mg/Kg	1	2500	<3.85	100	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			2610	mg/Kg	1	2500	<3.85	104	85 - 115	4	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 92033
Prep Batch: 78015

Date Analyzed: 2012-06-12
QC Preparation: 2012-06-08

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2500	mg/Kg	1	2500	<3.85	100	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			2680	mg/Kg	1	2500	<3.85	107	85 - 115	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: 299890

QC Batch: 91950
Prep Batch: 78010

Date Analyzed: 2012-06-07
QC Preparation: 2012-06-07

Analyzed By: AG
Prepared By: AG

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Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	246	mg/Kg	1	250	<15.7	98	36.1 - 147.2

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
DRO		1	219	mg/Kg	1	250	<15.7	88	36.1 - 147.2	12	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	91.3	88.0	mg/Kg	1	100	91	88	78.3 - 131.6

Matrix Spike (MS-1) Spiked Sample: 299940

QC Batch: 91952 Date Analyzed: 2012-06-07 Analyzed By: AG
Prep Batch: 78010 QC Preparation: 2012-06-07 Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	238	mg/Kg	1	250	<14.5	95	45.5 - 127

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	231	mg/Kg	1	250	<14.5	92	45.5 - 127	3	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	94.8	94.9	mg/Kg	1	100	95	95	45.4 - 145.8

Matrix Spike (MS-1) Spiked Sample: 299968

QC Batch: 91959 Date Analyzed: 2012-06-08 Analyzed By: AR
Prep Batch: 78015 QC Preparation: 2012-06-08 Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2520	mg/Kg	5	2500	92.6	97	79.4 - 120.6



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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			2800	mg/Kg	5	2500	92.6	108	79.4 - 120.6	10	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: 299940

QC Batch: 91972
Prep Batch: 78016

Date Analyzed: 2012-06-08
QC Preparation: 2012-06-08

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.94	mg/Kg	1	2.00	<0.00470	97	69.3 - 159.2
Toluene		1	1.98	mg/Kg	1	2.00	<0.00980	99	68.7 - 157
Ethylbenzene		1	2.17	mg/Kg	1	2.00	<0.00500	108	71.6 - 158.2
Xylene		1	6.34	mg/Kg	1	6.00	<0.0170	106	70.8 - 159.8

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	1.82	mg/Kg	1	2.00	<0.00470	91	69.3 - 159.2	6	20
Toluene		1	1.84	mg/Kg	1	2.00	<0.00980	92	68.7 - 157	7	20
Ethylbenzene		1	1.96	mg/Kg	1	2.00	<0.00500	98	71.6 - 158.2	10	20
Xylene		1	5.68	mg/Kg	1	6.00	<0.0170	95	70.8 - 159.8	11	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)	2.11	2.36	mg/Kg	1	2	106	118	71.4 - 133.9
4-Bromofluorobenzene (4-BFB)	2.25	2.31	mg/Kg	1	2	112	116	72.6 - 144.1

Matrix Spike (MS-1) Spiked Sample: 299880

QC Batch: 91973
Prep Batch: 78016

Date Analyzed: 2012-06-08
QC Preparation: 2012-06-08

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	29.1	mg/Kg	1	20.0	1.87	136	28.2 - 157.2

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
GRO		1	29.2	mg/Kg	1	20.0	1.87	146	28.2 - 157.2	0	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)	2.15	2.12	mg/Kg	1	2	108	106	75.5 - 122.3
4-Bromofluorobenzene (4-BFB)	2.25	2.42	mg/Kg	1	2	112	121	77.9 - 122.4

Matrix Spike (MS-1) Spiked Sample: 299963

QC Batch: 91974
Prep Batch: 78029

Date Analyzed: 2012-06-09
QC Preparation: 2012-06-09

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.97	mg/Kg	1	2.00	<0.00470	98	69.3 - 159.2
Toluene		1	2.00	mg/Kg	1	2.00	<0.00980	100	68.7 - 157
Ethylbenzene		1	2.17	mg/Kg	1	2.00	<0.00500	108	71.6 - 158.2
Xylene		1	6.40	mg/Kg	1	6.00	<0.0170	107	70.8 - 159.8

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.05	mg/Kg	1	2.00	<0.00470	102	69.3 - 159.2	4	20
Toluene		1	2.13	mg/Kg	1	2.00	<0.00980	106	68.7 - 157	6	20
Ethylbenzene		1	2.38	mg/Kg	1	2.00	<0.00500	119	71.6 - 158.2	9	20
Xylene		1	7.03	mg/Kg	1	6.00	<0.0170	117	70.8 - 159.8	9	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.90	2.38	mg/Kg	1	2	95	119	71.4 - 133.9
4-Bromofluorobenzene (4-BFB)	2.24	2.86	mg/Kg	1	2	112	143	72.6 - 144.1

Matrix Spike (MS-1) Spiked Sample: 299963

QC Batch: 91975
Prep Batch: 78029

Date Analyzed: 2012-06-09
QC Preparation: 2012-06-09

Analyzed By: AG
Prepared By: AG

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Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	24.9	mg/Kg	1	20.0	<1.22	124	28.2 - 157.2

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
GRO		1	26.3	mg/Kg	1	20.0	<1.22	132	28.2 - 157.2	6	20

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

Surrogate			MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)			2.05	2.09	mg/Kg	1	2	102	104	75.5 - 122.3
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	2.52	2.05	mg/Kg	1	2	126	102	77.9 - 122.4

Matrix Spike (MS-1) Spiked Sample: 299946

QC Batch: 91976
Prep Batch: 78030

Date Analyzed: 2012-06-09
QC Preparation: 2012-06-09

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	243	mg/Kg	1	250	16.8	90	36.1 - 147.2

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
DRO		1	240	mg/Kg	1	250	16.8	89	36.1 - 147.2	1	20

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

Surrogate			MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane			98.4	99.1	mg/Kg	1	100	98	99	78.3 - 131.6

Matrix Spike (MS-1) Spiked Sample: 299932

QC Batch: 92013
Prep Batch: 78015

Date Analyzed: 2012-06-12
QC Preparation: 2012-06-08

Analyzed By: AR
Prepared By: AR

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matrix spikes continued ...

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2630	mg/Kg	5	2500	<19.2	105	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
Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2810	mg/Kg	5	2500	<19.2	112	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: 299942

QC Batch: 92014
Prep Batch: 78015

Date Analyzed: 2012-06-12
QC Preparation: 2012-06-08

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2520	mg/Kg	5	2500	<19.2	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
Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2680	mg/Kg	5	2500	<19.2	107	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: 299952

QC Batch: 92031
Prep Batch: 78015

Date Analyzed: 2012-06-12
QC Preparation: 2012-06-08

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2470	mg/Kg	5	2500	<19.2	99	79.4 - 120.6

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
Chloride			2660	mg/Kg	5	2500	<19.2	106	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: 299962

QC Batch: 92033
Prep Batch: 78015

Date Analyzed: 2012-06-12
QC Preparation: 2012-06-08

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2510	mg/Kg	5	2500	<19.2	100	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			2680	mg/Kg	5	2500	<19.2	107	79.4 - 120.6	7	20

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

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Calibration Standards

Standard (CCV-1)

QC Batch: 91950

Date Analyzed: 2012-06-07

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	249	100	80 - 120	2012-06-07

Standard (CCV-2)

QC Batch: 91950

Date Analyzed: 2012-06-07

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	242	97	80 - 120	2012-06-07

Standard (CCV-3)

QC Batch: 91950

Date Analyzed: 2012-06-07

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	223	89	80 - 120	2012-06-07

Standard (CCV-4)

QC Batch: 91950

Date Analyzed: 2012-06-07

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	247	99	80 - 120	2012-06-07



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Standard (CCV-1)

QC Batch: 91952

Date Analyzed: 2012-06-07

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO			mg/Kg	250	255	102	80 - 120	2012-06-07

Standard (CCV-2)

QC Batch: 91952

Date Analyzed: 2012-06-07

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO			mg/Kg	250	249	100	80 - 120	2012-06-07

Standard (CCV-3)

QC Batch: 91952

Date Analyzed: 2012-06-07

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO			mg/Kg	250	244	98	80 - 120	2012-06-07

Standard (CCV-1)

QC Batch: 91959

Date Analyzed: 2012-06-08

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-06-08

Standard (CCV-2)

QC Batch: 91959

Date Analyzed: 2012-06-08

Analyzed By: AR

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.4	99	85 - 115	2012-06-08

Standard (CCV-1)

QC Batch: 91972

Date Analyzed: 2012-06-08

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	0.100	100	80 - 120	2012-06-08
Toluene		1	mg/kg	0.100	0.100	100	80 - 120	2012-06-08
Ethylbenzene		1	mg/kg	0.100	0.100	100	80 - 120	2012-06-08
Xylene		1	mg/kg	0.300	0.306	102	80 - 120	2012-06-08

Standard (CCV-2)

QC Batch: 91972

Date Analyzed: 2012-06-08

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	0.0959	96	80 - 120	2012-06-08
Toluene		1	mg/kg	0.100	0.0925	92	80 - 120	2012-06-08
Ethylbenzene		1	mg/kg	0.100	0.0911	91	80 - 120	2012-06-08
Xylene		1	mg/kg	0.300	0.270	90	80 - 120	2012-06-08

Standard (CCV-3)

QC Batch: 91972

Date Analyzed: 2012-06-08

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	0.0906	91	80 - 120	2012-06-08
Toluene		1	mg/kg	0.100	0.0882	88	80 - 120	2012-06-08
Ethylbenzene		1	mg/kg	0.100	0.0854	85	80 - 120	2012-06-08
Xylene		1	mg/kg	0.300	0.253	84	80 - 120	2012-06-08

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Standard (CCV-1)

QC Batch: 91973

Date Analyzed: 2012-06-08

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	0.824	82	80 - 120	2012-06-08

Standard (CCV-2)

QC Batch: 91973

Date Analyzed: 2012-06-08

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	0.813	81	80 - 120	2012-06-08

Standard (CCV-3)

QC Batch: 91973

Date Analyzed: 2012-06-08

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	0.813	81	80 - 120	2012-06-08

Standard (CCV-1)

QC Batch: 91974

Date Analyzed: 2012-06-09

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	0.0916	92	80 - 120	2012-06-09
Toluene		1	mg/kg	0.100	0.0904	90	80 - 120	2012-06-09
Ethylbenzene		1	mg/kg	0.100	0.0905	90	80 - 120	2012-06-09
Xylene		1	mg/kg	0.300	0.272	91	80 - 120	2012-06-09

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Standard (CCV-2)

QC Batch: 91974

Date Analyzed: 2012-06-09

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	0.0971	97	80 - 120	2012-06-09
Toluene		1	mg/kg	0.100	0.0948	95	80 - 120	2012-06-09
Ethylbenzene		1	mg/kg	0.100	0.0918	92	80 - 120	2012-06-09
Xylene		1	mg/kg	0.300	0.268	89	80 - 120	2012-06-09

Standard (CCV-1)

QC Batch: 91975

Date Analyzed: 2012-06-09

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	0.962	96	80 - 120	2012-06-09

Standard (CCV-2)

QC Batch: 91975

Date Analyzed: 2012-06-09

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	0.951	95	80 - 120	2012-06-09

Standard (CCV-1)

QC Batch: 91976

Date Analyzed: 2012-06-09

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	263	105	80 - 120	2012-06-09

Report Date: June 13, 2012
114-6401423

Work Order: 12060503
COG/BC Federal #21

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Lea Co., NM

Standard (CCV-2)

QC Batch: 91976

Date Analyzed: 2012-06-09

Analyzed By: AG

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	2012-06-09

Standard (CCV-3)

QC Batch: 91976

Date Analyzed: 2012-06-09

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	246	98	80 - 120	2012-06-09

Standard (CCV-1)

QC Batch: 92013

Date Analyzed: 2012-06-12

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-06-12

Standard (CCV-2)

QC Batch: 92013

Date Analyzed: 2012-06-12

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	2012-06-12

Standard (CCV-1)

QC Batch: 92014

Date Analyzed: 2012-06-12

Analyzed By: AR



Report Date: June 13, 2012
114-6401423

Work Order: 12060503
COG/BC Federal #21

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Lea Co., NM

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	2012-06-12

Standard (CCV-2)

QC Batch: 92014

Date Analyzed: 2012-06-12

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.8	100	85 - 115	2012-06-12

Standard (CCV-1)

QC Batch: 92031

Date Analyzed: 2012-06-12

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	98.1	98	85 - 115	2012-06-12

Standard (CCV-2)

QC Batch: 92031

Date Analyzed: 2012-06-12

Analyzed By: AR

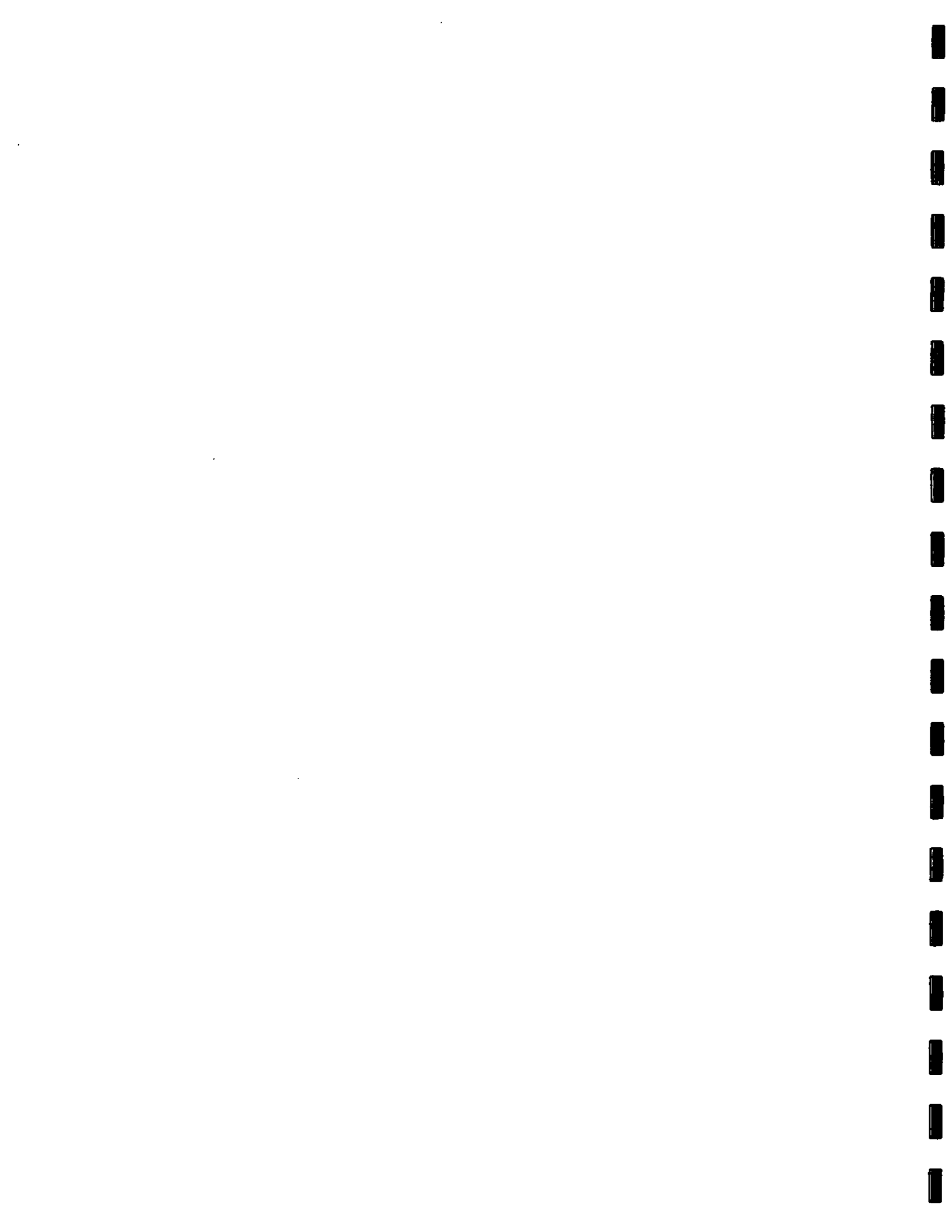
Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	102	102	85 - 115	2012-06-12

Standard (CCV-1)

QC Batch: 92033

Date Analyzed: 2012-06-12

Analyzed By: AR



Report Date: June 13, 2012
114-6401423

Work Order: 12060503
COG/BC Federal #21

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Lea Co., NM

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	2012-06-12

Standard (CCV-2)

QC Batch: 92033

Date Analyzed: 2012-06-12

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	98.3	98	85 - 115	2012-06-12

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	T104704392-11-3	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 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.



12060503

Analysis Request of Chain of Custody Record

PAGE: 2 OF: 4



TETRA TECH

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

PRESERVATIVE METHOD

HCL

HNO3

ICE

NONE

FILTERED (Y/N)

NUMBER OF CONTAINERS

SITE MANAGER: Jke Turner

PROJECT NAME: BC Federal #21

LAB I.D. NUMBER

DATE

TIME

MATRIX

COMP

GRAB

SAMPLE IDENTIFICATION

Lea Co., NM

DATE

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Lea Co., NM

DATE

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**

CLIENT NAME: COG						SITE MANAGER: Ike Turner		PRESERVATIVE METHOD	
PROJECT NO.: 114-6401423		PROJECT NAME: BC Federal #21				NUMBER OF CONTAINERS		FILTERED (Y/N)	
LAB I.D. NUMBER	DATE 2012	TIME	MATRIX	COMPR	GRAB	SAMPLE IDENTIFICATION Lea Co., NM		HCL	HNO3
950	5/31		S	X		AH-7	0-1'		X
951			/	/			1-1.5'		
952			/	/			2-2.5'		
953			/	/			3-3.5'		
954			/	/		AH-8	0-1'		
955			/	/			1-1.5'		
956			/	/			2-2.5'		
957			/	/			3-3.5'		
958			/	/		AH-9	0-1'		
959			/	/			1-1.5'		

RELINQUISHED BY: (Signature) _____ Date: 6/14/13 Time: 3:30 PM RECEIVED BY: (Signature) _____ Date: 6/14/13 Time: 3:50 PM

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

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

RECEIVING LABORATORY: TRAC Address: _____ City: MEXICO STATE: TX ZIP: _____ PHONE: _____ DATE: _____ TIME: _____

[illegible]

SAMPLED BY: (Print & Initial)	Kim
Date:	6/4/12
Time:	
SAMPLE SHIPPED BY: (Circle)	AFRILL #: _____
FEDEX	BUS
HAND DELIVERED	UPS
TETRA TECH CONTACT PERSON:	OTHER: _____
	Results by: _____
	RUSH Charges
	Authorized:
	Yes
	No

See note page 1

