

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

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company COG Operating LLC	Contact Pat Ellis
Address 550 W. Texas, Suite 1300 Midland, Texas 79701	Telephone No. (432) 230-0077
Facility Name MC Federal #63	Facility Type Well Pad
Surface Owner Federal	Mineral Owner
Lease No. 30-025-39867	

LOCATION OF RELEASE

Unit Letter K	Section 21	Township 17-S	Range 32-E	Feet from the	North/South Line	Feet from the	East/West Line	County Lea
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Latitude N 32 49.038° Longitude W 103 46.489°

NATURE OF RELEASE

Type of Release: Produced Fluid	Volume of Release 4 bbls, 10 bbls produced water	Volume Recovered 3 bbls, 9 bbls produced water
Source of Release Buried line	Date and Hour of Occurrence 10/21/2011	Date and Hour of Discovery 10/12/2011 3:00 p.m.
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom? Josh Russo	Date and Hour 12/05/2011 8:48 a.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

N/A

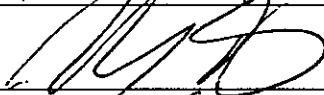
Describe Cause of Problem and Remedial Action Taken.*

A buried fiberglass line was hit while downsizing a pad for an interim reclamation. The line has been repaired.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech inspected site and collected samples to define spills extent. Soil with elevated chloride concentrations as well a soil with TPH concentrations that exceeded the RRAL was removed and hauled away to Controlled Recovery, Inc., Hobbs, NM. Site was then brought up to surface grade with clean backfill material. Tetra Tech prepared closure report and submitted to NMOCD for review.

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

Signature: 	OIL CONSERVATION DIVISION	
Printed Name: Ike Tavarez <i>(Agent for COG)</i>	Approved by District Supervisor:	
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: ike.tavarez@tetrattech.com	Conditions of Approval:	Attached ☐
Date: 4-24-12 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

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☒ Initial Report ☐ Final Report

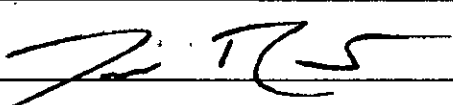
Name of Company	COG OPERATING LLC	Contact	Pat Ellis
Address	550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	MC Federal #63	Facility Type	Well Pad
Surface Owner	Federal	Mineral Owner	
		Lease No. (API#)	30-025-39867

LOCATION OF RELEASE

Unit Letter K	Section 21	Township 17S	Range 32E	Feet from the	North/South Line	Feet from the	East/West Line	County Lea
------------------	---------------	-----------------	--------------	---------------	------------------	---------------	----------------	---------------

Latitude 32 49.038 Longitude 103 46.489

NATURE OF RELEASE

Type of Release Produced Fluid	Volume of Release 4bbls oil, 10bbls produced water	Volume Recovered 3bbls oil, 9bbls produced water
Source of Release Buried line	Date and Hour of Occurrence 10/12/2011	Date and Hour of Discovery 10/12/2011 3:00 p.m.
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	
If a Watercourse was Impacted, Describe Fully.*		
Describe Cause of Problem and Remedial Action Taken.* A buried fiberglass line was hit while downsizing a pad for an interim reclamation. The line has been repaired.		
Describe Area Affected and Cleanup Action Taken.* Initially 14bbls of produced fluid was released from the fiberglass line and we were able to recover 13bbls with a vacuum truck. The original leak source is located roughly 20 yards north of the wellhead in the reclaimed portion of the pad. The fluid traveled SW roughly 40' in a stream no wider than 5' at its widest point. The contaminated soil has been removed from the location and hauled to a disposal. Tetra Tech will sample the spill site area to delineate any additional 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: 10/27/2011 Phone: 432-212-2399		

* Attach Additional Sheets If Necessary

SITE INFORMATION

MAR 09 2012

Report Type: Work Plan

General Site Information:

RECEIVED

Site:	MC Federal #63 Well				
Company:	COG Operating LLC				
Section, Township and Range	Unit K	Sec. 21	T-17-S	R-32-E	
Lease Number:	API-30-025-39867				
County:	Lea County				
GPS:	32.81729° N			103.77478° W	
Surface Owner:	Federal				
Mineral Owner:					
Directions:	Intersection of 529 and CR-216 travel north on 216 1.8 miles to Conoco Road, turn left 0.6 miles to location on right				

Release Data:

Date Released:	10/12/2011
Type Release:	Produced Fluids
Source of Contamination:	Buried fiberglass line hit with equipment
Fluid Released:	4 bbls oil and 10 bbls of produced water
Fluids Recovered:	3 bbls oil and 9 bbls of produced water

Official Communication:

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

Ranking Criteria

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	0
Wellhead Protection:		
Ranking Score		
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		
<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

DEC 22 2015



TETRA TECH

March 8, 2012

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

**Re: Work Plan for the COG Operating LLC., MC Federal #63 Well,
Unit K, Section 21, Township 17 South, Range 32 East, Lea
County, New Mexico.**

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG), to assess a spill from the MC Federal #63 Well, Unit K, Section 21, Township 17 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.81729°, W 103.77478°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on October 12, 2011. During downsizing a location, a buried fiberglass line was hit releasing approximately four (4) barrels of oil and ten (10) barrels of produced water. COG recovered twelve (12) barrels of fluid from the area. The spill measured approximately 5' x 65' in the pasture. The initial C-141 form is enclosed in Appendix C.

Groundwater

The United States Geological Survey (USGS) Well Reports did not list any wells in Section 21. According to the NMOCD groundwater map, the depth to groundwater in this area is approximately 125' below surface. The groundwater data is shown in Appendix A.

Tetra Tech

1910 North Big Spring Midland, TX 79705

Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com



Regulatory

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

Soil Assessment and Analytical Results

On December 21, 2011, Tetra Tech personnel inspected and sampled the spill area. Two (2) auger holes (AH-1 and AH-2) were installed using a stainless steel hand auger to assess the impacted soils. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B.

Referring to Table 1, both auger holes (AH-1 and AH-2) exceeded the RRAL for TPH and total BTEX. The TPH and total BTEX concentrations above the RRAL were detected in the AH-1 (0-1') and AH-2 (0-1' and 1-1.5'). Deeper samples showed declining concentrations below the RRAL at 1.0' to 2.0' below surface.

Elevated chloride concentrations were detected in the area of AH-1 and AH-2. Auger hole (AH-1 and AH-2) showed chloride highs of 9,870 and 6,280 mg/kg at 3-3.5', respectively. The chloride concentrations declined with depth, but not vertically defined with bottom hole samples of 9,870 mg/kg (AH-1, 3-3.5') and 1,660 mg/kg (AH-2, 9-9.5').

On January 26, 2012, Tetra Tech personnel supervised the installation of boreholes using an air rotary drilling rig. Two (2) boreholes (BH-1 and BH-2) were installed to define the chloride impact. Soil samples were collected and submitted for chloride analysis. The sampling results are summarized in Table 1. The borehole locations are shown on Figure 3. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B.



TETRA TECH

Referring to Table 1, the chloride concentrations declined at 6-7' in the area of BH-1. Borehole (BH-2) did not show a significant chloride impact to the area, with a chloride spike of 2,560 mg/kg at 4-5' and declined at 6-7' below surface to 511 mg/kg.

Work Plan

COG proposes to remove impacted material as highlighted (green) in Table 1 and shown in Figure 4. The area of AH-1 (BH-1) will be excavated to a depth approximately 5.0 to 6.0' below surface. Based on the auger hole data, the area of AH-2 (BH-2) will be excavated to a depth of approximately 9.0' bgs. Tetra Tech will collect samples from the excavation sidewalls and bottom to confirm the removal of the chloride impact soils. Once excavated to the appropriate depths, the excavation will be backfilled with clean soil. The excavated soil will be hauled to proper disposal.

Based on the location of the spill, the proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines (fiberglass line) may not be feasible or practicable to be removed due to safety concerns. As such, Tetra Tech will excavate the soils to the maximum extent practicable. If deeper impact is encountered and excavation is not practicable, the excavated area will be capped with a 40 mil liner at 4.0' below surface and backfilled to grade.

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 Tavaréz
Senior Project Manager

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

Table 1

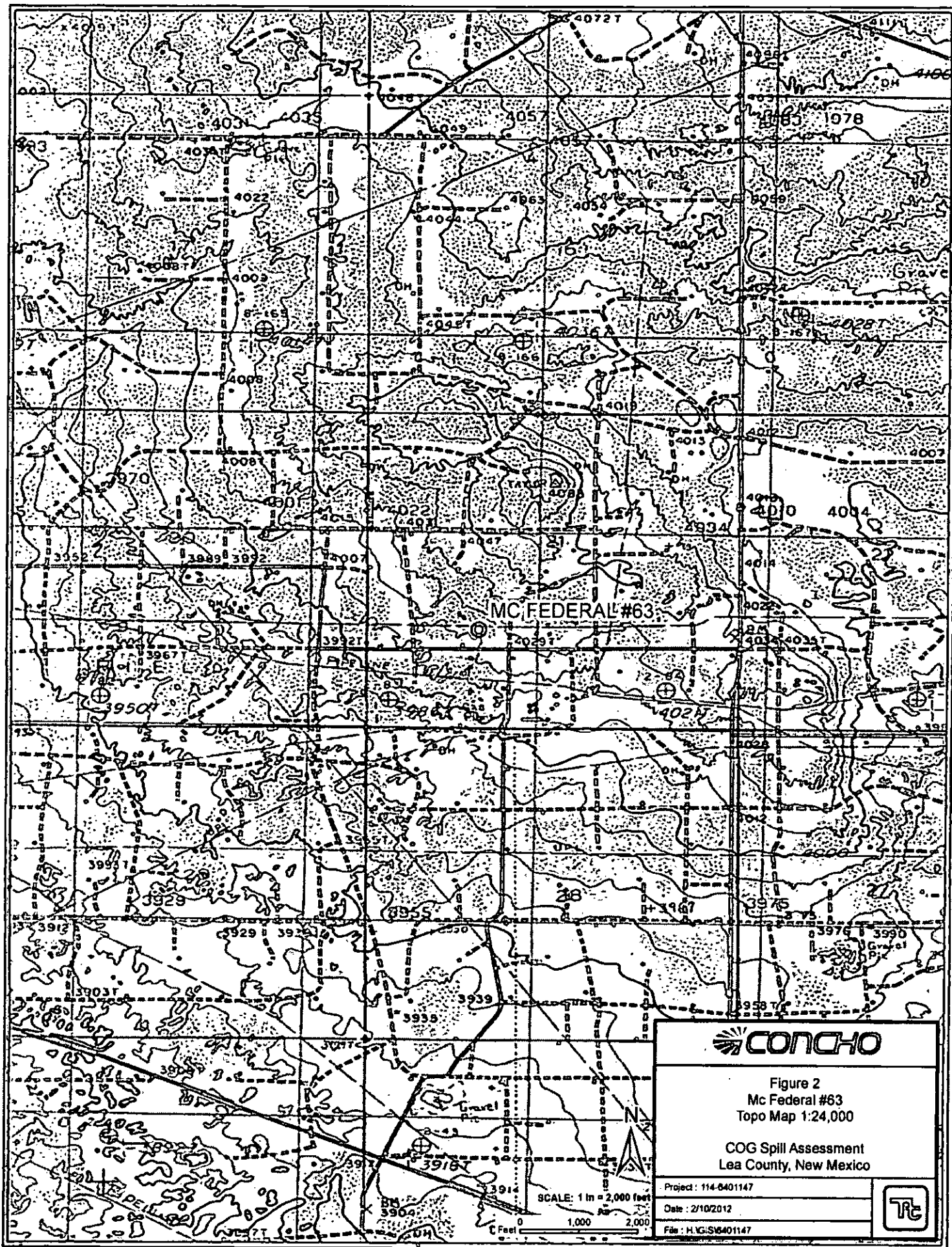
[illegible]

Table 1
COG Operating LLC
MC Federal #63
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total						
AH-2	12/21/2011	0-1	1'	X		3,780	9,360	13,140	<0.400	2.73	34.7	70.1	108	1,600
	"	1-1.5	1'	X		3.70	<50.0	3.70	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,850
	"	2-2.5	1'	X		-	-	-	-	-	-	-	-	5,280
	"	3-3.5	1'	X		-	-	-	-	-	-	-	-	6,280
	"	4-4.5	1'	X		-	-	-	-	-	-	-	-	3,160
	"	5-5.5	1'	X		-	-	-	-	-	-	-	-	1,290
	"	6-6.5	1'	X		-	-	-	-	-	-	-	-	845
	"	7-7.5	1'	X		-	-	-	-	-	-	-	-	1,330
	"	8-8.5	1'	X		-	-	-	-	-	-	-	-	2,430
	"	9-9.5	1'	X		-	-	-	-	-	-	-	-	1,660
BH-2	1/26/2012	0-1	-	X		-	-	-	-	-	-	-	-	<200
	"	2-3	-	X		-	-	-	-	-	-	-	-	<200
	"	4-5	-	X		-	-	-	-	-	-	-	-	2,560
	"	6-7	-	X		-	-	-	-	-	-	-	-	511
	"	9-10	-	X		-	-	-	-	-	-	-	-	275
	"	14-15	-	X		-	-	-	-	-	-	-	-	<200
	"	19-20	-	X		-	-	-	-	-	-	-	-	543

(--) Not Analyzed
☐ Proposed Excavation Depths
(BEB) Below Excavation Bottom





RECLAIMED
PASTURE

PASTURE

PAD

WELL

FIBERGLASS PIPELINE

LEASE ROAD

5' - 6' DEEP

9' DEEP

BH-1 AH-1 BH-2 AH-2

3' 65' 5'

EXPLANATION

- WELL
- ⊙ AUGER HOLE SAMPLE LOCATIONS
- ⊙ BORE HOLE SAMPLE LOCATIONS
- FIBERGLASS PIPELINE
- ▭ PROPOSED EXCAVATION AREA

SCALE: 1 IN = 60 FEET

Feet 0 25 50



Figure 4

McFederal #63
Proposed Excavation Area & Depths Map

COG Spill Assessment
Lea County, New Mexico

Project : 114-8401147

Date : 3/2/2012

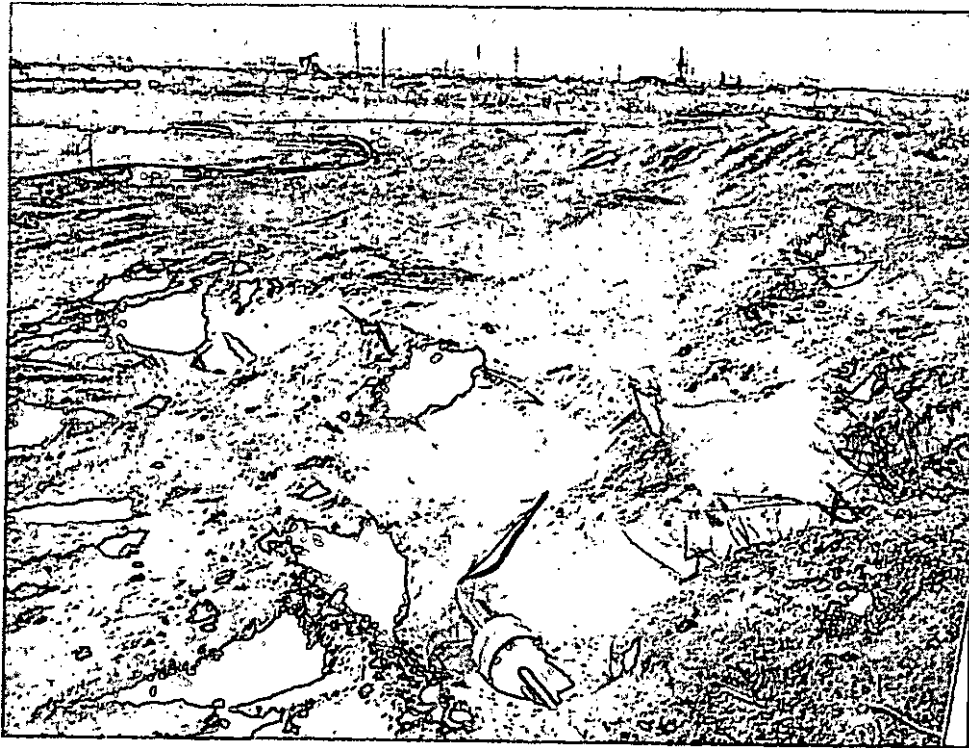
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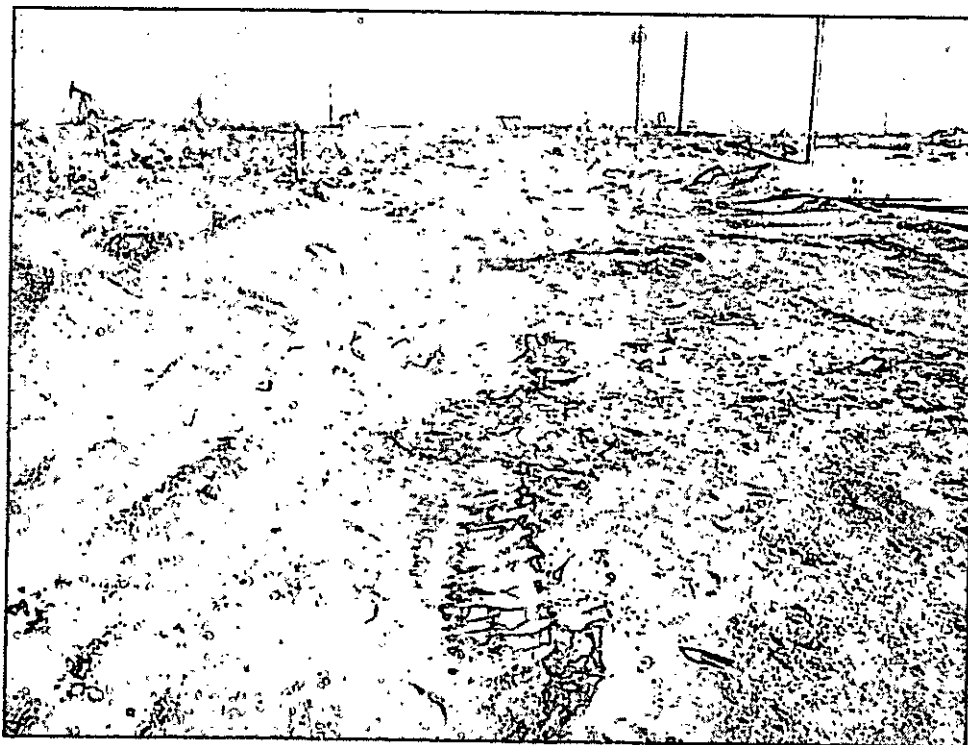
COG Operating LLC
MC Federal #63
Lea County, New Mexico
Drilling Date: June 27, 2011



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View west - Buried fiberglass line



View east near AH-2 and AH-1 (background)

Water Well Data
Average Depth to Groundwater (ft)
COG - MC Federal #63
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					

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

16 South				33 East			
6	5	180	4	3	130	2	1
			150			148	142
7	8		9	10	11		12
	200			182			142
18	17	16	15	14	13		
	182	180	175	143	110		
19	20	21	22	23	24		
				120			
30	29	28	27	26	25		
191		190	130	143	120		
31	32	33	34	35	36		
190	188		180				

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

17 South			32 East		
6	5	4	3	2	1 225
		82	175	60	
7	8	9	10	11	12
				70 88	120
18	17	16	15	14	13
19	20	21	22	23	24
		SITE			
30	29	28	27	26	25
180° Dry					
31	32	33	34	35	36

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

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

18 South				32 East		
6	5	4	65	3	2	1
7	460	8	9	10	11	12
82						
18	17	16	15	14	130° Dr	13
		84				
19	20	21	22	23	24	
	164		429			
30	29	28	27	26	25	
31	32	33	34	35	36	
			117			

18 South			33 East		
6	5	4	3	2	1
7	8 100	9	10 62	11	12 143 140
18	17 85	16	15	14 36	13 80
19	20	21	22	23	24
>140					195
30 35	29	28	27	26	25
31	32	33	34 177	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 - MC Federal #63
-  Tetra Tech Temporary well

Summary Report

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

Report Date: January 5, 2012

Work Order: 11122301

Project Location: Lea Co., NM
Project Name: COG/MC Federal #63
Project Number: 114-6401147

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
285120	AH-1 1' BEB 0-1'	soil	2011-12-21	00:00	2011-12-22
285121	AH-1 1' BEB 1-1.5'	soil	2011-12-21	00:00	2011-12-22
285122	AH-1 1' BEB 2-2.5'	soil	2011-12-21	00:00	2011-12-22
285123	AH-1 1' BEB 3-3.5'	soil	2011-12-21	00:00	2011-12-22
285124	AH-2 1' BEB 0-1'	soil	2011-12-21	00:00	2011-12-22
285125	AH-2 1' BEB 1-1.5'	soil	2011-12-21	00:00	2011-12-22
285126	AH-2 1' BEB 2-2.5'	soil	2011-12-21	00:00	2011-12-22
285127	AH-2 1' BEB 3-3.5'	soil	2011-12-21	00:00	2011-12-22
285128	AH-2 1' BEB 4-4.5'	soil	2011-12-21	00:00	2011-12-22
285129	AH-2 1' BEB 5-5.5'	soil	2011-12-21	00:00	2011-12-22
285130	AH-2 1' BEB 6-6.5'	soil	2011-12-21	00:00	2011-12-22
285131	AH-2 1' BEB 7-7.5'	soil	2011-12-21	00:00	2011-12-22
285132	AH-2 1' BEB 8-8.5'	soil	2011-12-21	00:00	2011-12-22
285133	AH-2 1' BEB 9-9.5'	soil	2011-12-21	00:00	2011-12-22

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
285120 - AH-1 1' BEB 0-1'	<0.400 ¹	23.6	39.5	65.4	11000	3570 Q _s
285121 - AH-1 1' BEB 1-1.5'	<0.400	27.5	58.4	87.2	2350	4510 Q _r , Q _s
285122 - AH-1 1' BEB 2-2.5'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	2.70 Q _r , Q _s
285124 - AH-2 1' BEB 0-1'	<0.400 ²	2.73	34.7	70.1	9360	3780 Q _s
285125 - AH-2 1' BEB 1-1.5'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	3.70 Q _r , Q _s

Sample: 285120 - AH-1 1' BEB 0-1'

¹ Dilution due to hydrocarbons.

² Sample dilution due to hydrocarbons.

Param	Flag	Result	Units	RL
Chloride		3290	mg/Kg	4

Sample: 285121 - AH-1 1' BEB 1-1.5'

Param	Flag	Result	Units	RL
Chloride		2810	mg/Kg	4

Sample: 285122 - AH-1 1' BEB 2-2.5'

Param	Flag	Result	Units	RL
Chloride		4730	mg/Kg	4

Sample: 285123 - AH-1 1' BEB 3-3.5'

Param	Flag	Result	Units	RL
Chloride		9870	mg/Kg	4

Sample: 285124 - AH-2 1' BEB 0-1'

Param	Flag	Result	Units	RL
Chloride		1600	mg/Kg	4

Sample: 285125 - AH-2 1' BEB 1-1.5'

Param	Flag	Result	Units	RL
Chloride		2850	mg/Kg	4

Sample: 285126 - AH-2 1' BEB 2-2.5'

Param	Flag	Result	Units	RL
Chloride		5280	mg/Kg	4

Sample: 285127 - AH-2 1' BEB 3-3.5'

Param	Flag	Result	Units	RL
Chloride		6280	mg/Kg	4

Sample: 285128 - AH-2 1' BEB 4-4.5'

Param	Flag	Result	Units	RL
Chloride		3160	mg/Kg	4

Sample: 285129 - AH-2 1' BEB 5-5.5'

Param	Flag	Result	Units	RL
Chloride		1290	mg/Kg	4

Sample: 285130 - AH-2 1' BEB 6-6.5'

Param	Flag	Result	Units	RL
Chloride		845	mg/Kg	4

Sample: 285131 - AH-2 1' BEB 7-7.5'

Param	Flag	Result	Units	RL
Chloride		1330	mg/Kg	4

Sample: 285132 - AH-2 1' BEB 8-8.5'

Param	Flag	Result	Units	RL
Chloride		2430	mg/Kg	4

Sample: 285133 - AH-2 1' BEB 9-9.5'

Param	Flag	Result	Units	RL
Chloride		1660	mg/Kg	4

Summary Report

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

Report Date: February 10, 2012

Work Order: 12013003

Project Location: Lea Co., NM
Project Name: COG/MC Federal #63
Project Number: 114-6401147

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
287724	BH-1 @ AH-1 0-1'	soil	2012-01-26	00:00	2012-01-27
287725	BH-1 @ AH-1 2-3'	soil	2012-01-26	00:00	2012-01-27
287726	BH-1 @ AH-1 4-5'	soil	2012-01-26	00:00	2012-01-27
287727	BH-1 @ AH-1 6-7'	soil	2012-01-26	00:00	2012-01-27
287728	BH-1 @ AH-1 9-10'	soil	2012-01-26	00:00	2012-01-27
287731	BH-2 @ AH-2 0-1'	soil	2012-01-26	00:00	2012-01-27
287732	BH-2 @ AH-2 2-3'	soil	2012-01-26	00:00	2012-01-27
287733	BH-2 @ AH-2 4-5'	soil	2012-01-26	00:00	2012-01-27
287734	BH-2 @ AH-2 6-7'	soil	2012-01-26	00:00	2012-01-27
287735	BH-2 @ AH-2 9-10'	soil	2012-01-26	00:00	2012-01-27
287736	BH-2 @ AH-2 14-15'	soil	2012-01-26	00:00	2012-01-27
287737	BH-2 @ AH-2 19-20'	soil	2012-01-26	00:00	2012-01-27

Sample: 287724 - BH-1 @ AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		912	mg/Kg	4

Sample: 287725 - BH-1 @ AH-1 2-3'

Param	Flag	Result	Units	RL
Chloride		3430	mg/Kg	4

Sample: 287726 - BH-1 @ AH-1 4-5'

Param	Flag	Result	Units	RL
Chloride		2980	mg/Kg	4

Sample: 287727 - BH-1 @ AH-1 6-7'

Param	Flag	Result	Units	RL
Chloride		244	mg/Kg	4

Sample: 287728 - BH-1 @ AH-1 9-10'

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

Sample: 287731 - BH-2 @ AH-2 0-1'

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

Sample: 287732 - BH-2 @ AH-2 2-3'

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

Sample: 287733 - BH-2 @ AH-2 4-5'

Param	Flag	Result	Units	RL
Chloride		2560	mg/Kg	4

Sample: 287734 - BH-2 @ AH-2 6-7'

Param	Flag	Result	Units	RL
Chloride		511	mg/Kg	4

Sample: 287735 - BH-2 @ AH-2 9-10'

Param	Flag	Result	Units	RL
Chloride		275	mg/Kg	4

Sample: 287736 - BH-2 @ AH-2 14-15'

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

Sample: 287737 - BH-2 @ AH-2 19-20'

Param	Flag	Result	Units	RL
Chloride		543	mg/Kg	4

SITE INFORMATION

Report Type: Closure Report

General Site Information:

Site:	MC Federal #63 Well					
Company:	COG Operating LLC					
Section, Township and Range	Unit K	Sec. 21	T-17-S	R-32-E		
Lease Number:	API-30-025-39867					
County:	Lea County					
GPS:	32.81729° N			103.77478° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	Intersection of 529 and CR-216 travel north on 216 1.8 miles to Conoco Road, turn left 0.6 miles to location on right					

Release Data:

Date Released:	10/12/2011
Type Release:	Produced Fluids
Source of Contamination:	Buried fiberglass line hit with equipment
Fluid Released:	4 bbls oil and 10 bbls of produced water
Fluids Recovered:	3 bbls oil and 9 bbls of produced water

Official Communication:

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

Ranking Criteria

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

Acceptable Soil RRAL (mg/kg)		
Benzene	Total BTEX	TPH
10	50	5,000

HOBBS OCD

MAY 21 2012

RECEIVED



TETRA TECH

April 24, 2012

HOBBS OCD

MAY 21 2012

RECEIVED

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

Re: Closure Report for the COG Operating LLC., MC Federal #63 Well, Unit K, Section 21, Township 17 South, Range 32 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG), to assess a spill from the MC Federal #63 Well, Unit K, Section 21, Township 17 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.81729°, W 103.77478°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on October 12, 2011. During downsizing a location, a buried fiberglass line was hit releasing approximately four (4) barrels of oil and ten (10) barrels of produced water. COG recovered twelve (12) barrels of fluid from the area. The spill measured approximately 5' x 65' in the pasture. The initial C-141 form is enclosed in Appendix A.

Groundwater

The United States Geological Survey (USGS) Well Reports did not list any wells in Section 21. According to the NMOCD groundwater map, the depth to groundwater in this area is approximately 125' below surface. The groundwater data is shown in Appendix B.

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559

Fax 432.682.3946

www.tetrattech.com



Regulatory

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

Soil Assessment and Analytical Results

On December 21, 2011, Tetra Tech personnel inspected and sampled the spill area. Two (2) auger holes (AH-1 and AH-2) were installed using a stainless steel hand auger to assess the impacted soils. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C.

Referring to Table 1, both auger holes (AH-1 and AH-2) exceeded the RRAL for TPH and total BTEX. The TPH and total BTEX concentrations above the RRAL were detected in the AH-1 (0-1') and AH-2 (0-1' and 1-1.5'). Deeper samples showed declining concentrations below the RRAL at 1.0' to 2.0' below surface.

Elevated chloride concentrations were detected in the area of AH-1 and AH-2. Auger hole (AH-1 and AH-2) showed chloride highs of 9,870 and 6,280 mg/kg at 3-3.5', respectively. The chloride concentrations declined with depth, but not vertically defined with bottom hole samples of 9,870 mg/kg (AH-1, 3-3.5') and 1,660 mg/kg (AH-2, 9-9.5').

On January 26, 2012, Tetra Tech personnel supervised the installation of boreholes using an air rotary drilling rig. Two (2) boreholes (BH-1 and BH-2) were installed to define the chloride impact. Soil samples were collected and submitted for chloride analysis. The sampling results are summarized in Table 1. The borehole locations are shown on Figure 3. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B.



TETRA TECH

Referring to Table 1, the chloride concentrations declined at 6-7' in the area of BH-1. Borehole (BH-2) did not show a significant chloride impact to the area, with a chloride spike of 2,560 mg/kg at 4-5' and declined at 6-7' below surface to 511 mg/kg.

Site Remediation

Tetra Tech personnel supervised the excavation as outlined in the approved work plan. The spill foot print and final excavation depths of the soil remediation were met or exceeded as stated in the approved work plan. The area of AH-1 (BH-1) and AH-2 (BH-2) were excavated to a depth of approximately 6.0' and 9.0', respectively. Tetra Tech field screened the excavation samples to confirm the removal of the chloride impact soils. Approximately 340 yards³ of impacted material was removed and disposed of at the CRI Facility. On April 4, 2012, Mr. Geoffrey Leking, with the NMOCD, inspected the site and approved site remediation. The excavation was backfilled with clean soil. The excavation photos are attached.

Based on the remediation activities performed at this location, COG request closure for 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 Tavaréz
Senior Project Manager

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

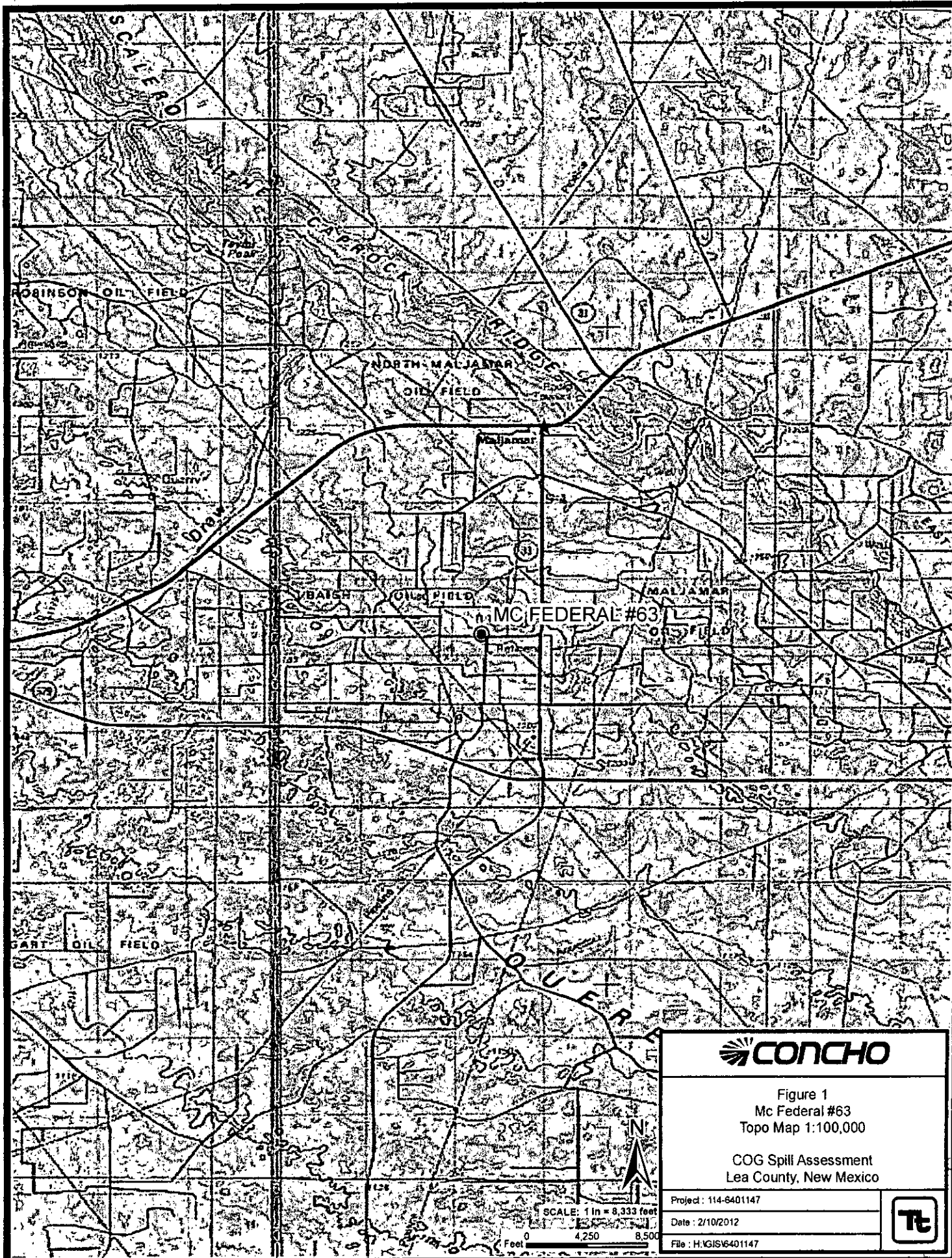


Figure 1
Mc Federal #63
Topo Map 1:100,000

COG Spill Assessment
Lea County, New Mexico

Project: 114-6401147

Date: 2/10/2012

File: H:\GIS\6401147



RECLAIMED
PASTURE

PASTURE

PAD

WELL

FIBERGLASS PIPELINE

BH-1 AH-1 BH-2 AH-2
3' 65' 5'

LEASE ROAD

EXPLANATION

- WELL
- AUGER HOLE SAMPLE LOCATIONS
- BORE HOLE SAMPLE LOCATIONS
- FIBERGLASS PIPELINE
- ▨ SPILL AREA



SCALE: 1 IN = 66 FEET

Feet 0 25 50



Figure 3

McFederal #63
Spill Assessment Map

COG Spill Assessment
Lea County, New Mexico

Project : 114-6401147

Date : 3/2/2012

File : H:\GIS\6401147



RECLAIMED
PASTURE

PASTURE

PAD

LEASE ROAD

5' - 6' DEEP

9' DEEP

FIBERGLASS PIPELINE

WELL

BH-1 AH-1 BH-2 AH-2

3' 65' 5'

EXPLANATION

- WELL
- AUGER HOLE SAMPLE LOCATIONS
- BORE HOLE SAMPLE LOCATIONS
- FIBERGLASS PIPELINE
- ▨ EXCAVATED AREA

SCALE: 1 IN = 69 FEET

Feet 0 25 50



Figure 4

McFederal #63
Excavation Areas & Depths Map

COG Spill Assessment
Lea County, New Mexico

Project: 114-6401147

Date: 4/24/2012

File: H:\GIS\6401147



Table 1

[illegible]

Table 1
COG Operating LLC
MC Federal #63
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total						
AH-2	12/21/2011	0-1	1'		X	3,780	9,360	13,140	<0.400	2.73	34.7	70.1	108	1,600
	"	1-1.5	1'		X	3.70	<50.0	3.70	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,850
	"	2-2.5	1'		X	-	-	-	-	-	-	-	-	5,280
	"	3-3.5	1'		X	-	-	-	-	-	-	-	-	6,280
	"	4-4.5	1'		X	-	-	-	-	-	-	-	-	3,160
	"	5-5.5	1'		X	-	-	-	-	-	-	-	-	1,290
	"	6-6.5	1'		X	-	-	-	-	-	-	-	-	845
	"	7-7.5	1'		X	-	-	-	-	-	-	-	-	1,330
	"	8-8.5	1'		X	-	-	-	-	-	-	-	-	2,430
	"	9-9.5	1'		X	-	-	-	-	-	-	-	-	1,660
BH-2	1/26/2012	0-1	-		X	-	-	-	-	-	-	-	-	<200
	"	2-3	-		X	-	-	-	-	-	-	-	-	<200
	"	4-5	-		X	-	-	-	-	-	-	-	-	2,560
	"	6-7	-		X	-	-	-	-	-	-	-	-	511
	"	9-10	-		X	-	-	-	-	-	-	-	-	275
	"	14-15	-	X		-	-	-	-	-	-	-	-	<200
	"	19-20	-	X		-	-	-	-	-	-	-	-	543

(--) Not Analyzed

☐ Excavation Depths

(BEB) Below Excavation Bottom



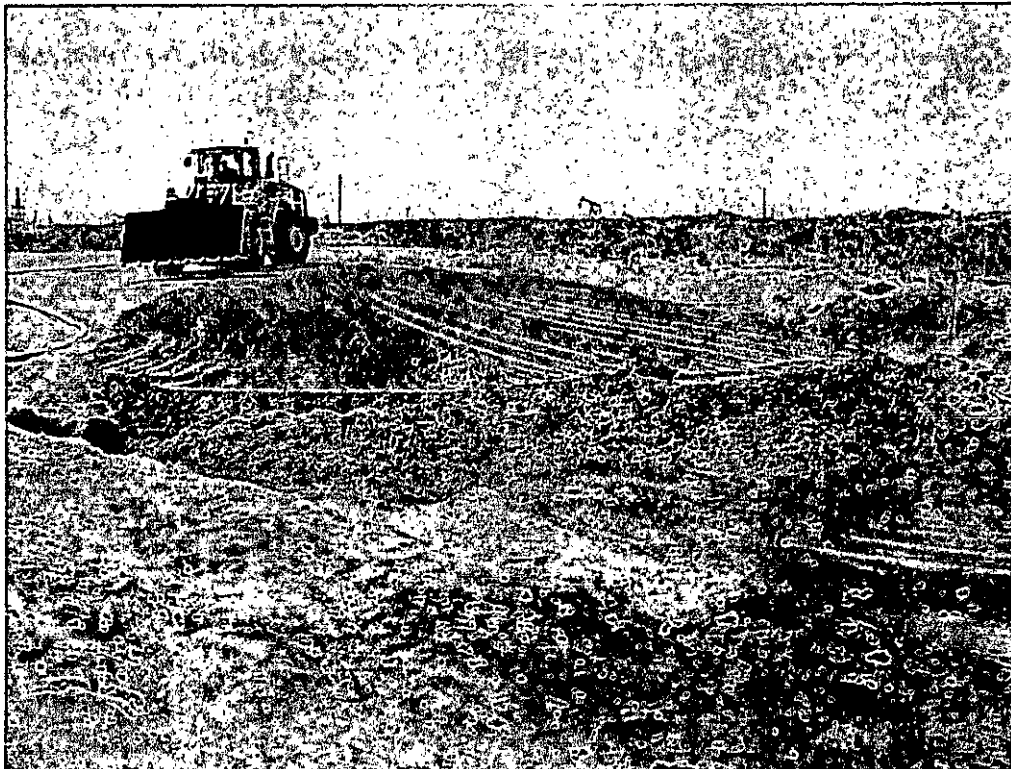
View west – Buried fiberglass line



View east near AH-2 and AH-1 (background)



View west – Final excavation depths



Site backfilled with clean material

Water Well Data
Average Depth to Groundwater (ft)
COG - MC Federal #63
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					

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

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 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

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
					225

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
90	167	173	161		

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

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

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 - MC Federal #63
-  Tetra Tech Temporary well

Summary Report

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

Report Date: January 5, 2012

Work Order: 11122301

Project Location: Lea Co., NM
Project Name: COG/MC Federal #63
Project Number: 114-6401147

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
285120	AH-1 1' BEB 0-1'	soil	2011-12-21	00:00	2011-12-22
285121	AH-1 1' BEB 1-1.5'	soil	2011-12-21	00:00	2011-12-22
285122	AH-1 1' BEB 2-2.5'	soil	2011-12-21	00:00	2011-12-22
285123	AH-1 1' BEB 3-3.5'	soil	2011-12-21	00:00	2011-12-22
285124	AH-2 1' BEB 0-1'	soil	2011-12-21	00:00	2011-12-22
285125	AH-2 1' BEB 1-1.5'	soil	2011-12-21	00:00	2011-12-22
285126	AH-2 1' BEB 2-2.5'	soil	2011-12-21	00:00	2011-12-22
285127	AH-2 1' BEB 3-3.5'	soil	2011-12-21	00:00	2011-12-22
285128	AH-2 1' BEB 4-4.5'	soil	2011-12-21	00:00	2011-12-22
285129	AH-2 1' BEB 5-5.5'	soil	2011-12-21	00:00	2011-12-22
285130	AH-2 1' BEB 6-6.5'	soil	2011-12-21	00:00	2011-12-22
285131	AH-2 1' BEB 7-7.5'	soil	2011-12-21	00:00	2011-12-22
285132	AH-2 1' BEB 8-8.5'	soil	2011-12-21	00:00	2011-12-22
285133	AH-2 1' BEB 9-9.5'	soil	2011-12-21	00:00	2011-12-22

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
285120 - AH-1 1' BEB 0-1'	<0.400 ¹	23.6	39.5	65.4	11000	3570 _{Qs}
285121 - AH-1 1' BEB 1-1.5'	<0.400	27.5	58.4	87.2	2350	4510 _{Qr,Qs}
285122 - AH-1 1' BEB 2-2.5'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	2.70 _{Qr,Qs}
285124 - AH-2 1' BEB 0-1'	<0.400 ²	2.73	34.7	70.1	9360	3780 _{Qs}
285125 - AH-2 1' BEB 1-1.5'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	3.70 _{Qr,Qs}

Sample: 285120 - AH-1 1' BEB 0-1'

¹Dilution due to hydrocarbons.

²Sample dilution due to hydrocarbons.

Param	Flag	Result	Units	RL
Chloride		3290	mg/Kg	4

Sample: 285121 - AH-1 1' BEB 1-1.5'

Param	Flag	Result	Units	RL
Chloride		2810	mg/Kg	4

Sample: 285122 - AH-1 1' BEB 2-2.5'

Param	Flag	Result	Units	RL
Chloride		4730	mg/Kg	4

Sample: 285123 - AH-1 1' BEB 3-3.5'

Param	Flag	Result	Units	RL
Chloride		9870	mg/Kg	4

Sample: 285124 - AH-2 1' BEB 0-1'

Param	Flag	Result	Units	RL
Chloride		1600	mg/Kg	4

Sample: 285125 - AH-2 1' BEB 1-1.5'

Param	Flag	Result	Units	RL
Chloride		2850	mg/Kg	4

Sample: 285126 - AH-2 1' BEB 2-2.5'

Param	Flag	Result	Units	RL
Chloride		5280	mg/Kg	4

Sample: 285127 - AH-2 1' BEB 3-3.5'

Param	Flag	Result	Units	RL
Chloride		6280	mg/Kg	4

Sample: 285128 - AH-2 1' BEB 4-4.5'

Param	Flag	Result	Units	RL
Chloride		3160	mg/Kg	4

Sample: 285129 - AH-2 1' BEB 5-5.5'

Param	Flag	Result	Units	RL
Chloride		1290	mg/Kg	4

Sample: 285130 - AH-2 1' BEB 6-6.5'

Param	Flag	Result	Units	RL
Chloride		845	mg/Kg	4

Sample: 285131 - AH-2 1' BEB 7-7.5'

Param	Flag	Result	Units	RL
Chloride		1330	mg/Kg	4

Sample: 285132 - AH-2 1' BEB 8-8.5'

Param	Flag	Result	Units	RL
Chloride		2430	mg/Kg	4

Sample: 285133 - AH-2 1' BEB 9-9.5'

Param	Flag	Result	Units	RL
Chloride		1660	mg/Kg	4



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1296
200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
E-Mail: lab@traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report (Corrected Report)

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

Report Date: January 5, 2012

Work Order: 11122301

Project Location: Lea Co., NM
Project Name: COG/MC Federal #63
Project Number: 114-6401147

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
285120	AH-1 1' BEB 0-1'	soil	2011-12-21	00:00	2011-12-22
285121	AH-1 1' BEB 1-1.5'	soil	2011-12-21	00:00	2011-12-22
285122	AH-1 1' BEB 2-2.5'	soil	2011-12-21	00:00	2011-12-22
285123	AH-1 1' BEB 3-3.5'	soil	2011-12-21	00:00	2011-12-22
285124	AH-2 1' BEB 0-1'	soil	2011-12-21	00:00	2011-12-22
285125	AH-2 1' BEB 1-1.5'	soil	2011-12-21	00:00	2011-12-22
285126	AH-2 1' BEB 2-2.5'	soil	2011-12-21	00:00	2011-12-22
285127	AH-2 1' BEB 3-3.5'	soil	2011-12-21	00:00	2011-12-22
285128	AH-2 1' BEB 4-4.5'	soil	2011-12-21	00:00	2011-12-22
285129	AH-2 1' BEB 5-5.5'	soil	2011-12-21	00:00	2011-12-22
285130	AH-2 1' BEB 6-6.5'	soil	2011-12-21	00:00	2011-12-22
285131	AH-2 1' BEB 7-7.5'	soil	2011-12-21	00:00	2011-12-22
285132	AH-2 1' BEB 8-8.5'	soil	2011-12-21	00:00	2011-12-22
285133	AH-2 1' BEB 9-9.5'	soil	2011-12-21	00:00	2011-12-22

Report Corrections (Work Order 11122301)

- BTEX and 8015 DRO/GRO results removed for sample 285126. 1/5/12

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

This report consists of a total of 34 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



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

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Case Narrative

Samples for project COG/MC Federal #63 were received by TraceAnalysis, Inc. on 2011-12-22 and assigned to work order 11122301. Samples for work order 11122301 were received intact at a temperature of 7.7 C. Samples were received on ice.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	74262	2011-12-28 at 07:25	87453	2011-12-28 at 07:25
BTEX	S 8021B	74348	2012-01-02 at 14:50	87557	2012-01-02 at 18:27
Chloride (Titration)	SM 4500-Cl B	74275	2011-12-28 at 09:55	87487	2011-12-29 at 14:16
Chloride (Titration)	SM 4500-Cl B	74275	2011-12-28 at 09:55	87488	2011-12-29 at 14:17
TPH DRO - NEW	S 8015 D	74279	2011-12-28 at 14:36	87474	2011-12-28 at 14:36
TPH DRO - NEW	S 8015 D	74324	2011-12-30 at 10:03	87526	2011-12-30 at 10:03
TPH GRO	S 8015 D	74291	2011-12-29 at 13:50	87486	2011-12-29 at 13:50
TPH GRO	S 8015 D	74348	2012-01-02 at 14:50	87558	2012-01-02 at 17:09

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 11122301 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: 285120 - AH-1 1' BEB 0-1'

Laboratory: Lubbock

Analysis: BTEX

QC Batch: 87453

Prep Batch: 74262

Analytical Method: S 8021B

Date Analyzed: 2011-12-28

Sample Preparation: 2011-12-28

Prep Method: S 5035

Analyzed By: MT

Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	<0.400	mg/Kg	20	0.0200
Toluene		1	23.6	mg/Kg	20	0.0200
Ethylbenzene		1	39.5	mg/Kg	20	0.0200
Xylene		1	65.4	mg/Kg	20	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.45	mg/Kg	20	2.00	72	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	21.1	mg/Kg	20	2.00	1055	70 - 130

Sample: 285120 - AH-1 1' BEB 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87487

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3290	mg/Kg	100	4.00

Sample: 285120 - AH-1 1' BEB 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 87474

Prep Batch: 74279

Analytical Method: S 8015 D

Date Analyzed: 2011-12-28

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	11000	mg/Kg	5	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	505	mg/Kg	5	100	505	53.5 - 147.1

Sample: 285120 - AH-1 1' BEB 0-1'

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

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

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qsr	1	3570	mg/Kg	50	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.88	mg/Kg	50	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	64.2	mg/Kg	50	2.00	3210	70 - 130

Sample: 285121 - AH-1 1' BEB 1-1.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 87557
Prep Batch: 74348

Analytical Method: S 8021B
Date Analyzed: 2012-01-02
Sample Preparation: 2012-01-02

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	2	<0.400	mg/Kg	20	0.0200
Toluene		2	27.5	mg/Kg	20	0.0200
Ethylbenzene		2	58.4	mg/Kg	20	0.0200
Xylene		2	87.2	mg/Kg	20	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			21.4	mg/Kg	20	20.0	107	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			33.1	mg/Kg	20	20.0	166	70.6 - 179

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Sample: 285121 - AH-1 1' BEB 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87487 Date Analyzed: 2011-12-29 Analyzed By: AR
Prep Batch: 74275 Sample Preparation: 2011-12-28 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2810	mg/Kg	100	4.00

Sample: 285121 - AH-1 1' BEB 1-1.5'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 87526 Date Analyzed: 2011-12-30 Analyzed By: kg
Prep Batch: 74324 Sample Preparation: 2011-12-30 Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	2350	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	173	mg/Kg	1	100	173	53.5 - 147.1

Sample: 285121 - AH-1 1' BEB 1-1.5'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 87558 Date Analyzed: 2012-01-02 Analyzed By: AG
Prep Batch: 74348 Sample Preparation: 2012-01-02 Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qsr, Qsr	2	4510	mg/Kg	20	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			21.5	mg/Kg	20	20.0	108	30 - 134.6
4-Bromofluorobenzene (4-BFB)			23.0	mg/Kg	20	20.0	115	22.4 - 149

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Sample: 285122 - AH-1 1' BEB 2-2.5'

Laboratory: Midland

Analysis: BTEX

QC Batch: 87557

Prep Batch: 74348

Analytical Method: S 8021B

Date Analyzed: 2012-01-02

Sample Preparation: 2012-01-02

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.18	mg/Kg	1	2.00	109	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.08	mg/Kg	1	2.00	104	70.6 - 179

Sample: 285122 - AH-1 1' BEB 2-2.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87487

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			4730	mg/Kg	100	4.00

Sample: 285122 - AH-1 1' BEB 2-2.5'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 87526

Prep Batch: 74324

Analytical Method: S 8015 D

Date Analyzed: 2011-12-30

Sample Preparation: 2011-12-30

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			93.3	mg/Kg	1	100	93	53.5 - 147.1

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Sample: 285122 - AH-1 1' BEB 2-2.5'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 87558
Prep Batch: 74348

Analytical Method: S 8015 D
Date Analyzed: 2012-01-02
Sample Preparation: 2012-01-02

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr, Qs	2	2.70	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.19	mg/Kg	1	2.00	110	30 - 134.6
4-Bromofluorobenzene (4-BFB)			1.97	mg/Kg	1	2.00	98	22.4 - 149

Sample: 285123 - AH-1 1' BEB 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 87487
Prep Batch: 74275

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

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			9870	mg/Kg	100	4.00

Sample: 285124 - AH-2 1' BEB 0-1'

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

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

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	2	u	<0.400	mg/Kg	20	0.0200
Toluene		1	2.73	mg/Kg	20	0.0200
Ethylbenzene		1	34.7	mg/Kg	20	0.0200
Xylene		1	70.1	mg/Kg	20	0.0200

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.42	mg/Kg	20	2.00	71	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	27.8	mg/Kg	20	2.00	1390	70 - 130

Sample: 285124 - AH-2 1' BEB 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87487

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1600	mg/Kg	100	4.00

Sample: 285124 - AH-2 1' BEB 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 87474

Prep Batch: 74279

Analytical Method: S 8015 D

Date Analyzed: 2011-12-28

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	9360	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	426	mg/Kg	5	100	426	53.5 - 147.1

Sample: 285124 - AH-2 1' BEB 0-1'

Laboratory: Lubbock

Analysis: TPH GRO

QC Batch: 87486

Prep Batch: 74291

Analytical Method: S 8015 D

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-29

Prep Method: S 5035

Analyzed By: MT

Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qsr	1	3780	mg/Kg	50	2.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.54	mg/Kg	50	2.00	127	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	80.2	mg/Kg	50	2.00	4010	70 - 130

Sample: 285125 - AH-2 1' BEB 1-1.5'

Laboratory: Midland

Analysis: BTEX

QC Batch: 87557

Prep Batch: 74348

Analytical Method: S 8021B

Date Analyzed: 2012-01-02

Sample Preparation: 2012-01-02

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.18	mg/Kg	1	2.00	109	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.08	mg/Kg	1	2.00	104	70.6 - 179

Sample: 285125 - AH-2 1' BEB 1-1.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87487

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2850	mg/Kg	100	4.00

Sample: 285125 - AH-2 1' BEB 1-1.5'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 87526

Prep Batch: 74324

Analytical Method: S 8015 D

Date Analyzed: 2011-12-30

Sample Preparation: 2011-12-30

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			101	mg/Kg	1	100	101	53.5 - 147.1

Sample: 285125 - AH-2 1' BEB 1-1.5'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 87558
Prep Batch: 74348

Analytical Method: S 8015 D
Date Analyzed: 2012-01-02
Sample Preparation: 2012-01-02

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr, Qs	2	3.70	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.19	mg/Kg	1	2.00	110	30 - 134.6
4-Bromofluorobenzene (4-BFB)			1.99	mg/Kg	1	2.00	100	22.4 - 149

Sample: 285126 - AH-2 1' BEB 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 87487
Prep Batch: 74275

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

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			5280	mg/Kg	100	4.00

Sample: 285127 - AH-2 1' BEB 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 87487
Prep Batch: 74275

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

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

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			6280	mg/Kg	100	4.00

Sample: 285128 - AH-2 1' BEB 4-4.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87487 Date Analyzed: 2011-12-29 Analyzed By: AR
Prep Batch: 74275 Sample Preparation: 2011-12-28 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3160	mg/Kg	100	4.00

Sample: 285129 - AH-2 1' BEB 5-5.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87487 Date Analyzed: 2011-12-29 Analyzed By: AR
Prep Batch: 74275 Sample Preparation: 2011-12-28 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1290	mg/Kg	100	4.00

Sample: 285130 - AH-2 1' BEB 6-6.5'

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			845	mg/Kg	50	4.00

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Sample: 285131 - AH-2 1' BEB 7-7.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87488

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1330	mg/Kg	100	4.00

Sample: 285132 - AH-2 1' BEB 8-8.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87488

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2430	mg/Kg	100	4.00

Sample: 285133 - AH-2 1' BEB 9-9.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87488

Prep Batch: 74275

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-12-29

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1660	mg/Kg	100	4.00

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Method Blanks

Method Blank (1) QC Batch: 87453

QC Batch: 87453
Prep Batch: 74262

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

Analyzed By: MT
Prepared By: MT

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

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

Method Blank (1) QC Batch: 87474

QC Batch: 87474
Prep Batch: 74279

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

Analyzed By: kg
Prepared By: kg

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

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

Method Blank (1) QC Batch: 87486

QC Batch: 87486
Prep Batch: 74291

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

Analyzed By: MT
Prepared By: MT

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

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

Method Blank (1) QC Batch: 87487

QC Batch: 87487
Prep Batch: 74275

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

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 87488

QC Batch: 87488
Prep Batch: 74275

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

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 87526

QC Batch: 87526
Prep Batch: 74324

Date Analyzed: 2011-12-30
QC Preparation: 2011-12-30

Analyzed By: kg
Prepared By: kg

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

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			90.0	mg/Kg	1	100	90	52.7 - 133.8

Method Blank (1) QC Batch: 87557

QC Batch: 87557
Prep Batch: 74348

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

Analyzed By: AG
Prepared By: AG

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

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

Method Blank (1) QC Batch: 87558

QC Batch: 87558
Prep Batch: 74348

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

Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		2	1.04	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.05	mg/Kg	1	2.00	102	67.6 - 150
4-Bromofluorobenzene (4-BFB)			1.59	mg/Kg	1	2.00	80	52.4 - 130

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 87453
Prep Batch: 74262

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

Analyzed By: MT
Prepared By: MT

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

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.79	mg/Kg	1	2.00	<0.00335	90	70 - 130	0	20
Toluene		1	1.80	mg/Kg	1	2.00	<0.00471	90	70 - 130	0	20
Ethylbenzene		1	1.86	mg/Kg	1	2.00	<0.00440	93	70 - 130	1	20
Xylene		1	5.55	mg/Kg	1	6.00	<0.00557	92	70 - 130	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.80	1.81	mg/Kg	1	2.00	90	90	70 - 130
4-Bromofluorobenzene (4-BFB)	1.77	1.80	mg/Kg	1	2.00	89	90	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 87474
Prep Batch: 74279

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

Analyzed By: kg
Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	205	mg/Kg	1	250	<14.5	82	64.5 - 146.9

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

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Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2	210	mg/Kg	1	250	<14.5	84	64.5 - 146.9	2	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	104	105	mg/Kg	1	100	104	105	65.3 - 135.8

Laboratory Control Spike (LCS-1)

QC Batch: 87486
Prep Batch: 74291

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

Analyzed By: MT
Prepared By: MT

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

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	18.2	mg/Kg	1	20.0	<0.446	91	70 - 130	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.94	1.87	mg/Kg	1	2.00	97	94	70 - 130
4-Bromofluorobenzene (4-BFB)	2.14	2.17	mg/Kg	1	2.00	107	108	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 87487
Prep Batch: 74275

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

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			94.9	mg/Kg	1	100	<3.85	95	85 - 115

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

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

Laboratory Control Spike (LCS-1)

QC Batch: 87488
Prep Batch: 74275

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

Analyzed By: AR
Prepared By: AR

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

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

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

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

Laboratory Control Spike (LCS-1)

QC Batch: 87526
Prep Batch: 74324

Date Analyzed: 2011-12-30
QC Preparation: 2011-12-30

Analyzed By: kg
Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	218	mg/Kg	1	250	<14.5	87	64.5 - 146.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2	217	mg/Kg	1	250	<14.5	87	64.5 - 146.9	0	20

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

Surrogate	LCSD Result	LCSD Result	Units	Dil.	Spike Amount	LCSD Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	108	107	mg/Kg	1	100	108	107	65.3 - 135.8

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Laboratory Control Spike (LCS-1)

QC Batch: 87557
Prep Batch: 74348

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

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		2	2.08	mg/Kg	1	2.00	<0.0118	104	77.4 - 121.7
Toluene		2	2.02	mg/Kg	1	2.00	<0.00600	101	88.6 - 121.6
Ethylbenzene		2	1.92	mg/Kg	1	2.00	<0.00850	96	74.3 - 117.9
Xylene		2	5.75	mg/Kg	1	6.00	<0.00613	96	73.4 - 118.8

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		2	2.20	mg/Kg	1	2.00	<0.0118	110	77.4 - 121.7	6	20
Toluene		2	2.12	mg/Kg	1	2.00	<0.00600	106	88.6 - 121.6	5	20
Ethylbenzene		2	2.03	mg/Kg	1	2.00	<0.00850	102	74.3 - 117.9	6	20
Xylene		2	6.08	mg/Kg	1	6.00	<0.00613	101	73.4 - 118.8	6	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.02	2.06	mg/Kg	1	2.00	101	103	65.5 - 116.7
4-Bromofluorobenzene (4-BFB)	1.93	2.02	mg/Kg	1	2.00	96	101	56.2 - 132.1

Laboratory Control Spike (LCS-1)

QC Batch: 87558
Prep Batch: 74348

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

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		2	17.5	mg/Kg	1	20.0	<0.753	88	60.9 - 105.4

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		2	18.0	mg/Kg	1	20.0	<0.753	90	60.9 - 105.4	3	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)	2.06	2.14	mg/Kg	1	2.00	103	107	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.75	1.84	mg/Kg	1	2.00	88	92	56.2 - 132

Matrix Spike (MS-1) Spiked Sample: 285158

QC Batch: 87453
Prep Batch: 74262

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

Analyzed By: MT
Prepared By: MT

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

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.61	mg/Kg	1	2.00	<0.00335	80	70 - 130	2	20
Toluene		1	1.73	mg/Kg	1	2.00	<0.00471	86	70 - 130	2	20
Ethylbenzene		1	1.90	mg/Kg	1	2.00	<0.00440	95	70 - 130	3	20
Xylene		1	5.63	mg/Kg	1	6.00	<0.00557	94	70 - 130	2	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.78	1.82	mg/Kg	1	2	89	91	70 - 130
4-Bromofluorobenzene (4-BFB)	1.69	1.77	mg/Kg	1	2	84	88	70 - 130

Matrix Spike (MS-1) Spiked Sample: 285309

QC Batch: 87474
Prep Batch: 74279

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

Analyzed By: kg
Prepared By: kg

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

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

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

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

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

Matrix Spike (MS-1) Spiked Sample: 285289

QC Batch: 87486
Prep Batch: 74291

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

Analyzed By: MT
Prepared By: MT

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

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

Param				MSD			Spike	Matrix		Rec.		RPD
	F	C	Result	Units	Dil.		Amount	Result	Rec.	Limit	RPD	Limit
GRO	Q _s	Q _s	1	2420	mg/Kg	50	20.0	1920	2500	70 - 130	18	20

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

Surrogate			MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	Q _{sr}	Q _{sr}	11.0	19.8	mg/Kg	50	2	550	990	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	29.0	42.6	mg/Kg	50	2	1450	2130	70 - 130

Matrix Spike (MS-1) Spiked Sample: 285129

QC Batch: 87487
Prep Batch: 74275

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

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			10800	mg/Kg	100	10000	1290	95	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			11100	mg/Kg	100	10000	1290	98	79.4 - 120.6	3	20

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

Matrix Spike (MS-1) Spiked Sample: 285139

QC Batch: 87488
Prep Batch: 74275

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

Analyzed By: AR
Prepared By: AR

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

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			11200	mg/Kg	100	10000	420	108	79.4 - 120.6	6	20

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

Matrix Spike (MS-1) Spiked Sample: 285126

QC Batch: 87526
Prep Batch: 74324

Date Analyzed: 2011-12-30
QC Preparation: 2011-12-30

Analyzed By: kg
Prepared By: kg

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	190	mg/Kg	1	250	<14.5	76	38.8 - 153.3

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

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Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2	196	mg/Kg	1	250	<14.5	78	38.8 - 153.3	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	87.8	88.2	mg/Kg	1	100	88	88	54.6 - 149.8

Matrix Spike (MS-1) Spiked Sample: 285290

QC Batch: 87557
Prep Batch: 74348

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

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		2	2.24	mg/Kg	1	2.00	<0.0118	112	69.4 - 123.6
Toluene		2	2.21	mg/Kg	1	2.00	<0.00600	110	75.4 - 134.3
Ethylbenzene		2	2.16	mg/Kg	1	2.00	<0.00850	108	58.8 - 133.7
Xylene		2	6.50	mg/Kg	1	6.00	<0.00613	108	57 - 134.2

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		2	1.99	mg/Kg	1	2.00	<0.0118	100	69.4 - 123.6	12	20
Toluene		2	1.96	mg/Kg	1	2.00	<0.00600	98	75.4 - 134.3	12	20
Ethylbenzene		2	1.96	mg/Kg	1	2.00	<0.00850	98	58.8 - 133.7	10	20
Xylene		2	5.87	mg/Kg	1	6.00	<0.00613	98	57 - 134.2	10	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.12	2.49	mg/Kg	1	2	106	124	79.4 - 141.1
4-Bromofluorobenzene (4-BFB)	2.07	2.47	mg/Kg	1	2	104	124	71 - 167

Matrix Spike (MS-1) Spiked Sample: 285125

QC Batch: 87558
Prep Batch: 74348

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

Analyzed By: AG
Prepared By: AG

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Lea Co., NM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		2	20.7	mg/Kg	1	20.0	3.7	85	61.8 - 114

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

Param			F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	3	Q7, Q8	Q7, Q8	2	3.47	mg/Kg	1	20.0	3.7	0	61.8 - 114	143	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)	2.70	1.72	mg/Kg	1	2	135	86	29.4 - 161.7
4-Bromofluorobenzene (4-BFB)	2.64	1.54	mg/Kg	1	2	132	77	37.3 - 162

Report Date: January 5, 2012
114-6401147

Work Order: 11122301
COG/MC Federal #63

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Lea Co., NM

Calibration Standards

Standard (CCV-1)

QC Batch: 87453

Date Analyzed: 2011-12-28

Analyzed By: MT

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

Standard (CCV-2)

QC Batch: 87453

Date Analyzed: 2011-12-28

Analyzed By: MT

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

Standard (CCV-3)

QC Batch: 87474

Date Analyzed: 2011-12-28

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	208	83	80 - 120	2011-12-28

Standard (CCV-4)

QC Batch: 87474

Date Analyzed: 2011-12-28

Analyzed By: kg

Report Date: January 5, 2012
114-6401147

Work Order: 11122301
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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
DRO		2	mg/Kg	250	211	84	80 - 120	2011-12-28

Standard (CCV-1)

QC Batch: 87486

Date Analyzed: 2011-12-29

Analyzed By: MT

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

Standard (CCV-2)

QC Batch: 87486

Date Analyzed: 2011-12-29

Analyzed By: MT

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

Standard (ICV-1)

QC Batch: 87487

Date Analyzed: 2011-12-29

Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	107	107	85 - 115	2011-12-29

Standard (CCV-1)

QC Batch: 87487

Date Analyzed: 2011-12-29

Analyzed By: AR

Report Date: January 5, 2012
114-6401147

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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	92.8	93	85 - 115	2011-12-29

Standard (ICV-1)

QC Batch: 87488

Date Analyzed: 2011-12-29

Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	97.9	98	85 - 115	2011-12-29

Standard (CCV-1)

QC Batch: 87488

Date Analyzed: 2011-12-29

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	102	102	85 - 115	2011-12-29

Standard (CCV-1)

QC Batch: 87526

Date Analyzed: 2011-12-30

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	210	84	80 - 120	2011-12-30

Standard (CCV-2)

QC Batch: 87526

Date Analyzed: 2011-12-30

Analyzed By: kg

Report Date: January 5, 2012
114-6401147

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	214	86	80 - 120	2011-12-30

Standard (CCV-1)

QC Batch: 87557

Date Analyzed: 2012-01-02

Analyzed By: AG

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

Standard (CCV-2)

QC Batch: 87557

Date Analyzed: 2012-01-02

Analyzed By: AG

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

Standard (CCV-1)

QC Batch: 87558

Date Analyzed: 2012-01-02

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		2	mg/Kg	1.00	1.16	116	80 - 120	2012-01-02

Report Date: January 5, 2012
114-6401147

Work Order: 11122301
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Lea Co., NM

Standard (CCV-2)

QC Batch: 87558

Date Analyzed: 2012-01-02

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		z	mg/Kg	1.00	1.11	111	80 - 120	2012-01-02

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	T104704219-11-5	Lubbock
2	NELAP	T104704392-11-3	Midland

Standard Flags

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

Result Comments

- 1 Dilution due to hydrocarbons.
- 2 Sample dilution due to hydrocarbons.
- 3 special comment - Prep error. Sample was not spiked.

Report Date: January 5, 2012
114-6401147

Work Order: 11122301
COG/MC Federal #63

Page Number: 34 of 34
Lea Co., NM

Attachments

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

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 2

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: FLE TAVAREZ	CONTAINERS (N)	PRESERVATIVE METHOD
PROJECT NO.: 114-6401147	PROJECT NAME: MC FEDERAL #103		

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION
	2011					Lea Co NM

285	121	S	X	AH-1 'BEB	0-1'	1	X
121	↓	↓	↓		1-1.5'	↓	↓
122	↓	↓	↓		2-2.5'	↓	↓
123	↓	↓	↓		3-3.5'	↓	↓

[illegible]

RELINQUISHED BY: (Signature)	Date: 12-3-11	Time: 16:45	RECEIVED BY: (Signature)	Date: 12-3-11	Time: 16:45
RELINQUISHED BY: (Signature)	Date: 12-3-11	Time: 16:45	RECEIVED BY: (Signature)	Date: 12-3-11	Time: 16:45
RELINQUISHED BY: (Signature)	Date: 12-3-11	Time: 16:45	RECEIVED BY: (Signature)	Date: 12-3-11	Time: 16:45

RECEIVING LABORATORY: Boz CITY: Midland STATE: TX ZIP: _____
ADDRESS: _____ PHONE: _____
DATE: 12/20/11 TIME: 8:50
RECEIVED BY (Signature): Shirley Ward LS 2N 1972

77° later	REMARKS: KU layer Sample H-TPH 0
-----------	----------------------------------

Release III out all copies - Laboratory retains Yellow copy - Return Original copy to Tetra Tech - Project Manager

BTEX 8021B	X		
NCH 8015-MOD TX1006 (Ext. to C35)	X	X	
PAH 8270			
RCRA Metals Ag As Ba Cd Cr Pb Hg Se			
TCLP Metals Ag As Ba Cd Vr Pd Hg Se			
TCLP Volatiles			
TCLP Semi Volatiles			
RCl			
GC.MS Vol. 8240/8260/624			
GC.MS Semt. Vol. 8270/625			
PCBs 8080/608			
Pest. 808/608			
Chlorides			
Gamma Spec.			
Alpha Beta (Air)			
PLM (Asbestos)			
Major Anions/Cations, pH, TDS			

SAMPLE BY: (Print & Initial)		Date: _____
SAMPLE SHIPPED BY: (Circle)		Time: _____
FEDEX		AIRBILL #: _____
BUS		OTHER: _____
HAND DELIVERED		Results by: _____
TETRA TECH CONTACT PERSON: _____		

305	Ike Tawarez	RUSH Charges Authorized:	Yes	No
3.8/3.9				

recibo 1,000 mg/19g

Accounting receives Gold copy.

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

Kensington Records 10 m/11/19 and Total Box Records 50 m/11/19.

Summary Report

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

Report Date: February 10, 2012

Work Order: 12013003

Project Location: Lea Co., NM
Project Name: COG/MC Federal #63
Project Number: 114-6401147

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
287724	BH-1 @ AH-1 0-1'	soil	2012-01-26	00:00	2012-01-27
287725	BH-1 @ AH-1 2-3'	soil	2012-01-26	00:00	2012-01-27
287726	BH-1 @ AH-1 4-5'	soil	2012-01-26	00:00	2012-01-27
287727	BH-1 @ AH-1 6-7'	soil	2012-01-26	00:00	2012-01-27
287728	BH-1 @ AH-1 9-10'	soil	2012-01-26	00:00	2012-01-27
287731	BH-2 @ AH-2 0-1'	soil	2012-01-26	00:00	2012-01-27
287732	BH-2 @ AH-2 2-3'	soil	2012-01-26	00:00	2012-01-27
287733	BH-2 @ AH-2 4-5'	soil	2012-01-26	00:00	2012-01-27
287734	BH-2 @ AH-2 6-7'	soil	2012-01-26	00:00	2012-01-27
287735	BH-2 @ AH-2 9-10'	soil	2012-01-26	00:00	2012-01-27
287736	BH-2 @ AH-2 14-15'	soil	2012-01-26	00:00	2012-01-27
287737	BH-2 @ AH-2 19-20'	soil	2012-01-26	00:00	2012-01-27

Sample: 287724 - BH-1 @ AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		912	mg/Kg	4

Sample: 287725 - BH-1 @ AH-1 2-3'

Param	Flag	Result	Units	RL
Chloride		3430	mg/Kg	4

Sample: 287726 - BH-1 @ AH-1 4-5'

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

Param	Flag	Result	Units	RL
Chloride		2980	mg/Kg	4

Sample: 287727 - BH-1 @ AH-1 6-7'

Param	Flag	Result	Units	RL
Chloride		244	mg/Kg	4

Sample: 287728 - BH-1 @ AH-1 9-10'

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

Sample: 287731 - BH-2 @ AH-2 0-1'

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

Sample: 287732 - BH-2 @ AH-2 2-3'

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

Sample: 287733 - BH-2 @ AH-2 4-5'

Param	Flag	Result	Units	RL
Chloride		2560	mg/Kg	4

Sample: 287734 - BH-2 @ AH-2 6-7'

Param	Flag	Result	Units	RL
Chloride		511	mg/Kg	4

Sample: 287735 - BH-2 @ AH-2 9-10'

Param	Flag	Result	Units	RL
Chloride		275	mg/Kg	4

Report Date: February 10, 2012

Work Order: 12013003

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Sample: 287736 - BH-2 @ AH-2 14-15'

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

Sample: 287737 - BH-2 @ AH-2 19-20'

Param	Flag	Result	Units	RL
Chloride		543	mg/Kg	4



5701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
E-Mail: lab@traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report (Corrected Report)

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

Report Date: February 10, 2012

Work Order: 12013003

Project Location: Lea Co., NM
Project Name: COG/MC Federal #63
Project Number: 114-6401147

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

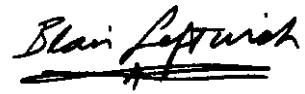
Sample	Description	Matrix	Date Taken	Time Taken	Date Received
287724	BH-1 @ AH-1 0-1'	soil	2012-01-26	00:00	2012-01-27
287725	BH-1 @ AH-1 2-3'	soil	2012-01-26	00:00	2012-01-27
287726	BH-1 @ AH-1 4-5'	soil	2012-01-26	00:00	2012-01-27
287727	BH-1 @ AH-1 6-7'	soil	2012-01-26	00:00	2012-01-27
287728	BH-1 @ AH-1 9-10'	soil	2012-01-26	00:00	2012-01-27
287731	BH-2 @ AH-2 0-1'	soil	2012-01-26	00:00	2012-01-27
287732	BH-2 @ AH-2 2-3'	soil	2012-01-26	00:00	2012-01-27
287733	BH-2 @ AH-2 4-5'	soil	2012-01-26	00:00	2012-01-27
287734	BH-2 @ AH-2 6-7'	soil	2012-01-26	00:00	2012-01-27
287735	BH-2 @ AH-2 9-10'	soil	2012-01-26	00:00	2012-01-27
287736	BH-2 @ AH-2 14-15'	soil	2012-01-26	00:00	2012-01-27
287737	BH-2 @ AH-2 19-20'	soil	2012-01-26	00:00	2012-01-27

Report Corrections (Work Order 12013003)

- Re-ran CI for 287737. 2-10-12

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

This report consists of a total of 15 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink, reading "Blair Leftwich". The signature is written in a cursive style and is positioned above a horizontal line.

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

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Case Narrative

Samples for project COG/MC Federal #63 were received by TraceAnalysis, Inc. on 2012-01-27 and assigned to work order 12013003. Samples for work order 12013003 were received intact at a temperature of 1.1 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	74901	2012-02-01 at 11:48	88248	2012-02-01 at 11:23
Chloride (Titration)	SM 4500-Cl B	74901	2012-02-01 at 11:48	88249	2012-02-01 at 11:24
Chloride (Titration)	SM 4500-Cl B	75097	2012-02-09 at 13:44	88457	2012-02-09 at 15:44

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 12013003 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Report Date: February 10, 2012
114-6401147

Work Order: 12013003
COG/MC Federal #63

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Lea Co., NM

Analytical Report

Sample: 287724 - BH-1 @ AH-1 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-02-01	Analyzed By:	AR
QC Batch:	88248	Sample Preparation:	2012-02-01	Prepared By:	AR
Prep Batch:	74901				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			912	mg/Kg	50	4.00

Sample: 287725 - BH-1 @ AH-1 2-3'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-02-01	Analyzed By:	AR
QC Batch:	88248	Sample Preparation:	2012-02-01	Prepared By:	AR
Prep Batch:	74901				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3430	mg/Kg	100	4.00

Sample: 287726 - BH-1 @ AH-1 4-5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-02-01	Analyzed By:	AR
QC Batch:	88248	Sample Preparation:	2012-02-01	Prepared By:	AR
Prep Batch:	74901				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2980	mg/Kg	100	4.00

Report Date: February 10, 2012
114-6401147

Work Order: 12013003
COG/MC Federal #63

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Lea Co., NM

Sample: 287727 - BH-1 @ AH-1 6-7'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-02-01	Analyzed By:	AR
QC Batch:	88248	Sample Preparation:	2012-02-01	Prepared By:	AR
Prep Batch:	74901				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			244	mg/Kg	50	4.00

Sample: 287728 - BH-1 @ AH-1 9-10'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-02-01	Analyzed By:	AR
QC Batch:	88248	Sample Preparation:	2012-02-01	Prepared By:	AR
Prep Batch:	74901				

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

Sample: 287731 - BH-2 @ AH-2 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-02-01	Analyzed By:	AR
QC Batch:	88248	Sample Preparation:	2012-02-01	Prepared By:	AR
Prep Batch:	74901				

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

Sample: 287732 - BH-2 @ AH-2 2-3'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-02-01	Analyzed By:	AR
QC Batch:	88248	Sample Preparation:	2012-02-01	Prepared By:	AR
Prep Batch:	74901				

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

Sample: 287733 - BH-2 @ AH-2 4-5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 88248 Date Analyzed: 2012-02-01 Analyzed By: AR
Prep Batch: 74901 Sample Preparation: 2012-02-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2560	mg/Kg	100	4.00

Sample: 287734 - BH-2 @ AH-2 6-7'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 88249 Date Analyzed: 2012-02-01 Analyzed By: AR
Prep Batch: 74901 Sample Preparation: 2012-02-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			511	mg/Kg	50	4.00

Sample: 287735 - BH-2 @ AH-2 9-10'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 88249 Date Analyzed: 2012-02-01 Analyzed By: AR
Prep Batch: 74901 Sample Preparation: 2012-02-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			275	mg/Kg	50	4.00

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Sample: 287736 - BH-2 @ AH-2 14-15'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-02-01	Analyzed By:	AR
QC Batch:	88249	Sample Preparation:	2012-02-01	Prepared By:	AR
Prep Batch:	74901				

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

Sample: 287737 - BH-2 @ AH-2 19-20'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-02-09	Analyzed By:	AR
QC Batch:	88457	Sample Preparation:	2012-02-09	Prepared By:	AR
Prep Batch:	75097				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			543	mg/Kg	50	4.00

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Method Blanks

Method Blank (1) QC Batch: 88248

QC Batch: 88248
Prep Batch: 74901

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

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 88249

QC Batch: 88249
Prep Batch: 74901

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

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 88457

QC Batch: 88457
Prep Batch: 75097

Date Analyzed: 2012-02-09
QC Preparation: 2012-02-09

Analyzed By: AR
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: 88248
Prep Batch: 74901

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

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			94.3	mg/Kg	1	100	<3.85	94	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			103	mg/Kg	1	100	<3.85	103	85 - 115	9	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 88249
Prep Batch: 74901

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

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			95.7	mg/Kg	1	100	<3.85	96	85 - 115

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

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

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

Laboratory Control Spike (LCS-1)

QC Batch: 88457
Prep Batch: 75097

Date Analyzed: 2012-02-09
QC Preparation: 2012-02-09

Analyzed By: AR
Prepared By: AR

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Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			95.8	mg/Kg	1	100	<3.85	96	85 - 115

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

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

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

Matrix Spike (MS-1) Spiked Sample: 287733

QC Batch: 88248
Prep Batch: 74901

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

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			12500	mg/Kg	100	10000	2560	99	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			13100	mg/Kg	100	10000	2560	105	79.4 - 120.6	5	20

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

Matrix Spike (MS-1) Spiked Sample: 287744

QC Batch: 88249
Prep Batch: 74901

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

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10000	mg/Kg	100	10000	<385	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			10400	mg/Kg	100	10000	<385	104	79.4 - 120.6	4	20

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

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Matrix Spike (MS-1) Spiked Sample: 287737

QC Batch: 88457
Prep Batch: 75097

Date Analyzed: 2012-02-09
QC Preparation: 2012-02-09

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10700	mg/Kg	100	10000	543	102	79.4 - 120.6

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			11400	mg/Kg	100	10000	543	108	79.4 - 120.6	6	20

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

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Calibration Standards

Standard (ICV-1)

QC Batch: 88248

Date Analyzed: 2012-02-01

Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-02-01

Standard (CCV-1)

QC Batch: 88248

Date Analyzed: 2012-02-01

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	2012-02-01

Standard (ICV-1)

QC Batch: 88249

Date Analyzed: 2012-02-01

Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-02-01

Standard (CCV-1)

QC Batch: 88249

Date Analyzed: 2012-02-01

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-02-01

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Standard (ICV-1)

QC Batch: 88457

Date Analyzed: 2012-02-09

Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-02-09

Standard (CCV-1)

QC Batch: 88457

Date Analyzed: 2012-02-09

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	99.1	99	85 - 115	2012-02-09

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

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.

