Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	
WellHead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Nater 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:		RECEIVED

Total BTEX

50

**TPH** 

5,000

NMOCD ARTESIA

Benzene

10



October 12, 2011

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



Re: Closure Request for the COG Operating LLC., Electra Federal #5 Tank Battery, Unit D, Section 15, Township 17 South, Range 30 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the Electra Federal #5 Tank Battery, Unit D, Section 15, Township 17 South, Range 30 East, Eddy County, New Mexico. (Site). The spill site coordinates are N 32.83989°, W 103.96511°. 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 February 9, 2011, and released approximately eight (8) barrels of produced water due to freezing temperatures splitting a flow line. To alleviate the problem, COG personnel replaced the damaged flow line. Six (6) barrels of standing fluids were recovered. The spill initiated from a flow line in the pasture area south of the tank battery and migrated north approximately 150'. The spill affected an area approximately 10 x 150'. The initial C-141 form is enclosed in Appendix A.

#### Groundwater

No water wells were listed within Section 15. According to the NMOCD Eddy County groundwater map, the average depth to groundwater in this area is greater than 300' below surface. The groundwater data is shown in Appendix B.



#### Regulatory

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

#### **Soil Assessment and Analytical Results**

On March 4, 2011, Tetra Tech personnel inspected and sampled the spill area. A total of four (4) auger holes (AH-1 through AH-4) were installed using a stainless steel hand auger to assess the impacted soils. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1: The auger hole locations are shown on Figure 3.

Referring to Table 1, all of the submitted samples were below the RRAL for TPH and BTEX, with the exception of AH-2. Auger hole (AH-2) showed a TPH of 8,140 mg/kg and a total BTEX of 217.18 mg/kg at 0-1' and declined below the RRAL at 1-1.5' below surface.

A shallow chloride impact was detected in the auger holes. In the areas of AH-1, AH-2 and AH-3, the chloride concentrations declined below the reporting limit at 4.0', 5.0' and 1.0', respectively. Auger hole (AH-4) showed a chloride concentrations of 2,450 mg/kg at 0-1' and declined to <200 at 1-1.5', but the deeper sample showed an increasing chloride concentration of 1,000 mg/kg at 3-3.5' below surface.

#### **Closure Activities**

Based on the approved work plan, Tetra Tech personnel supervised the excavation of the site. The final excavation depths of the soil remediation were met or exceeded as stated in the approved work plan. A total of 180



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

As requested by the BLM, confirmation samples were collected from the excavation bottom holes and sidewalls. The confirmation samples results are shown in Table 1. Referring to Table 1, the chloride concentrations detected in the areas of CS-1 (west wall) and CS-4 (north wall) showed an elevated chloride concentration of 3,630 mg/kg and 2,400 mg/kg, respectively. However, these areas were not excavated due to the facility lines near the sidewalls. The BLM inspected these areas and approved the chloride concentrations.

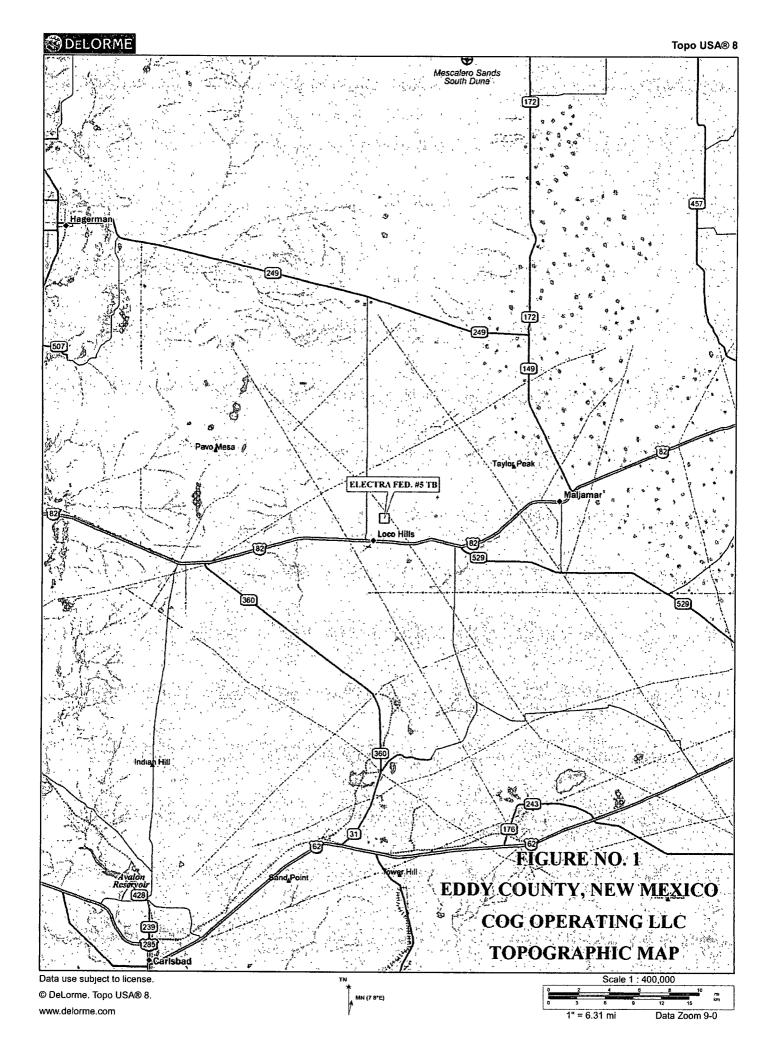
Based on the remedial activities performed, COG request closure of the site. A copy of the C-141 (Final) is included in Appendix A. If you have any questions or comments concerning the remedial activities, please call me at (432) 682-4559.

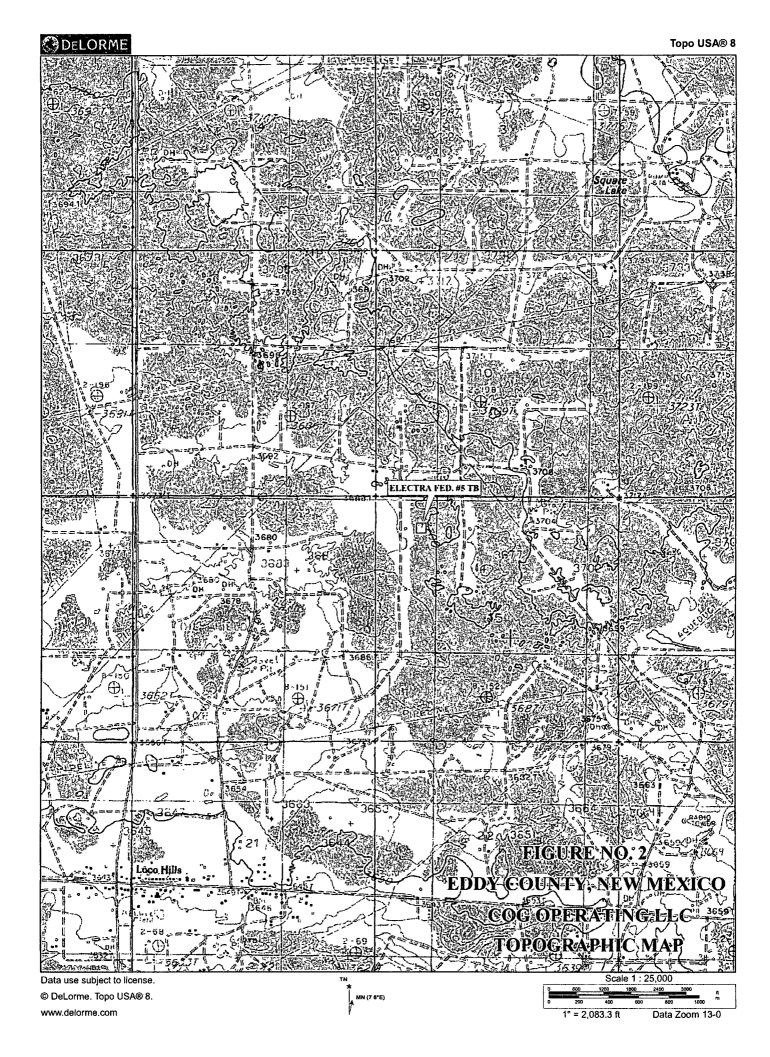
Respectfully submitted,

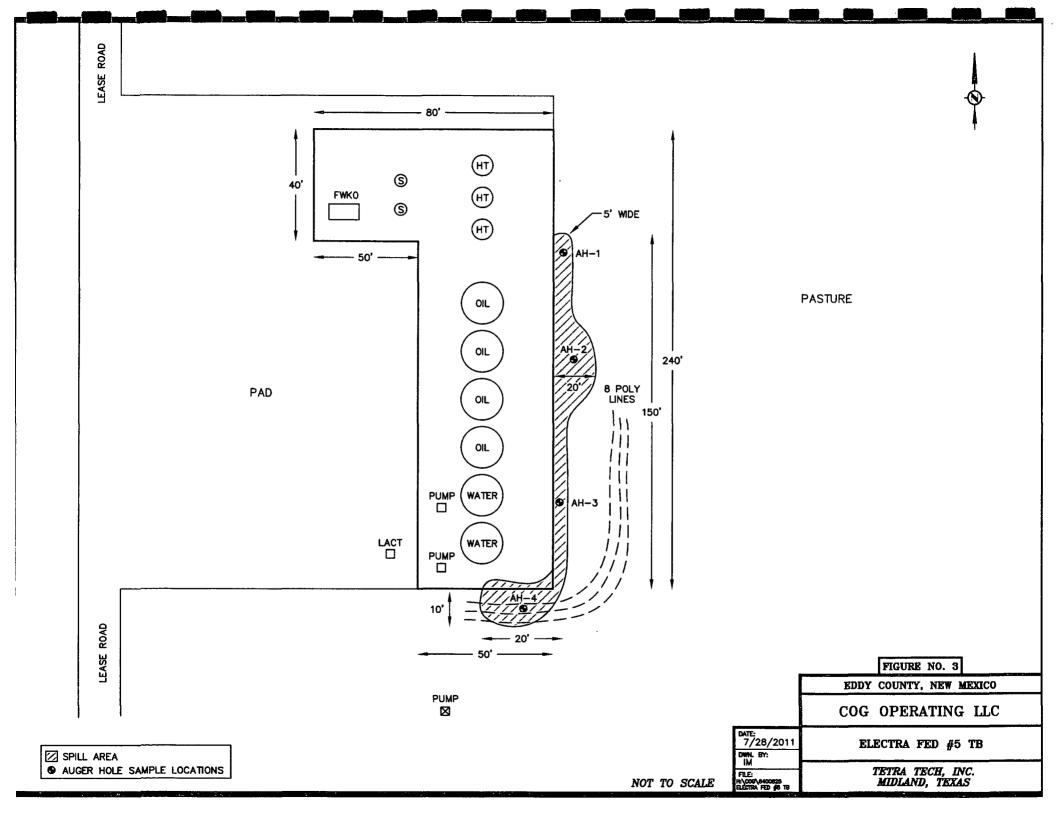
TETBATECH

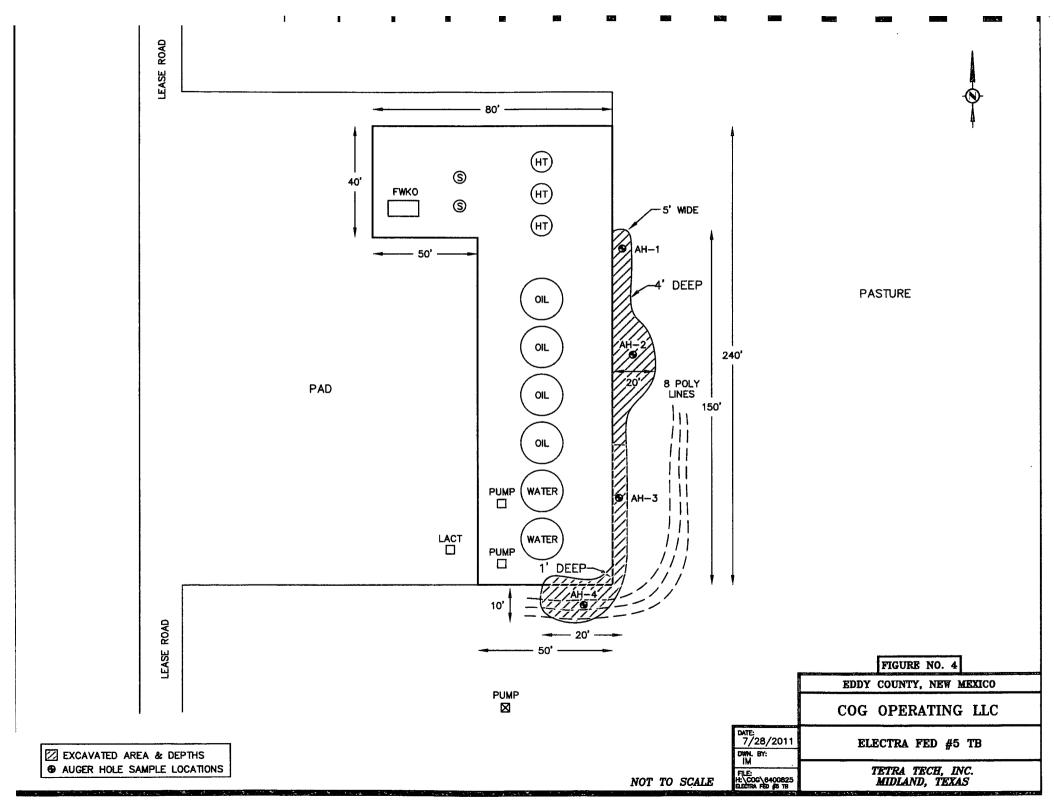
Ike Tavarez , PG Sr. Project Manager

# Figures









# **Tables**

Table 1
COG Operating LLC.
ELECTRA FEDERAL #5
EDDY COUNTY, NEW MEXICO

0	Sample	Sample Depth	Soi	l Status	TF	PH (mg/k	(g)	Benzene	Toluene	Ethlybenzene	Xylene	Chloride
Sample ID	Date	(ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-1	3/4/2011	. 0-1	16	, X	53.0	163	216.0	,0.136	0.186	0.178	0.492	6,020
· ····	11	1-1.5'	- 'r 0 . .t.	. X	-	-	-	_	-	- A	-	4,770
	11	2-2.5'		, X	- :	-	-	-	-	4		1,710
	"	3-3.5'	%± 	Х	-	-	-	-	j -	-	-	1,710
	11	4-4.5'	Х		-	-	-	-	-	-	-	<200
	11	5 <b>-</b> 5.5'	Х		-	-	-	-	-	-	-	214
CS-1	9/22/2011	4' botton hole	Х		-	-	-	-	-	-	-	713
	l1	North wall	Х		-	-	-	-	-	-	-	<200
	11	East wall	Х		-	-	-	-	-	-	-	249
	"	West wall	Х		-	-	-	-	-	*	-	3,630
AH-2	3/4/2011	0-1'	e distrib	Х	3,260	4,880	8,140	5.38	63.0	. 59.6	89.2	8,740
	11	1-1.5'	,,,,,	Х	<2.00	<50.0	<50.0	<0.0200	0.161	<0.0200	<0.0200	3,030
	. II	2-2.5'	, š <sup>4</sup> .	X	<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	2,820
	11	3-3.5'	ه برد	Χ	-	-	-	-	6 3 4	-	-	291
	to .	4-4.5'	4	Х	-	-	-	-	<b>*</b> -	-	-	2,520
	t1	5-5.5'	Х		-	-	-	-	-	-	-	<200
	11	6-6.5'	Х		-	-	-	-	-	-	-	<200
CS-2	9/22/2011	4' bottom hole	Х		<u> </u>	-	_	-	-	*	-	<200
	11	East wall	Х		-	-	-	-	-	•	-	<200
	"	West wall	×		-	_	-	-	-	-	-	948

# Table 1 COG Operating LLC. ELECTRA FEDERAL #5 EDDY COUNTY, NEW MEXICO

	Sample	Sample Depth	Soi	l Status	TF	H (mg/k	(g)	Benzene	Toluene	Ethlybenzene	Xylene	Chloride
Sample ID	Date	(ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-3	3/4/2011	0-1'		Х	478	180	658	<0.0200	4.35	8.52	12.8	2,490
	u	1-1.5'	Х		-	-	-	-	-	-	-	<200
	и	2-2.5'	Х		-	-	_	-	-	•	-	461
CS-3	9/22/2011	1' bottom hole	Х		<del>-</del>	<u>-</u>	-	-		-	-	<200
	11	East wali	Х		•	-	-	-	-	-	-	<200
	п	West wall	Х		-	-	-	-	-	•	-	390
AH-4	3/4/2011	0-1'		Х	54.2	245	299.2	<0.0200	0.152	0.228	0.548	2,450
	u	1-1.5'	Х		-	-	-	-	-	-	-	<200
	"	2-2.5'	Х		-	-	-	-	-	-	-	<200
	п	3-3.5'	Х		-	-	-	-	-	-	-	1,000
CS-4	9/22/2011	1' bottom hole	Х	<del></del>		-	<u>-</u>	-	_	-	-	<200
	tt	North Wall	Х		-	-	-	-	-	-	-	2,400
	ŧI	East Wall	Х		-	-	-	-	-	-	-	<200
	11	West Wall	Х		-	-	-	-	-	-	-	<200
	16	South Wall	Х		-	-	-	-	-	-	•	<200
T1	9/26/2011	3'	Х		_	_	_		_	-	_	<200
	п	5'	Х		-	-	-	-	-	-	-	<200

(--) Not Analyzed

Excavation Depth

T1 Trench Backhoe

CS Confirmation Samples

# Appendix A

<u>District I</u> 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 1220 S. St. Francis Dr., Santa Fe, NM 87505

#### State of New Mexico Energy Minerals and Natural Resources

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

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

side of form

Form C-141 Revised October 10, 2003

Final Report

#### **Release Notification and Corrective Action**

**OPERATOR** 

Name of Co	Name of Company COG OPERATING LLC						Contact Pat Ellis							
Address				dland, TX 79701		Telephone N		230-007	17					
Facility Nar	ne	Electra	Federal:	#5		Facility Typ	e Flo	owline						
Surface Ow	ner Fede	ral		Mineral O	wner				Lease N	No. (API#) 30-015-34211				
Bulliuo O III	104	201		Luqui		,			Dealer 1	(12111) 00 010 0 1211	_			
			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			N OF REI								
Unit Letter	Section	Township	Range	Feet from the	North	h/South Line	Feet from the	East/W	est Line	County				
D	15	175	30E	}						Eddy				
				Latitude 32 5	0.373	Longitu	ide 103 57.919							
NATURE OF RELEASE														
Type of Relea	ase Produ	ced water					Release 8bbls		Volume F	Recovered 6bbls	-			
	Source of Release Flowline						Iour of Occurrenc			Hour of Discovery				
	W I					02/09/2011			02/09/201	10:00 a.m.				
Was Immedia	Was Immediate Notice Given?  ☐ Yes ☒ No ☒ Not Requ						Whom?							
By Whom?						Date and H	lour							
Was a Water	course Reac			~		If YES, Vo	lume Impacting t	he Water	rcourse.					
			Yes 🛭	No										
If a Watercou	rse was Im	oacted, Descri	be Fully.	k						The state of the s				
Describe Cau	se of Proble	m and Remed	lial Action	n Taken *										
					<b>117</b>		is in interest and a sur-	l	d tha lina i	into comico				
Due to freezu	ng temperat	ures the flow	ine split a	nd released fluid.	we re	placed the spir	t joint of pipe and	returne	d the line i	nto service.				
Describe Are	a Affected a	ind Cleanup A	ction Tak	en.*							:			
Initially Shale	v voc roloce	ad from the f	owline on	d wa wara ahla ta	racove	ar Khhle with a	vacuum truck T	ha releac	e occurre	i just outside the berm wall o	√f.			
										on and into the pasture area.	,,			
Tetra Tech w	ill sample ti	ne spill site are	ea to delin	eate any possible						nediation work plan to the				
NMOCD price	or to any sig	nificant reme	diation wo	ork.										
I herehu certi	fy that the i	nformation di	ven ahove	is true and compl	ete to	the hest of my	knowledge and u	nderstan	d that nurs	suant to NMOCD rules and				
regulations al	l operators	are required to	report an	id/or file certain re	elease	notifications ar	nd perform correc	tive action	ons for rel	eases which may endanger				
public health	or the envir	onment. The	acceptance	e of a C-141 repor	rt by tl	he NMOCD m	arked as "Final R	eport" do	oes not reli	ieve the operator of liability				
should their o	perations h	ave failed to a	dequately	investigate and re	media	ite contaminati	on that pose a three	eat to gro	ound water	r, surface water, human healt	th			
federal, state,	iment. In ac or local lay	idition, NiviO /s and/or requ	CD accep	tance of a C-141 r	eport	does not renev	e the operator of i	esponsi	mily for c	ompliance with any other				
-cucian, siate,	o. toval tav	o ana, or rogu		,			OIL CONS	SERV	ATION	DIVISION				
		> ī			l		<u> </u>							
Signature:				<u> </u>										
Printed Name	. /	Inch	Russo		ŀ	Approved by	District Supervise	or:						
Printed Name: Josh Russo														
Title:	Title: HSE Coordinator						Approval Date:			Date:				
E-mail Addre	ss:	jrusso@concl	noresourc	es.com		Conditions of Approval:			Attached					
	101 1001			10.010.0000					Attached					
Date: 02 Attach Addit	2/21/2011	Photos If Negacia		32-212-2399						1	···			
Auach Addit	ionai Snee	18 11 INCCESS	uу											

# Water Well Data Average Depth to Groundwater (ft) COG - Electra Federal #5 Eddy County, New Mexico

	16 Sc	outh		29 East				South		) East				South		31 East	
	5	4	3	2	1	6	5	4	3	2	1	6	5	4	3	2	
	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11	-
8	17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14	_
																	_
9 <b>10</b>	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	
0	29	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26	
1	32	33	34	35	36	31	32	33	34	35	36	31 <b>290</b>	32	33	34	35	
	17 Sc	outh	:	29 East		<del></del>	17 9	South	30	) East			17 :	South	:	31 East	
i	5	4	3	2	1	6	5	4	3	2	1	6	5	4	3	2	_
	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11	
8	17	16	15	14	13	18	17	16	15 SITE	14	13	18	17	16	15	14	_
9	20	21	22 <b>80</b>	23	24	19	20	21	22	23	24	19	20	21	22	23	
0	29 <b>210</b>	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26	
11	32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35	
		<u> </u>	Д	153		<u> </u>		-	1	.					271		
	18 Sc	outh		29 East			18 9	South	3(	0 East	<u>:                                    </u>		18	South		31 East	
i	5	4	3	2	1	6	5	4	3	2	1	6	5	4	3	2	
	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11	
8	17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14 317	
9	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	
0	29	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26	_
1	32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35	_

New Mexico State Engineers Well Reports

USGS Well Reports

Geology and Groundwater Conditions in Southern Eddy, County, NM

NMOCD - Groundwater Data

Site Location - Electra Federal #5 Site

# Appendix C

Report Date: March 17, 2011 Work Order: 11030725 Page Number: 1 of 4

## **Summary Report**

Victoria Inman Tetra Tech 1910 N. Big Spring Street Midland, TX 79705

Report Date: March 17, 2011

Work Order: 11030725

Project Location: Eddy County, NM Project Name: COG/Electra Federal #5

Project Number: 114-6400825

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
259766	AH-1 0-1'	soil	2011-03-04	00:00	2011-03-04
259767	AH-1 1-1.5'	soil	2011-03-04	. 00:00	2011-03-04
259768	AH-1 2-2.5'	soil	2011-03-04	00:00	2011-03-04
259769	AH-1 3-3.5'	soil	2011-03-04	00:00	2011-03-04
259770	AH-1 4-4.5'	soil	2011-03-04	00:00	2011-03-04
259771	AH-1 5-5.5'	soil	2011-03-04	00:00	2011-03-04
259772	AH-2 0-1'	soil	2011-03-04	00:00	2011-03-04
259773	AH-2 1-1.5'	soil	2011-03-04	00:00	2011-03-04
259774	AH-2 2-2.5'	soil	2011-03-04	00:00	2011-03-04
259775	AH-2 3-3.5'	soil	2011-03-04	00:00	2011-03-04
259776	AH-2 4-4.5'	soil	2011-03-04	00:00	2011-03-04
259777	AH-2 5-5.5'	soil	2011-03-04	00:00	2011-03-04
259778	AH-2 6-6.5'	soil	2011-03-04	00:00	2011-03-04
259779	AH-3 0-1'	soil	2011-03-04	00:00	2011-03-04
259780	AH-3 1-1.5'	soil	2011-03-04	00:00	2011-03-04
259781	AH-3 2-2.5'	soil	2011-03-04	00:00	2011-03-04
259782	AH-4 ()-1'	soil	2011-03-04	00:00	2011-03-04
259783	AH-4 1-1.5'	soil	2011-03-04	00:00	2011-03-04
259784	AH-4 2-2.5'	soil	2011-03-04	00:00	2011-03-04
259785	AH-4 3-3.5'	soil	2011-03-04	00:00	2011-03-04

		]	BTEX		TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
259766 - AH-1 0-1'	0.136	0.186	0.178	0.492	163	53.0
259772 - AH-2 0-1'	5.38	63.0	<b>59.6</b>	89.2	4880	3260
259773 - AH-2 1-1.5'	< 0.0200	0.161	< 0.0200	< 0.0200	< 50.0	< 2.00
259774 - AH-2 2-2.5'	< 0.0200	< 0.0200	< 0.0200	< 0.0200	< 50.0	< 2.00
259779 - AH-3 0-1'	< 0.0200	4.35	$\bf 8.52$	12.8	180	478

continued ...

Report Date: March 17, 2011			Work Order: 110	030725	Page Number: 2 of						
$\dots continued$											
			BTEX		TPH DRO - NEW	TPH GRO					
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO					
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)					
259782 - AH-4 0-1'	< 0.0200	0.152	0.228	0.548	245	54.2					
Sample: 259766 - A	H_1 0_1'										
			<b>.</b>		**	***					
Param	Flag		Result		Units	RL					
Chloride			6020		mg/Kg	4.00					
Sample: 259767 - A	H-1 1-1.5'										
Param	Flag		Result		Units	RL					
Chloride			4770		mg/Kg	4.00					
Sample: 259768 - A	H-1 2-2.5' Flag		Result		Units	RL					
			Result 1710		Units mg/Kg	RL 4.00					
Param	Flag H-1 3-3.5'		1710		mg/Kg						
Param Chloride  Sample: 259769 - A Param	Flag		1710 Result		mg/Kg Units	4.00 RL					
Param Chloride  Sample: 259769 - A	Flag H-1 3-3.5'		1710		mg/Kg	4.00					
Param Chloride  Sample: 259769 - A Param	Flag H-1 3-3.5' Flag		1710 Result		mg/Kg Units	4.00 RL					
Param Chloride  Sample: 259769 - A Param Chloride  Sample: 259770 - A Param	Flag H-1 3-3.5' Flag		Result 1710 Result 1710		mg/Kg  Units  mg/Kg  Units	4.00 RL 4.00					
Param Chloride  Sample: 259769 - A Param Chloride  Sample: 259770 - A	Flag H-1 3-3.5' Flag H-1 4-4.5'		1710 Result 1710		mg/Kg Units mg/Kg	4.00 RL 4.00					
Param Chloride  Sample: 259769 - A Param Chloride  Sample: 259770 - A Param Chloride	Flag H-1 3-3.5' Flag H-1 4-4.5' Flag		Result 1710 Result 1710		mg/Kg  Units  mg/Kg  Units	4.00 RL 4.00					
Param Chloride  Sample: 259769 - A Param Chloride  Sample: 259770 - A Param	Flag H-1 3-3.5' Flag H-1 4-4.5' Flag		Result 1710 Result 1710		mg/Kg  Units  mg/Kg  Units	4.00 RL 4.00					

continued ...

Sample: 259772 - AH-2 0-1'

Report Date: March 17, 2011		Work Order: 11030725		Page Number: 3 of 4
sample 259772 con	tinued			
Param	Flag	Result	Units	RL
Param	Flag	Result	Units	RL
Chloride		8740	mg/Kg	4.00
Sample: 259773	- AH-2 1-1.5'			
Param	Flag	Result	Units	RL
Chloride		3030	mg/Kg	4.00
Sample: 259774	- AH-2 2-2.5'			
Param	Flag	Result	Units	RL
Chloride		2820	mg/Kg	4.00
Sample: 259775	- AH-2 3-3.5'			
Param	Flag	Result	Units	RL
Chloride		291	mg/Kg	4.00
Sample: 259776	- AH-2 4-4.5'			
Param	Flag	Result	Units	RL
Chloride		2520	mg/Kg	4.00
Sample: 259777 -	- AH-2 5-5.5'			
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00
Sample: 259778 ·	- AH-2 6-6.5'			
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 259779 - AH-3 0-1'

Report Date: Marc	h 17, 2011	Work Order: 11030725	Page	Number: 4 of 4
Param	Flag	Result	Units	RL
Chloride		2490	nıg/Kg	4.00
Sample: 259780 ·	- AH-3 1-1.5'			
Param Flag Result		Result	Units	RL
Chloride		<200	ıng/Kg	4.00
Sample: 259781 -	- AH-3 2-2.5'			
Param	Flag	Result	Units	m RL
Chloride		461	mg/Kg	4.00
Sample: 259782 ·	- AH-4 0-1'			
Param	Flag	Result	Units	. RL
Chloride		2450	mg/Kg	4.00
Sample: 259783 -	- AH-4 1-1.5'			
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00
Sample: 259784 -	- AH-4 2-2.5'			
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00
Sample: 259785 -	- AH-4 3-3.5'			
Param	Flag	Result	Units	RL
Chloride		1000	mg/Kg	4.00

_	

Analysis Request of Chain of Custody Record												P	PAGE	:	1		OI	₹	<u>a</u>	
										(Circ				REQU / Me:			)			
TETRA TECI 1910 N. Big Spring St Midland, Texas 79705 (432) 682-4559 • Fax (432) 6							)5 (Ext. to C35)	Cd Cr Pb Hg Se	₽ Pd									TDS		
CLIENT NAME: SITE MANAGER:  CUC  The Tavarez	NERS	F		THOD			1X1005	a	As Ba C			260/624	701077					ns, pH,		
PROJECT NO.: PROJECT NAME:  114-6400825 Electra Federal #5	CONTAI	(N/A)				4	MOM	Is Ag A	ls Ag A	Volatiles		8240/62	7608 7608	88		Şi j	stos)	ns/Catio		
LAB I.D. DATE TIME XX BY SAMPLE IDENTIFIC	NUMBER OF CONTAINERS	FILTERED (Y/N) HCL	HNO3	IOE NONF		BTEX 8021B	PAH 8270	RCRA Metals Ag /	TCLP Metals /	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	PCB's 8080	Pest. 808/608	Chloride	Alpha Beta (Air)	PLM (Asbe	Major Anions/Cations, pH, TDS		
259766 3 14 S X AH-1 0-1"	<u> </u>			X		X								1 4	X					
767 / / AH-1 1-1.5'	[/]			4				Ш					$\perp$		$\prod$					
768 / AH-1 2-2.5'							$\perp$			$\perp$		$\perp$		[	$\coprod$	_				
769 AH-1 3-35'				$\coprod$					$\downarrow$				$\bot$	4	$\coprod$	_	Ц	$\perp$	$\perp$	
7-70				$\coprod$			1		1	$\perp$	Ц	_	_	4	$\prod$	1				
771 \ AH-1 5-5.5°		$\perp$		$\downarrow \downarrow$			$\perp$			1		4	_	14	$\coprod$	$\downarrow$				<b> </b>
772		-		$\bot\!$		X	<u>Y</u>	$\sqcup$	1	$\perp$		4	_		4	_			$\perp$	
773 AH-2 1-1.5				$\bot$	_		$\bot$	$\perp \downarrow$	1			4								
774 / / / / / / / / / / / / / / / / / /				4			$\perp$	$\downarrow \downarrow$	1	1		1	$\bot$	'	$\coprod$	$\perp$				
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RELINQUISHED BY: (Signature)  Time: 11.15  RELINQUISHED BY: (Signature)  Date:			Time: Date:		(01/2					PEDI	BY: (C	ircle)			-	7	ime:			
•	Time: Time:							DELJ	VEREC	<u> </u>	BUS UPS PERS	ON:			οπ	IER:	ults b	·		
RECEIVING LABORATORY: 7704 RECEIVED BY: (Signature)  ADDRESS:							<u>-</u>  "			e 7							RU:		arges	
CITY: Middle STATE: TX ZIP:													<u></u>		<del>.</del>			Yes	····	No
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			•											$\dashv$					(Ci	At rcle	VAL'						o.)			
						1910 N. B Midland, (432) 682-459	A TECH ig Spring St. Texas 79705 59 • Fax (432) 682-3946								05 (Ext. to C35)	1	Cr Pb	Cd Vr Pd Hg Se										TDS		
CLIENT NAM	ΛE:					SITE MANA		ERS		P		SERV ETH		Æ	TX1005		33	æ			0/624	8270/625			ı			Ha		
PROJECT N	O.:		PF	ROJI	ECT	NAME:	e Tavourez	MIAIN		$\vdash$	Γ			$\dashv$	1		A As	S S	#iles		0/856	3, 82,		١	1			ations	11	
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LAB I.D. NUMBER	DATE QUIL	TIME	MATRIX	COMP.	GRAB	SAI	Eddy Co WM MPLE IDENTIFICATION	NUMBER OF CONTAINERS	(N/A) GENED (X/N)	HCL	HN03	ICE	NONE		ATEX 8021B	PAH 8270	RCRA Mei	TCLP Metals Ag	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Se	PCB's 8080/608	Pest. 808/608	Plonde	Gamma spec.	Alpha beta (Alr)	Major Anions/Cations, pH, TDS		
259776	314		5		χ	AH-2	44.5'	١				X												,	X					
777					/	A4-2	5.5.5	/																,						
778						AH-2	6-65																	4						
779						AH 3	6.1,		L						XX	<u></u>								/						
780						A4-3	1-1.5																	4						
781			Ц			AH-3	2-2.5			L								$\perp$						1				L		
782					1	AH-4	5.1		L					_	VW	1							$\downarrow$	4	$\downarrow$	$\perp$		$oldsymbol{\perp}$	Ц	$\bot$
183			Ц		$\perp$	AH -4	1-1.5		L															4	$\prod$	$\perp$		L	Ц	$\perp$
784			$\parallel$			Au-d	2.2.51		L			1												4	$\prod$	_		$\perp$	Ш	$\perp$
785	(2)	1	<b> </b>			AH-4	3.35	V		L,	Date:	4	ر ر	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>					4 (0-		l l			<u>十</u>	<b>V</b>		Date	$\perp$	3.24	
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RELINQUISHED	FBY: (Signatu	re)				Date:	RECEIVED BY. (Signature)				Date: Time:					F	EDE	(	PPED	<b>-</b>	BUS	s					IRBIL THEA			
RELINQUISHED	BY: (Signatu	ire)				Date:	RECEIVED BY: (Signature)			_	Date: Time:								CON	_	PER		:					esults	by:	

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

TIME:

RUSH Charges Authorized:

No

Yes

Ike Tavarez

RECEIVED BY: (Signature)

DATE:

RECEIVING LABORATORY: Troud ADDRESS; CITY: M'. Jourd STATE: CONTACT:

SAMPLE CONDITION WHEN RECEIVED:

STATE: TX

ZIP:

REMARKS:

PHONE:



6701 Aberdeen Avenue, Suite 9 200 East Sunset Road, Suite E 5002 Basin Street, Suite A1

El Paso, Texas 79922

Midland, Texas 79703 6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132

800 • 378 • 1296 888 • 588 • 3443

806 • 794 • 1296 915 • 585 • 3443

FAX 915 • 585 • 4944 FAX 432 • 689 • 6313

432 • 689 • 6301 817 • 201 • 5260

E-Mail lab@traceanalysis.com

### Certifications

**WBENC**: 237019

HUB:

1752439743100-86536

**DBE:** VN 20657

NCTRCA WFWB38444Y0909

### **NELAP** Certifications

Lubbock: T104704219-08-TX

LELAP-02003

El Paso:

T104704221-08-TX LELAP-02002

Midland: T104704392-08-TX

Kansas E-10317

### **Analytical and Quality Control Report**

Victoria Inman

Tetra Tech 1910 N. Big Spring Street

Report Date: March 17, 2011

Midland, TX, 79705

Work Order: 11030725 

Project Location: Eddy County, NM

Project Name:

COG/Electra Federal #5

Project Number:

114-6400825

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
259766	AH-1 0-1'	soil	2011-03-04	00:00	2011-03-04
259767	AH-1 1-1.5'	soil	2011-03-04	00:00	2011-03-04
259768	AH-1 2-2.5'	soil	2011-03-04	00:00	2011-03-04
259769	AH-1 3-3.5'	soil	2011-03-04	00:00	2011-03-04
259770	AH-1 4-4.5'	soil	2011-03-04	00:00	2011-03-04
259771	AH-1 5-5.5'	soil	2011-03-04	00:00	2011-03-04
259772	AH-2 0-1'	soil	2011-03-04	00:00	2011-03-04
259773	AH-2 1-1.5'	soil	2011-03-04	00:00	2011-03-04
259774	AH-2 2-2.5'	soil	2011-03-04	00:00	2011-03-04
259775	AH-2 3-3.5'	soil	2011-03-04	00:00	2011-03-04

			Date	$\operatorname{Time}$	Date
Sample	Description	Matrix	Taken	Taken	Received
259776	AH-2 4-4.5'	soil	2011-03-04	00:00	2011-03-04
259777	ΛH-2 5-5.5'	soil	2011-03-04	00:00	2011-03-04
259778	AH-2 6-6.5'	soil	2011-03-04	00:00	2011-03-04
259779	AH-3 0-1'	soil	2011-03-04	00:00	2011-03-04
259780	AH-3 1-1.5'	soil	2011-03-04	00:00	2011-03-04
259781	AH-3 2-2.5'	soil	2011-03-04	00:00	2011-03-04
259782	AH-4 0-1'	soil	2011-03-04	00:00	2011-03-04
259783	AH-4 1-1.5°	soil	2011-03-04	00:00	2011-03-04
259784	AH-4 2-2.5'	soil	2011-03-04	00:00	2011-03-04
259785	AH-4 3-3.5'	soil	2011-03-04	00:00	2011-03-04

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

This report consists of a total of 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

#### Standard Flags

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

### Case Narrative

Samples for project COG/Electra Federal #5 were received by TraceAnalysis, Inc. on 2011-03-04 and assigned to work order 11030725. Samples for work order 11030725 were received intact at a temperature of 4.0 C.

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

		$\operatorname{Prep}$	$\operatorname{Prep}$	QC	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	67108	2011-03-09 at 13:56	79090	2011-03-09 at 23:39
BTEX	S 8021B	67162	2011-03-10 at 11:27	79174	2011-03-10 at 11:27
BTEX	S 8021B	67358	2011-03-15 at 10:58	79388	2011-03-15 at 10:38
Chloride (Titration)	SM 4500-Cl B	67261	2011-03-09 at 09:27	79405	2011-03-09 at 09:35
Chloride (Titration)	SM 4500-Cl B	67261	2011-03-09 at 09:27	79406	2011-03-09 at 09:36
Chloride (Titration)	SM 4500-Cl B	67261	2011-03-09 at 09:27	79408	2011-03-09 at 09:37
TPH DRO - NEW	S 8015 D	67239	2011-03-08 at 09:57	79253	2011-03-08 at 09:57
TPH DRO - NEW	S 8015 D	67363	2011-03-15 at 10:57	79402	2011-03-15 at 10:57
TPH GRO	S 8015 D	67108	2011-03-09 at 13:56	79091	2011-03-09 at 23:39
TPH GRO	S 8015 D	67162	2011-03-10 at 11:27	79175	2011-03-10 at 11:27
TPH GRO	S 8015 D	67358	2011-03-15 at 10:58	79389	2011-03-15 at 10:58

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 11030725 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: March 17, 2011

114-6400825

Work Order: 11030725 COG/Electra Federal #5 Page Number: 4 of 34 Eddy County, NM

### **Analytical Report**

Sample: 259766 - AH-1 0-1'

Laboratory: Midland

Analysis: BTEX QC Batch: 79090 Prep Batch: 67108

Analytical Method: S 8021B Date Analyzed: 2011-03-09 Sample Preparation: 2011-03-09

Prep Method: S 5035 Analyzed By: MEPrepared By:

		RL			
Parameter	$\operatorname{Flag}$	Result	Units	Dilution	RL
Benzene		0.136	mg/Kg	1	0.0200
Toluene		0.186	mg/Kg	1	0.0200
Ethylbenzene		0.178	mg/Kg	1	0.0200
Xylene		$\boldsymbol{0.492}$	mg/Kg	1	0.0200

					$\operatorname{Spike}$	Percent	Recovery
Surrogate	$\mathbf{Flag}$	Result	${f Units}$	Dilution	${f Amount}$	Recovery	Limits
Trifluorotoluene (TFT)		2.52	mg/Kg	1	2.00	126	52.8 - 137
4-Bromofluorobenzene (4-BFB)		2.25	$_{ m mg/Kg}$	1	2.00	112	38.4 - 157

Sample: 259766 - AH-1 0-1'

Laboratory: Midland

Chloride (Titration)

Analysis: QC Batch: 79405 Prep Batch: 67261 Analytical Method: SM 4500-Cl B Date Analyzed: 2011-03-09 Sample Preparation: 2011-03-09

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

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		6020	mg/Kg	100	4.00

Sample: 259766 - AH-1 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW QC Batch: 79253 Prep Batch: 67239

S 8015 DAnalytical Method: Date Analyzed: 2011-03-08 Sample Preparation: 2011-03-08

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

RL

Parameter	Flag	Result	Units	Dilution	RL
DRO		163	ıng/Kg	1	50.0

Report Date: March 17, 2011

114-6400825

Work Order: 11030725 COG/Electra Federal #5 Page Number: 5 of 34 Eddy County, NM

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	${f Amount}$	Recovery	Limits
n-Tricosane		105	mg/Kg	1	100	105	70 - 130

Sample: 259766 - AH-1 0-1'

Laboratory:

Midland TPH GRO

Analysis: QC Batch: 79091 Prep Batch: 67108 Analytical Method: Date Analyzed:

S 8015 D 2011-03-09 Sample Preparation: 2011-03-09

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

RL

Parameter	Flag	Result	Units	Dilution	RL
GRO		53.0	mg/Kg	1	2.00

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		2.48	ıng/Kg	1	2.00	124	48.5 - 152
4-Bromofluorobenzene (4-BFB)		2.44	mg/Kg	1	2.00	122	42 - 159

Sample: 259767 - AH-1 1-1.5'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 79405 Prep Batch: 67261

Analytical Method: SM 4500-Cl B Date Analyzed: 2011-03-09 Sample Preparation: 2011-03-09

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

RLFlag Parameter Result Units Dilution RL4770 Chloride mg/Kg 100 4.00

Sample: 259768 - AH-1 2-2.5'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 79405 Prep Batch: 67261

Analytical Method: SM 4500-Cl B Date Analyzed: 2011-03-09 Sample Preparation: 2011-03-09

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

RL

Parameter	Flag	Result	Units	Dilution	RL
Chloride		1710	mg/Kg	100	4.00

Report Date: March 17, 2011 114-6400825		Work Order: 110 COG/Electra Fed		Page Number: Eddy Coun	
Sample: 25	9769 - AH-1 3-3.5'				
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 79405 67261	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-03-09 2011-03-09	Prep Method: Analyzed By: Prepared By:	N/A AR AR.
ттер васи:	07201	Sample Preparation:	2011-03-09	Prepared by:	AR.
_		RL			
Parameter Chloride	Flag	Result 1710	Units mg/Kg	Dilution 100	4.00
Chlorate		1710	mg/ r.g	100	4.00
Sample: 25	9770 - AH-1 4-4.5'				
Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	
QC Batch:	79405	Date Analyzed:	2011-03-09	Analyzed By:	AR
Prep Batch:	67261	Sample Preparation:	2011-03-09	Prepared By:	AR.
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00
Omoride			0/3		
	9771 - <b>AH</b> -1 5-5.5'  Midland  Chloride (Titration)  79405  67261	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-03-09	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Sample: 25 Laboratory: Analysis: QC Batch:	Midland Chloride (Titration) 79405	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-03-09	Prep Method: Analyzed By:	N/A AR
Sample: 25 Laboratory: Analysis: QC Batch:	Midland Chloride (Titration) 79405 67261	Analytical Method: Date Analyzed: Sample Preparation: RL	SM 4500-Cl B 2011-03-09 2011-03-09	Prep Method: Analyzed By:	N/A AR
Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 79405	Analytical Method: Date Analyzed: Sample Preparation: RL Result	SM 4500-Cl B 2011-03-09	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch: Parameter Chloride	Midland Chloride (Titration) 79405 67261	Analytical Method: Date Analyzed: Sample Preparation: RL Result	SM 4500-Cl B 2011-03-09 2011-03-09 Units	Prep Method: Analyzed By: Prepared By: Dilution	N/A AR AR RL
Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch: Parameter Chloride  Sample: 25 Laboratory:	Midland Chloride (Titration) 79405 67261  Flag  9772 - AH-2 0-1' Midland	Analytical Method: Date Analyzed: Sample Preparation: RL Result 214	SM 4500-Cl B 2011-03-09 2011-03-09 Units mg/Kg	Prep Method: Analyzed By: Prepared By: Dilution 50	N/A AR AR RL 4.00
Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch: Parameter Chloride  Sample: 25 Laboratory: Analysis:	Midland Chloride (Titration) 79405 67261  Flag  9772 - AH-2 0-1' Midland BTEX	Analytical Method: Date Analyzed: Sample Preparation: RL Result 214  Analytical Method: S 8	SM 4500-Cl B 2011-03-09 2011-03-09 Units mg/Kg	Prep Method: Analyzed By: Prepared By:  Dilution 50  Prep Method:	N/A AR AR RL 4.00
Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch: Parameter Chloride  Sample: 25 Laboratory: Analysis: QC Batch:	Midland Chloride (Titration) 79405 67261  Flag  9772 - AH-2 0-1'  Midland BTEX 79090	Analytical Method: Date Analyzed: Sample Preparation: RL Result 214  Analytical Method: S 8 Date Analyzed: 201	SM 4500-Cl B 2011-03-09 2011-03-09 Units mg/Kg	Prep Method: Analyzed By: Prepared By:  Dilution 50  Prep Method: Analyzed By:	N/A AR AR RL 4.00
Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch: Parameter Chloride  Sample: 25 Laboratory: Analysis: QC Batch:	Midland Chloride (Titration) 79405 67261  Flag  9772 - AH-2 0-1' Midland BTEX	Analytical Method: Date Analyzed: Sample Preparation: RL Result 214  Analytical Method: S 8 Date Analyzed: 201	SM 4500-Cl B 2011-03-09 2011-03-09 Units mg/Kg	Prep Method: Analyzed By: Prepared By:  Dilution 50  Prep Method: Analyzed By:	N/A AR AR RL 4.00
Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch:  Parameter Chloride  Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 79405 67261  Flag  9772 - AH-2 0-1'  Midland BTEX 79090 67108	Analytical Method: Date Analyzed: Sample Preparation: RL Result 214  Analytical Method: S 8 Date Analyzed: 201 Sample Preparation: 201 RL	SM 4500-Cl B 2011-03-09 2011-03-09 Units mg/Kg	Prep Method: Analyzed By: Prepared By:  Dilution 50  Prep Method: Analyzed By: Prepared By:	N/A AR AR RL 4.00 S 5035 ME ME
Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch:  Parameter Chloride  Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch: Prep Batch:	Midland Chloride (Titration) 79405 67261  Flag  9772 - AH-2 0-1'  Midland BTEX 79090	Analytical Method: Date Analyzed: Sample Preparation: RL Result 214  Analytical Method: S 8 Date Analyzed: 201 Sample Preparation: 201 RL Result	SM 4500-Cl B 2011-03-09 2011-03-09  Units mg/Kg  021B 1-03-09 1-03-09 Units	Prep Method: Analyzed By: Prepared By:  Dilution 50  Prep Method: Analyzed By: Prepared By: Dilution	N/A AR AR RL 4.00 S 5035 ME ME
Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch:  Parameter Chloride  Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 79405 67261  Flag  9772 - AH-2 0-1'  Midland BTEX 79090 67108	Analytical Method: Date Analyzed: Sample Preparation: RL Result 214  Analytical Method: S 8 Date Analyzed: 201 Sample Preparation: 201 RL Result 1.38	SM 4500-Cl B 2011-03-09 2011-03-09 Units mg/Kg	Prep Method: Analyzed By: Prepared By:  Dilution 50  Prep Method: Analyzed By: Prepared By: Prepared By:	N/A AR AR RL 4.00 S 5035 ME ME

Report Date:	March	17,	2011
114-6400825			

Work Order: 11030725 COG/Electra Federal #5 Page Number: 7 of 34 Eddy County, NM

sample	259772	continued		

Parameter	Flag		RL Result		Units	Di	lution	RL
Ethylbenzene			59.6		mg/Kg		20	0.0200
Xylene			89.2		mg/Kg		20	0.0200
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	D)	1	23.0	mg/Kg	20	20.0	115	52.8 - 137
4-Bromofluorobenzene (4-BF	R)	1	39.4	$_{ m nig}/{ m Kg}$	20	20.0	197	38.4 - 157

#### Sample: 259772 - AH-2 0-1'

La	boratory:	Mic	dlanc

Analysis: Chloride (Titration)

QC Batch: 79406 Prep Batch: 67261

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-03-09 Sample Preparation: 2011-03-09 Prep Method: N/A Analyzed By: AR.

AR

Prepared By:

RLParameter Flag Result Units Dilution RL8740 Chloride 100 4.00 mg/Kg

#### Sample: 259772 - AH-2 0-1'

Laboratory:

Midland

Analysis: TPH DRO - NEW QC Batch: 79253 Prep Batch: 67239

Analytical Method: Date Analyzed:

S 8015 D 2011-03-08 Sample Preparation: 2011-03-08 Prep Method: N/A Analyzed By: kg Prepared By:

Parameter	Flag	Result	Units	Dilution	RL
DRO		4880	mg/Kg	5	50.0
			a n	ъ.	T)

					$\mathbf{Spike}$	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	${f Amount}$	Recovery	Limits
n-Tricosane	2	466	ıng/Kg	5	100	466	70 - 130

#### Sample: 259772 - AH-2 0-1'

Laboratory: Midland

TPH GRO Analysis: QC Batch: 79091 Prep Batch: 67108

Analytical Method: S 8015 D Date Analyzed: 2011-03-09 Sample Preparation: 2011-03-09 Prep Method: S 5035 Analyzed By: MEPrepared By: ME

<sup>&</sup>lt;sup>1</sup>High surrogate recovery due to peak interference.

<sup>&</sup>lt;sup>2</sup>High surrogate recovery due to peak interference.

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Parameter Flag		RL Result		Units	Б	lilution	m RL
GRO		3260		mg/Kg		20	2.00
					Spike	Percent	Recovery
Surrogate	$\operatorname{Flag}$	Result	${ m Units}$	Dilution	Amount	Recovery	${f Limits}$
Trifluorotoluene (TFT)		23.1	mg/Kg	20	20.0	116	48.5 - 152
4-Bromofluorobenzene (4-BFB)	3	43.9	mg/Kg	20	20.0	220	42 - 159

Sample: 259773 - AH-2 1-1.5'

Laboratory:

Midland

Analysis: **BTEX** QC Batch: 79388 Prep Batch: 67358

Analytical Method: S 8021B Date Analyzed:

2011-03-15 Sample Preparation: 2011-03-15 Prep Method: S 5035 Analyzed By: ME

ME

AR

AR

Prepared By:

		m RL			
Parameter	Flag	Result	Units	Dilution	RL
Benzene		< 0.0200	mg/Kg	1	0.0200
Toluene		0.161	mg/Kg	1	0.0200
Ethylbenzene		< 0.0200	mg/Kg	1	0.0200
Xylene		< 0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Result	Units	Dilution	${ m Spike} \ { m Amount}$	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.67	mg/Kg	1	2.00	134	52.8 - 137
4-Bromofluorobenzene (4-BFB)		2.58	mg/Kg	1	2.00	129	38.4 - 157

Sample: 259773 - AH-2 1-1.5'

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 79406 Prep Batch: 67261

Analytical Method: SM 4500-Cl B Date Analyzed: 2011-03-09 Sample Preparation: 2011-03-09

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

		$\operatorname{RL}$			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		3030	ıng/Kg	100	4.00

Sample: 259773 - AH-2 1-1.5'

Laboratory:

Midland

Analysis: TPH DRO - NEW QC Batch: 79402 Prep Batch: 67363

Analytical Method: S 8015 D Date Analyzed: 2011-03-15 Sample Preparation: 2011-03-15

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

<sup>&</sup>lt;sup>3</sup>High surrogate recovery due to peak interference.

Report Date: March 17, 2011

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QC Batch:

Prep Batch: 67358

79388

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Analyzed By: ME

Prepared By: ME

Parameter	Fla	or	RL Result		Units		Dilution	RL
DRO	1 100	<u> </u>	<50.0		mg/Kg		1	50.0
Surrogate	Flag	Result	Units		ıtion	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		102	nıg/Kg		1	100	102	70 - 130
Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch:	9773 - AH-2 1-3 Midland TPH GRO 79389 67358	1.5'	Analytical Date Anal Sample Pr	yzed:	S 8015 D 2011-03-15 2011-03-15		Prep Met Analyzed Prepared	By: ME
Parameter	Fla	r	RL Result		Units		Dilution	RL
GRO	1 100	<u> </u>	<2.00		mg/Kg		1	2.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolu	ene (TFT)		2.75	mg/Kg	1	2.00	138	48.5 - 152
	obenzene (4-BFB	)	2.44	nıg/Kg	1	2.00	122	42 - 159
Sample: 25 Laboratory: Analysis:	<b>9774 - AH-2 2-</b> : Midland BTEX	2.5'	Analytical 1	Method:	S 8021B		Prep Met	hod: S 5035

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

Sample Preparation: 2011-03-15

2011-03-15

Date Analyzed:

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	${f Amount}$	Recovery	Limits
Triffuorotoluene (TFT)		2.22	mg/Kg	1	2.00	111	52.8 - 137
4-Bromofluorobenzene (4-BFB)		2.17	mg/Kg	1	2.00	108	38.4 - 157

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#### Sample: 259774 - AH-2 2-2.5'

Laboratory: Analysis:

Midland

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch:

79406

Date Analyzed: Sample Preparation:

2011-03-09

Analyzed By: ARAR

Prep Batch: 67261

RL

2011-03-09

Prepared By:

Parameter Flag Result Chloride 2820

Units Dilution mg/Kg 100

RL4.00

#### Sample: 259774 - AH-2 2-2.5'

Laboratory:

Midland

TPH DRO - NEW

Analysis: QC Batch: 79402 Prep Batch: 67363 Analytical Method:

S 8015 D

Prep Method: N/A

Date Analyzed: 2011-03-15 Sample Preparation: 2011-03-15

Analyzed By: kg Prepared By: kg

RL

Parameter Flag Result Units Dilution RLDRO < 50.0 mg/Kg 50.0 1

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

#### Sample: 259774 - AH-2 2-2.5'

Laboratory:

Midland

TPH GRO Analysis: QC Batch: 79389 Prep Batch: 67358

Analytical Method: Date Analyzed:

Sample Preparation:

S 8015 D 2011-03-15 2011-03-15 Prep Method: S 5035 Analyzed By: ME Prepared By: ME

RL

Flag Result Units Dilution RLParameter **GRO** < 2.00 mg/Kg 2.00

					Spike	Percent	Recovery
Surrogate	$\operatorname{Flag}$	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		2.29	nig/Kg	1	2.00	114	48.5 - 152
4-Bromofluorobenzene (4-BFB)		2.06	mg/Kg	1	2.00	103	42 - 159 _

114-6400825 COG/Electra Federal #5 Eddy County, NM Sample: 259775 - AH-2 3-3.5' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 79406 Date Analyzed: Analyzed By: AR. 2011-03-09 Prep Batch: 67261 Sample Preparation: 2011-03-09 Prepared By: ARRLParameter Flag Result Units Dilution RLChloride 291 mg/Kg 50 4.00 Sample: 259776 - AH-2 4-4.5' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 79406 Date Analyzed: 2011-03-09 Analyzed By: ARPrep Batch: 67261 Sample Preparation: 2011-03-09 Prepared By: AR RLFlag Parameter Result RLUnits Dilution Chloride 2520 4.00 mg/Kg 100 Sample: 259777 - AH-2 5-5.5' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 79406 Date Analyzed: 2011-03-09 Analyzed By: ARPrep Batch: 67261 Sample Preparation: 2011-03-09 Prepared By: AR RL Parameter Flag Result Units RLDilution Chloride mg/Kg <200 50 4.00 Sample: 259778 - AH-2 6-6.5' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 79406 Date Analyzed: Analyzed By: 2011-03-09 ARPrep Batch: 67261 Sample Preparation: 2011-03-09 Prepared By: AR RL

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Parameter

Chloride

Flag

Result

<200

Units

mg/Kg

Dilution

50

RL

4.00

#### Sample: 259779 - AH-3 0-1'

Laboratory:	Midland
Analysis:	BTEX

QC Batch: 79174 Prep Batch: 67162

Analytical Method: S 8021B Date Analyzed: 2011-03-10 Sample Preparation: 2011-03-10

Prep Method: S 5035 Analyzed By: MEPrepared By: ME

1

0.0200

		RL			
Parameter	$\operatorname{Flag}$	Result	Units	Dilution	RL
Benzene		< 0.0200	mg/Kg	1	0.0200
Toluene		4.35	mg/Kg	1	0.0200
Ethylbenzene		8.52	mg/Kg	1	0.0200

12.8

					$\mathbf{Spike}$	Percent	Recovery
Surrogate	$\mathbf{Flag}$	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		2.66	mg/Kg	1	2.00	133	52.8 - 137
4-Bromofluorobenzene (4-BFB)	4	5.78	${ m mg/Kg}$	1	2.00	289	38.4 - 157

#### Sample: 259779 - AH-3 0-1'

Laboratory:

Xylene

Midland

Analysis: Chloride (Titration) QC Batch: 79406 Prep Batch: 67261

SM 4500-Cl B Analytical Method: Date Analyzed: 2011-03-09 Sample Preparation: 2011-03-09

mg/Kg

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

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		2490	mg/Kg	100	4.00

#### Sample: 259779 - AH-3 0-1'

Laboratory: Midland

TPH DRO - NEW

Analysis: QC Batch: 79253 Prep Batch: 67239

Analytical Method: S 8015 D Date Analyzed: 2011-03-08 Sample Preparation: 2011-03-08

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

		m RL			
Parameter	$\operatorname{Flag}$	Result	Units	Dilution	RL
DRO		180	mg/Kg	1	50.0

					$\mathbf{Spike}$	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane		109	mg/Kg	1	100	109	70 - 130

<sup>&</sup>lt;sup>4</sup>High surrogate recovery due to peak interference.

114-6400825	: March 17, 2011		Work Order: 11030725 COG/Electra Federal #5			Page Number: 1 Eddy Count			
Sample: 25	9779 - AH-3 0-1'								
Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 79175 67162		Analytical Date Anal Sample Pr		S 8015 D 2011-03-10 2011-03-10		Prep Met Analyzed Prepared	By: M	5035 IE IE
, , , , , , , , , , , , , , , , , , ,			RL		2011 00 10		1 1 0 p w 2 v u	_,, -	
Parameter	Flag		Result		Units		Dilution		RL
GRO			478		nıg/Kg		1		2.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Lin	very
Trifluorotolu 4-Bromofluor	ene (TFT) robenzeue (4-BFB)	5	2.63 15.7	mg/Kg mg/Kg	1 1	2.00 2.00	132 785		- 152 159
Analysis: QC Batch: Prep Batch: Parameter	Chloride (Titration) 79406 67261 Flag		Date	tical Method Analyzed: e Preparatio	2011-03-0	9 9	Prep M Analyz Prepare  Dilution	ed By:	N/A AR AR RL
Chloride	1 105		<200		mg/Kg	···	50		4.00
Laboratory: Analysis: QC Batch:	9781 - AH-3 2-2.5' Midland Chloride (Titration) 79406 67261		Date A	tical Method Analyzed: e Preparatio	2011-03-0	9	Prep M Analyz Prepare	ed By:	N/A AR AR
Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch: Parameter Chloride	Midland Chloride (Titration) 79406		Date A	Analyzed:	2011-03-0	9	Analyz	ed By:	

Analytical Method:

Sample Preparation: 2011-03-10

Date Analyzed:

S 8021B

2011-03-10

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

BTEX

79174

Analysis:

QC Batch:

Prep Batch: 67162

<sup>&</sup>lt;sup>5</sup>High surrogate recovery due to peak interference.

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Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		< 0.0200	mg/Kg	1	0.0200
Toluene		0.152	mg/Kg	1	0.0200
Ethylbenzene		0.228	mg/Kg	1	0.0200
Xylene		0.548	mg/Kg	1	0.0200

					$\mathbf{Spike}$	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		2.53	mg/Kg	1	2.00	126	52.8 - 137
4-Broniofluorobenzene (4-BFB)		2.65	${ m mg/Kg}$	1.	2.00	132	38.4 - 157

#### Sample: 259782 - AH-4 0-1'

Laboratory: Mie

Midland

Analysis: Chloride (Titration)

QC Batch: 79408 Prep Batch: 67261 Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-03-09 Sample Preparation: 2011-03-09 Prep Method: N/A

Analyzed By: AR
Prepared By: AR

#### Sample: 259782 - AH-4 0-1'

Laboratory:

Midland

Analysis: TPH DRO - NEW QC Batch: 79253 Prep Batch: 67239 Analytical Method: S 8015 D
Date Analyzed: 2011-03-08
Sample Preparation: 2011-03-08

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

					Spike	Percent	Recovery
Surrogate	$\operatorname{Flag}$	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane		116	mg/Kg	1	100	116	70 - 130

#### Sample: 259782 - AH-4 0-1'

Laboratory: Midland

TPH GRO Analysis: Analytical Method: S 8015 D Prep Method: S 5035 QC Batch: 79175 Date Analyzed: 2011-03-10 Analyzed By: MEPrep Batch: 67162 Sample Preparation: 2011-03-10 Prepared By: ME

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Parameter	Flag		RL Result		Units	Б	Pilution	RL
GRO			54.2		mg/Kg		1	2.00
Surrogate		Flag	Result	Units	Dilution	$\begin{array}{c} {\rm Spike} \\ {\rm Amount} \end{array}$	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT 4-Bromofluorobenzeno	•		2.50 3.02	mg/Kg mg/Kg	1 1	2.00 2.00	125 151	48.5 - 152 42 - 159

Sample: 259783 - AH-4 1-1.5'

Laboratory:

Prep Batch: 67261

Midland

Analysis: Chloride (Titration) QC Batch: 79408

Analytical Method: SM 4500-Cl B Date Analyzed: 2011-03-09 Sample Preparation: 2011-03-09

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

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

Sample: 259784 - AH-4 2-2.5'

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 79408 Prep Batch: 67261

Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2011-03-09 2011-03-09

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

		$\mathrm{RL}$			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 259785 - AH-4 3-3.5'

Laboratory:

Chloride

Midland

Analysis: Chloride (Titration) QC Batch: 79408 Prep Batch: 67261

Analytical Method: Date Analyzed: Sample Preparation:

SM 4500-Cl B 2011-03-09 2011-03-09

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

Parameter Flag

RLResult 1000

Units mg/Kg Dilution 100

RL4.00

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Method Blank (1)	QC Batch: 79090						
QC Batch: 79090		Date Ana	dvzed: 20	11-03-09		Analyz	ed By: ME
Prep Batch: 67108		QC Prepa		11-03-09		Prepar	
			MD	т			
Parameter	Flag		Resu		Uni	ts	RL
Benzene			< 0.011				0.02
Toluene			< 0.0060	0	mg/l		0.02
Ethylbenzene			< 0.0085	0	mg/l	Κg	$0.02^{-}$
Xylene			< 0.0061	3	mg/l	Kg	0.02
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.76	mg/Kg	1	2.00	88	66.6 - 122
4-Bromofluorobenzene		1.50	mg/Kg	1	2.00	75	55.4 - 124
Prep Batch: 67108  Parameter	Flag	QC Prepa	MDL Result	11-03-09	Unit		RL
GRO			< 0.753		mg/K	<u></u>	2
Surrogate	$\operatorname{Flag}$	Result	Units	Dilution	${ m Spike} \ { m Amount}$	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.78	mg/Kg	1	2.00	89	67.6 - 150
4-Bromofluorobenzene	(4-BFB)	1.38	mg/Kg	11	2.00	69	52.4 - 130
Method Blank (1)	QC Batch: 79174						
QC Batch: 79174		Date Ana	lyzed: 20	11-03-10		Analyz	ed By: ME
Prep Batch: 67162		QC Prepa	eration: 20	11-03-10		Prepar	ed By: ME
Davamatan	Elec		MD		Tīm:	<b>.</b>	Dτ
Parameter Benzene	Flag		Resu <0.011		Unit		RL 0.02
Toluene			< 0.0011		mg/I		0.02
Ethylbenzene			< 0.0085		mg/I		0.02
Xylene			< 0.0061		$\frac{mg}{l}$		0.02
,-		· · · · · · · · · · · · · · · · · · ·	70.0001	-		-0	

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Recovery Spike Percent Flag Units Limits Surrogate Result Dilution Amount Recovery Trifluorotoluene (TFT) 66.6 - 122 1.97 mg/Kg  $\overline{1}$ 2.00 98 4-Bromofluorobenzene (4-BFB) 1.91mg/Kg 2.00 96 55.4 - 1241

Method Blank (1)

QC Batch: 79175

QC Batch: Prep Batch:

 $\overline{\text{GRO}}$ 

79175 67162 Date Analyzed: QC Preparation: 2011-03-10

2011-03-10

Analyzed By: ME

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ME Prepared By:

RL

MDL Parameter Flag Result

Units < 0.753mg/Kg

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		2.00	mg/Kg	1	2.00	100	67.6 - 150
4-Bromofluorobenzene (4-BFB)		1.80	mg/Kg	1	2.00	90	52.4 - 130

Method Blank (1)

QC Batch: 79253

QC Batch: 79253 Prep Batch: 67239 Date Analyzed: 2011-03-08 QC Preparation: 2011-03-08

Analyzed By: kg Prepared By: kg

MDL Flag Parameter Result Units RL $\overline{\text{DRO}}$ <15.7 mg/Kg 50

					Spike	Percent	Recovery
Surrogate	$\mathbf{Flag}$	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane		99.3	mg/Kg	1	100	99	70 - 130

Method Blank (1)

QC Batch: 79388

QC Batch: 79388 Prep Batch: 67358

Date Analyzed: 2011-03-15 QC Preparation: 2011-03-15 Analyzed By: ME Prepared By: ME

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

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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recove Limit	
Trifluorotoluene (TFT)	1106	1.88	mg/Kg	1	2.00	94	66.6 - 1	
4-Bromofluorobenzene (	(4-BFB)	1.72	mg/Kg	1	2.00	86	55.4 - 1	
Method Blank (1)	QC Batch: 79389		· ·					•
QC Batch: 79389 Prep Batch: 67358		Date Ana QC Prepa			Analyzed By: ME Prepared By: ME			
			MDL					
Parameter	Flag		Result		Uni		I	RL
GRO			< 0.753		mg/l	Kg		2
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recove Limit	•
Trifluorotoluene (TFT)	8	1.96	mg/Kg	1	2.00	98	67.6 - 1	
4-Bromofluorobenzene (	(4-BFB)	1.65	mg/Kg	1	2.00	82	52.4 - 1	130
Method Blank (1)  QC Batch: 79402  Prep Batch: 67363	QC Batch: 79402	Date Ana QC Prep		11-03-15 11-03-15				kg kg
			MDL					
Parameter	Flag		Result		Unit	•		RL
DRO			<15.7		mg/I	ζg		50
Surrogate Flag		Units	Dilut	ion	Spike Amount	Percent Recovery	Recove Limit	ts
n-Tricosane	97.9	mg/Kg	1		100	98	70 - 13	30
Method Blank (1)	QC Batch: 79405							
QC Batch: 79405		Date Ana		1-03-09		Analyz		R
Prep Batch: 67261		QC Prepa	aration: 201	.1-03-09		Prepar	ed By: A	R
			$\mathrm{MDL}$					
Parameter	Flag		$rac{ ext{MDL}}{ ext{Result}}$		Unit	is .	I	RL

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Method Blank (1) QC Batch: 79406

 QC Batch:
 79406
 Date Analyzed:
 2011-03-09
 Analyzed By:
 AR

 Prep Batch:
 67261
 QC Preparation:
 2011-03-09
 Prepared By:
 AR

Method Blank (1) QC Batch: 79408

 QC Batch:
 79408
 Date Analyzed:
 2011-03-09
 Analyzed By:
 AR

 Prep Batch:
 67261
 QC Preparation:
 2011-03-09
 Prepared By:
 AR

### Laboratory Control Spike (LCS-1)

QC Batch: 79090 Date Analyzed: 2011-03-09 Analyzed By: ME
Prep Batch: 67108 QC Preparation: 2011-03-09 Prepared By: ME

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	$\mathbf{A}\mathbf{mount}$	Result	Rec.	Limit
Benzene	1.92	mg/Kg	1	2.00	< 0.0118	96	81.9 - 108
Toluene	1.88	mg/Kg	1	2.00	< 0.00600	94	81.9 - 107
Ethylbenzene	1.84	mg/Kg	1	2.00	< 0.00850	92	78.4 - 107
Xylene	5.47	mg/Kg	1	6.00	< 0.00613	91	79.1 - 107

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

Param	LCSD Result	Units	Dil.	${f Spike} \ {f Amount}$	Matrix Result	Rec.	$egin{array}{c} { m Rec.} \\ { m Limit} \end{array}$	RPD	$egin{array}{c}  ext{RPD} \  ext{Limit} \end{array}$
Benzene	1.90	mg/Kg	1	2.00	< 0.0118	95	81.9 - 108	1	20
Toluene	1.88	mg/Kg	1	2.00	< 0.00600	94	81.9 - 107	0	20
Ethylbenzeue	1.81	mg/Kg	1	2.00	< 0.00850	90	78.4 - 107	2	20
Xylene	5.44	mg/Kg	1	6.00	< 0.00613	91	79.1 - 107	0	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	${ m Rec.}$	Limit
Trifluorotoluene (TFT)	1.82	1.80	mg/Kg	1	2.00	91	90	70.2 - 114
4-Bromofluorobenzene (4-BFB)	1.71	1.65	mg/Kg	1	2.00	86	82	69.8 - 121

114-6400825

Work Order: 11030725 COG/Electra Federal #5 Page Number: 20 of 34

Eddy County, NM

### Laboratory Control Spike (LCS-1)

QC Batch:

GRO

79091

Date Analyzed:

2011-03-09

Analyzed By: ME

Prep Batch: 67108

QC Preparation: 2011-03-09

Units

mg/Kg

Dil.

1

Prepared By: ME

	LC
Param	Rest

S Result 15.1

Spike Matrix Amount Result < 0.753 20.0

Rec. 76

Rec. Limit 60.9 - 95.4

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	15.8	mg/Kg	1	20.0	< 0.753	79	60.9 - 95.4	4	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	${ m Units}$	Dil.	${f Amount}$	Rec.	Rec.	$\mathbf{Limit}$
Trifluorotoluene (TFT)	2.01	2.14	mg/Kg	1	2.00	100	107	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.91	2.02	mg/Kg	1	2.00	96	101	68.2 - 132

### Laboratory Control Spike (LCS-1)

QC Batch:

79174 Prep Batch: 67162 Date Analyzed:

2011-03-10 QC Preparation: 2011-03-10

Analyzed By: ME Prepared By: ME

Param	$egin{array}{c}  ext{LCS} \  ext{Result} \end{array}$	Units	Dil.	$\begin{array}{c} {\rm Spike} \\ {\rm Amount} \end{array}$	Matrix Result	Rec.	Rec. Limit
Benzene	2.03	mg/Kg	1	2.00	< 0.0118	102	81.9 - 108
Toluene	2.02	mg/Kg	1	2.00	< 0.00600	101	81.9 - 107
Ethylbenzene	1.98	mg/Kg	1	2.00	< 0.00850	99	78.4 - 107
Xylene	5.95	mg/Kg	1	6.00	< 0.00613	99	79.1 - 107

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	${f Amount}$	Result	Rec.	Limit	RPD	Limit
Benzene	2.08	mg/Kg	1	2.00	< 0.0118	104	81.9 - 108	2	20
Toluene	2.08	mg/Kg	1	2.00	< 0.00600	104	81.9 - 107	3	20
Ethylbenzene	2.02	mg/Kg	1	2.00	< 0.00850	101	78.4 - 107	2	20
Xylene	6.09	mg/Kg	1	6.00	< 0.00613	102	79.1 - 107	2	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	${f Units}$	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.98	1.96	mg/Kg	1	2.00	99	98	70.2 - 114
4-Bromofluorobenzene (4-BFB)	2.05	2.06	mg/Kg	1	2.00	102	103	69.8 - 121

114-6400825

Work Order: 11030725 COG/Electra Federal #5 Page Number: 21 of 34 Eddy County, NM

### Laboratory Control Spike (LCS-1)

QC Batch:

79175

Date Analyzed:

2011-03-10

Analyzed By: ME

Prep Batch: 67162

QC Preparation: 2011-03-10

Prepared By: ME

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$
GRO	13.8	mg/Kg	1	20.0	< 0.753	69	60.9 - 95.4

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	$\mathbf{Limit}$	RPD	Limit
GRO	13.5	nıg/Kg	1	20.0	< 0.753	68	60.9 - 95.4	2	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.91	1.95	mg/Kg	1	2.00	96	98	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.83	1.86	${ m mg/Kg}$	1	2.00	92	93	68.2 - 132

#### Laboratory Control Spike (LCS-1)

QC Batch:

79253 Prep Batch: 67239 Date Analyzed:

2011-03-08 QC Preparation: 2011-03-08 Analyzed By: kg Prepared By: kg

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO	231	mg/Kg	1	250	<15.7	92	47.5 - 144.1

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

	LCSD			$_{ m Spike}$	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO	237	mg/Kg	1	250	<15.7	95	47.5 - 144.1	3	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	114	123	mg/Kg	1	100	114	123	70 - 130

### Laboratory Control Spike (LCS-1)

QC Batch:

79388

Date Analyzed:

2011-03-15

Analyzed By: ME

Prep Batch: 67358

QC Preparation: 2011-03-15

Prepared By: ME

114-6400825

Work Order: 11030725 COG/Electra Federal #5 Page Number: 22 of 34 Eddy County, NM

Param	LCS Result	Units	Dil.	$\begin{array}{c} {\rm Spike} \\ {\rm Amount} \end{array}$	Matrix Result	Rec.	Rec. Limit
Benzene	1.86	mg/Kg	1	2.00	< 0.0118	93	81.9 - 108
Toluene	1.88	mg/Kg	1	2.00	< 0.00600	94	81.9 - 107
Ethylbenzene	1.85	mg/Kg	1	2.00	< 0.00850	92	78.4 - 107
Xylene	5.55	mg/Kg	1	6.00	< 0.00613	92	79.1 - 107

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$	RPD	Limit
Benzene	1.92	mg/Kg	1	2.00	< 0.0118	96	81.9 - 108	3	20
Toluene	1.94	mg/Kg	1	2.00	< 0.00600	97	81.9 - 107	3	20
Ethylbenzene	1.91	mg/Kg	1	2.00	< 0.00850	96	78.4 - 107	3	20
Xylene	5.79	mg/Kg	1	6.00	< 0.00613	96	79.1 - 107	4	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	$\mathbf{Limit}$
Trifluorotoluene (TFT)	1.76	1.90	mg/Kg	1	2.00	88	95	70.2 - 114
4-Bromofluorobenzene (4-BFB)	1.76	1.93	m mg/Kg	1	2.00	88	96	69.8 - 121

### Laboratory Control Spike (LCS-1)

QC Batch:

79389

Date Analyzed:

2011-03-15

Analyzed By: ME

Prep Batch: 67358 QC Preparation: 2011-03-15

Prepared By: ME

	LCS			$\operatorname{Spike}$	Matrix		$\mathrm{Rec.}$
Param	Result	Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$
GRO	14.2	mg/Kg	1	20.0	< 0.753	71	60.9 - 95.4

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	13.8	mg/Kg	1	20.0	< 0.753	69	60.9 - 95.4	3	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.99	1.97	mg/Kg	1	2.00	100	98	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.82	1.82	nıg/Kg	1	2.00	91	91	68.2 - 132

### Laboratory Control Spike (LCS-1)

QC Batch: 79402 Prep Batch: 67363 Date Analyzed: 2011-03-15 QC Preparation: 2011-03-15 Analyzed By: kg Prepared By: kg

114-6400825

Work Order: 11030725 COG/Electra Federal #5 Page Number: 23 of 34 Eddy County, NM

 				 ,	 	,,	

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	${f Amount}$	Result	Rec.	Limit
DRO	242	${ m mg/Kg}$	1	250	<15.7	97	47.5 - 144.1

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

	LCSD			$_{ m Spike}$	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	${f Limit}$	RPD	Limit
DRO	259	mg/Kg	1	250	<15.7	104	47.5 - 144.1	7	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	${f Limit}$
n-Tricosane	99.0	99.6	mg/Kg	1	100	99	100	70 - 130

### Laboratory Control Spike (LCS-1)

QC Batch:

Date Analyzed:

2011-03-09

Analyzed By: AR

Prep Batch: 67261

QC Preparation: 2011-03-09

Prepared By: AR.

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$
Chloride	97.9	mg/Kg	1	100	< 3.85	98	85 - 115

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	$_{ m Limit}$	RPD	Limit
Chloride	106	mg/Kg	1	100	< 3.85	106	85 - 115	8	20

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

### Laboratory Control Spike (LCS-1)

QC Batch:

79406

Date Analyzed:

2011-03-09

Analyzed By: AR

Prep Batch: 67261

QC Preparation: 2011-03-09

Prepared By: AR

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride	97.5	mg/Kg	1	100	< 3.85	98	85 - 115

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

	LCSD			$_{ m Spike}$	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$	RPD	Limit
Chloride	103	mg/Kg	1	100	< 3.85	103	85 - 115	6	20

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

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### Laboratory Control Spike (LCS-1)

QC Batch:

79408

Date Analyzed:

2011-03-09

Analyzed By: AR

Prepared By: AR

Prep Batch: 67261

QC Preparation:

2011-03-09

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	$\mathbf{Limit}$
Chloride	97.0	mg/Kg	1	100	< 3.85	97	85 - 115

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

	LCSD			$\mathbf{Spike}$	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	104	mg/Kg	1	100	< 3.85	104	85 - 115	7	20

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

#### Matrix Spike (MS-1) Spiked Sample: 259766

QC Batch: Prep Batch: 67108

Date Analyzed:

2011-03-09 QC Preparation: 2011-03-09 Analyzed By: ME

Prepared By: ME

Param	$rac{ ext{MS}}{ ext{Result}}$	Units	Dil.	$\begin{array}{c} {\rm Spike} \\ {\rm Amount} \end{array}$	Matrix Result	Rec.	Rec. Limit
Benzene	1.89	mg/Kg	1	2.00	< 0.0118	94	80.5 - 112
Toluene	1.93	mg/Kg	1	2.00	< 0.00600	96	82.4 - 113
Ethylbenzene	2.00	mg/Kg	1	2.00	< 0.00850	100	83.9 - 114
Xylene	5.97	mg/Kg	1	6.00	< 0.00613	100	84 - 114

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

D	MSD	77	D.I	Spike	Matrix	n	Rec.	DDD	RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$	RPD	$\mathbf{Limit}$
Benzene	1.81	mg/Kg	1	2.00	< 0.0118	90	80.5 - 112	4	20
Toluene	1.83	mg/Kg	1	2.00	< 0.00600	92	82.4 - 113	5	20
Ethylbenzene	1.91	mg/Kg	1	2.00	< 0.00850	96	83.9 - 114	5	20
$\mathbf{X}\mathbf{y}\mathbf{lene}$	5.70	mg/Kg	1	6.00	< 0.00613	95	84 - 114	5	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT) 6-7	2.44	2.45	mg/Kg	1	2	122	122	41.3 - 117
4-Bromofluorobenzene (4-BFB)	2.14	2.00	mg/Kg	1	2	107	100	35.5 - 129

<sup>&</sup>lt;sup>6</sup>High surrogate recovery due to peak interference.

<sup>&</sup>lt;sup>7</sup>High surrogate recovery due to peak interference.

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Matrix Spike (MS-1)

Spiked Sample: 259740

QC Batch:

79091

Date Analyzed:

2011-03-09

Analyzed By: ME

62

Prep Batch:

67108

QC Preparation:

2011-03-09

Prepared By: ME

MS
Result
10 5

MS Resul

> 2.36 2.00

MS

Result

1.86

1.88

1.96

5.91

6.77

Spike

Matrix

Result

< 0.753

Matrix Result

Rec. Rec.

Param	
$\overline{\text{GRO}}$	

1110	
Result	
12.5	

MSD

Result

13.5

Units Dil. Amount mg/Kg 20.0

< 0.753

Limit 61.8 - 114

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

Param	
$\overline{\text{GRO}}$	

		Spike
Units	Dil.	Amount
mar/Ka	1	20.0

Rec. Rec. Limit 68 61.8 - 114

RPD RPD Limit 8 20

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

Surrogate
Trifluorotoluene (TFT)
4-Bromoffuorobenzene (4-BFB

lt	$rac{ ext{MSD}}{ ext{Result}}$	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	${ m Rec.} \ { m Limit}$
	2.52	mg/Kg	1	2	118	126	50 - 162
ì	2.11	mg/Kg	1	2	100	106	50 - 162

Matrix Spike (MS-1)

Spiked Sample: 259861

QC Batch:

79174

Date Analyzed:

2011-03-10

Analyzed By: ME Prepared By: ME

Prep Batch: 67162

Param

Benzene

Toluene

Xylene

Ethylbenzene

QC Preparation:

Units

mg/Kg

mg/Kg

mg/Kg

mg/Kg

1

2011-03-10

Dil.

1

1

1

1

Spike

Amount

2.00

2.00

2.00

6.00

Matrix Rec. Result Limit Rec. < 0.0118 93 80.5 - 112 < 0.00600 94 82.4 - 113 83.9 - 114 < 0.00850 98

98

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

Param_	
Benzene	
Toluene	

Xylene

Param	Result
Benzeue	2.08
Toluene	2.14
Ethylbenzene	2.24

MSD Spike Matrix Rec.

RPD Units Dil. Amount Result Rec. Limit Limit mg/Kg 2.00 < 0.0118 104 80.5 - 112 20 1 11 20 mg/Kg 1 2.00 < 0.00600 107 82.4 - 113 13 20 1 2.00 < 0.00850 112 83.9 - 114 13 mg/Kg < 0.00613 14 20 mg/Kg 6.00 113 84 - 114

< 0.00613

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

continued ...

84 - 114

RPD

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matrix spikes continued								
	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil. A	mount	Rec.	Rec.	Limit
	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units		mount	Rec.	Rec.	Limit
Trifluorotoluene (TFT) 8	2.26	2.37	mg/Kg	1	2	113	118	41.3 - 117
4-Bromofluorobenzene (4-BFB)	2.44	2.54	mg/Kg	1	2	122	127	35.5 - 129
Matrix Spike (MS-1) Spiked Sar QC Batch: 79175 Prep Batch: 67162	I	888 Date Analyzed QC Preparatio					Analyze Prepare	
	MS			Spike	Ma	trix		Rec.
Param	Resul	Units	Dil.	Amount	Rea	$\operatorname{sult}$	Rec.	$\mathbf{Limit}$
GRO 9	19.2	mg/Kg	1	20.0	11.3	3277	39	61.8 - 114
Percent recovery is based on the spike	result. F	RPD is based of	n the spike	and spike	duplicate	result.		
	MSD		Spike	Matrix	,	Re	a.c.	RPD
	Result	Units Dil	_		_	Lir		PD Limit
GRO 10		mg/Kg 1	20.0	11.327		61.8		38 20
Percent recovery is based on the spike	result. F	RPD is based of	on the spike	and spike	duplicate	result.		
-	MS	MSD	-	-	C	MS	MSD	Rec.
Surrogate	Resul		Units	Dil.	Spike Amount	Rec.	Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.21	2.08	mg/Kg	1	2	110	104	50 - 162
4-Bromofluorobenzene (4-BFB)	2.36	2.03	mg/Kg	1	$\frac{2}{2}$	118	102	50 - 162
Matrix Spike (MS-1) Spiked Sar QC Batch: 79253 Prep Batch: 67239		825 Date Analyzec QC Preparatio	l: 2011-03				•	zed By: kg red By: kg
	MS			$_{ m Spike}$	Mati	rix		Rec.
Param DRO	MS Result	Units mg/Kg	Dil.	Spike Amount 250	Mati Resu		Rec.	Rec. Limit

 $continued \dots$ 

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

<sup>&</sup>lt;sup>8</sup>High surrogate recovery due to peak interference.

<sup>9</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>10</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

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matmin	amalaca	continued		
ништи	spikes	continued		

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	217	mg/Kg	1	250	17.7	80	11.7 - 152.3	2	20

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

	MS	MSD			$\mathbf{Spike}$	MS	MSD	Rec.
Surrogate	Result	Result	$\mathbf{Units}$	Dil.	${f Amount}$	Rec.	Rec.	${f Limit}$
n-Tricosane	100	96.0	mg/Kg	1	100	100	96	70 - 130

#### Matrix Spike (MS-1) Spiked Sample: 259974

QC Batch: Prep Batch: 67358

79388

Date Analyzed: QC Preparation: 2011-03-15

2011-03-15

Analyzed By: ME Prepared By: ME

Param	MS Result	Units	Dil.	$\begin{array}{c} {\rm Spike} \\ {\rm Amount} \end{array}$	Matrix Result	Rec.	Rec. Limit
Benzene	1.92	mg/Kg	1	2.00	< 0.0118	96	80.5 - 112
Toluene	2.00	mg/Kg	1	2.00	< 0.00600	100	82.4 - 113
Ethylbenzene	2.09	mg/Kg	1	2.00	< 0.00850	104	83.9 - 114
Xylene	6.30	mg/Kg	1	6.00	0.3919	98	84 - 114

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	$\operatorname{Limit}$
Benzene	1.90	mg/Kg	1	2.00	< 0.0118	95	80.5 - 112	1	20
Toluene	2.01	mg/Kg	1	2.00	< 0.00600	100	82.4 - 113	0	20
Ethylbenzene	2.09	mg/Kg	1	2.00	< 0.00850	104	83.9 - 114	0	20
Xylene	6.30	mg/Kg	1	6.00	0.3919	98	84 - 114	0	20

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

	MS	MSD			$\operatorname{Spike}$	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	$\mathbf{Limit}$
Trifluorotoluene (TFT)	$^{2}$ 2.44	2.42	ıng/Kg	1	2	122	121	41.3 - 117
4-Bromofluorobenzene (4-BFB)	2.48	2.46	mg/Kg	1	2	124	123	35.5 - 129

Matrix Spike (MS-1) Spiked Sample: 259889

QC Batch: 79389 Prep Batch: 67358 Date Analyzed: 2011-03-15 QC Preparation: 2011-03-15 Analyzed By: ME Prepared By: ME

<sup>&</sup>lt;sup>11</sup>High surrogate recovery due to peak interference.

<sup>&</sup>lt;sup>12</sup>High surrogate recovery due to peak interference.

114-6400825

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Eddy Con	ntv	NM	

Rec.

Limit

80 - 120

Rec.

99

Param		MS Resul	t U	Inits	Dil.	Spike Amount		trix sult	Rec.		Rec. imit
GRO		14.4	m	g/Kg	1	20.0		.753	72	61.8	3 - 114
Percent recovery is based	on the spi	ike result. I			the spike a	and spike d	uplicate	result.			
		MSD			Spike	Matrix		Rec			RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limi		RPD	Limit
GRO		15.1	mg/Kg	1	20.0	< 0.753	76	61.8 -	114	5	20
Percent recovery is based	on the spi	ike result. I	RPD is b	ased on	the spike a	and spike d	uplicate	result.			
		MS	MS	SD		1	Spike	MS	MS	D	Rec.
Surrogate		Resul	t Res	sult	Units	Dil. A	mount	Rec.	Rec	e. I	Limit
Trifluorotoluene (TFT)		2.56	2.		mg/Kg	1	2	128	127		0 - 162
4-Bromofluorobenzene (4-	BFB)	2.43	2.3	39	mg/Kg	1	2	122	120	) 50	0 - 162
QC Batch: 79402 Prep Batch: 67363		MS	Date An QC Prep	paration		·15 Spike	Mat		Prep		r: kg
Param		Result		nits	Dil.	Amount	Resi		Rec.		mit
DRO		388		g/Kg	1	250	180		81	11.7	- 152.3
Percent recovery is based	on the spi	ike result. F	RPD is b	ased on	the spike a	and spike d	uplicate	result.			
		MSD			Spike	Matrix		Rec.			RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limi		RPD	Limit
DRO	13		mg/Kg	1	250	186	232	11.7 - 1	52.3	66	20
Percent recovery is based	on the spi	ike result. I	RPD is b	ased on	the spike a	and spike d	uplicate	result.			
	MS	MSD				Spike	I	MS	MSD		Rec.
Surrogate	Result	Result		nits	Dil.	Amount		lec.	Rec.		Limit
n-Tricosane <sup>14</sup>	116	239	mg	g/Kg	1	100	1	116	239	70	0 - 130
Matrix Spike (MS-1)	Spiked :	Sample: 259	9771								
QC Batch: 79405		]	Date Ana	alyzed:	2011-03-	09			Analy	zed By:	AR
Prep Batch: 67261		(	QC Prepa	aration:	2011-03-	09			Prepa	red By:	AR

Units

mg/Kg

Dil.

100

Spike

Amount

10000

Matrix

Result

<385

MS

Result

10100

Param

Chloride

<sup>&</sup>lt;sup>13</sup>Matrix spike recovery out of control limits due to peak interference Use LCS/LCSD to demonstrate analysis is under control. <sup>14</sup>High surrogate recovery due to peak interference.

114-6400825

Work Order: 11030725 COG/Electra Federal #5 Page Number: 29 of 34 Eddy County, NM

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	10600	mg/Kg	100	10000	<385	104	80 - 120	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: 259781

QC Batch: 79406 Prep Batch: 67261 Date Analyzed: 2011-03-09 QC Preparation: 2011-03-09 Analyzed By: AR Prepared By: AR

MSSpike Matrix Rec. Param Result Units Dil. Result Amount Rec. Limit Chloride 10800 mg/Kg 100 10000 461 103 80 - 120

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

	MSD			Spike	Matrix	,	Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	11600	mg/Kg	100	10000	461	111	80 - 120	7	20

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

Matrix Spike (MS-1) Spiked Sample: 259791

QC Batch: 79408 Prep Batch: 67261

Date Analyzed: 2011-03-09 QC Preparation: 2011-03-09

Analyzed By: AR. Prepared By: AR

MS Spike Matrix Rec. Param Result Units Dil. Result Amount Rec. Limit Chloride 10800 mg/Kg 100 10000 612 102 80 - 120

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	11300	mg/Kg	100	10000	612	107	80 - 120	4	20

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

Standard (CCV-1)

QC Batch: 79090

Date Analyzed: 2011-03-09

Analyzed By: ME

Report Date: March 17, 2011 114-6400825

Work Order: 11030725 COG/Electra Federal #5 Page Number: 30 of 34 Eddy County, NM

			$rac{ ext{CCVs}}{ ext{True}}$	$\operatorname{CCVs}$ Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	${f Analyzed}$
Benzene	•	mg/Kg	0.100	0.101	101	80 - 120	2011-03-09
Toluene		$_{ m mg/Kg}$	0.100	0.0998	100	80 - 120	2011-03-09
Ethylbenzene		mg/Kg	0.100	0.0966	97	80 - 120	2011-03-09
Xylene		mg/Kg	0.300	0.287	96	80 - 120	2011-03-09

### Standard (CCV-2)

QC Batch: 79090

Date Analyzed: 2011-03-09

Analyzed By: ME

			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0956	96	80 - 120	2011-03-09
Toluene		$_{ m mg/Kg}$	0.100	0.0947	95	80 - 120	2011-03-09
Ethylbenzene		mg/Kg	0.100	0.0919	92	80 - 120	2011-03-09
Xylene		mg/Kg	0.300	0.277	92	80 - 120	2011-03-09

### Standard (CCV-1)

QC Batch: 79091

Date Analyzed: 2011-03-09

Analyzed By: ME

D	Elos	Ilmita	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	0.928	93	80 - 120	2011-03-09

### Standard (CCV-2)

QC Batch: 79091

Date Analyzed: 2011-03-09

Analyzed By: ME

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	1.08	108	80 - 120	2011-03-09

### Standard (CCV-1)

QC Batch: 79174

Date Analyzed: 2011-03-10

Analyzed By: ME

114-6400825

Work Order: 11030725 COG/Electra Federal #5 Page Number: 31 of 34 Eddy County, NM

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0999	100	80 - 120	2011-03-10
Toluene		mg/Kg	0.100	0.0996	100	80 - 120	2011-03-10
Ethylbenzene		mg/Kg	0.100	0.0969	97	80 - 120	2011-03-10
Xylene		mg/Kg	0.300	0.292	97	80 - 120	2011-03-10

### Standard (CCV-2)

QC Batch: 79174

Date Analyzed: 2011-03-10

Analyzed By: ME

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0964	96	80 - 120	2011-03-10
Toluene		mg/Kg	0.100	0.0959	96	80 - 120	2011-03-10
Ethylbenzene		mg/Kg	0.100	0.0943	94	80 - 120	2011-03-10
Xylene		mg/Kg	0.300	0.286	95	80 - 120	2011-03-10

### Standard (CCV-1)

QC Batch: 79175

Date Analyzed: 2011-03-10

Analyzed By: ME

D.	Dl	T7*4	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	0.926	93	80 - 120	2011-03-10

### Standard (CCV-2)

QC Batch: 79175

Date Analyzed: 2011-03-10

Analyzed By: ME

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	0.832	83	80 - 120	2011-03-10

### Standard (CCV-2)

QC Batch: 79253

Date Analyzed: 2011-03-08

Analyzed By: kg

114-6400825

Work Order: 11030725 COG/Electra Federal #5 Page Number: 32 of 34 Eddy County, NM

_	D)	** **	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	$\operatorname{Flag}$	Units	Conc.	Conc.	Recovery	$_{ m Limits}$	Analyzed
DRO		mg/Kg	250	211	84	80 - 120	2011-03-08

### Standard (CCV-3)

QC Batch: 79253

Date Analyzed: 2011-03-08

Analyzed By: kg

			CCVs True	CCVs Found	${ m CCVs} \ { m Percent}$	Percent Recovery	Date
Param	$\operatorname{Flag}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		mg/Kg	250	236	94	80 - 120	2011-03-08

### Standard (CCV-1)

QC Batch: 79388

Date Analyzed: 2011-03-15

Analyzed By: ME

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0931	93	80 - 120	2011-03-15
Toluene		$_{ m mg/Kg}$	0.100	0.0942	94	80 - 120	2011-03-15
Ethylbenzene		mg/Kg	0.100	0.0930	93	80 - 120	2011-03-15
Xylene		mg/Kg	0.300	0.278	93	80 - 120	2011-03-15

### Standard (CCV-2)

QC Batch: 79388

Date Analyzed: 2011-03-15

Analyzed By: ME

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	$\operatorname{Flag}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0979	98	80 - 120	2011-03-15
Toluene		mg/Kg	0.100	0.102	102	80 - 120	2011-03-15
Ethylbenzene		mg/Kg	0.100	0.102	102	80 - 120	2011-03-15
Xylene		mg/Kg	0.300	0.304	101	80 - 120	2011-03-15

## Standard (CCV-1)

QC Batch: 79389

Date Analyzed: 2011-03-15

Analyzed By: ME

Work Order: 11030725 Report Date: March 17, 2011 Page Number: 33 of 34 114-6400825 COG/Electra Federal #5 Eddy County, NM **CCVs CCVs CCVs** Percent True Found Percent Recovery Date Units Analyzed Param Flag Conc. Conc. Recovery Limits GRO mg/Kg 1.00 0.925 80 - 120 2011-03-15 92 Standard (CCV-2) QC Batch: 79389 Date Analyzed: 2011-03-15 Analyzed By: ME **CCVs CCVs CCVs** Percent True Recovery Found Percent Date Flag Units Conc. Conc. Recovery Limits Analyzed Param 1.00 80 - 120 GRO mg/Kg 1.19 119 2011-03-15 Standard (CCV-1) QC Batch: 79402 Date Analyzed: 2011-03-15 Analyzed By: kg CCVs**CCVs** CCVsPercent True Found Percent Recovery Date Units Analyzed Param Flag Conc. Conc. Recovery Limits DRO mg/Kg 250 264 106 80 - 120 2011-03-15 Standard (CCV-2) QC Batch: 79402 Date Analyzed: 2011-03-15 Analyzed By: kg **CCVs CCVs CCVs** Percent True Found Percent Recovery Date Flag Units Analyzed Param Conc. Conc. Recovery Limits DRO mg/Kg 250 237 95 80 - 120 2011-03-15 Standard (ICV-1) QC Batch: 79405 Date Analyzed: 2011-03-09 Analyzed By: AR **ICVs ICVs ICVs** Percent True Found Percent Recovery Date Param Flag Units Conc. Conc. Recovery Limits Analyzed 100 85 - 115 Chloride mg/Kg 99.9 100 2011-03-09

Date Analyzed: 2011-03-09

Analyzed By: AR

Standard (CCV-1)

QC Batch: 79405

Report Date: March 17, 2011 114-6400825

Standard (CCV-1)

Flag

Units

mg/Kg

QC Batch: 79408

Param

Chloride

Work Order: 11030725

COG/Electra Federal #5

Page Number: 34 of 34 Eddy County, NM

Analyzed By: AR

Date

Analyzed

2011-03-09

Percent

Recovery

Limits

85 - 115

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2011-03-09
Standard	(ICV-1)						
QC Batch:	79406		Date Ana	lyzed: 2011-03	3-09	Anal	yzed By: AR
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	99.0	99	85 - 115	2011-03-09
Standard (OC Batch:	` ,		Date Ana	lvzed: 2011-03	3-09	Anal	vzed Bv: AR.
	` ,		Data Ana	lvzod - 2011 05	t no	Anal	vand By: AR
	` ,		Date Ana	lyzed: <b>2011-</b> 03	3-09	Anal	yzed By: AR.
	` ,		CCVs	CCVs	CCVs	Percent	
QC Batch:	79406		CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
QC Batch:	` ,	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Standard  QC Batch:  Param Chloride	79406	Units mg/Kg	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date Analyzed
QC Batch: Param Chloride	79406 Flag		CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date
QC Batch: Param Chloride Standard	79406 Flag		CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery 101	Percent Recovery Limits 85 - 115	Date Analyzed
QC Batch:	79406  Flag  (ICV-1)		CCVs True Conc. 100	CCVs Found Conc.	CCVs Percent Recovery 101	Percent Recovery Limits 85 - 115	Date Analyzed 2011-03-09
QC Batch:  Param Chloride  Standard ( QC Batch:	79406  Flag  (ICV-1)  79408	mg/Kg	CCVs True Conc. 100  Date Ana ICVs True	CCVs Found Conc. 101	CCVs Percent Recovery 101	Percent Recovery Limits 85 - 115  Anal Percent Recovery	Date Analyzed 2011-03-09 yzed By: AR Date
QC Batch: Param Chloride Standard	79406  Flag  (ICV-1)		CCVs True Conc. 100  Date Ana.	CCVs Found Conc. 101  dyzed: 2011-03	CCVs Percent Recovery 101	Percent Recovery Limits 85 - 115  Anal	Date Analyzed 2011-03-09 yzed By: AR

Date Analyzed: 2011-03-09

CCVs

Found

 ${\rm Conc.}$ 

98.5

 $\mathrm{CCVs}$ 

Percent

Recovery

98

CCVs

True

Conc.

100

Report Date: October 10, 2011 Work Order: 11100302 Page Number: 1 of 3

# **Summary Report**

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

Report Date: October 10, 2011

Work Order: 11100302

Project Location: Eddy County, NM Project Name: COG/Electra Federal #5

Project Number: 114-6400825

			Date	$\operatorname{Time}$	Date
Sample	Description	Matrix	Taken	Taken	Received
278822	CS #1 Bottom Hole 4' @ AH-1	soil	2011-09-22	00:00	2011-09-30
278823	CS #1 North Side Wall @ AH-1	soil	2011-09-22	00:00	2011-09-30
278824	CS #1 East Side Wall @ AH-1	soil	2011-09-22	00:00	2011-09-30
278825	CS #1 West Side Wall @ AH-1	soil	2011-09-22	00:00	2011-09-30
278826	CS #2 Bottom Hole 4' @ AH-2	soil	2011-09-22	00:00	2011-09-30
278827	CS #2 East Side Wall @ AH-2	soil	2011-09-22	00:00	2011-09-30
278828	CS #2 West Side Wall @ AH-2	soil	2011-09-22	00:00	2011-09-30
278829	CS #3 Bottom Hole 1' @ AH-3	soil	2011-09-22	00:00	2011-09-30
278830	CS #3 East Side Wall @ AH-3	soil	2011-09-22	00:00	2011-09-30
278831	CS #3 West Side Wall @ AH-3	soil	2011-09-22	00:00	2011-09-30
278832	CS #4 Bottom Hole 1' @ AH-4	soil	2011-09-22	00:00	2011-09-30
278833	CS #4 North Side Wall @ AH-4	soil	2011-09-22	00:00	2011-09-30
278834	CS #4 East Side Wall @ AH-4	soil	2011-09-22	00:00	2011-09-30
278835	CS #4 West Side Wall @ AH-4	soil	2011-09-22	00:00	2011-09-30
278836	CS #4 South Side Wall @ AH-4	soil	2011-09-22	00:00	2011-09-30
278837	TI-3' Trench @ AH-4	soil	2011-09-26	00:00	2011-09-30
278838	TI-5' Trench @ AH-4	soil	2011-09-26	00:00	2011-09-30

Sample: 278822 - CS #1 Bottom Hole 4' @ AH-1

Param	Flag	Result	Units	RL
Chloride		713	nig/Kg	4

Sample: 278823 - CS #1 North Side Wall @ AH-1

Report Date: Octob	per 10, 2011	Work Order: 11100302		Number: 2 of 3
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4
	CS #1 East Side Wa			
Param	Flag	Result	Units	RL
Chloride		249	mg/Kg	4
Sample: 278825 -	CS #1 West Side W	all @ AH-1		
Param	Flag	Result	Units	RL
Chloride		3630	mg/Kg	4
Sample: 278826 - Param Chloride	CS #2 Bottom Hole Flag	4' @ AH-2  Result  <200	Units mg/Kg	RL 4
Sample: 278827 -	CS #2 East Side Wa	all @ AH-2		
Param	Flag	Result	Units	RL
Chloride				
Omoride		<200	mg/Kg	4
	CS #2 West Side W			
Sample: 278828 -	CS #2 West Side W			
		all @ AH-2	mg/Kg	4
Sample: 278828 - Param Chloride		all @ AH-2 Result 948	mg/Kg Units	4 RL
Sample: 278828 - Param Chloride	Flag CS #3 Bottom Hole	all @ AH-2  Result  948  1' @ AH-3	mg/Kg  Units  mg/Kg	RL 4
Sample: 278828 - Param Chloride  Sample: 278829 -	Flag	all @ AH-2 Result 948	mg/Kg Units	4 RL
Sample: 278828 - Param Chloride  Sample: 278829 - Param Chloride	Flag CS #3 Bottom Hole	Result 948  1' @ AH-3  Result <200	mg/Kg  Units  mg/Kg  Units	RL 4
Sample: 278828 - Param Chloride  Sample: 278829 - Param Chloride	Flag  CS #3 Bottom Hole  Flag	Result 948  1' @ AH-3  Result <200	mg/Kg  Units  mg/Kg  Units	RL 4

Chloride   390   mg/Kg	Report Date: October 10, 2011	Work Order: 11100302	P	age Number: 3 of 3
Chloride	Sample: 278831 - CS #3 West S	ide Wall @ AH-3		
Sample: 278832 - CS #4 Bottom Hole 1'	Param Flag	Result	Units	RL
Param	Chloride	390	mg/Kg	4
Chloride         <200         mg/Kg           Sample: 278833 - CS #4 North Side Wall @ AH-4         Param         Flag         Result         Units           Chloride         2400         mg/Kg           Sample: 278834 - CS #4 East Side Wall @ AH-4         Units           Param         Flag         Result         Units           Chloride         <200	Sample: 278832 - CS #4 Bottom	ı Hole 1' @ AH-4		
Sample: 278833 - CS #4 North Side Wall @ AH-4         Param         Flag         Result         Units           Chloride         2400         mg/Kg           Sample: 278834 - CS #4 East Side Wall @ AH-4         Units           Param         Flag         Result         Units           Chloride         <200				RL
Param	Chloride	<200	mg/Kg	4
Chloride       2400       mg/Kg         Sample: 278834 - CS #4 East Side Wall @ AH-4       Units         Param       Flag       Result       Units         Chloride       <200	Sample: 278833 - CS #4 North S	Side Wall @ AH-4		
Chloride         2400         mg/Kg           Sample: 278834 - CS #4 East Side Wall @ AH-4         Units           Param         Flag         Result         Units           Chloride         <200	Param Flag	Result	Units	RL
Param         Flag         Result         Units           Chloride         <200		2400	mg/Kg	4
Sample: 278835 - CS #4 West Side Wall @ AH-4         Param       Flag       Result       Units         Chloride       <200       mg/Kg         Sample: 278836 - CS #4 South Side Wall @ AH-4       Units         Param       Flag       Result       Units         Chloride       <200       mg/Kg         Sample: 278837 - TI-3' Trench @ AH-4       Param       Flag       Result       Units         Chloride       <200       mg/Kg	Param Flag	Result		RL
Param         Flag         Result         Units           Chloride         <200	Chloride	<200	nig/Kg	4
Param         Flag         Result         Units           Chloride         <200         mg/Kg           Sample: 278837 - TI-3' Trench @ AH-4         Hesult         Units           Param         Flag         Result         Units           Chloride         <200         mg/Kg           Sample: 278838 - TI-5' Trench @ AH-4         Result         Units           Param         Flag         Result         Units	Param Flag	Result		RL 4
Sample: 278837 - TI-3' Trench @ AH-4         Param       Flag       Result       Units       Include       <	Param Flag	Result		RL 4
Param         Flag         Result         Units           Chloride         <200			mg/11g	*
Chloride         <200         mg/Kg           Sample: 278838 - TI-5' Trench @ AH-4         Param         Flag         Result         Units	<del>-</del>		**	<b></b>
Sample: 278838 - TI-5' Trench @ AH-4 Param Flag Result Units	· ·			RL 4
ParamFlag Result Units	Cinoriae	<b>\200</b>	mg/ Kg	4
	Sample: 278838 - TI-5' Trench @	AH-4		
Chloride <200 mg/Kg				RL
-0/-0	Chloride	<200	mg/Kg	4



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## Certifications

WBE HUB NCTRCA DBE NELAP Dod LELAP Kansas Oklahoma ISO 17025

# Analytical and Quality Control Report

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

Report Date: October 10, 2011

Work Order: 11100302 

Project Location: Eddy County, NM Project Name: COG/Electra Federal #5

114-6400825 Project Number:

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

			Date	$\operatorname{Time}$	$\operatorname{Date}$
Sample	Description	Matrix	Taken	Taken	Received
278822	CS #1 Bottom Hole 4' @ AH-1	soil	2011-09-22	00:00	2011-09-30
278823	CS #1 North Side Wall @ AH-1	soil	2011-09-22	00:00	2011-09-30
278824	CS #1 East Side Wall @ AH-1	soil	2011-09-22	00:00	2011-09-30
278825	CS #1 West Side Wall @ AH-1	soil	2011-09-22	00:00	2011-09-30
278826	CS #2 Bottom Hole 4' @ AH-2	soil	2011-09-22	00:00	2011-09-30
278827	CS #2 East Side Wall @ AH-2	soil	2011-09-22	00:00	2011-09-30
278828	CS #2 West Side Wall @ AH-2	soil	2011-09-22	00:00	2011-09-30
278829	CS #3 Bottom Hole 1' @ AH-3	soil	2011-09-22	00:00	2011-09-30
278830	CS #3 East Side Wall @ AH-3	soil	2011-09-22	00:00	2011-09-30
278831	CS #3 West Side Wall @ AH-3	soil	2011-09-22	00:00	2011-09-30
278832	CS #4 Bottom Hole 1' @ AH-4	soil	2011-09-22	00:00	2011-09-30
278833	CS #4 North Side Wall @ AH-4	soil	2011-09-22	00:00	2011-09-30
278834	CS #4 East Side Wall @ AH-4	soil	2011-09-22	00:00	2011-09-30
278835	CS #4 West Side Wall @ AH-4	soil	2011-09-22	00:00	2011-09-30
278836	CS #4 South Side Wall @ AH-4	soil	2011-09-22	00:00	2011-09-30
278837	TI-3' Trench @ AH-4	soil	2011-09-26	00:00	2011-09-30
278838	TI-5' Trench @ AH-4	soil	2011-09-26	00:00	2011-09-30

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

> Michael about Dr. Blair Leftwich, Director

Dr. Michael Abel, Project Manager

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Case Narrative	4
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Sample 278822 (CS #1 Bottom Hole 4' @AH-1)	ţ
Sample 278823 (CS #1 North Side Wall @AH-1)	ŧ
Sample 278824 (CS #1 East Side Wall @AH-1)	Ę
Sample 278825 (CS #1 West Side Wall @AH-1)	ŗ
Sample 278826 (CS #2 Bottom Hole 4' @AH-2)	(
Sample 278827 (CS #2 East Side Wall @AH-2)	
Sample 278828 (CS #2 West Side Wall @AH-2)	6
Sample 278829 (CS #3 Bottom Hole 1' @AH-3)	7
Sample 278830 (CS #3 East Side Wall @AH-3)	•
Sample 278831 (CS #3 West Side Wall @AH-3)	7
Sample 278832 (CS #4 Bottom Hole 1' @AH-4)	-
Sample 278833 (CS #4 North Side Wall @AH-4)	8
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## Case Narrative

Samples for project COG/Electra Federal #5 were received by TraceAnalysis, Inc. on 2011-09-30 and assigned to work order 11100302. Samples for work order 11100302 were received intact at a temperature of 11.3 C.

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

		Prep	Prep	QC	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (Titration)	SM 4500-Cl B	72450	2011-10-06 at 10:23	85367	2011-10-07 at 13:20
Chloride (Titration)	SM 4500-Cl B	72450	2011-10-06 at 10:23	85368	2011-10-07 at 13:22

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 11100302 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.

114-6400825

Work Order: 11100302 COG/Electra Federal #5 Page Number: 5 of 14 Eddy County, NM

# **Analytical Report**

Sample: 278822 - CS #1 Bottom Hole 4' @ AH-1

Laboratory:

Midland

Analysis:

Chloride (Titration)

85367

Analytical Method: Date Analyzed:

SM 4500-Cl B

Units

mg/Kg

Prep Method: N/A

QC Batch:

Sample Preparation:

2011-10-07 2011-10-06 Analyzed By: ARAR

Prep Batch:

72450

Prepared By:

RL

Parameter Flag Chloride

Cert Result 713 Dilution 50

RL4.00

Sample: 278823 - CS #1 North Side Wall @ AH-1

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 85367

Analytical Method:

SM 4500-Cl B

Prep Method: N/A Analyzed By: AR

Prep Batch:

72450

Date Analyzed: Sample Preparation:

2011-10-07 2011-10-06

Prepared By: AR

RL

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

Sample: 278824 - CS #1 East Side Wall @ AH-1

Laboratory:

Prep Batch:

Analysis: QC Batch: 85367

72450

Midland Chloride (Titration)

Analytical Method: Date Analyzed:

SM 4500-Cl B 2011-10-07 2011-10-06

Prep Method: N/A Analyzed By: ARPrepared By: AR.

			RL			
Parameter	Flag	$\operatorname{Cert}$	Result	Units	Dilution	RL
Chloride			249	mg/Kg	50	4.00

Sample Preparation:

Report Date: October 10, 2011 Work Order: 11100302 Page Number: 6 of 14 114-6400825 COG/Electra Federal #5

Sample: 278825 - CS #1 West Side Wall @ AH-1

Laboratory: Midland

Analytical Method: Analysis: Chloride (Titration) Prep Method: SM 4500-Cl B N/A QC Batch: 85367 Analyzed By: Date Analyzed: 2011-10-07 ARPrep Batch: 72450 Sample Preparation: 2011-10-06 Prepared By: AR

Eddy County, NM

RLParameter Flag Cert Result Units Dilution RLChloride 3630 100 4.00 mg/Kg

Sample: 278826 - CS #2 Bottom Hole 4' @ AH-2

Laboratory: Midland

Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 85367 Date Analyzed: 2011-10-07 Analyzed By: AR Prep Batch: 72450 Sample Preparation: 2011-10-06 Prepared By: AR.

RLParameter Flag Cert Result Units Dilution RLChloride Ū <200 mg/Kg 50 4.00

Sample: 278827 - CS #2 East Side Wall @ AH-2

Midland Laboratory:

Chloride (Titration) Analytical Method: Analysis: SM 4500-Cl B Prep Method: N/A QC Batch: 85367 Date Analyzed: 2011-10-07 Analyzed By: AR Sample Preparation: Prep Batch: 72450 2011-10-06 Prepared By: AR

RLParameter Flag Cert Result Units Dilution RLChloride U <200 mg/Kg 50 4.00

Sample: 278828 - CS #2 West Side Wall @ AH-2

Laboratory: Midland

Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 85367 Date Analyzed: 2011-10-07 Analyzed By: ARPrep Batch: 72450 Sample Preparation: 2011-10-06 Prepared By: AR

Report Date: October 10, 2011 114-6400825

Work Order: 11100302 COG/Electra Federal #5 Page Number: 7 of 14 Eddy County, NM

			$\operatorname{RL}$			
Parameter	$\operatorname{Flag}$	Cert	Result	Units	Dilution	RL
Chloride			948	mg/Kg	50	4.00

#### Sample: 278829 - CS #3 Bottom Hole 1' @ AH-3

Laboratory: Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

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

QC Batch: 85368 Prep Batch: 72450 Date Analyzed: Sample Preparation:

2011-10-07 2011-10-06

			m RL			
Parameter	$\operatorname{Flag}$	$\operatorname{Cert}$	Result	Units	Dilution	RL
Chloride	U		<200	mg/Kg	50	4.00

### Sample: 278830 - CS #3 East Side Wall @ AH-3

Laboratory:

Prep Batch:

Midland

72450

Analysis: QC Batch: 85368

Chloride (Titration) Analytical Method: Date Analyzed:

SM 4500-Cl B 2011-10-07 Sample Preparation: 2011-10-06

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

RLParameter Flag Cert Result Units Dilution RLChloride <200 mg/Kg 50 4.00

### Sample: 278831 - CS #3 West Side Wall @ AH-3

Laboratory:

Prep Batch:

Midland

Analysis: Chloride (Titration) QC Batch: 85368 72450

Analytical Method: Date Analyzed:

SM 4500-Cl B 2011-10-07

2011-10-06

Prep Method: N/A Analyzed By: ARPrepared By:

AR

RLParameter Flag Cert Result Units Dilution RLChloride 390 50 4.00 mg/Kg

Sample Preparation:

114-6400825

Work Order: 11100302 COG/Electra Federal #5 Page Number: 8 of 14 Eddy County, NM

Sample: 278832 - CS #4 Bottom Hole 1' @ AH-4

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch: 72450 Prep Batch:

85368

Date Analyzed: Sample Preparation:

2011-10-07 2011-10-06

Analyzed By: AR. Prepared By: AR

RL

Parameter Flag Cert Result Chloride Ū <200 Units

mg/Kg

Dilution RL50 4.00

Sample: 278833 - CS #4 North Side Wall @ AH-4

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch:

85368 72450

Date Analyzed:

2011-10-07 2011-10-06 Analyzed By: AR

Prep Batch:

Sample Preparation:

Prepared By: AR

RL

Parameter Flag Cert Result Units Dilution RLChloride 2400 mg/Kg 100 4.00

Sample: 278834 - CS #4 East Side Wall @ AH-4

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch:

85368

Date Analyzed:

2011-10-07

Analyzed By: AR

Prep Batch:

72450

Sample Preparation:

Cert

2011-10-06

AR

RL

4.00

RL

Prepared By:

Parameter

Chloride

Flag Ū

Result <200

Units mg/Kg

Dilution

50

Sample: 278835 - CS #4 West Side Wall @ AH-4

Laboratory:

QC Batch:

Prep Batch:

Midland

85368

72450

Analysis: Chloride (Titration)

Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2011-10-07 2011-10-06

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

Report Date: October 10, 2011 114-6400825

Work Order: 11100302 COG/Electra Federal #5 Page Number: 9 of 14 Eddy County, NM

			RL			
Parameter	$\operatorname{Flag}$	Cert	Result	Units	Dilution	RL
Chloride	Ü		<200	mg/Kg	50	4.00

### Sample: 278836 - CS #4 South Side Wall @ AH-4

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 85368 Prep Batch: 72450

Analytical Method: Date Analyzed:

SM 4500-Cl B 2011-10-07 Sample Preparation: 2011-10-06

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

RLParameter Flag Cert Result Units Dilution RLChloride U <200 mg/Kg 50 4.00

### Sample: 278837 - TI-3' Trench @ AH-4

Laboratory: Midland

Prep Batch:

Analysis: Chloride (Titration) QC Batch: 85368

72450

Analytical Method: Date Analyzed:

SM 4500-Cl B 2011-10-07 Sample Preparation: 2011-10-06

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

RLParameter Flag Cert Result Dilution RLUnits Chloride <200 U mg/Kg 50 4.00

### Sample: 278838 - TI-5' Trench @ AH-4

Laboratory: Midland

Prep Batch.

Analysis: Chloride (Titration) QC Batch: 85368

72450

Analytical Method: Date Analyzed: Sample Preparation:

SM 4500-Cl B 2011-10-07 2011-10-06

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

RLParameter Flag Cert Result Units Dilution RLChloride <200 mg/Kg 4.00

114-6400825

Work Order: 11100302 COG/Electra Federal #5 Page Number: 10 of 14 Eddy County, NM

# Method Blanks

Method Blank (1)

QC Batch: 85367

QC Batch: 85367 Prep Batch: 72450 Date Analyzed: 2011-10-07 QC Preparation: 2011-10-06 Analyzed By: AR Prepared By: AR

RL

4

Method Blank (1)

QC Batch: 85368

QC Batch: 85368 Prep Batch: 72450 Date Analyzed: 2011-10-07 QC Preparation: 2011-10-06 Analyzed By: AR. Prepared By: AR.

114-6400825

Work Order: 11100302 COG/Electra Federal #5 Page Number: 11 of 14 Eddy County, NM

# **Laboratory Control Spikes**

### Laboratory Control Spike (LCS-1)

QC Batch:

85367

Date Analyzed:

2011-10-07

Analyzed By: AR

Prep Batch: 72450

QC Preparation: 2011-10-06

Prepared By: AR.

			LCS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	${f Limit}$
Chloride			95.1	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.

			LCSD			Spike	Matrix		Rec.		RPD
Param	F	C	Result	$\mathbf{Units}$	Dil.	Amount	Result	Rec.	Limit	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: 85368 Prep Batch: 72450 Date Analyzed: QC Preparation:

2011-10-07 2011-10-06 Analyzed By: AR Prepared By: AR.

			LCS			Spike	Matrix		Rec.
Param	F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			96.7	mg/Kg	1	100	< 3.85	97	85 - 115

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	F	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			105	mg/Kg	1	100	< 3.85	105	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: 278828

QC Batch: 85367 Prep Batch: 72450 Date Analyzed: 2011-10-07 QC Preparation: 2011-10-06

Analyzed By: AR Prepared By: AR

114-6400825

Work Order: 11100302 COG/Electra Federal #5 Page Number: 12 of 14 Eddy County, NM

			MS			Spike	Matrix		Rec.
Param	F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			10900	mg/Kg	100	10000	948	100	79.4 - 120.6

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

			MSD			$_{ m Spike}$	Matrix		${ m Rec.}$		RPD
Param	F	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	$\operatorname{Limit}$
Chloride			11600	mg/Kg	100	10000	948	106	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: 278838

QC Batch:

85368

Date Analyzed:

2011-10-07

Analyzed By: AR.

Prep Batch: 72450

QC Preparation: 2011-10-06

Prepared By: AR

			MS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$
Chloride			10300	nıg/Kg	100	10000	<385	101	79.4 - 120.6

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

			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			10800	mg/Kg	100	10000	<385	106	79.4 - 120.6	5	20

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

114-6400825

Work Order: 11100302 COG/Electra Federal #5 Page Number: 13 of 14 Eddy County, NM

# Calibration Standards

Standard (ICV-1)

QC Batch: 85367

Date Analyzed: 2011-10-07

Analyzed By: AR

				<b>ICVs</b>	ICVs	<b>ICVs</b>	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2011-10-07

Standard (CCV-1)

QC Batch: 85367

Date Analyzed: 2011-10-07

Analyzed By: AR

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	99.9	100	85 - 115	2011-10-07

Standard (ICV-1)

QC Batch: 85368

Date Analyzed: 2011-10-07

Analyzed By: AR

				ICVs	ICVs	ICVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2011-10-07

Standard (CCV-1)

QC Batch: 85368

Date Analyzed: 2011-10-07

Analyzed By: AR

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	99.5	100	85 - 115	2011-10-07

114-6400825

Work Order: 11100302 COG/Electra Federal #5 Page Number: 14 of 14 Eddy County, NM

# **Appendix**

## **Laboratory Certifications**

	Certifying	Certification	Laboratory
$\mathbf{C}$	Authority	Number	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 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.
- Or 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.

MO#: 11100302 **Analysis Request of Chain of Custody Record** PAGE: OF: **ANALYSIS REQUEST** (Circle or Specify Method No.) TETRA TECH (Ext. to C35) တ္တီ တ္တ 1910 N. Big Spring St. Ηĝ Midland, Texas 79705 P. (432) 682-4559 • Fax (432) 682-3946 Ö 8 SITE MANAGER: CLIENT NAME: **PRESERVATIVE** GC.MS Vol. 8240/8260/624 æ IKE TAVAREZ METHOD RCRA Metals Ag As PROJECT NAME: PROJECT NO.: GC.MS Semi. Vol. ELECTRA FEODER #5 TANK BATTERY FILTERED (Y/N) 114-6400825 MATRIX LAB I.D. COMP DATE TIME NONE GRAB SAMPLE IDENTIFICATION HNO3 **NUMBER** 도 핑 778822 9/22/11 RELINQUISHED BY: (Signature) SAMPLED BY: (Print & Initia

Time: Time: RECEIVED BY: (Signature) Date: RELINQUISHED BY: (Signature) SAMPLE SHIPPED BY: (Circle) AIRBILL #: Time: FEDEX Time: HAND DELIVERED OTHER: UPS RELINQUISHED BY: (Signature) RECEIVED BY: (Signature) TETRA TECH CONTACT PERSON: Time: Time: Results by: RECEIVING LABORATORY: RECEIVED BY: (Signature) ADDRESS: RUSH Charges STATE: ZIP: Authorized: PHONE: DATE: CONTACT: Yes No SAMPLE CONDITION WHEN RECEIVED:

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

XWD #: 11100302

Analysis Request of Chain of Custody Record										L							P/	\GE:		Z		OF	: -	<u>Z</u>								
															(					EQU Met	-		)									
1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946															1 1	5 (Ext. to C35)	Cr Pb Hq	≯									C	3				
CLIENT NAME: COG SITE MANAGER:								TAVARE		NERS			ESEF				TX1005	As Ba Cd	E E			260/624	270/625					ן ן	ns, pri,			
PROJECT N 114 - 648			PRO	JEC	FICE	TRA	FEDER	eal "	5 TAN	C BATTERY	F CONTA	3						5 MOD.	A P		iles	Volatile	8240/8	ni. Val. 8	809/	88	ec.	(Air)	stos)	Anions/Cations, ph. 103		
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278832	9/23/11	:	5	Х	154	4 7	OTTOM	, Hou	÷ 1 /	DAH-4	1			X												1	9		$\prod$	$\prod$		
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836	9/22/11		S	X	15#4	<u>,                                    </u>	7 007H	Sioi	Usu C	DAH -4	1			X													1					
				_		<i></i>																							$\perp$			
837	9/26/11		S	∫x	17.	-3 ′	TREM	CH C	a AA	1-4	1			X												X						
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				s -	Laborat	ory reta	ins Yellov	w copy	v - Return (	Orginal copy to	Tetra Tec	h -	Pro	ect	Mana	ager	reta	ins i	ink	COD	v -	Acc	oun	tina	rece	eives	Go	ld c	opv.			