<b>.</b> .				HOBBS OCD	pLWJ191383501
District J 1625 N. French Dr., Hobbs, NM 85240 District JI	State of Energy Minerals	f New Mexi and Natura	ico I Resources	AN <b>1 2</b> 2012	Form C-141 Revised October 10, 2003
1301 W. Grand Avenue, Artesia, NM 88210 <u>District III</u> 1000 Rio Brazos Road, Aztec, NM 87410 <u>District IV</u> 1220 S. St. Francis Dr., Santa Fe, NM 87505	1220 Sout	rvation Div h St. Franc Fe, NM 875	is Dr.	RECEIVED	Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form
F	telease Notificatio	n and Co	rrective A	ction	
		OPERAT			l Report 🔲 Final Repor
Name of Company COG OPERA Address 550 W. Texas. Suite 100		Contact Telephone N		at Ellis 230-0077	
Facility Name GC FEDER		Facility Typ	and the second	k Battery	
Surface Owner Federal	Mineral Owner		·····	Lease N (API#)	
	LOCATIO	N OF REI	EASE	<u> </u>	· · · · · · · · · · · · · · · · · · ·
Unit Letter Section Township Ran N 20 17S 32	ge Feet from the North	h/South Line South	Feet from the 2200	East/West Line West	County Les
	Latitude 32 48.98	8 Longitud	le 103 47.443	<b>L</b>	······································
	NATURE	COF RELI	EASE		
Type of Release Produced Water	·····	······	Release 60bbls	the second se	
Source of Release Produced water flow	nne	05/04/2010		05/04/201	lour of Discovery 0 4:00 p.m.
Was Immediate Notice Given? 🛛 Yes	No Not Required	lf YES, To	c	Larry Johnson - O Geoffrey Leking - O	DCD
By Whom? Josh Russo	·····	Date and H	nur 05/05/2010	frishia Bad Bear - B 10:29 a.m.	
Was a Watercourse Reached?	5 🖾 No	If YES, Vo	lume impacting I	he Watercourse.	
If a Watercourse was impacted. Describe Fi	ully.*				
Describe Cause of Problem and Remedial A	ection Taken.*				
The produced water line had a release at a f	use in the line. The line has l	been re-fused a	nd put back into:	service.	
Describe Area Affected and Cleanup Action	1 Taken,*		<u></u>		
60bbls of produced water was initially releating the pasture. The spill site area is located mg/l. A sundry will be submitted and we way spill site area to define any possible contract to any significant remediation work.	100 yards west of the GC FE vill wait for archeological / w	DERAL #27. /ildlife sensitivi	The estimated ch ty clearance from	loride content of the the BLM before ha	produced water is 135548 aving Tetra Tech sample the
I hereby certify that the information given a regulations all operators are required to rep- public health or the environment. The acce should their operations have failed to adequ or the environment. In addition, NMOCD a federal, state, or local laws and/or regulation	ort and/or file certain release ptance of a C-141 report by the ately investigate and remedia acceptance of a C-141 report	notifications at he NMOCD ma ate contamination	id perform correct arked as "Final R on that pose a three the operator of the	responsibility for co	ases which may endanger eve the operator of liability surface water, human health mpliance with any other
Signature:	~		<u>OIL CON</u>	SERVATION I	DIVISION
Printed Nume: Josh Russ	0	Approved by	District Supervis	or:	
Title: HSE Coordi	nator	Approval Dal	e:	Expiration D	Pate:
E-mail Address: jrusso@conchore	SOURCES.COM	Conditions of	Approval:		Attached
Date: 05/05/2010 Phone: Attach Additional Sheets If Necessary	432-212-2399		·		

			HOBBS OCD			
District I 1625 N. French Dr., Hobbs, NM 88240 District II Energy Minera	of New Mex			Form C-141 Revised October 10, 2003		
1301 W. Grand Avenue, Artesia, NM 88210			JAN <b>1 2</b> 2012			
I HUU RID Brazos Koad, Aziec, NM 87410	servation Div			Submit 2 Copies to appropriate District Office in accordance		
1000 0 D IS IN 10 D IS 11 ANA 07505	outh St. Franc		RECEIVED	with Rule 116 on back side of form		
Santa	a Fe, NM 875					
Release Notificat						
■ Name of Company COG Operating LLC	OPERAT			l Report 🛛 Final Report		
Address 550 W. Texas, Suite 1300 Midland, Texas 79701	Contact Pa	vo. (432) 230-0	077			
Facility Name GC Federal #27		e Tank Batte	and the second			
				20.025.202(4		
Surface Owner: Federal Mineral Owner	er ION OF REI		Lease N	0. 30-025-39264		
	orth/South Line	Feet from the	East/West Line	County		
N 20 17S 32E 990	South	2200	West	Lea		
Latitude N 32 48.9	988 Longitud	e W 103 47.44	3			
	RE OF REL					
Type of Release: Produced water Source of Release: flow line		Release 60 bbls lour of Occurrence		ecovered 47 bbls		
	5/4/10	iour of Occurrenc	5/4/10 4	-		
Was Immediate Notice Given?	If YES, To					
Yes 🗌 No 🗋 Not Requir		son - OCD .eking - OCD				
		1 Bear - BLM				
By Whom?		lour 5/5/10 10:2				
Was a Watercourse Reached?	If YES, Vo	olume Impacting t	he Watercourse.			
If a Watercourse was Impacted, Describe Fully.*						
If a watercourse was impacted, Describe runy."						
N/A						
Describe Cause of Problem and Remedial Action Taken.*						
The produced water line had a release at a fuse in the line. The line had	is re-fused and pu	it back in service.				
Describe Area Affected and Cleanup Action Taken.*						
Tetra Tech inspected and assessed the spill area for extents. A work pl	lan was prepared	and submitted to	NMOCD and BLM	for approval. Soils		
exceeding the RRAL and chloride impact were removed to the appropriate the second seco	riate depths and t	ransported to proj	oer disposal. Once	e excavated to the appropriate		
depths, the excavation was backfilled with clean soil. Tetra Tech prepa	ared closure repo	rt and submitted	o NMOCD for revi	ew.		
I hereby certify that the information given above is true and complete t	to the best of my	knowledge and u	nderstand that pursu	ant to NMOCD rules and		
regulations all operators are required to report and/or file certain releas	se notifications ar	nd perform correc	tive actions for rele	ases which may endanger		
public health or the environment. The acceptance of a C-141 report by should their operations have failed to adequately investigate and remed						
or the environment. In addition, NMOCD acceptance of a C-141 report						
federal. state, or local laws and/or regulations.						
Signature:		OIL CON	SERVATION	<u>DIVISION</u>		
Printed Name: Ike Tavarez (agent for COG)	Approved by	District Supervise	)r:			
Title: Project Manager	Approval Dat	e:	Expiration D	Date:		
E-mail Address: ike.tavarez@tetratech.com	Conditions of	Approval:		Attached		
Date: 12-7-11 Phone: (432) 682-4559						

\* Attach Additional Sheets If Necessary

······································					
		<u> </u>	TE INFORMA	ATION	
		Rep	ort Type: W	ork Plar	n
General/Site Infor	rmation:				
Site:	·	GC Federal #	·	· · · · · · · · · · · · · · · · · · ·	
Company:		COG Operati			
Section, Townshi	ip and Range			-17S R-32E	Sec. 20 Unit N
Lease Number:		30-025-39264	4		
County:		Lea County			
GPS:			32.81645° N	لــــــا	103.79073° W
Surface Owner:		Federal	<u></u>		
Mineral Owner:					ADD
Directions:					I-126 (South of Maljamar, NM), travel west on D. Spill was at south west corner of four way
	<u> </u>	<del> </del>	· · · · · · · · · · · · · · · · · · ·		
Release)Data:					
Date Released:		5/4/2010			
Type Release:		Produced Wa	ater		
Source of Contami	instion:	Flowline failur			
Fluid Released:	magor	60 bbls	<u> </u>		<u> </u>
Fluids Recovered:		47 bbls			
Official Communi					
	Pat Ellis		T		Kim Dorey
			ł		
Company:	COG Operating, LLC		{		Tetra Tech
Address:	550 W. Texas Ave.	Ste. 1300	<u> </u>		1910 N. Big Spring
P.O. Box					
	Midland Texas, 797	01			Midland, Texas
Phone number:>	(432) 686-3023				(432) 631-0348
Fax:	(432) 684-7137				
	pellis@conchoresou	urces.com			kim.dorey@tetratech.com
Ranking Criteria		ane sa N			
Depth to Groundwa	ater:	······································	Ranking Score		Site Data
<50 ft		'	20	·····	
50-99 ft	<u> </u>	,	10	J	
> <u>100 ft.</u>		′	0		0
WellHead Protectio			Ranking Score	·····	Site Data
Water Source <1,00		t.	20	······	
Water Source >1,00			0		0
Surface Body of Wa	ater:		Ranking Score		Site Data
<200 ft.		′	20		······································
200 ft - 1,000 ft. >1,000 ft.		······································	10		0
>1,000 n.		/			V
Tota	l/Ranking[Score:				
	Ŧ	Accepta	ble]SoillRRAL(m	na/kg)	175
	!	Benzene	Total BTEX	ТРН	

10

50

5,000

۰.



December 16, 2010

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

#### Re: Work Plan for the COG Operating LLC., GC Federal #27 Flowline, Unit N, Section 20, Township 17 South, Range 32 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the GC Federal #27 Flowline located in Unit N, Section 20, Township 17 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.81645°, W 103.79073°. 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 May 4, 2010, and released approximately sixty (60) barrels of produced water due to flow line failure at a fused connection. To alleviate the problem, COG personnel repaired the flow line. Forty-seven (47) barrels of standing fluids were recovered. The flow line leak was located on the south edge of the lease road in a native low-lying area within the vicinity of the flow line. The initial C-141 form is enclosed in Appendix C.

#### Groundwater

The United States Geological Survey (USGS) Well Reports did not list any wells in Section 21. According to the NMOCD groundwater map, the average depth to groundwater in this area is greater than 175' below surface. The groundwater data is shown in Appendix A.



#### 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 May 26, 2010, Tetra Tech personnel inspected and sampled the spill area which measured approximately 25' x 70'. A total of two (2) auger holes (AH-1 and AH-2) were installed using a stainless steel hand auger to assess the impacted soils. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B. 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 BTEX and TPH. Elevated chloride concentrations were detected in both auger holes. Auger hole (AH-1) was not vertically define at 9.0' below surface, with a bottom hole sample of 7,540 mg/kg. However, AH-2 was vertically defined at 7.0' below surface.

On November 11, 2010, Tetra Tech personnel supervised the installation of a soil bore (SB-1) near AH-1 utilizing an air rotary drilling rig. Soil samples were collected to a depth of 60' to define the impact of the chloride concentrations. Referring to Table 1, the chloride concentrations significantly declined at 25.0' below surface to 400 mg/kg.

#### Work Plan

COG proposes to removal of impacted material as highlighted (green) in Table 1. Once the areas are excavated to the appropriate depths, the excavation will be backfilled with clean soil.



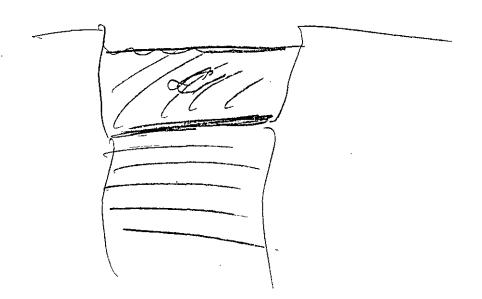
Since the impacted area is in the native sand dunes, the proposed excavation depths may not be reached due to wall cave ins, safety concerns for lines, equipment operators as well, as other onsite personnel. As such, Tetra Tech will excavate the soils to the maximum extent practicable. If the depths are not reached, a 40 mil liner will be installed at depth of 4' to 5' below surface to cap the impacted area. Upon completion, a final closure report will be submitted to the NMOCD.

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

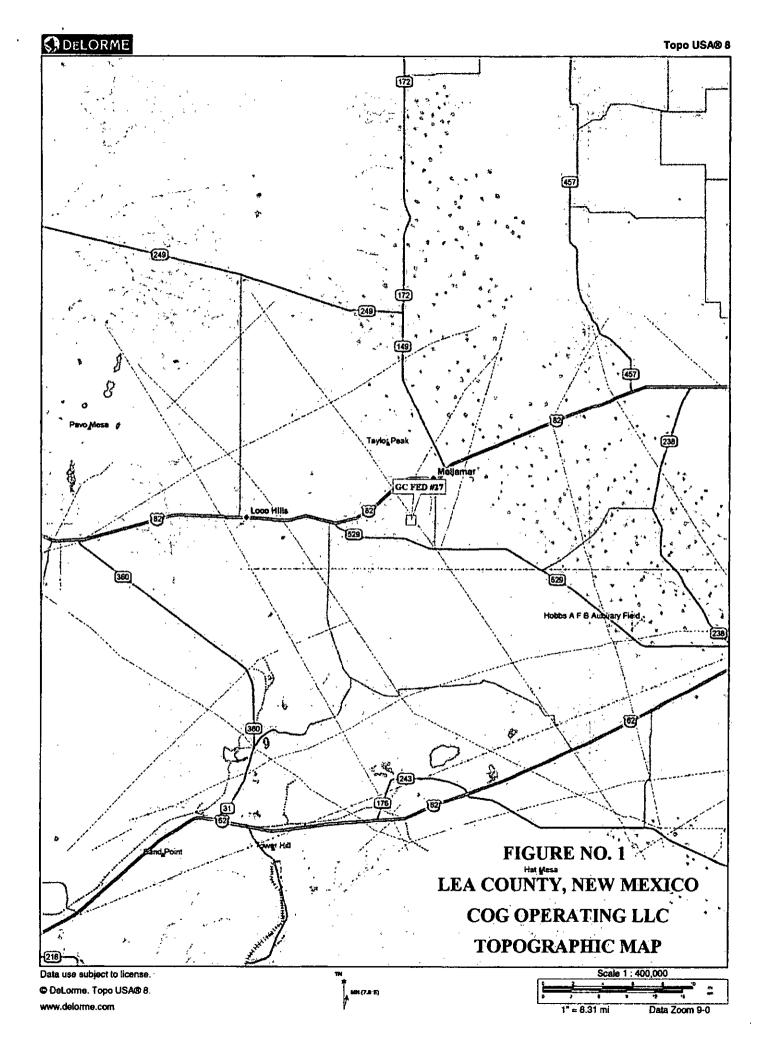
Respectfully submitted, TETRA TECH

Kim Dorey Staff Geologist

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

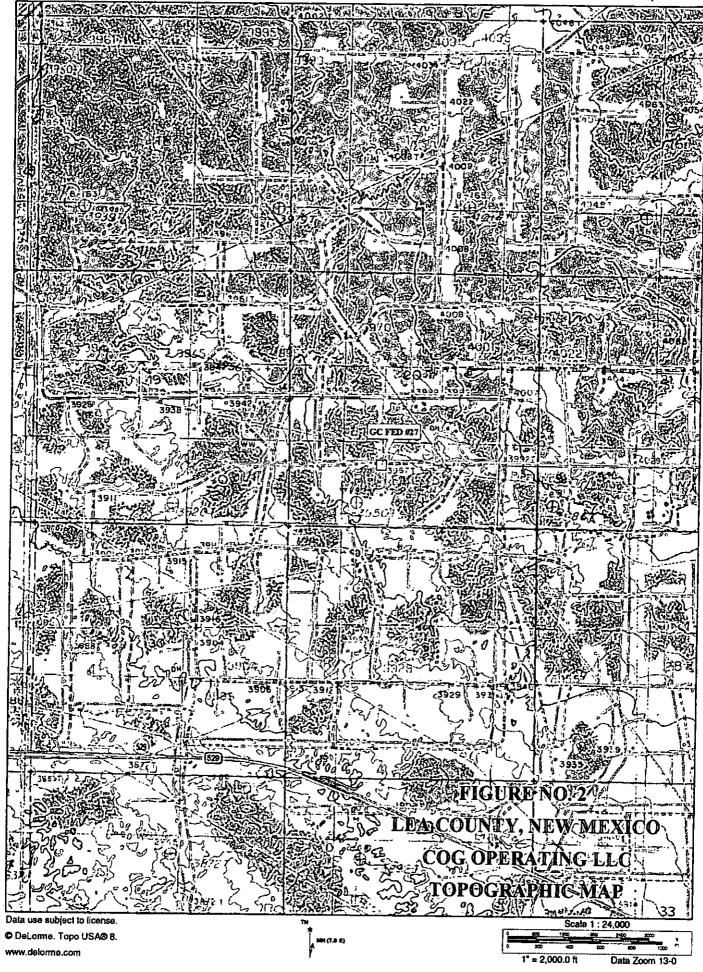


3





Topo USA® 8



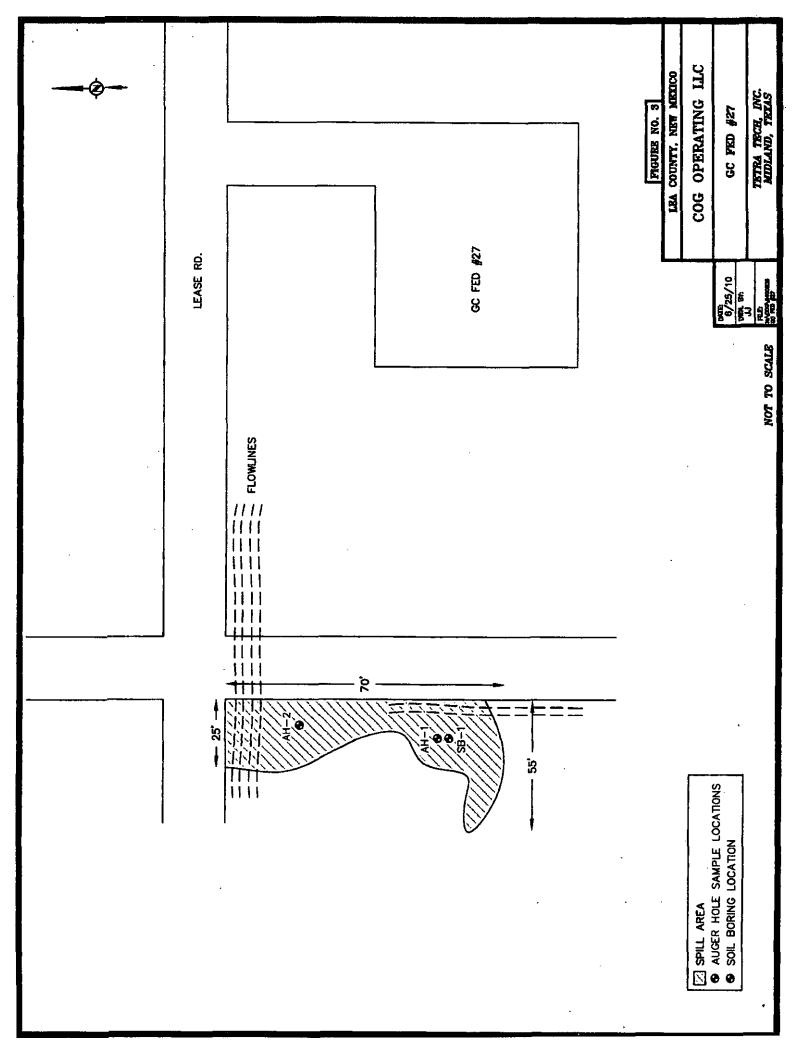


Table 1 COG Operating LLC. GC Federal #27 LEA COUNTY, NEW MEXICO

Chloride 11,400 10,300 17,600 10,200 10,400 11,100 (mg/kg) 2,050 7,540 1,090. 5,850 5,170 <200 <200 3,520 5,560 3,340 1,310 224 400 332 411 211 227 (mg/kg) Xylene <0.0200 . , ٠ . ٠ . . . . . ł . . ı . Ethlybenzene (mg/kg) <0.0200 . . . 1 , . • Toluene <0.0200 (mg/kg) ī ÷ ł 4 . 4 . i. . . . . ı . 1 4 Benzene (mg/kg) <0.0200 1 . ī ł . . . 8 , 1 1 Total 93.3 1 . . . . , ı . . . , , , 1 , TPH (mg/kg) GRO <1.00 .ï , • . • ł ŧ ı . r ı ŧ 1 . , ŧ 1 . 1 DRO 93.3 . . . . , . . 4 ī 1 1 ī , 1 4 In-Situ Removed Soil Status × × × ×  $\times$ × ×  $\boldsymbol{\times}$ × × × × × × × × × × × × ×  $\times$ Depth (BEB) ¥ Ň ž M Ň Š ¥. Ň **N**N Š ş Š MN M ş Ň Ň Š ¥ ≸ ٨N ş Depth (ft) Sample 1-1.5 2-2.5 3-3.5 4-4.5' 6-6.5 8-8.5 9-9.5 5-5.5 7-7.5 -<del>-</del>-5 õ 15' 20, ន្ល 30' 00 20 4 õ io | i~ 5/26/10 11/11/10 11/11/10 11/11/10 11/11/10 11/11/10 5/26/10 5/26/10 5/26/10 5/26/10 11/11/10 11/11/10 11/11/10 11/11/10 11/11/10 5/26/10 11/11/10 11/11/10 Sample 5/26/10 5/26/10 5/26/10 5/26/10 Date Sample AH-1 SB-1 ݠ

LEA COUNTY, NEW MEXICO COG Operating LLC. GC Federal #27 Table 1

.

Sample	Sample	Sample	Depth	Soil	Status	τp	TPH (mg/kg)	g)	Benzene	Toluene	Ethivbenzene	Xvlene	Chloride
₽	Date	Depth (ft)	(BEB)	In-Situ	Removed	DRO	GRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
AH-2	5/26/10	0-1'	<b>N/A</b>	×		<50.0	<1.00	<1.00	<0.0200	<0.0200	<0.0200	<0.0200	5,320
•	5/26/10	1-1.5'	AVA	×		r		-		•	•	•	7,910
	5/26/10	2-2.5'	٩N	×		r	•		.			,	7,210
-	5/26/10	3-3.5'	AVA	х			,	1	•	•	•	•	9,160
	5/26/10	4-4.5'	NA	×			,	•			•		11,000
	5/26/10	5-5.5'	A'A	×		•	•	•			•	•	9,070
	5/26/10	6-6.5	NA	×		•	•	•	•	•	F	•	2,620
	5/26/10	7-7.5'	NA	×		•	•	•	1	•	•	•	<200
	5/26/10	8-8.5'	AN	×		•	•	•		•	•		251
·	5/26/10	9-9.5'	AN	×		•	•		•	•	J	•	221

Below Excavation Bottom BEB

Not Analyzed Ĵ 🗌

Proposed excavation Depth

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#### Water Well Data Average Depth to Groundwater (ft) COG - G.C. Federal 27 Tank Battery Lea County, New Mexico

	16	South	:	31 East	t t
6	5	4	3	2	1
7	8	9	10	11	12 288
18	17	16	15	14	13
	-				113
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
290	1				
	17	South	3	31 East	1
6	5	4	Э	2	1
7	0	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
			271		
	18 :	South	. 3	B1 East	
6	5	4	3	2	1
7	8	9	10	11	12 400
18	17	16	15	14	13
19	20	21	22	317 23	24
-	20				
30	29	28	27	26	25
31	32	33	34	35	36
				261	

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

	17 S	outh	3	2 East	
6	5	4	3	2	1 225
		82	175	60	
7	8	9	10	11	12
			I	70 68	120
18	17	16	15	14	13
19	20 SITE	21	22	23	24
30 160	29	28	27	26	25
31	32	33	34	35	36

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

	16 Sc	outh	33	East	
6	5 180		3 130	-	1
		150		148	142
1	8	9	10	11	12
	200	L	182		142
18	17	16	15	14	13
	182	180	175	143	110
19	20	21	22	23	24
				120	
30	29	28	27	26	25
191	1	190	130	143	120
31	32	33	34	35	36
190	168	l	160		

	17 9	South	33	East	
6	5	4	3 155	2 158	1 150
90					<u> </u>
7 187	8 173	9 181	10	11	12
18	17	16	15	14	13
168	180			l	165
19	20 190	21	22	23 115	24
30	29	28	27	26	25
31	32	33	34	35 155	36

	18 Se	outh	. 3	33 East	
6	5	4	3	2	1
7	8 t <b>o</b> 0	9	10 62	11	12 143 140
18	17 85	16	15	14	13 60
19 >140	20	21	22	23	24 195
30 35	29	28	27	26	25
31	32	33	34 177	35	36

New Mexico State Engineers Well Reports

USGS Well Reports

Geology and Groundwater Conditions in Southern Eddy, County, NM

NMOCD - Groundwater Data

Field water level

New Mexico Water and Infrastructure Data System

] Tetra Tech Temporary well (TD 180' - Dry Well)

## **Summary Report**

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

Report Date: June 25, 2010

# Work Order: 10052809

Project Location:Lea County, NMProject Name:COG/GC Federal #27Project Number:114-6400525

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
233041	AH-1 0-1'	soil	2010-05-26	00:00	2010-05-27
233042	AH-1 1-1.5'	soil	2010-05-26	00:00	2010-05-27
233043	AH-1 2-2.5'	soil	2010-05-26	00:00	2010-05-27
233044	AH-1 3-3.5'	soil	2010-05-26	00:00	2010-05-27
233045	AH-1 4-4.5'	soil	2010-05-26	00:00	2010-05-27
233046	AH-1 5-5.5'	soil	2010-05-26	00:00	2010-05-27
233047	AH-1 6-6.5'	soil	2010-05-26	00:00	2010-05-27
233048	AH-1 7-7.5'	soil	2010-05-26	00:00	2010-05-27
233049	AH-1 8-8.5'	soil	2010-05-26	00:00	2010-05-27
233050	AH-1 9-9.5'	soil	2010-05-26	00:00	2010-05-27
233051	AH-2 0-1'	soil	2010-05-26	00:00	2010-05-27
233052	AH-2 1-1.5'	soil	2010-05-26	00:00	2010-05-27
233053	AH-2 2-2.5'	soil	2010-05-26	00:00	2010-05-27
233054	AH-2 3-3.5'	soil	2010-05-26	00:00	2010-05-27
233055	AH-2 4-4.5'	soil	2010-05-26	00:00	2010-05-27
233056	AH-2 5-5.5'	soil	2010-05-26	00:00	2010-05-27
233057	AH-2 6-6.5'	soil	2010-05-26	00:00	2010-05-27
233058	AH-2 7-7.5'	soil	2010-05-26	00:00	2010-05-27
233059	AH-2 8-8.5'	soil	2010-05-26	00:00	2010-05-27
233060	<u>AH-2</u> 9-9.5'	soil	2010-05-26	00:00	2010-05-27

	BTEX			TPH DRO - NEW	TPH GRO	
	Benzene	Tolucne	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(m <b>s/Ks</b> )	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
233041 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	93.3	<1.00
233051 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<1.00

#### Sample: 233041 - AH-1 0-1'

Report Date: June 25, 2010		Work Order: 10052809	Page	Page Number: 2 of 4	
Param	Flag	Result	Units	RL	
Chloride		332	mg/Kg	4.00	
Sample: 233042 -	AH-1 1-1.5'				
Param	Flag	Result	Units	RL	
Chloride		224	mg/Kg	4.00	
Sample: 233043 -	AH-1 2-2.5'				
Param	Flag	Result	Units	RL	
Chloride		2050	mg/Kg	4.00	
Sample: 233044 -	AH-1 3-3.5'				
Param	Flag	Result	Units	RL	
Chloride		11400	mg/Kg	4.00	
Sample: 233045 -	AH-1 4-4.5'				
Param	Flag	Result	Units	RL	
Chloride	·····	10300	mg/Kg	4.00	
Sample: 233046 -	AH-1 5-5.5'				
Param	Flag	Result	Units	RL	
Chloride		17600	mg/Kg	4.00	
Sample: 233047 -	AH-1 6-6.5'				
Param	Flag	Result	Units	RL	
Chloride	·····	10200	mg/Kg	4.00	
Sample: 233048 -	AH-1 7-7.5'				
Param	Flag	Result	Units	RL	
Chloride		5850	mg/Kg	4.00	

Report Date: June 25, 2010

Work Order: 10052809

\*

Sample:	233049 -	AH-1 8-8.5'
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Param	Flag	Result	Units	RL
Chloride		5170	mg/Kg	4.00
Sample: 233050 ·	- AH-1 9-9.5'			
Param	Flag	Result	Units	RL
Chloride		7540	mg/Kg	4.00
Sample: 233051 ·	- AH-2 0-1'			
Param	Flag	Result	Units	RL
Chloride		5320	mg/Kg	4.00
Sample: 233052	- AH-2 1-1.5'			
Param	Flag	Result	Units	RL
Chloride		7910	mg/Kg	4.00
Sample: 233053 -	- AH-2 2-2.5'			
-		Provide	T	DÍ
Sample: 233053 - Param Chloride	- AH-2 2-2.5' Flag	Result 7210	Units mg/Kg	RL 4.00
Param Chloride	Flag			
Param Chloride Sample: 233054 - Param	Flag	7210 Result	mg/Kg Units	
Param Chloride Sample: 233054 - Param	Flag - AH-2 3-3.5'	7210	mg/Kg	4.00
Param Chloride Sample: 233054 - Param Chloride	Flag - AH-2 3-3.5' Flag	7210 Result	mg/Kg Units	4.00 RL
Param	Flag - AH-2 3-3.5' Flag	7210 Result	mg/Kg Units	4.00 RL
Param Chloride Sample: 233054 - Param Chloride Sample: 233055 -	Flag - AH-2 3-3.5' Flag - AH-2 4-4.5'	7210 Result 9160	Units Mg/Kg	4.00 RL 4.00
Param Chloride Sample: 233054 - Param Chloride Sample: 233055 - Param	Flag - AH-2 3-3.5' Flag - AH-2 4-4.5' Flag	7210 Result 9160 Result	Units Kg Units	4.00 RL 4.00 RL
Param Chloride Sample: 233054 - Param Chloride Sample: 233055 - Param Chloride	Flag - AH-2 3-3.5' Flag - AH-2 4-4.5' Flag	7210 Result 9160 Result	Units Kg Units	4.00 RL 4.00 RL

Report Date: June 25, 2010

Work Order: 10052809

#### Sample: 233057 - AH-2 6-6.5'

Param	Flag	Result	Units	RL
Chloride		2620	mg/Kg	4.00
Sample: 233058	- AH-2 7-7.5'			
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00
Sample: 233059	- AH-2 8-8.5'			
-		Regult	linite	TI
Sample: 233059 Param Chloride	- AH-2 8-8.5' Flag	Result 251	Units mg/Kg	RL 4.00
Param	Flag			
Param Chloride	Flag			

.

## **Summary Report**

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

Report Date: November 19, 2010

# Work Order: 10111512

Project Location:Lea County, NMProject Name:COG/GC Federal #27Project Number:114-6400549

			<ul> <li>Date</li> </ul>	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
250467	SB-1 0-1'	soil	2010-11-11	00:00	2010-11-15
250468	SB-1 3'	soil	2010-11-11	00:00	2010-11-15
250469	SB-1 5'	soil	2010-11-11	00:00	2010-11-15
250470	SB-1 7'	soil	2010-11-11	00:00	2010-11-15
250471	SB-1 10'	soil	2010-11-11	00:00	2010-11-15
250472	SB-1 15'	soil	2010-11-11	00:00	2010-11-15
250473	SB-1 20'	soil	2010-11-11	00:00	2010-11-15
250474	SB-1 25'	soil	2010-11-11	00:00	2010-11-15
250475	SB-1 30'	soil	2010-11-11	00:00	2010-11-15
250476	SB-1 40'	soil	2010-11-11	00:00	2010-11-15
250477	SB-1 50'	soil	2010-11-11	00:00	2010-11-15
250478	SB-1 60'	soil	2010-11-11	00:00	2010-11-15

#### Sample: 250467 - SB-1 0-1'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

#### Sample: 250468 - SB-1 3'

Param	Flag	Result	Units	RL
Chloride		1090	mg/Kg	4.00

#### Sample: 250469 - SB-1 5'

Report Date: November 19, 2010		Work Order: 10111512	Page Number: 2 of 3	
Param	Flag	Result	Units	RL
Chloride		3520	mg/Kg	4.00
Sample: 250470	- SB-1 7'			
Param	Flag	Result	Units	RL
Chloride		10400	mg/Kg	4.00
Sample: 250471	- SB-1 10'			
Param	Flag	Result	Units	RL
Chloride		11100	mg/Kg	4.00
Sample: 250472	- SB-1 15'			
Param	Flag	Result	Units	RL
Chloride		5560	mg/Kg	4.00
Sample: 250473	- SB-1 20'			
Param	Flag	Result	Units	RL
Chloride		3340	mg/Kg	4.00
Sample: 250474	- SB-1 25'			
Param	Flag	Result	Units	RL
Chloride		400	mg/Kg	4.00
Sample: 250475 -	· SB-1 30'			
Param	Flag	Result	Units	RL
Chloride		411	mg/Kg	4.00
Sample: 250476 -	- SB-1 40'			
Param	Flag	Result	Units	RL
Chloride		1310	mg/Kg	4.00

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State of New Mexico Energy Minerals and Natural Resources

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

Form C-141 Revised October 10, 2003

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

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

			OPERATOR	$\boxtimes$	Initial R	leport 🗌	Final Repor
Name of Company	COG OPERATING	LLC	Contact	Pat Ellis			<u></u>
Address 550 W	. Texas, Suite 100. Midla	and, TX 79701	Telephone No.	432-230-0077			
Facility Name	GC FEDERAL #2	27	Facility Type	Tank Battery			· · · · · · · · · · · · · · · · · · ·
Surface Owner	Federal	Mineral Owner		1	ease No. (API#)	NMLC-02 30-025-39	

#### LOCATION OF RELEASE

1	Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
	N	20	175	32E	990	South	2200	West	Lea
		L	L	ļ.,	l		<u> </u>		

Latitude 32 48.988 Longitude 103 47.443

#### NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 60bbls	Volume Recovered 47bbls		
Source of Release Produced water flowline	Date and Hour of Occurrence	Date and Hour of Discovery		
	05/04/2010	05/04/2010 4:00 p.m.		
Was Immediate Notice Given?	If YES, To Whom?			
🛛 Yes 🗌 No 🗌 Not Required	Larry Jolinson – OCD			
	Geoffrey	Leking – OCD		
	Trishia I	Bad Bear - BLM		
By Whom? Josh Russo	Date and Hour 05/05/2010 10	:29 a.m.		
Was a Watercourse Reached?	If YES, Volume Impacting the Wate	ercourse.		
🗆 Yes 🖾 No				
If a Watercourse was Impacted. Describe Fully.*				

Describe Cause of Problem and Remedial Action Taken.\*

The produced water line had a release at a fuse in the line. The line has been re-fused and put back into service.

Describe Area Affected and Cleanup Action Taken.\*

60bbls of produced water was initially released and we able to recover 47bbls of free fluid. The fluid was localized in a 40° x 60° area off of the lease road in the pasture. The spill site area is located 100 yards west of the GC FEDERAL #27. The estimated chloride content of the produced water is 135548 mg/l. A sundry will be submitted and we will wait for archeological / wildlife sensitivity clearance from the BLM before having Tetra Tech sample the spill site area to delineate any possible contamination from the release. We will present a remediation work plan to the NMOCD / BLM for approval prior to any significant remediation work.

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

Signature: 72 7	<u>OIL CON</u>	SERVATION DIVISION
Printed Name: Josh Russo	Approved by District Supervis	sor:
Title: HSE Coordinator	Approval Date:	Expiration Date:
E-mail Address: jrusso@conchoresources.com	Conditions of Approval:	Attached
Date: 05/05/2010 Phone: 432-212-2399	<u> </u>	

\* Attach Additional Sheets If Necessary

# SITE INFORMATION

			t Type: Clos		
General Site In	formation:				
Site:		GC Federal			
Company:		COG Opera	ting LLC		
Section, Towns	ship and Range			T-17S R-32	E Sec. 20 Unit N
Lease Number.	•	30-025-392	54		
County:		Lea County			
GPS:			32.81645° N		103.79073° W
Surface Owner	*	Federal			
Mineral Owner:					
Directions:					R-126 (South of Maljamar, NM), travel west on n. Spill was at south west corner of four way
Release Data:					
Date Released:		5/4/2010		· · · · · · · · · · · · · · · · · · ·	אין איז
Type Release:		Produced W	ater		
Source of Conta	mination:	Flowline failu			
Fluid Released:		60 bbls			- <u> </u>
Fluids Recovere	ed:	47 bbls			
Official Commu	inication:				
Name:	Pat Ellis				lke Tavarez
Company:	COG Operating,	LLC			Tetra Tech
Address:	550 W. Texas Av			·	1910 N. Big Spring
P.O. Box				····	
City:	Midland Texas, 7	79701	+		Midland, Texas
Phone number:	(432) 686-3023				432-682-4559
					432-002-4339
Fax:	(432) 684-7137				
Email:	pellis@conchore	sources.com	- <b>I</b>		ike.tavarez@tetratech.com
Ranking Criteri	a a a a a a a a a a a a a a a a a a a				
Depth to Ground	water:		Ranking Score		Site Data
<50 ft			20		
50-99 ft	· · ·		10		
-100 ft	· · · ·		0		0
WellHead Protec	tion:		Ranking Score		Site Data
	,000 ft., Private <20	O ft.	20		
	,000 ft., Private >20		0		0
				· · · · · · · · · · · · · · · · · · ·	
Surface Body of	Water:		Ranking Score		Site Data
<200 ft.		<u></u>	20		
200 ft - 1,000 ft.			10		
-1,000 ft.			0		0
Tc	otal Ranking Sco	re: , 🥬	0,		HOBBS OCD
		Accent	ble Soil RRAL (r	nalka	1
		Benzene	Total BTEX	TPH	" JAN 1 2 2012
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				0.000	I
			·		RECEIVED

**TETRA TECH** 

December 7, 2011

HOBBS OCD

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

JAN 1 2 2012

RECEIVED

#### Re: Closure Request for the COG Operating LLC., GC Federal #27 Flow line, Unit N, Section 20, Township 17 South, Range 32 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the GC Federal #27 Flow line located in Unit N, Section 20, Township 17 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.81645°, W 103.79073°. 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 May 4, 2010, and released approximately sixty (60) barrels of produced water due to flow line failure at a fused connection. To alleviate the problem, COG personnel repaired the flow line. Forty-seven (47) barrels of standing fluids were recovered. The flow line leak was located on the south edge of the lease road in a native low-lying area within the vicinity of the flow line. The initial C-141 form is enclosed in Appendix C.

#### Groundwater

The United States Geological Survey (USGS) Well Reports did not list any wells in Section 21. According to the NMOCD groundwater map, the average depth to groundwater in this area is greater than 175' below surface. The groundwater data is shown in Appendix A.



#### 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 May 26, 2010, Tetra Tech personnel inspected and sampled the spill area which measured approximately 25' x 70'. A total of two (2) auger holes (AH-1 and AH-2) were installed using a stainless steel hand auger to assess the impacted soils. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B. 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 BTEX and TPH. Elevated chloride concentrations were detected in both auger holes. Auger hole (AH-1) was not vertically define at 9.0' below surface, with a bottom hole sample of 7,540 mg/kg. However, AH-2 was vertically defined at 7.0' below surface.

On November 11, 2010, Tetra Tech personnel supervised the installation of a soil bore (SB-1) near AH-1 utilizing an air rotary drilling rig. Soil samples were collected to a depth of 60' to define the impact of the chloride concentrations. Referring to Table 1, the chloride concentrations significantly declined at 25.0' below surface to 400 mg/kg.



#### **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. The areas of AH-1 and AH-2 were excavated to a depth of 20.0' and 6.0', respectively. A total of 1,020 cubic yards of soil were excavated and hauled to proper disposal. The excavation depths are highlighted in Table 1 and shown on Figure 4. Once completed, the BLM inspected the excavation and approved the site for backfilling. The excavations were backfilled with clean soil to grade.

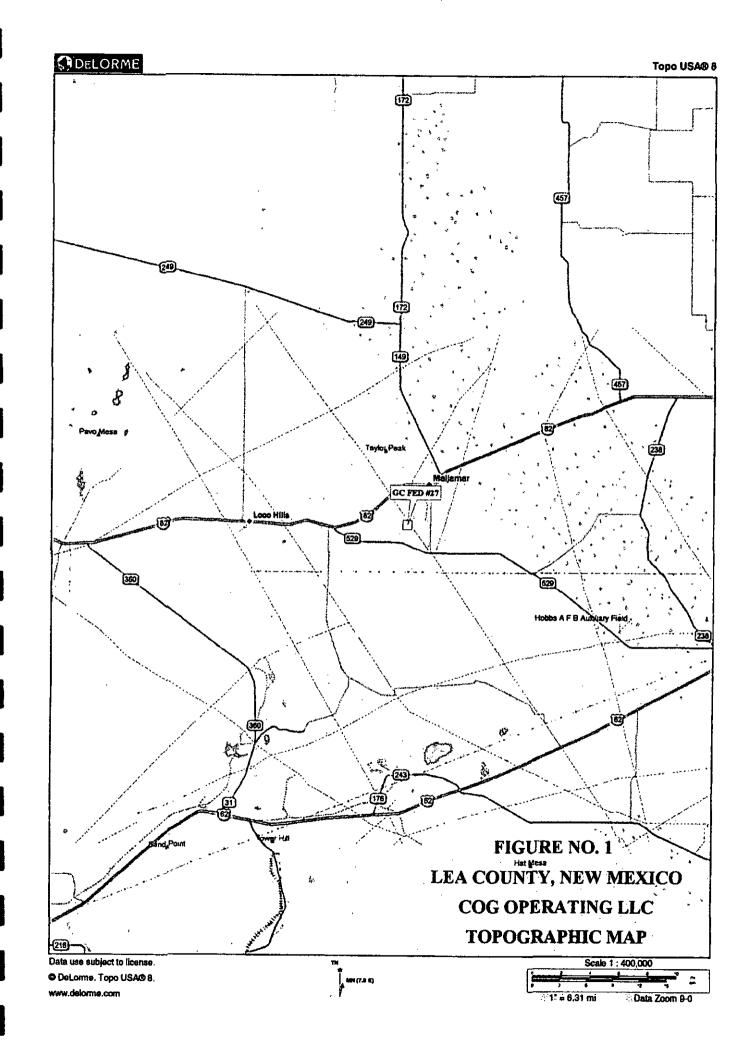
Based on the approved remedial activities performed, COG requests closure of the site. A copy of the C-141 (Final) is included in Appendix C. If you have any questions or comments concerning the remedial activities, please call me at (432) 682-4559.

Respectfully submitted, TETRA/TECH

Ike Tavarez, Pe

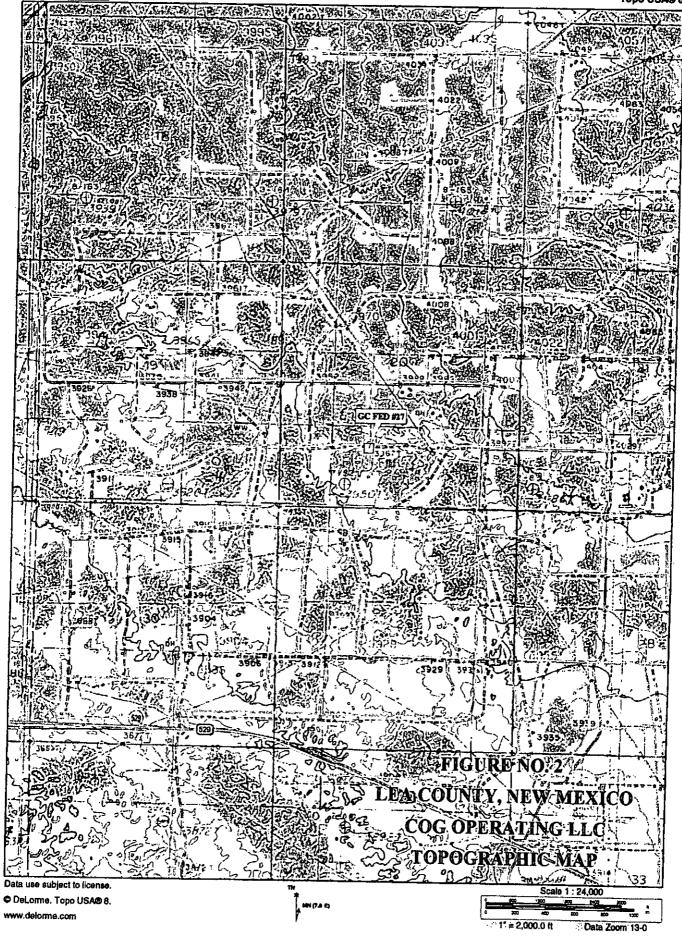
Senior Project Manager

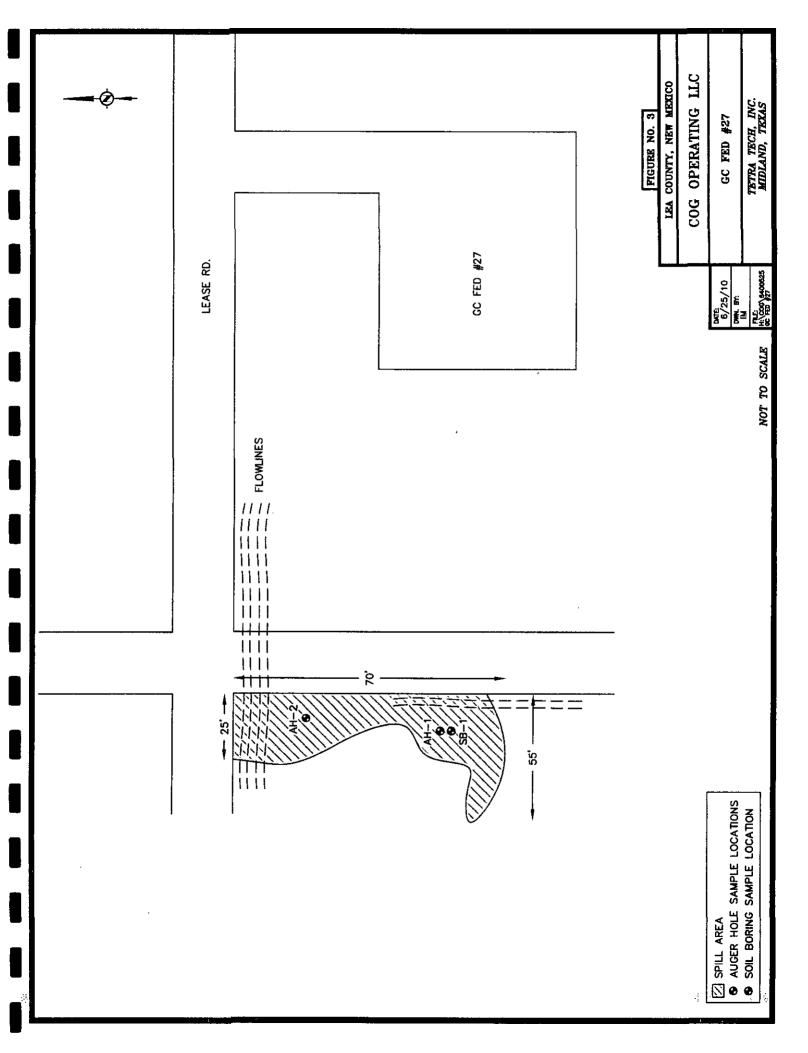
cc: Pat Ellis – COG cc: Terry Gregston cc: Jim Amos – BLM

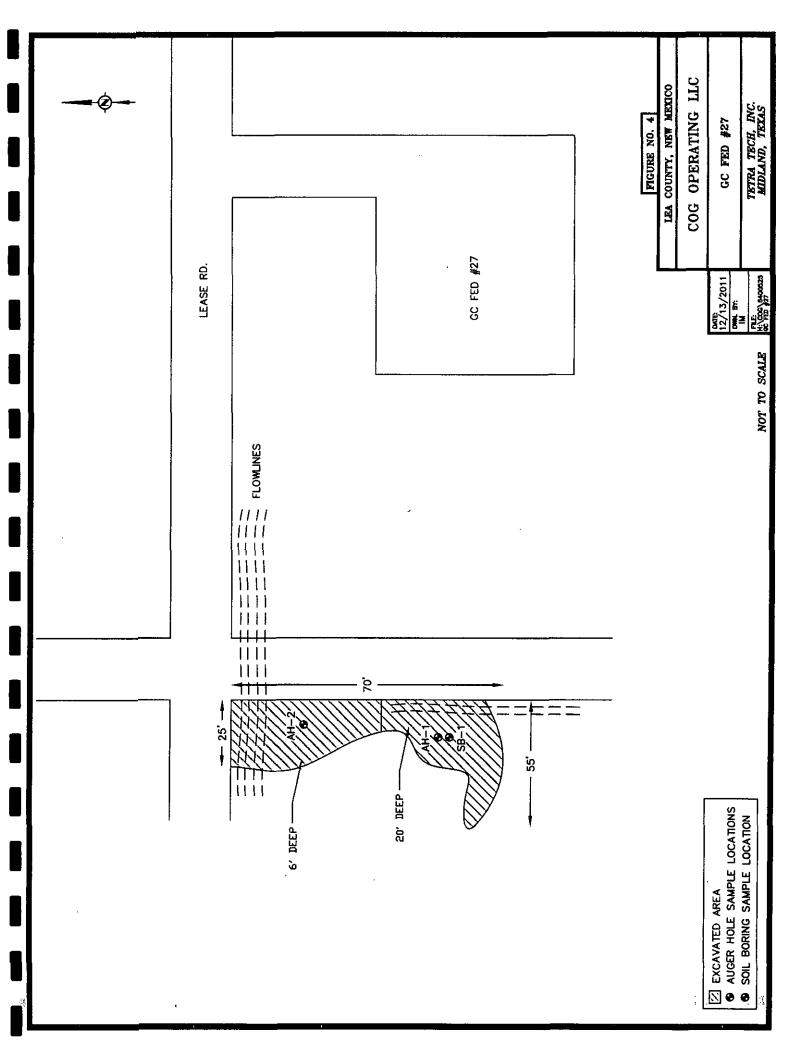


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# COG - GC Federal #27 Flow Line Eddy County, NM

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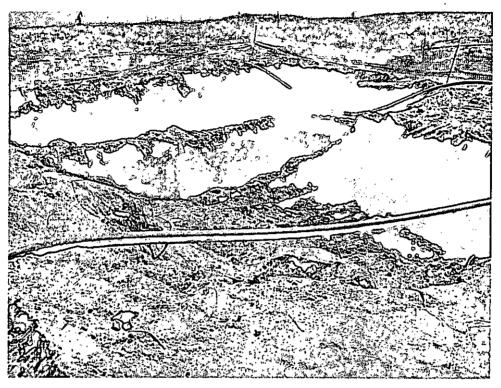
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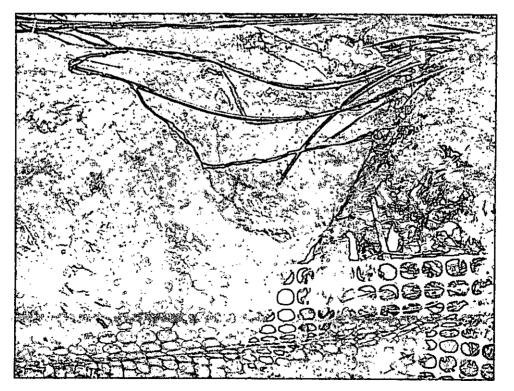
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制造性



1. View of excavation - areas of AH-1 and AH-2



2. View of excavation - areas of AH-1 and AH-2

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Table 1 COG Operating LLC. GC Federal #27 LEA COUNTY, NEW MEXICO

Chloride	(mg/kg)	14:332 W	224	2.050	11,400	-10,300	17,600	10,200	- 5,850 V	5,170	7,540		<200	1,090	5 3,520 <b>č</b>	10,400	11,1001	1.5,560%	3,340	400	411	1,310	211	227
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TPH (mg/kg)	GRO	<1.00 <1.00	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	1. 4. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	10 2 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		10 H 10 H 10		الم من المراجع المراجع من المراجع المر من المراجع المر	and the second	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1								and the second	, ,	-	,	•	t
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Sample	Depth (ft)	*	1-1-2: 1-1 WAY	2-2 P	\$\$\$;\$;\$;\$;\$ \$	<u>\$</u> 445	5-5:5' NVA		1.2-7:5's	<b>8-8</b> 5				<u>الم الم 1</u> 34	55°	چې 7 مې	<u>.</u> 105	121 F	20'-1 NA	25'	30'	40'	50'	60'
Sample	Date	5/26/10	5/26/10	5/26/10	5/26/10	5/26/10	5/26/10	5/26/10	5/26/10	5/26/10	5/26/10		11/11/10	11/11/10	11/11/10	11/11/10	11/11/10	11/11/10	11/11/10	11/11/10	11/11/10	11/11/10	11/11/10	11/11/10
Sample	Q	AH-1								-			SB-1											

COG Operating LLC. Table 1

GC Federal #27 LEA COUNTY, NEW MEXICO

Sample Sample Sample Depth		ē	Depth	Soil	Status	Ę	TPH (mg/kg)	(6	Benzene	Toluene	Ethlybenzene	Xylene	Chloride
Date Depth (ft) (BEB) In-Situ	(BEB)	(BEB)	In-Si	itu	Removed	DRO	GRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
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5/26/10 3-3.5' NIA	•	NVA *		· ·	. د <b>X</b>			•					- 9,160
5/26/10 4-4.5' N/A		N/A	• •		X	-		•	, <b>.</b>	-	3	त्र : 	11,000
5/26/10 5-5.5' NiA	. 5-5.5	ŃA			X	•		•					9,070
5/26/10 .6-6.5' NA		N/A			ن ت <b>X</b> الم		्र इन	1		¥			2,620
5/26/10 7-7.5' N/A X	N/A	1	×			-	•	•	,	•	1	-	<200
5/26/10 8-8.5' N/A X	N/A		×	-		-	-	-	•	•		•	251
5/26/10 9-9.5' NA X	N/A		×			-	1	•	•	•	1	•	221

Below Excavation Bottom 858

Not Analyzed **(** 

Excavated material and depth

'

#### Water Well Data Average Depth to Groundwater (ft) COG - G.C. Federal 27 Tank Battery Lea County, New Mexico

32 East

16 South

	16	South		31 East	
6	5	4	3	2	1
7	8	9	10	н	12 288
18	17	16	15	14	13 113
19	20	21	22	23	24
30	29	28	27	26	25
31 290	32	39	34	35	36
	17 :	South		31 East	
6	5	4	3	2	
7	8	9	10	51	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
	18 1	South		31 East	
6	5	4	3	2	
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30	29	28	27	26	25
31	32	33	34	35 261	36

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		221			215
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	16 Se	outh	33	East	
6	5 180	4 150	3 130	2 148	1142
7	8 200	9	10 182	11	12 142
18	17 182	16 180	15 175	14 143	13 110
19	20	21	22	23 120	24
30 191	29	28 190	27 130	26 143	25 120
31 198	32 168	33	34 160	35	36

	17 \$	South	33	East	
6 90	5	1	3 155	2 158	1 150
7 167	0 173	9 161	10	11	12
18 188	17 180	16	15	14	13 163
19	20 190	21	22	23 115	24
30	29	28	27	26	25
31	32	33	34	35 155	36

	18 S	outh		33 Easi	t
6	5	4	3	2	1
7	8 100	9	10 82	11	12 143
18	17 85	16	15	14	13 50
19 >140	20	21	22	23	24 195
>140 30 35 31	29	28	27	26	25
31	32	33	84 177	35	36

New Mexico State Engineers Well Reports

USGS Well Reports

Geology and Groundwater Conditions In Southern Eddy, County, NM

31

32

33

NMOCD - Groundwater Data

Field water level

New Mexico Water and Infrastructure Data System

Tetra Tech Temporary well (TD 180' - Dry Well)

# **Summary Report**

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

Report Date: June 25, 2010

Work Order: 10052809

<b>Project Location:</b>	Lea County, NM
Project Name:	COG/GC Federal #27
Project Number:	114-6400525

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
233041	AH-1 0-1'	soil	2010-05-26	00:00	2010-05-27
233042	AH-1 1-1.5'	soil	2010-05-26	00:00	2010-05-27
233043	AH-1 2-2.5'	soil	2010-05-26	00:00	2010-05-27
233044	AH-1 3-3.5'	soil	2010-05-26	00:00	2010-05-27
233045	AH-1 4-4.5'	soil	2010-05-26	00:00	2010-05-27
233046	AH-1 5-5.5'	soil	2010-05-26	00:00	2010-05-27
233047	AH-1 6-6.5'	soil	2010-05-26	00:00	2010-05-27
233048	AH-1 7-7.5'	soil	2010-05-26	00:00	2010-05-27
233049	AH-1 8-8.5'	soil	2010-05-26	00:00	2010-05-27
233050	AH-1 9-9.5'	soil	2010-05-26	00:00	2010-05-27
233051	AH-2 0-1'	soil	2010-05-26	00:00	2010-05-27
233052	AH-2 1-1.5'	soil	2010-05-26	00:00	2010-05-27
233053	AH-2 2-2.5'	soil	2010-05-26	00:00	2010-05-27
233054	AH-2 3-3.5'	soil	2010-05-26	00:00	2010-05-27
233055	AH-2 4-4.5'	soil	2010-05-26	00:00	2010-05-27
233056	AH-2 5-5.5'	soil	2010-05-26	00:00	2010-05-27
233057	AH-2 6-6.5'	soil	2010-05-26	00:00	2010-05-27
233058	AH-2 7-7.5'	soil	2010-05-26	00:00	2010-05-27
233059	AH-2 8-8.5'	soil	2010-05-26	00:00	2010-05-27
233060	AH-2 9-9.5'	soil	2010-05-26	00:00	2010-05-27

	······	1	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)
233041 - AH-1 0-1'	< 0.0200	<0.0200	<0.0200	<0.0200	98.3	<1.00
233051 - AH-2 0-1'	< 0.0200	<0.0200	<0.0200	<0.0200	<50.0	<1.00

#### Sample: 233041 - AH-1 0-1'

Report Date: June 25, 2010		Work Order: 10052809	Pag	Page Number: 2 of 4	
Param	Flag	Result	Units	RI	
Chloride	······································	332	mg/Kg	4.00	
Sample: 233042	- AH-1 1-1.5'				
Param	Flag	Result	Units	RI	
Chloride		224	mg/Kg	4.00	
Sample: 233043	- AH-1 2-2.5'				
Param	Flag	Result	Units	RI	
Chloride		2050	mg/Kg	4.00	
Sample: 233044	- AH-1 3-3.5'				
Param	Flag	Result	Units	RI	
Chloride	······································	11400	mg/Kg	4.00	
Sample: 233045 Param	- AH-1 4-4.5' Flag	Result	Units	RL	
Chloride		10300	mg/Kg	4.00	
Sample: 233046	- AH-1 5-5.5'				
Param	Flag	Result	Units	RI	
Chloride		17600	mg/Kg	4.00	
Sample: 233047	- AH-1 6-6.5'				
Param	Flag	Result	Units	RL	
Chloride		10200	mg/Kg	4.00	
Sample: 233048	- AH-1 7-7.5'				
Sample: 233048 · Param	- AH-1 7-7.5' Flag	Result	Units	RL	

,

Report Date: June	25, 2010	Work Order: 10052809	Page	Number: 3 of 4
Sample: 233049 -	- AH-1 8-8.5'			
Param	Flag	Result	Units	RI
Chloride		5170	mg/Kg	4.0
Sample: 233050 ·	- AH-1 9-9.5'			
Param	Flag	Result	Units	RI
Chloride	·	7540	mg/Kg	4.0
Sample: 233051 -	- AH-2 0-1'			
Param	Flag	Result	Units	RI
Chloride	<u>o~</u>	5320	mg/Kg	4.0
Param Chloride Sample: 233053 -		Result 7910	Units mg/Kg	<u>R1</u> 4.0
Param	Flag	Result	Units	RI
Chloride		7210	mg/Kg	4.00
Sample: 233054 -	AH-2 3-3.5'			
Param	Flag	Result	Units	RL
Chloride		9160	mg/Kg	4.00
Sample: 233055 -	AH-2 4-4.5'			
Sample: 233055 - <sup>Param</sup>	AH-2 4-4.5' Flag	Result	Units	RL
Param		Result 11000	Units mg/Kg	
	Flag			RL 4.00
Param Chloride	Flag			

Report Date: June 25, 2010		0 Work Order: 10052809		Page Number: 4 of 4		
Sample: 233057 - AH-2 6-6.5'						
Param	Flag	Result	Units	RL		
Chloride		2620	mg/Kg	4.00		
Sample: 233058	- AH-2 7-7.5'					
Param	Flag	Result	Units	RL		
Chloride	·····	<200	mg/Kg	4.00		
Sample: 233059	- AH-2 8-8.5'					
Param	Flag	Result	Units	RL		
Chloride		251	mg/Kg	4.00		
Sample: 233060 -	- AH-2 9-9.5'					
Param	Flag	Result	Units	RL		
Chloride		221	mg/Kg	4.00		

LILLUM TRACEANALYSIS, INC. MULLUM MULLUM

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**WBENC:** 237019

HUB:1752439743100-86536NCTRCAWFWB38444Y0909

**DBE:** VN 20657

### **NELAP** Certifications

Certifications

Lubbock: T104704219-08-TX LELAP-02003 Kansas E-10317 El Paso: T104704221-08-TX LELAP-02002 Midland: T104704392-08-TX

# Analytical and Quality Control Report

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

Report Date: June 7, 2010

Work Order: 10052809

Project Location:Lea County, NMProject Name:COG/GC Federal #27Project Number:114-6400525

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
233041	AH-1 0-1'	soil	2010-05-26	00:00	2010-05-27
233051	AH-2 0-1'	soil	2010-05-26	00:00	2010-05-27

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

Michael abel

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

#### Standard Flags

 $\,B\,$  - The sample contains less than ten times the concentration found in the method blank.

## **Case Narrative**

Samples for project COG/GC Federal #27 were received by TraceAnalysis, Inc. on 2010-05-27 and assigned to work order 10052809. Samples for work order 10052809 were received intact at a temperature of 3.1 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	60409	2010-06-01 at 12:03	70556	2010-06-02 at 13:04
TPH DRO - NEW	S 8015 D	60419	2010-06-01 at 13:52	70544	2010-06-01 at 13:52
TPH GRO	S 8015 D	60437	2010-06-02 at 14:15	70574	2010-06-02 at 16:59

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 10052809 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: June 7, 2010 114-6400525

# **Analytical Report**

#### Sample: 233041 - AH-1 0-1'

Chloride		332	mg/Kg	50	4.00
Parameter	Flag	RL Result	Units	Dilution	RL
Prep Batch:	60409	Sample Preparation	2010-06-01	Prepared By:	AR
QC Batch:	70556	Date Analyzed:	2010-06-02	Analyzed By:	AR.
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland				

#### Sample: 233041 - AH-1 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - ? 70544 60419	NEW	Date A	nalyzed: 2	8015 D 010-06-01 010-06-01		lethod: N/A ed By: kg ed By: kg
Parameter	F	lag	RL Result	Un	iits	Dilution	RL
DRO			93.3	mg/	Kg	1	50.0
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	1	133	mg/Kg	1	100	133	70 - 130

#### Sample: 233041 - AH-1 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 70574 60437		Date Ana	l Method: lyzed: reparation:	S 8015 D 2010-06-02 2010-06-02		Prep Me Analyze Prepare	d By: AG
			RL					
Parameter	Flag		Result		Units		Dilution	$\mathbf{RL}$
GRO			<1.00		mg/Kg		1	1.00
Surrogate		Flag	Result	Units	Dilution	Spike - Amount	Percent Recovery	Recovery Limits
Trifluorotolue	ene (TFT)	<u>_</u>	2.29	mg/Kg	1	2.00	114	50.3 - 155
	obenzene (4-BFB)		2.01	mg/Kg	1	2.00	100	51.7 - 131.1

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

Report Date: June 7, 2010	Work Order: 10052809	Page Number: 5 of 10
114-6400525	COG/GC Federal #27	Lea County, NM

## Sample: 233051 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	70556	Date Analyzed:	2010-06-02	Analyzed By:	AR
Prep Batch:	60409	Sample Preparation:	2010-06-01	Prepared By:	$\mathbf{AR}$
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		5320	mg/Kg	100	4.00

#### Sample: 233051 - AH-2 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - ? 70544 60419	JEW	Date A	nalyzed:	S 8015 D 2010-06-01 2010-06-01	Prep M Analyze Prepare	
Parameter	F	lag	RL Result		Jnits	Dilution	RL
DRO			<50.0	mg	ç/Kg	11	50.0
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	2	132	mg/Kg	1	100	132	70 - 130

#### Sample: 233051 - AH-2 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 70574 60437		Date Ana	l Method: lyzed: reparation:'	S 8015 D 2010-06-02 2010-06-02		Prep Me Analyze Preparec	d By: AG
			RL					
Parameter	Flag		Result		Units		Dilution	$\mathbf{RL}$
GRO		·	<1.00		mg/Kg		1	1.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolu	ene (TFT)		2.29	mg/Kg	1	2.00	114	50.3 - 155
4-Bromofluor	obenzene (4-BFB)		2.02	mg/Kg	1	2.00	101	51.7 - 131.1

<sup>2</sup>High surrogate recovery. Sample non-detect, result bias high.

Report Date: June 7, 20 114-6400525				10052809 deral #27		Page Number: 6 c Lea County,				
Method Blank (1)	QC Batch: 70544									
QC Batch: 70544		Date Ana		2010-06-01			yzed By: kg			
Prep Batch: 60419		QC Prepa	ration:	2010-06-01		Prep	ared By: kg			
_			MD							
Parameter	Flag		Resu			Inits	RL			
DRO	<u>.</u>		<5.8	36	m	g/Kg	50			
Surrogate Flag	Result	Units	Di	lution	Spike Amount	Percent Recovery	Recovery Limits			
n-Tricosane	95.4	mg/Kg		1	100	95	70 - 130			
QC Batch: 70556 Prep Batch: 60409 Parameter	Flag	Date Anal QC Prepar			U		zed By: AR red By: AR RL			
Chloride	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		<2.1	8	m;	g/Kg	1			
Method Blank (1)	QC Batch: 70574									
QC Batch: 70574		Date Analy	vzed:	2010-06-02		Analyz	ed By: AG			
Prep Batch: 60437		QC Prepar		2010-06-02			ed By: AG			
			MD	L						
Parameter	Flag		Resu	lt	U	nits	$\mathbf{RL}$			
GRO			< 0.39	)6	m	g/Kg	1			
Surrogate	Flag	Result	Units	Dilution	Spike 1 Amoun	Percent t Recovery	Recovery Limits			
Trifluorotoluene (TFT)		2.06	mg/Kg		2.00	103	66.2 - 145			
1-Bromofluorobenzene (4-	-BFB)	1.60	mg/Kg	1	2.00	80	62 - 120.5			

## Laboratory Control Spike (LCS-1)

QC Batch:	70544	Date Analyzed:	2010-06-01	Analyzed By:	kg
Prep Batch:	60419	QC Preparation:	2010-06-01	Prepared By:	kg

Report Date: June 7, 9 114-6400525	2010				er: 100528 Federal #				Number: 7 of Lea County, N		
		LCS	5			Spike	Ma	trix			Rec.
Param		Resu		Units	Dil.	Amount		sult	Rec.		Limit
DRO		265	n	ıg/Kg	1	250		.86	106		- 133.4
Percent recovery is bas	ed on the sp	pike result.	RPD is	based on	the spike	and spike d	uplicat	e result.			
		LCSD			Spike	Matrix		Re	c.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Lin	nit	RPD	Limi
DRO		277	mg/Kg	1	250	<5.86	111	57.4 -	133.4	4	20
Percent recovery is bas	ed on the s	pike result.	RPD is	based on	the spike	and spike d	uplicate	e result.			
	LCS	LCSD				Spike	L	$\mathbf{CS}$	LCSD	ì	Rec.
Surrogate	Result	Result	U	nits	Dil.	Amount		.ec.	Rec.		Limit
n-Tricosane	98.0	99.8		g/Kg	1	100		98	100		70 - 130
Param		LC · Rest		Units	Dil.	Spike Amount		4atrix Result	Rec		Rec. Limit
			ult	Units mg/Kg	Dil.	-	; <b>]</b>				Limit
Param Chloride Percent recovery is bas	ed on the sp	· Rest 98.	ult 6	mg/Kg	1	Amount 100	; <u>]</u>	Result <2.18			Limit
Chloride	ed on the sp	· Rest 98.	ult 6	mg/Kg	1	Amount 100	; <u>]</u>	Result <2.18 e result.			
Chloride	ed on the sp	Res 98. pike result.	ult 6	mg/Kg	1 the spike a	Amount 100 and spike d Matrix	; <u>]</u>	Result <2.18 e result. R	99		Limit 85 - 118
Chloride Percent recovery is bas Param Chloride		Rest 98. pike result. LCSD Result 100	ult 6 RPD is 1 Units mg/Kg	mg/Kg based on Dil.	1 the spike Spike Amount 100	Amount 100 and spike d Matrix Result <2.18	uplicate Rec 100	Result <2.18 e result. R Lin 85 -	99 ec.		Limit 85 - 113 RPD
Chloride Percent recovery is bas	ed on the sp	Rest 98. oike result. LCSD Result 100 oike result.	ult 6 RPD is 1 Units mg/Kg RPD is 1 Date An	mg/Kg based on Dil. ; 1 based on halyzed:	1 the spike Spike Amount 100	Amount 100 and spike d Matrix Result <2.18 and spike d 02	uplicate Rec 100	Result <2.18 e result. R Lin 85 -	99 ec. 115 Analy	RPD	Limit 85 - 113 RPD Limit 20
Chloride Percent recovery is bas Param Chloride Percent recovery is bas Laboratory Control QC Batch: 70574 Prep Batch: 60437	ed on the sp	Result 98. oike result. LCSD Result 100 oike result. S-1)	ult 6 RPD is <u>Units</u> mg/Kg RPD is RPD is QC Prep	mg/Kg based on <u>Dil.</u> ; 1 based on palyzed: paration:	1 the spike Amount 100 the spike a 2010-06- 2010-06-	Amount 100 and spike d Matrix Result <2.18 and spike d 02 02 Spike	uplicate Rec 100 uplicate	Result 2.18 result. R Lin 85 - result.	99 ec. 115 Analy Prepa	RPD 1 vzed By ared By	Limit 85 - 113 RPD Limit 20 : AG : AG Rec.
Chloride Percent recovery is bas Param Chloride Percent recovery is bas Laboratory Control QC Batch: 70574 Prep Batch: 60437 Param	ed on the sp	Rest 98. 98. 98. 98. 98. 98. 98. 98. 98. 98.	ult 6 RPD is <u>Units</u> mg/Kg RPD is RPD is QC Prep	mg/Kg based on <u>Dil.</u> <u>1</u> based on based on balyzed: paration:	1 the spike Spike Amount 100 the spike a 2010-06-	Amount 100 and spike d Matrix Result <2.18 and spike d 02 02 Spike Amount	uplicate Rec 100 uplicate Mat Res	Result <2.18 result. R Lin 85 - result. result.	99 ec. 115 Analy Prepa Rec.	RPD 1 vzed By ared By I L	Limit 85 - 118 RPD Limit 20 : AG : AG Rec. .imit
Chloride Percent recovery is bas Param Chloride Percent recovery is bas Laboratory Control QC Batch: 70574 Prep Batch: 60437 Param GRO	ed on the sp Spike (LC	Resu 98. 98. 0ike result. LCSD 0ike result. S-1) LCS Resu 15.4	ult 6 RPD is 1 Units mg/Kg RPD is 1 Date An QC Prep 1t U	mg/Kg based on Dil. 1 based on balyzed: paration: Jnits g/Kg	1 the spike a Amount 100 the spike a 2010-06- 2010-06- Dil. 1	Amount 100 and spike d Matrix Result <2.18 and spike d 02 02 Spike Amount 20.0	Amplicate Rec 100 uplicate Mat Res <0.:	Result <2.18 result. R Lin 85 - result. result. rix ult 396	99 ec. 115 Analy Prepa	RPD 1 vzed By ared By I L	Limit 85 - 118 RPD Limit 20 : AG : AG Rec.
Chloride Percent recovery is bas Param Chloride Percent recovery is bas Laboratory Control QC Batch: 70574 Prep Batch: 60437 Param GRO	ed on the sp Spike (LC	Resu 98. 98. 98. 09. 20. 20. 20. 20. 20. 20. 20. 20. 20. 20	ult 6 RPD is 1 Units mg/Kg RPD is 1 Date An QC Prep 1t U	mg/Kg based on Dil. 1 based on balyzed: paration: Jnits g/Kg	1 the spike a Amount 100 the spike a 2010-06- 2010-06- 2010-06- Dil. 1 the spike a	Amount 100 and spike d Matrix Result <2.18 and spike d 02 02 Spike Amount 20.0 and spike du	Amplicate Rec 100 uplicate Mat Res <0.:	Result <2.18 result. R. Lin 85 - result. rix ult 396 result.	99 ec. mit 115 Analy Prepa Rec. 77	RPD 1 vzed By ared By I L	Limit 85 - 118 RPD Limit 20 : AG : AG Rec. .imit - 114.3
Chloride Percent recovery is bas Param Chloride Percent recovery is bas Laboratory Control QC Batch: 70574	ed on the sp Spike (LC	Resu 98. 98. 0ike result. LCSD 0ike result. S-1) LCS Resu 15.4	ult 6 RPD is 1 Units mg/Kg RPD is 1 Date An QC Prep 1t U	mg/Kg based on Dil. 1 based on balyzed: paration: Jnits g/Kg	1 the spike a Amount 100 the spike a 2010-06- 2010-06- Dil. 1	Amount 100 and spike d Matrix Result <2.18 and spike d 02 02 Spike Amount 20.0	Amplicate Rec 100 uplicate Mat Res <0.:	Result <2.18 result. R Lin 85 - result. result. rix ult 396	99 ec. mit 115 Analy Prepa Rec. 77	RPD 1 vzed By ared By I L	Limit 85 - 118 RPD Limit 20 : AG : AG Rec. .imit

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Report Date: June 7, 20 114-6400525	10				er: 100528 Federal #					P:			8 of 10 ity, NM
		LCS	LC	SD		÷	$\mathbf{Spil}$	(A	LCS	3 L.	CSD	F	lec.
Surrogate		Result			nits	Dil.	Amo		Rec	-	lec.		imit
Trifluorotoluene (TFT)		2.08	1.8		g/Kg	1	2.0		104		94		- 148.7
4-Bromofluorobenzene (4	-BFB)	1.83	1.6		g/Kg	1	2.0		92		83		- 127.4
Matrix Spike (MS-1)	Spiked Samp	ole: 233	3169										
QC Batch: 70544			Date A:	nalyzed:	2010-0	6-01					Anal	yzed B	y: kg
Prep Batch: 60419			QC Pro	paration	2010-0	6-01					Prep	ared B	y: kg
		MS				•	ike		atrix				lec.
Param		Result		Jnits	Dil.		ount		sult		ec.		imit
DRO		334	m	g/Kg	1	2	50	3	7.7	1	18	35.2	- 167.1
Percent recovery is based	on the spike re	sult. F	RPD is l	based on	the spike	and s	spike du	iplica	te res	ult.			
	MS	D			Spike	Ma	trix			Rec.			RPD
Param	Resi	ılt	Units	Dil.	Amount	Re	sult	Rec.		Limit		RPD	Limit
DRO	298	8 r	ng/Kg	1	250	3	7.7	104	35	.2 - 167	7.1	11	20
Surrogate	Result R	ASD esult 112		nits g/Kg	Dil. 1		Spike mount 100		MS Rec. 115		MSD Rec. 112		Rec. Limit 0 - 130
Matrix Spike (MS-1)	Spiked Samp			1 1	0010.00					•			
QC Batch: 70556 Prep Batch: 60409			Date An QC Prej	alyzed: paration:	2010-06 2010-06							zed By red By:	
Param		MS	4	Units	Dil.		Spike		Matr		Dee		Rec.
Chloride		Resul	цI		100		mount 10000		Resu 545		Rec. 91		Limit 5 - 115
Percent recovery is based	on the spike re-							unlicat			91		5-115
					-		-	priou	0 100				<b>NDD</b>
Param	MS Res		Units	Dil.	Spike Amoun		A <mark>atri</mark> x Result	Re	<b>-</b>	Rec. Limit		RPD	RPD Limit
Chloride	983		mg/Kg		10000	ι <u>Γ</u>	<u>545</u>			85 - 11		2	20
Percent recovery is based						and s						<u> </u>	
Matrix Spike (MS-1)	Spiked Samp												
QC Batch: 70574	- 4		Date An	alvzed	2010-06	-02					Analy	zed By:	AG
Prep Batch: 60437				aryzed.	2010-00						-	red By:	
TOP Datent V0401		<u>ر</u>	¢⇔ r reț	ar at i OII.	2010-00	-74				1	тера	ied på:	ло

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sed on the spike ro MS Res 26 sed on the spike ro C) 2 (4-BFB)	SD sult Units 5.8 mg/K esult. RPD is MS 5 Result F 2.28	s Dil. <u> </u>	Spike Amount 20.0	Mat Res 5.58	ount R .0 5 ike duplicat trix sult Rec. 366 106	Rec Limi 10 - 19	it	•	Rec. Limit - 198.3 RPD Limit 20
MS Res 26 sed on the spike re	25.1 esult. RPD is SD sult Units i.8 mg/K esult. RPD is MS I Result F 2.28	mg/Kg s based o s Dil. g 1 s based o MSD Result	1 on the spike Spike Amount 20.0	20 and spi Mat Res 5.58	.0 5 ike duplicat trix sult Rec. 366 106	.5866 e result. Rec Limi 10 - 19	98  it	10 RPD	- 198.3 RPD Limit
MS Res 26 sed on the spike re	esult. RPD is SD sult Units i.8 mg/K esult. RPD is MS I Result F 2.28	s based o s Dil. g 1 s based o MSD Result	on the spike Spike Amount 20.0	and spi Mat Res 5.58	ike duplicat trix sult Rec. 366 106	e result. Rec Limi 10 - 19	it.	RPD	RPD Limit
MS Res 26 sed on the spike re	SD sult Units 5.8 mg/K esult. RPD is MS 5 Result F 2.28	s Dil. <u> </u>	Spike Amount 20.0	Mat Res 5.58	trix ault Rec. 366 106	Rec Limi 10 - 19	it		Limit
Res 26 sed on the spike ro ")	sult Units 1.8 mg/K esult. RPD is MS Result F 2.28	s based o MSD Result	Amount 20.0	Res 5.58	ault Rec. 366 106	Limi 10 - 19	it		Limit
Res 26 sed on the spike ro ")	sult Units 1.8 mg/K esult. RPD is MS Result F 2.28	s based o MSD Result	Amount 20.0	Res 5.58	ault Rec. 366 106	Limi 10 - 19	it		Limit
26 sed on the spike ro )	6.8 mg/K esult. RPD in MS Result F 2.28	s based o MSD Result	20.0	5.58	366 106	10 - 19			
sed on the spike re	esult. RPD is MS Result F 2.28	s based o MSD Result							
<u>`)</u>	MS Result F 2.28	MSD Result	÷	•	•				
	Result I 2.28	Result			Chiles	MS	MSD		Rec.
	2.28		Units	Dil.	Spike Amount	Rec.	Rec.		nec. Limit
		2.37	mg/Kg	1	2	<u>114</u>	118		5 - 143
- <u></u>	2.42	2.38	mg/Kg	1	$\frac{2}{2}$	121	119		6 - 14
Units mg/Kg	CCVs True Conc. 250	F	`ound Conc.	Perc Reco	cent very	Recover Limits	у	An	Date alyzed 0-06-01
	Date	Analyzed	l: 2010-06-	01			Anal	yzed B	y: kg
	CCVa	C	CVa	cc	Ve	Porcont			
								T	Date
Units	Conc.						•		alyzed
mg/Kg	250		290			80 - 120	)		0-06-0
	Date A	Analyzed:	: 2010-06-0	)2			Anały	zed By	AR
	ICVs		ICVs	IC	Vs	Percent	t.		
	True	I	Found	Per	cent	Recover	y	I	Date
	Conc.	(			•				alyzed
mg/Kg	100		101	1(	01	85 - 11	5	201	0-06-02
	_							. –	
	Units mg/Kg Units mg/Kg Units	Date CCVs True Units Conc. mg/Kg 250 Date CCVs True Units Conc. mg/Kg 250 Date A ICVs True Units Conc. mg/Kg 100	Date Analyzed CCVs ( True F Units Conc. ( mg/Kg 250 Date Analyzed CCVs ( True F Units Conc. ( mg/Kg 250 Date Analyzed ICVs True I Units Conc. Mg/Kg 100	Date Analyzed: 2010-06- CCVs CCVs True Found Units Conc. Conc. mg/Kg 250 291 Date Analyzed: 2010-06- CCVs CCVs True Found Units Conc. Conc. mg/Kg 250 290 Date Analyzed: 2010-06-0 ICVs ICVs True Found Units Conc. Conc. ICVs ICVs True Found Units Conc. Conc. mg/Kg 100 101	Date Analyzed:       2010-06-01         CCVs       CCVs       CC         True       Found       Pero         Units       Conc.       Conc.       Reco         mg/Kg       250       291       11         Date Analyzed:       2010-06-01         CCVs       CC         True       Found       Pero         Units       Conc.       Corc       Reco         Units       Conc.       Corc       Reco         Units       Conc.       Conc.       Reco         Mg/Kg       250       290       11         Date Analyzed:       2010-06-01         Date Analyzed:       2010-06-02       ICVs       ICVs         ICVs       ICVs       ICVs       ICVs         Units       Conc.       Conc.       Reco         Mg/Kg       100       101       10	Date Analyzed: 2010-06-01 CCVs CCVs CCVs True Found Percent Units Conc. Conc. Recovery mg/Kg 250 291 116 Date Analyzed: 2010-06-01 CCVs CCVs CCVs True Found Percent Units Conc. Conc. Recovery mg/Kg 250 290 116 Date Analyzed: 2010-06-02 ICVs ICVs ICVs ICVs True Found Percent Units Conc. Conc. Recovery mg/Kg 100 101 101	Date Analyzed:       2010-06-01         CCVs CCVs CCVs Percent         True       Found       Percent       Recover         Units       Conc.       Conc.       Recovery       Limits         mg/Kg       250       291       116       80 - 124         Date Analyzed:       2010-06-01         CCVs CCVs Percent         True       Found       Percent       Recovery         Units       Conc.       Conc.       Recovery       Limits         mg/Kg       250       290       116       80 - 124         Date Analyzed:       2010-06-01         CVs CCVs CCVs Percent         mg/Kg       250       290       116       80 - 124         Date Analyzed:       2010-06-02         ICVs ICVs ICVs Percent         True       Found       Percent       Recover         Units       Conc.       Conc.       Recovery       Limits         Mg/Kg       100       101       101       85 - 114	Date Analyzed:     2010-06-01     Anal       CCVs     CCVs     CCVs     Percent       True     Found     Percent     Recovery       Units     Conc.     Conc.     Recovery       Units     Conc.     Conc.     Recovery       Units     Conc.     Conc.     Recovery       Units     Conc.     Conc.     Recovery       Units     Conc.     CCVs     Percent       Recovery     Limits     Nal       CCVs     CCVs     Percent       Recovery     Limits     Recovery       Units     Conc.     Conc.     Recovery       Units     Conc.     Conc.     Recovery       Units     Conc.     Conc.     Recovery       Units     Conc.     Conc.     Recovery       Units     ICVs     ICVs     ICVs       Date Analyzed:     2010-06-02     Analy       ICVs     ICVs     ICVs     Percent       True     Found     Percent     Recovery       Units     Conc.     Conc.     Recovery       Units     Conc.     Conc.     Recovery       Units     Conc.     Conc.     Recovery       Units     Conc.     Conc.	Date Analyzed:       2010-06-01       Analyzed By         CCVs       CCVs       CCVs       Percent         True       Found       Percent       Recovery       I         Units       Conc.       Conc.       Recovery       Limits       Analyzed         mg/Kg       250       291       116       80 - 120       2016         Date Analyzed:       2010-06-01       Analyzed By         CCVs       CCVs       CCVs       Percent         True       Found       Percent       Recovery       I         Units       Conc.       Conc.       Recovery       Limits       Analyzed         Units       Conc.       Conc.       Recovery       Limits       Analyzed         Mg/Kg       250       290       116       80 - 120       2010         Date Analyzed:       2010-06-02       Analyzed By:       ICVs       ICVs       Percent         True       Found       Percent       Recovery       I       I         Units       Conc.       Conc.       Recovery       I       I         Units       Conc.       Conc.       Recovery       Limits       Analyzed         Units

Report Dat 114-640052	e: June 7, 20 5	10		rk Order: 1005: G/GC Federal			umber: 10 of 10 Lea County, NM
Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.0	99	85 - 115	2010-06-02
Standard (	(CCV-1)						
QC Batch:	70574		Date Ana	lyzed: 2010-0	6-02	Anal	yzed By: AG
			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRÖ		mg/Kg	1.00	0.949	95	80 - 120	2010-06-02
Standard (	(CCV-2)						
QC Batch:	70574		Date Ana	lyzed: 2010-0	6-02	Anal	yzed By: AG
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	1.01	101	80 - 120	2010-06-02

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PAGE: 1 OF: 3	ANALYSIS REQUEST (Circle or Specify Method No.)	ез 6н рд 4 ез 6н рд 4 ез 6н од 20	510/622 60/624 9 84 Cq 1X1009	60M A 2A 8 A 2A 8 Selitsiov 58/0458 58/0458 58/0458 58/0458 660 80 80 80 80 80 80 80 80 80 80 80 80 80	PAH 8270												BY: (Circle) All BUS	TETTRA TECH COMACT PERSON: Results br	μ	- Provect Manadar retained Pick Conv Accountion modeling Conv.
of Custody Becord					ICE HMO3 HCT LITLEBED V MNWBEB OL										~			Deter	D C C	- Heturn Orcinal coox to Teria Tech Project N
I _	_	<b>TETRA TECH</b> 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946	SITE MANAGER: I K TAVARET	Federal #	Leas	-1-0-1-										1605	RECEIVED BY: (Signature)	RECEIVED BY: (Signature)	RECEVED BY: REQUIRING	
Analysis Reginest of Chain		<b>F</b>		PROJECT NAME	TM MATAM MATRIX SCOMP BARD	5/26 5 × AU-1			1- <del>11</del>          -	- HM          HH-1	1- +++¥          ×++ - !	AH-1	- 114          VII- 1	1-4M		un /			PHONE	SAMPLE CONDITION WHEN RECEIVED: 3.1'C
Ana			CUENT NAME:	PROJECT NO : 114 - 6400525	LAB I.D. NUMBER	2320 HI 2	242	043	Чч	어도	OUL	ትባ	ભક	ठमन	050	RELINQUISHED BY: (Signatura)	RELINQUISHED BY: (Signature)	RELINDUISHED BY: (Signature)	HECENNIG LABORATOHI: CTALLE ADDRESS: UNALLEND STATE CONTACT: CONTACT:	SAMPLE CONDITION

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PAGE 2 OF 2	ANALYSIS REQUEST (Circle or Specify Method No.)	·····	510/625 50/624 50/624	400M A 6A 6 A 6A 6 A 6A 8 A 6A 8 8 8 608 8 608 8 8 8 8 8 8 8 8 8 8 8 8	PAH 8270 RCRA Metal	X												(AND DELIVERED) UPS OTHER	TEIRA TECH CONTACT PERSON:	1.0% I'Re Tavavez Autoreas	
of Ciletody Bacord		ω			HRO3 HCF LITLENED (J MOWBEH OL	~									<b>^</b>		) Date:		Time:		og ne lie a
		<b>FETRA TECH</b> 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946	SITE MANAGER: T.K. Tandyet		LAGE CO NIN SAMPLE IDENTIFICATION	-1-0	I-1:5'	3-2-5	3-3,5'	4-45	S-5.6'	6-6.51	7-1.5`	8-85'		1	RECEIVED BY: (Signature)	RECEIVED BY: (Sugnature)	RECEIVED BY: (Signature)		TPH ENCOME 50
reis Reducet of Chain			SITE	PROJECT NAME:	XITTAM COMP BARB	c-my x s	<del>د ا</del>	E-44	E-114    //	AH-2	AH-2	AH-2	C-#4	AH-2	V V A4-2	Date: 32 Time: //		Derter	Tione:	PHONE:	ED: REMARKS
Analysis			CLIENT NAME: PDC+	PROJECT NO .:	LABI.D. DATE TIME NUMBER 2.DND	299051 5/20	1	053	D54	055	82 <sup>6</sup>	Ę	<b>ઝ</b> ઝ	ð	owo V	RELINQUISHED BY (Standard)	RELINQUISHED BY: (Signature)	RELINGUISHED BY: (Signature)	RECEIVING LABORATORY: KONLA		SAMPLE CONDITION WHEN RECEIN

MULLING TRACEANALYSIS, INC.

800+378+1296

 6701 Aberdeen Avenue, Suite 9
 Lubbock, Texas 79424

 200 East Sunset Road, Suite 5
 El Paso, Texas 79922

 5002 Basin Street, Suite A1
 Midland, Texas 79703

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

El Paso, Texas 79922 888 • 588 • 3443 Midland, Texas 79703 t. Worth, Texas 76132 E-Mail: tab@traceanalysis.com 806+794+1296 FAX 806+ 915+585+3443 FAX 915+ 432+689+6301 FAX 432+ 817+201+5260

FAX 806 • 794 • 1298 FAX 915 • 585 • 4944 FAX 432 • 689 • 6013

**WBENC:** 237019

HUB:1752439743100-86536NCTRCAWFWB38444Y0909

Certifications

DBE: VN 20657

## **NELAP** Certifications

Lubbock: T104704219-08-TX LELAP-02003 Kansas E-10317 El Paso: T104704221-08-TX LELAP-02002 Midland: T104704392-08-TX

# Analytical and Quality Control Report

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

Report Date: June 25, 2010

Work Order: 10052809

Project Location:Lea County, NMProject Name:COG/GC Federal #27Project Number:114-6400525

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
233041	AH-1 0-1'	soil	2010-05-26	00:00	2010-05-27
233042	AH-1 1-1.5'	soil	2010-05-26	00:00	2010-05-27
233043	AH-1 2-2.5'	soil	2010-05-26	00:00	2010-05-27
233044	AH-1 3-3.5'	soil	2010-05-26	00:00	2010-05-27
233045	AH-1 4-4.5'	soil	2010-05-26	00:00	2010-05-27
233046	AH-1 5-5.5'	soil	2010-05-26	00:00	2010-05-27
233047	AH-1 6-6.5'	soil	2010-05-26	00:00	2010-05-27
233048	AH-1 7-7.5'	soil	2010-05-26	00:00	2010-05-27
233049	AH-1 8-8.5'	soil	2010-05-26	00:00	2010-05-27
233050	AH-1 9-9.5'	soil	2010-05-26	00:00	2010-05-27

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
233051	AH-2 0-1'	soil	2010-05-26	00:00	2010-05-27
233052	AH-2 1-1.5'	soil	2010-05-26	00:00	2010-05-27
233053	AH-2 2-2.5'	soil	2010-05-26	00:00	2010-05-27
233054	AH-2 3-3.5'	soil	2010-05-26	00:00	2010-05-27
233055	AH-2 4-4.5'	soil	2010-05-26	00:00	2010-05-27
233056	AH-2 5-5.5'	soil	2010-05-26	00:00	2010-05-27
233057	AH-2 6-6.5'	soil	2010-05-26	00:00	2010-05-27
233058	AH-2 7-7.5'	soil	2010-05-26	00:00	2010-05-27
233059	AH-2 8-8.5'	soil	2010-05-26	00:00	2010-05-27
233060	AH-2 9-9.5'	soil	2010-05-26	00:00	2010-05-27

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

Blain Lefturch

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

,

#### Standard Flags

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

# **Case Narrative**

Samples for project COG/GC Federal #27 were received by TraceAnalysis, Inc. on 2010-05-27 and assigned to work order 10052809. Samples for work order 10052809 were received intact at a temperature of 3.1 C.

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

		Prep	Prep	$\mathbf{QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	60437	2010-06-02 at 14:15	70573	2010-06-02 at 16:31
Chloride (Titration)	SM 4500-Cl B	60409	2010-06-01 at 12:03	70556	2010-06-02 at 13:04
Chloride (Titration)	SM 4500-Cl B	60876	2010-06-22 at 11:55	71104	2010-06-23 at $14:10$
Chloride (Titration)	SM 4500-Cl B	60877	2010-06-22 at 11:56	71105	2010-06-23 at 14:11
TPH DRO - NEW	S 8015 D	60419	2010-06-01 at 13:52	70544	2010-06-01 at 13:52
TPH GRO	S 8015 D	60437	2010-06-02 at 14:15	70574	2010-06-02 at $16:59$

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 10052809 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.

# **Analytical Report**

#### Sample: 233041 - AH-1 0-1'

Laboratory: Midland	1							
Analysis: BTEX			Analytical	Method:	S 8021B		Prep Metl	hod: S 5035
QC Batch: 70573			Date Analy	zed:	2010-06-02		Analyzed	By: AG
Prep Batch: 60437			Sample Pre	paration:	2010-06-02		Prepared	By: AG
			$\mathbf{RL}$					
Parameter	Flag		Result		Units	E	lution	$\mathbf{RL}$
Benzene		-	< 0.0200	I	mg/Kg		1	0.0200
Toluene			< 0.0200		mg/Kg		1	0.0200
Ethylbenzene			< 0.0200	I	mg/Kg		1	0.0200
Xylene			< 0.0200	i	mg/Kg		1	0.0200
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT	')		2.03	mg/Kg	1	2.00	102	52.8 - 137
4-Bromofluorobenzenc	(4-BFB)		1.90	mg/Kg		2.00	95	38.4 - 157

### Sample: 233041 - AH-1 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (Titration) 70556	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2010-06-02 2010-06-01	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		332	mg/Kg	50	4.00

#### Sample: 233041 - AH-1 0-1'

Parameter DRO	Flag	Result 93.3	Units mg/Kg	Dilution 1	RL 50.0
Prep Batch:	60419	Sample Preparat RL	ion: 2010-06-01	Prepared By:	kg
Laboratory: Analysis: QC Batch:	TPH DRO - NEW 70544	Analytical Metho Date Analyzed:	2010-06-01	Prep Method: Analyzed By:	kg

114-6400525	e: June 25, 2010			ork Order: OG/GC Fed				umber: ca Cour	
Surrogate _	Flag	Result	Units	Dilu	tion	Spike Amount	Percent Recovery		ecovery Limits
n-Tricosanc	1	133	mg/Kg	1		100	133	70	0 - 130
Sample: 23	<b>33041 - AH-1</b> 0	-1'							
Laboratory:	Midland								
Analysis:	TPH GRO		Analytica	l Method:	S 8015 D		Prep Me	thod:	S 5035
QC Batch:	70574		Date Ana		2010-06-02		Analyze		AG
Prep Batch:	60437			reparation:	2010-06-02		Prepareo		AG
			$\mathbf{RL}$						
Parameter	Fla	ag	Result		Units		Dilution		$\mathbf{RL}$
GRO			<1.00		mg/Kg		1		1.00
				********		Spike	Percent	Dag	overy
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery		mits
Trifluorotolu		1 105	2.29	mg/Kg	1	2.00	<u>114</u>		- 155
	robenzene (4-BF)	R)	2.29	mg/Kg	1	2.00	114		- 131.1
~									
Laboratory: Analysis: QC Batch:	3 <b>3042 - AH-1 1</b> Midland Chloride (Titra 71104 60876		Date	tical Method Analyzed: le Preparatio	2010-0		Analyz	Aethod: zed By: zed By:	N/A AR AR
Laboratory: Analysis: QC Batch:	Midland Chloride (Titra 71104 60876	tion)	Date	Analyzed:	2010-0	6-23	Analyz	zed By:	AR
Sample: 23 Laboratory: Analysis: QC Batch: Prep Batch: Parameter	Midland Chloride (Titra 71104	tion)	Date . Sampl	Analyzed:	2010-0	6-23	Analyz	zed By:	$\mathbf{AR}$
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titra 71104 60876	tion)	Date . Sampl RL	Analyzed:	2010-0 on: 2010-0	6-23	Analyz Prepar	zed By:	AR AR RL
Laboratory: Analysis: QC Batch: Prep Batch: Parameter Chloride Sample: 23 Laboratory: Analysis: QC Batch:	Midland Chloride (Titra 71104 60876	ution) <u>vg</u> .2.5'	Date Analy Sample	Analyzed:	2010-00 on: 2010-00 <u>Units</u> mg/Kg l: SM 450 2010-06	6-23 6-22 00-Cl B 3-23	Analyz Prepar Dilution 50 Prep M	zed By: red By: fethod: red By:	AR AR <u>RL</u> 4.00
Laboratory: Analysis: QC Batch: Prep Batch: Parameter Chloride Sample: 23 Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titra 71104 60876 Fla <b>3043 - AH-1 2-</b> Midland Chloride (Titra 71104 60876	ution) 4g .2.5' tion)	Date A Sampl RL Result 224 Analy Date A Sampl RL	Analyzed: le Preparatio	2010-00 on: 2010-00 <u>Units</u> mg/Kg d: SM 450 2010-06 on: 2010-06	6-23 6-22 00-Cl B 3-23	Analyz Prepar Dilution 50 Prep M Analyz Prepar	zed By: red By: fethod: red By:	AR AR 4.00 N/A AR AR
Laboratory: Analysis: QC Batch: Prep Batch: Parameter Chloride Sample: 23 Laboratory: Analysis: QC Batch:	Midland Chloride (Titra 71104 60876 Fla <b>3043 - AH-1 2</b> - Midland Chloride (Titra 71104	ution) 4g .2.5' tion)	Date A Sampl RL Result 224 Analy Date A Sampl	Analyzed: le Preparatio	2010-00 on: 2010-00 <u>Units</u> mg/Kg l: SM 450 2010-06	6-23 6-22 00-Cl B 3-23	Analyz Prepar Dilution 50 Prep M Analyz	zed By: red By: fethod: red By:	AR AR RL 4.00 N/A AR

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

114-6400525	: June 25, 2010 .	Work Order: 100 COG/GC Federa		Page Number: Lea Count	
Sample: 23	3044 - AH-1 3-3.5'				
Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	71104	Date Analyzed:	2010-06-23	Analyzed By:	AR
Prep Batch:	60876	Sample Preparation:	2010-06-22	Prepared By:	AR
		RL			
					БТ
Parameter	Flag	Result	Units	Dilution	- KL
Chloride	Flag		Units mg/Kg	Dilution	
Parameter Chloride Sample: 23 Laboratory: Analysis: QC Batch: Prep Batch:	Flag 3045 - AH-1 4-4.5' Midland Chloride (Titration) 71104 60876				RL 4.00 N/A AR AR
Chloride Sample: 23 Laboratory: Analysis: QC Batch:	3045 - AH-1 4-4.5' Midland Chloride (Titration) 71104	11400 Analytical Method: Date Analyzed:	ng/Kg SM 4500-Cl B 2010-06-23	100 Prep Method: Analyzed By:	4.00 N/A AR
Chloride Sample: 23 Laboratory: Analysis: QC Batch:	3045 - AH-1 4-4.5' Midland Chloride (Titration) 71104	11400 Analytical Method: Date Analyzed: Sample Preparation:	ng/Kg SM 4500-Cl B 2010-06-23	100 Prep Method: Analyzed By:	4.00 N/A AR

### Sample: 233046 - AH-1 5-5.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	71104	Date Analyzed:	2010-06-23	Analyzed By:	AR
Prep Batch:	60876	Sample Preparation:	2010-06-22	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		17600	ng/Kg	100	4.00

#### Sample: 233047 - AH-1 6-6.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	71104	Date Analyzed:	2010-06-23	Analyzed By:	AR
Prep Batch:	60876	Sample Preparation:	2010-06-22	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		10200	mg/Kg	100	4.00

Report Date: June 25, 2010 114-6400525		Work Order: 100 COG/GC Federa	Page Number: 7 of 20 Lea County, NM		
Sample: 233048	8 - AH-1 7-7.5'				
Laboratory: Mic	lland				
Analysis: Chl	oride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch: 711	04	Date Analyzed:	2010-06-23	Analyzed By:	AR
Prep Batch: 608	76	Sample Preparation:	2010-06-22	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		5850	mg/Kg	100	4.00

#### Sample: 233049 - AH-1 8-8.5'

Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (Titration) 71104	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2010-06-23 2010-06-22	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		5170	mg/Kg	100	4.00

#### Sample: 233050 - AH-1 9-9.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	Ň/A
QC Batch:	71104	Date Analyzed:	2010-06-23	Analyzed By:	AR
Prep Batch:	60876	Sample Preparation:	2010-06-22	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		7540	mg/Kg	100	4.00

#### Sample: 233051 - AH-2 0-1'

					continued	
Toluene			<0.0200	mg/Kg	1	0.0200
Benzene			< 0.0200	mg/Kg	1	0.0200
Parameter		Flag	Result	Units	Dilution	$\mathbf{RL}$
			$\mathbf{RL}$			
Prep Batch:	60437		Sample Preparation:	2010-06-02	Prepared By:	AG
QC Batch:	70573		Date Analyzed:	2010-06-02	Analyzed By:	$\mathbf{AG}$
Analysis:	BTEX		Analytical Method:	S 8021B	Prep Method:	S 5035
Laboratory:	Midland					

continued ...

Report Date: June 25, 2010		Work Order: 10052809	Page Number: 8 of 20
114-6400525	•	COG/GC Federal #27	Lea County, NM

#### sample 233051 continued ...

		RL					
Parameter Fla	ag	Result	2	Units	Di	lution	RL
Ethylbenzene		< 0.0200	}	mg/Kg		1	0.0200
Xylene		< 0.0200	)	mg/Kg		1	0.0200 .
•					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	$\mathbf{A}\mathbf{m}\mathbf{o}\mathbf{u}\mathbf{n}\mathbf{t}$	Recovery	Limits
Trifluorotoluene (TFT)		2.05	mg/Kg	1	2.00	102	52.8 - 137
4-Bromofluorobenzene (4-BFB)	)	1.91	mg/Kg	1	2.00	96	38.4 - 157

### Sample: 233051 - AH-2 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 70556 60409	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2010-06-02 2010-06-01	Prep Method: Analyzed By: Prepared By:	AR.
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		5320	mg/Kg	100	4.00

#### Sample: 233051 - AH-2 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - N 70544 60419	EW	Date Ar	nalyzed:	S 8015 D 2010-06-01 2010-06-01	Prep M Analyz Prepare	• •
Parameter DRO	FI	ag .	RL Result <50.0		nits /Kg	Dilution 1	RL 50.0
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	2	132	mg/Kg	1	100	132	70 - 130

#### Sample: 233051 - AH-2 0-1'

Laboratory: Analysis:	Midland TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	70574	Date Analyzed:	2010-06-02	Analyzed By: Prepared By:	
Prep Batch:	00437	Sample Preparation:	2010-00-02	r repared by:	AG

<sup>2</sup>High surrogate recovery. Sample non-detect, result bias high.

Report Date: June 25, 2010 114-6400525			Work Order: 10052809 COG/GC Federal #27				Page Number: 9 of 20 Lea County, NM		
Parameter	Flag		RL Result		Units		Dilution	RL	
GRO			<1.00		mg/Kg		1	1.00	
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluene (	FFT)	0	2.29	mg/Kg	1	2.00	114	50.3 - 155	
4-Bromofluoroben:			2.02	mg/Kg	1	2.00	101	51.7 - 131.1	

#### Sample: 233052 - AH-2 1-1.5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 71104 60876	Analytical Method: Date Analyzed: Sample Preparation	2010-06-23	Prep Method: Analyzed By: Prepared By:	AR
_	_	RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		7910	mg/Kg	100	4.00

#### Sample: 233053 - AH-2 2-2.5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 71105 60877	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2010-06-23 2010-06-22	Prep Method: Analyzed By: Prepared By:	$\mathbf{AR}$
Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		7210	mg/Kg	100	4.00

### Sample: 233054 - AH-2 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	71105	Date Analyzed:	2010-06-23	Analyzed By:	AR
Prep Batch:	60877	Sample Preparation:	2010-06-22	Prepared By:	AR
		D.I.			
		$\mathbf{RL}$			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		9160 r	ng/Kg	100	4.00

Report Date: June 25, 2010 114-6400525		Work Order: 100 COG/GC Federal	Page Number: 10 of Lea County, N		
Sample: 23	3055 - AH-2 4-4.5'				
Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	71105	Date Analyzed:	2010-06-23	Analyzed By:	AR
Prep Batch:	60877	Sample Preparation:	2010-06-22	Prepared By:	AR.
		RL			
Parameter	$\operatorname{Flag}$	Result	Units	Dilution	$\mathbf{RL}$
Chloride	<u>_</u>	11000	ıng/Kg	100	4.00

## Sample: 233056 - AH-2 5-5.5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 71105 60877	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2010-06-23 2010-06-22	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		9070	mg/Kg	100	4.00

#### Sample: 233057 - AH-2 6-6.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	71105	Date Analyzed:	2010-06-23	Analyzed By:	AR
Prep Batch:	60877	Sample Preparation:	2010-06-22	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		2620 1	ng/Kg	100	4.00

## Sample: 233058 - AH-2 7-7.5'

,

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	71105	Date Analyzed:	2010-06-23	Analyzed By:	$\mathbf{AR}$
Prep Batch:	60877	Sample Preparation	2010-06-22	Prepared By:	AR
		$\mathbf{RL}$			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		<200	mg/Kg	50	4.00

e: June 25, 2	010	Work Order: 1005 COG/GC Federal		Page Number: 11 of Lea County, N		
3059 - AH	-2 8-8.5'					
Midland Chloride (1 71105 60877	Fitration)	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2010-06-23 2010-06-22	Prep Method: Analyzed By: Prepared By:	N/A AR AR	
	<b>T</b> 1	RL	<b>T</b> T •.		ы	
	Flag				$\frac{\text{RL}}{4.00}$	
				· ·		
	-2 9-9.5'					
Chloride (1 71105	Fitration)	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2010-06-23 2010-06-22	Prep Method: Analyzed By: Propaged By:	N/A AR AR	
00011		• -	2010-00-22	тараха Бу.	m	
	Flag		Units	Dilution	RL	
	_ + ***8			50	4.00	
	QC Batch: 70544	Date Analyzed: 2010-	-06-01	Analyzed By		
70544 60419		0	-06-01	Prepared By:		
		QC Preparation: 2010- MDL		Prepared By:	kg	
	Flag	QC Preparation: 2010- MDL Result		Prepared By: Units	kg RL	
	Flag	QC Preparation: 2010- MDL	-06-0.1	Prepared By: Units mg/Kg	kg RL 50	
	Result	QC Preparation: 2010- MDL Result <5.86 Units Dilution	-06-0.1 Spike Amount	Prepared By: Units mg/Kg Percent Rec Recovery Li	kg RL 50 covery mits	
60419	·····	QC Preparation: 2010- MDL Result <5.86	-06-01 	Prepared By: Units mg/Kg Percent Rec Recovery Li	kg RL 50 covery mits	
60419	Result	QC Preparation: 2010- MDL Result <5.86 Units Dilution	-06-0.1 Spike Amount	Prepared By: Units mg/Kg Percent Rec Recovery Li	kg RL 50 covery mits	
60419 Flag	Result 95.4	QC Preparation: 2010- MDL Result <5.86 Units Dilution	-06-01 Spike 1 Amount 100 06-02	Prepared By: Units mg/Kg Percent Rec Recovery Li	kg RL 50 covery mits	
60419 Flag ank (1) 70556	Result 95.4	QC Preparation: 2010- MDL Result <5.86 Units Dilution mg/Kg 1 Date Analyzed: 2010-	-06-01 Spike 1 Amount 100 06-02	Prepared By: Units mg/Kg Percent Rec Recovery Li 95 70 Analyzed By:	kg RL 50 xovery mits - 130 AR	
	3059 - AH Midland Chloride (* 71105 60877 3060 - AH Midland Chloride (*	3059 - AH-2 8-8.5' Midland Chloride (Titration) 71105 60877 Flag 3060 - AH-2 9-9.5' Midland Chloride (Titration) 71105 60877 Flag Flag	3059 - AH-2 8-8.5'         Midland         Chloride (Titration)       Analytical Method:         71105       Date Analyzed:         60877       Sample Preparation:         RL       Flag         Flag       Result         3060 - AH-2 9-9.5'       Midland         Chloride (Titration)       Analytical Method:         71105       Date Analyzed:         60877       Sample Preparation:         RE       Result         3060 - AH-2 9-9.5'       Midland         Chloride (Titration)       Analytical Method:         71105       Date Analyzed:         60877       Sample Preparation:         RL       Flag         Result       221         ank (1)       QC Batch: 70544	3059 - AH-2 8-8.5' Midland Chloride (Titration) Analytical Method: SM 4500-Cl B 71105 Date Analyzed: 2010-06-23 60877 Sample Preparation: 2010-06-22 RL Flag Result Units 251 mg/Kg 3060 - AH-2 9-9.5' Midland Chloride (Titration) Analytical Method: SM 4500-Cl B 71105 Date Analyzed: 2010-06-23 60877 Sample Preparation: 2010-06-22 RL Flag Result Units 221 mg/Kg ank (1) QC Batch: 70544	3059 - AH-2 8-8.5'         Midland Chloride (Titration)       Analytical Method:       SM 4500-Cl B       Prep Method:         71105       Date Analyzed:       2010-06-23       Analyzed By:         60877       Sample Preparation:       2010-06-22       Prepared By:         RL       Flag       Result       Units       Dilution         251       mg/Kg       50         3060 - AH-2 9-9.5'         Midland       Chloride (Titration)       Analytical Method:       SM 4500-Cl B       Prep Method:         71105       Date Analyzed:       2010-06-23       Analyzed By:         60877       Sample Preparation:       2010-06-23       Analyzed By:         60877       Sample Preparation:       2010-06-23       Analyzed By:         60877       Sample Preparation:       2010-06-23       Prep Method:         71105       Date Analyzed:       2010-06-23       Analyzed By:         60877       Sample Preparation:       2010-06-22       Prepared By:         RL       Result       Units       Dilution         221       mg/Kg       50	

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Report Date: June 25, 114-6400525	Work Order: 10052809 COG/GC Federal #27					Page Number: 12 of 20 Lea County, NM		
Method Blank (1)	QC Batch: 70573							
QC Batch: 70573		Date Ana	alyzed: 201	10-06-02		Analyz	ed By: AG	
Prep Batch: 60437		QC Prep	aration: 20	10-06-02		Prepare	ed By: AG	
			MD	L				
Parameter	Flag		Resul		Unit		RL	
Benzene			< 0.015		mg/I		0.02	
Tolucne			< 0.0095		mg/I		0.02	
Ethylbenzene			< 0.010		mg/I		0.02	
Xylene			< 0.0093	0	mg/I	Kg	0.02	
<b>`</b>					Spike	Percent	Recovery	
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits	
Trifluorotoluene (TFT)		1.83	mg/Kg	1	2.00	92	66.6 - 122	
4-Bromofluorobenzene	(4-BFB)	1.50	mg/Kg	1	2.00	75	55.4 - 104	
QC Batch: 70574	QC Batch: 70574	Date Ana	*	10-06-02		Analyz	•	
Method Blank (1) QC Batch: 70574 Prep Batch: 60437	QC Batch: 70574	Date Ana QC Prepa	*	10-06-02 10-06-02		Analyz Prepare	•	
QC Batch: 70574 Prep Batch: 60437			aration: 201 MDL		11-:-	Prepare	ed By: AG	
QC Batch: 70574 Prep Batch: 60437 Parameter	QC Batch: 70574 Flag		aration: 201 MDL Result		Unit:	Prepare	ed By: AG	
QC Batch: 70574 Prep Batch: 60437 Parameter			aration: 201 MDL		Unit: mg/K	Prepare	ed By: AG	
QC Batch: 70574 Prep Batch: 60437 Parameter GRO	Flag	QC Prepa	aration: 20 MDL Result <0.396		mg/K Spike	Prepare s S Percent	ed By: AG RL 1 Recovery	
QC Batch: 70574 Prep Batch: 60437 Parameter GRO Surrogate	Flag	QC Prepa	aration: 20 MDL Result <0.396 Units	Dilution	mg/K Spike Amount	Prepare s g Percent Recovery	ed By: AG RL 1 Recovery Limits	
QC Batch: 70574 Prep Batch: 60437 Parameter GRO Surrogate Trifluorotoluene (TFT)	Flag Flag	QC Prepa Result 2.06	aration: 20 MDL Result <0.396 Units mg/Kg		mg/K Spike	Prepare s <u>s</u> Percent	ed By: AG RL 1 Recovery Limits 66.2 - 145	
QC Batch: 70574 Prep Batch: 60437 Parameter GRO Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene	Flag Flag	QC Prepa	aration: 20 MDL Result <0.396 Units	10-06-02 	mg/K Spike Amount 2.00	Prepare s g Percent Recovery 103	ed By: AG RL 1 Recovery Limits	
QC Batch: 70574 Prep Batch: 60437 Parameter GRO Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene Method Blank (1)	Flag Flag (4-BFB)	QC Prepa Result 2.06 1.60	aration: 20 MDL Result <0.396 Units mg/Kg mg/Kg	Dilution 1	mg/K Spike Amount 2.00	Prepare s g Percent Recovery 103 80	ed By: AG <u>RL</u> 1 Recovery <u>Limits</u> 66.2 - 145 62 - 120.5	
QC Batch: 70574 Prep Batch: 60437 Parameter GRO Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene Method Blank (1) QC Batch: 71104	Flag Flag (4-BFB)	QC Prepa Result 2.06	aration: 20 MDL Result <0.396 Units mg/Kg mg/Kg mg/Kg	10-06-02 	mg/K Spike Amount 2.00	Prepare s g Percent Recovery 103	ed By: AG <u>RL</u> 1 Recovery <u>Limits</u> 66.2 - 145 62 - 120.5 ed By: AR	
QC Batch: 70574 Prep Batch: 60437 Parameter GRO Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene Method Blank (1) QC Batch: 71104 Prep Batch: 60876	Flag Flag (4-BFB) QC Batch: 71104	QC Prepa Result 2.06 1.60 Date Ana	aration: 201 MDL Result <0.396 Units mg/Kg mg/Kg Mg/Kg	Dilution 1 1 1 10-06-23	mg/K Spike Amount 2.00 2.00	Prepare s Percent Recovery 103 80 Analyze Prepare	ed By: AG RL 1 Recovery Limits 66.2 - 145 62 - 120.5 ed By: AR ed By: AR	
QC Batch: 70574 Prep Batch: 60437 Parameter GRO Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene Method Blank (1) QC Batch: 71104	Flag Flag (4-BFB)	QC Prepa Result 2.06 1.60 Date Ana	aration: 20 MDL Result <0.396 Units mg/Kg mg/Kg mg/Kg hlyzed: 20 aration: 201	Dilution 1 1 1 10-06-23	mg/K Spike Amount 2.00	Prepare s Percent Recovery 103 80 Analyze Prepare	ed By: AG <u>RL</u> 1 Recovery <u>Limits</u> 66.2 - 145 62 - 120.5 ed By: AR	

## Method Blank (1) QC Batch: 71105

QC Batch:	71105	Date Analyzed:	2010-06-23	Analyzed By:	AR
Prep Batch:	60877	QC Preparation:	2010-06-22	Prepared By:	$\mathbf{AR}$

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Report Date: June 25, 2010 114-6400525				Work Order: 10052809 COG/GC Federal #27				Page	Number Lea Co	: 13 of 20 unty, NM
_					DL					
Parameter	Fl	ag			sult		Un			RL
Chloride				<'2	2.18		mg/	Kg		4
Laboratory Contro	ol Spike (LCS	S-1)								
QC Batch: 70544 Prep Batch: 60419			Date An QC Prep	-	2010-06- 2010-06-				nalyzed repared	
Daran		LC Rest		Inits	Dil.	Spike A mount	Matr			Rec.
Paranı DRO		26		g/Kg	<u></u>	Amount 250	Resu <5.8			Limit 4 - 133.4
									57.	- 100.4
Percent recovery is ba	ased on the spi	ike result.	RED IS D	ased on	тие зріке а	na spike a	upricate	resuit.		
		LCSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO		277	mg/Kg	1	250	<5.86	111	57.4 - 133.4	4	20
Percent recovery is ba	ased on the spi	ike result.	RPD is b	ased on	the spike a	nd spike d	uplicate i	esult.		
	LCS	LCGD				Spiles	τc	e to	20	Paa
Surrogata	LCS Besult	LCSD Result	Lin	ite	Dil	Spike A mount	LC			Rec. Limit
	LCS Result 98.0	LCSD Result 99.8	Un mg/	iits /Kg	Dil. 1	Spike Amount 100	LC Rec 98	r. Re	c.	Rec. Limit 70 - 130
Surrogate n-Tricosane Laboratory Contro QC Batch: 70556 Prep Batch: 60409	Result 98.0	Result 99.8		/Kg alyzed:		Amount 100	Ree	2. Re 10	c.	Limit 70 - 130 by: AR
n-Tricosane Laboratory Contro QC Batch: 70556 Prep Batch: 60409	Result 98.0	Result 99.8 5-1)	mg/ Date Ana QC Prep CS	/Kg alyzed: aration:	1 2010-06-0 2010-06-0	Amount 100 02 01 Spike	Rec 98	e. Re 10 An Pro	c. 0 alyzed B epared B	Limit 70 - 130 y: AR y: AR Rec.
n-Tricosane Laboratory Contro QC Batch: 70556 Prep Batch: 60409 Param	Result 98.0	Result 99.8 5-1) LC Res	mg/ Date Ana QC Prep CS sult	/Kg alyzed: aration: Units	1 2010-06-0	Amount 100 02 01 Spike Amount	Rec 98	e. Re 10 An Pro sutrix sult R	c. 0 alyzed B epared B	Limit 70 - 130 y: AR y: AR Rec. Limit
n-Tricosane Laboratory Contro QC Batch: 70556 Prep Batch: 60409 Param Chloride	Result 98.0	Result 99.8 5-1) LC Res 98	mg/ Date Ana QC Prep CS sult .6 n	/Kg alyzed: aration: Units ng/Kg	1 2010-06-0 2010-06-0 Dil. 1	Amount 100 02 01 Spike Amount 100	Rec 98	2. Re 10 An Pro atrix sult R 2.18	c. 0 alyzed B epared B	Limit 70 - 130 y: AR y: AR Rec. Limit
n-Tricosane Laboratory Contro QC Batch: 70556 Prep Batch: 60409 Param	Result 98.0	Result 99.8 5-1) LC Res 98	mg/ Date Ana QC Prep CS sult .6 n	/Kg alyzed: aration: Units ng/Kg	1 2010-06-0 2010-06-0 Dil. 1	Amount 100 02 01 Spike Amount 100	Rec 98	2. Re 10 An Pro atrix sult R 2.18	c. 0 alyzed B epared B	Limit 70 - 130 y: AR y: AR Rec. Limit
n-Tricosane Laboratory Contro QC Batch: 70556 Prep Batch: 60409 Param Chloride	Result 98.0	Result 99.8 5-1) LC Res 98 ke result. LCSD	mg/ Date Ana QC Prep CS sult .6 m RPD is b.	/Kg alyzed: aration: Units ng/Kg	1 2010-06-0 2010-06-0 Dil. 1	Amount 100 02 01 Spike Amount 100	Rec 98	2. Re 10 An Pro atrix sult R 2.18	c. 0 alyzed B epared B	Limit 70 - 130 y: AR y: AR Rec. Limit
n-Tricosane Laboratory Contro QC Batch: 70556 Prep Batch: 60409 Param Chloride Percent recovery is ba Param	Result 98.0	Result 99.8 5-1) LC Res 98 ke result. LCSD Rosult	mg/ Date Ana QC Prep CS sult 1 .6 n RPD is b. Units	/Kg alyzed: aration: Units ng/Kg	1 2010-06-0 2010-06-0 Dil. 1 the spike a Spike Amount	Amount 100 201 Spike Amount 100 nd spike du Matrix Result	Rec.	2. Re 10 An Pro utrix sult R 2.18 esult. Rec. Limit	c. 0 alyzed B epared B dec. 99 RPD	Limit 70 - 130 y: AR y: AR Rec. Limit 85 - 115 RPD Limit
n-Tricosane Laboratory Contro QC Batch: 70556 Prep Batch: 60409 Param Chloride Percent recovery is ba	Result 98.0	Result 99.8 5-1) LC Res 98 ke result. LCSD	mg/ Date Ana QC Prep CS sult .6 m RPD is b.	/Kg alyzed: aration: Units ng/Kg ased on	1 2010-06-0 2010-06-0 Dil. 1 the spike a Spike	Amount 100 02 01 Spike Amount 100 nd spike du Matrix	Rec 98 98 Ma Re <2	2. Re 10 An Pro atrix sult R 2.18 2.18 2.18	c. 0 alyzed B epared B ec. 99	Limit 70 - 130 y: AR y: AR Rec. Limit 85 - 115 RPD
n-Tricosane Laboratory Contro QC Batch: 70556 Prep Batch: 60409 Param Chloride Percent recovery is ba Param	Result 98.0 ol Spike (LCS ased on the spi	Result 99.8 5-1) LC Res 98 ke result. LCSD Result 100 ke result.	mg/ Date Ana QC Prep CS sult .6 n RPD is b Units mg/Kg	/Kg alyzed: aration: Units ng/Kg ased on Dil. 1	1 2010-06-0 2010-06-0 Dil. 1 the spike a Spike Amount 100	Amount 100 02 01 Spike Amount 100 nd spike du Matrix Result <2.18	Rec. 98 Ma Re 21 Iplicate r	2. Re 10 Am Pro sult R 2.18 result. Rec. Limit 85 - 115	c. 0 alyzed B epared B dec. 99 RPD	Limit 70 - 130 y: AR y: AR Rec. Limit 85 - 115 RPD Limit
n-Tricosane Laboratory Contro QC Batch: 70556 Prep Batch: 60409 Param Chloride Percent recovery is ba Param Chloride Percent recovery is ba	Result 98.0 ol Spike (LCS ased on the spi	Result 99.8 5-1) LC Res 98 ke result. LCSD Result 100 ke result.	mg/ Date Ana QC Prep CS sult .6 n RPD is b Units mg/Kg	/Kg alyzed: aration: Units ng/Kg ased on Dil. 1 ased on	1 2010-06-0 2010-06-0 Dil. 1 the spike a Spike Amount 100	Amount 100 02 01 Spike Amount 100 nd spike du Matrix Result <2.18 nd spike du	Rec. 98 Ma Re 21 Iplicate r	2. Re 10 Am Pro sult R 2.18 result. Rec. Limit 85 - 115 csult.	c. 0 alyzed B epared B dec. 99 RPD	Limit 70 - 130 y: AR y: AR Rec. Limit 85 - 115 RPD Limit 20

Report Date: June 25, 2010 114-6400525		······································	Work Order: 10052809 COG/GC Federal #27				Page Number: 14 of 20 Lea County, NM		
Param	•	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	
Benzene		1.83	mg/Kg	1	2.00	< 0.0150	92	81.9 - 108	
Toluene		1.84	mg/Kg	1	2.00	< 0.00950	92	81.9 - 107	
Ethylbenzene		1.80	mg/Kg	1	2.00	< 0.0106	90	78.4 - 107	
Xylene		5.44	mg/Kg	1	6.00	< 0.00930	91	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.		$\mathbf{RPD}$
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	$\operatorname{Limit}$
Benzene	1.90	mg/Kg	1	2.00	< 0.0150	95	81.9 - 108	4	20
Toluene	1.91	mg/Kg	1	2.00	< 0.00950	96	81.9 - 107	4	20
Ethylbenzene	1.87	mg/Kg	1	2.00	< 0.0106	94	78.4 - 107	4	20
Xylene	5.64	mg/Kg	1	6.00	<0.00930	94	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)	1.86	1.82	mg/Kg	1	2.00	93	91	70.2 - 114
4-Bromofluorobenzene (4-BFB)	1.76	1.76	ıng/Kg	1	2.00	88	88	69.8 - 121

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

QC Batch:	70574	Date Analyzed:	2010-06-02	Analyzed By:	$\mathbf{AG}$
Prep Batch:	60437	QC Preparation:	2010-06-02	Prepared By:	$\mathbf{AG}$

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO	15.4	mg/Kg	1	20.0	< 0.396	77	52.5 - 114.3

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	16.0	mg/Kg	1	20.0	< 0.396	80	52.5 - 114.3	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	$\mathbf{Result}$	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	2.08	1.89	mg/Kg	1	2.00	104	94	66.2 - 148.7
4-Bromofluorobenzene (4-BFB)	1.83	1.66	mg/Kg	1	2.00	92	83	64.1 - 127.4

### Laboratory Control Spike (LCS-1)

QC Batch:	71104	Date Analyzed:	2010-06-23	Analyzed By:	AR
Prep Batch:	60876	QC Preparation:	2010-06-22	Prepared By:	$\mathbf{AR}$

114-6400525	2010			er: 1005280 Federal #2			Pa	ge Number Lca Co	: 15 of 2 unty, NN
	I	LCS			Spike	N	Aatrix		Rec.
Param		esult	Units	Dil.	Amount	F	Result	Rec.	Limit
Chloride		98.3	mg/Kg	1	100		<2.18	98	85 - 115
Percent recovery is based	• • • · · · · · · · · · · · · · ·			the spike a	and spike d	uplicate	e result.		
	LCSD			Spike	Matrix		Rec.		RPD
Param	Result			Amount		Rec	. Limi	RPD	Limi
Chloride	101	mg/K	g 1	100	<2.18	101	85 - 1	15 3	20
Percent recovery is based	_	t. RPD is	based on	the spike a	and spike di	uplicate	e result.		
QC Batch: 71105	,	Date A	nalyzed:	2010-06-	23			Analyzed E	y: AR
Prep Batch: 60877			eparation:					Prepared B	-
	1	LCS			Spike	٦	latrix		Rec.
Param		esult	Units	Dil.	Amount		Result	Rec.	Limit
Chloride		08.9	mg/Kg	1	100		<2.18	99	85 - 113
Param Chloride Percent recovery is based	Result 101 I on the spike resul	mg/K	g 1	Amount 100 the spike a	<2.18	Rec. 101 Iplicate	85 - 11		Limi 20
	-			-					
Matrix Spike (MS-1)	Spiked Sample:	233169							
Matrix Spike (MS-1) QC Batch: 70544 Prep Batch: 60419	Spiked Sample:	Date A	Analyzed:	2010-06- 2010-06-				Analyzed I Prepared 1	
QC Batch: 70544	Spiked Sample:	Date A	Analyzed: eparation:					Analyzed I Prepared I	
QC Batch: 70544		Date A				Mat	rix		• •
QC Batch: 70544 Prep Batch: 60419	У	Date A QC Pr 1S sult	eparation: Units		01 Spike Amount	Res	ult R	Prepared 1	By: kg Rec. Limit
QC Batch: 70544 Prep Batch: 60419	M Re	Date A QC Pr 1S sult	eparation:	2010-06-	01 Spike		ult R	Prepared 1	By: kg Rec. Limit
QC Batch: 70544 Prep Batch: 60419 Param DRO	M Re 3	Date A QC Pr 1S sult 34 n	eparation: Units ng/Kg	2010-06- Dil.	01 Spike Amount 250	Res 37.	ult R	Prepared 1	By: kg Rec. Limit
QC Batch: 70544 Prep Batch: 60419 Param DRO	M Re 3	Date A QC Pr 1S sult 34 n	eparation: Units ng/Kg	2010-06- Dil.	01 Spike Amount 250	Res 37.	ult Ra 7 1 result. Rec.	Prepared I	By: kg Rec. Limit 2 - 167.1
QC Batch: 70544 Prep Batch: 60419 Param DRO Percent recovery is based Param	M Re 3 I on the spike resul MSD Result	Date A QC Pr 1S sult 34 n	Units ng/Kg based on	2010-06- Dil. 1 the spike a	01 Spike Amount 250 Ind spike du Matrix Result	Res 37.	ult Re 7 1 result. Rec. Limit	Prepared I ec. 18 35. RPD	By: kg Rec. Limit 2 - 167.1 RPD
QC Batch: 70544 Prep Batch: 60419 Param DRO Percent recovery is based Param	M Re 3 I on the spike resul MSD	Date A QC Pr 1S sult 34 r t. RPD is	units ng/Kg based on Dil.	2010-06- Dil. 1 the spike a Spike	01 Spike Amount 250 Ind spike du Matrix	Res 37. iplicate	ult Ra 7 1 result. Rec.	Prepared I ec. 18 35. RPD	By: kg Rec. Limit 2 - 167.1 RPD
QC Batch: 70544 Prep Batch: 60419 Param DRO Percent recovery is based Param DRO	M Re 3 I on the spike resul MSD Result 298	Date A QC Pr 4S sult 34 n t. RPD is Units mg/Kg	Units ng/Kg based on Dil. 1	2010-06- Dil. 1 the spike a Spike Amount 250	01 Spike Amount 250 Ind spike du Matrix Result 37.7	Res 37. iplicate Rec. 104	ult Re 7 1 result. Rec. Limit 35.2 - 167	Prepared I ec. 18 35. RPD	By: kg Rec. Limit 2 - 167.1 RPD Limit
QC Batch: 70544	M Re 3 I on the spike resul MSD Result 298	Date A QC Pr 4S sult 34 n t. RPD is <u>Units</u> <u>mg/Kg</u> t. RPD is	Units ng/Kg based on Dil. 1	2010-06- Dil. 1 the spike a Spike Amount 250	01 Spike Amount 250 Ind spike du Matrix Result 37.7	Res 37. iplicate Rec. 104 iplicate	ult Re 7 1 result. Rec. Limit 35.2 - 167 result.	Prepared I ec. 18 35. RPD	By: kg Rec. Limit 2 - 167.1 RPD Limit
QC Batch: 70544 Prep Batch: 60419 Param DRO Percent recovery is based Param DRO	M Re 3 I on the spike resul MSD Result 298 I on the spike resul	Date A QC Pr 4S sult 34 r t. RPD is Units mg/Kg t. RPD is D	Units ng/Kg based on Dil. 1	2010-06- Dil. 1 the spike a Spike Amount 250	01 Spike Amount 250 Ind spike du Matrix Result 37.7 Ind spike du	Res 37. aplicate Rec. 104 aplicate	ult Ra 7 1 result. Rec. Limit 35.2 - 167 result. MS 1	Prepared 1 ec. 18 35. RPD 7.1 11	By: kg Rec. Limit 2 - 167.1 RPD Limit 20

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Report Date: June 25, 2010 114-6400525	<del></del>			er: 10052 Federal <sub>7</sub>				Page Nu L	umber: ea Cou	
Matrix Spike (MS-1) Spike	ed Sample: 23	3088								
QC Batch: 70556		Date An	alvzed:	2010-0	6-02			Anal	yzed By	: AR
Prep Batch: 60409		QC Prep							ared By	
								•		
	MS				Sn	ike l	Matrix			Rec.
Param	Resu	lt.	Units	Dil.	Amo		Result	Rec	_	Limit
Chloride	9670		ng/Kg	100		)00	545	91		35 - 11
Percent recovery is based on the										
v	MSD			Spike	-	-		Rec.		RPD
Param	Result	Units	Dil.	Amou					RPD	Limi
Chloride	9830	mg/Kg	100	10000				- 115	2	20
Percent recovery is based on the										
electrocovery is based on the	spike reaut. 1		asea on	the spine	and spir	te unpatar	e resur.	•		
Matrix Spike (MS-1) Spike	ed Sample: 233	3018								
	-			0010.0	• • •					10
QC Batch: 70573		Date Ana	•	2010-0				+	/zed By	
Prep Batch: 60437		QC Prep	aration:	2010-0	0-02			Prepa	ared By	: AG
	MS				C					<b>D</b>
Param	Result	TT	nits	Dil.	Spike Amoun		atrix sult	Rec.		Rec. Limit
Benzene	1.82		/Kg	1	2.00		.0150	<u>91</u>		.5 - 11
Toluene	1.88		g/Kg	1	2.00		0100	94		.4 - 113
Ethylbenzene	1.90		s/Kg	1	2.00		.0106	95		.9 - 114
Xylene	5.72		s/8 s/Kg	1	6.00		00930	95		4 - 114
Percent recovery is based on the				the spike						
	MSD			Spike	Matr	ix	ß	tec.		RPD
Param		Units	Dil.	Amount	Resu			imit	RPD	Limi
Benzene		ng/Kg	1	2.00	< 0.01			5 - 112	2	20
Toluene		ng/Kg	1	2.00	< 0.00			- 113	2	20
Ethylbenzene		ng/Kg	1	2.00	< 0.01	.06 97	83.9	) - 114	<b>2</b>	20
Xylene	5.82 I	ng/Kg	1	6.00	< 0.00	930 97	84	- 114	2	20
Percent recovery is based on the	spike result. H	RPD is b	ased on	the spike	and spik	e duplicate	e result.			
	MS	MS	SD			Spike	MS	MSD	•	Rec.
Surrogate	Result	Res	ult	Units	Dil.	Amount	Rec.	Rec.		Limit
Trifluorotoluene (TFT)	1.48	1.5		ng/Kg	1	2	74	77		.3 - 111
4-Bromofluorobenzene (4-BFB)	1.44	1.4	18 n	ng/Kg	1	2	72	74	35	.5 - 129
Matrix Spike (MS-1) Spike	d Sample: 233	165								
QC Batch: 70574	1	Date Ana	alvzed:	2010-06	5-02			Anab	zed By	: AG
Prep Batch: 60437		QC Prep		2010-00					red By	
	`	** * • • • b		-010 00						

Report Date: June 25, 2010 114-6400525				ler: 1005280 Federal #2					Page		r: 17 of 2 ounty, NI
	M	5			Spi	ke	Ma	atrix			Rec.
Param	Res		Units	Dil.	Amo		Re	sult	Ree	с.	Limit
GRO	25.	1 n	ng/Kg	1	20	.0	5.5	5866	98	3	10 - 198.
Percent recovery is based on the sj	pike result.	RPD is	based or	the spike a	und spi	ike du	plicate	result			
	MSD			Spike	Mat	rix		F	lec.		RPE
Param	Result	Units	Dil.	Amount	Res		Rec.		imit	RPI	) Limi
GRO	26.8	mg/Kg	1	20.0	5.58	366	106	10 -	198.3	7	20
Percent recovery is based on the sp	oike result.	RPD is l	based or	the spike a	und spi	ke du	plicate	result			
	MS	S M	SD			$\mathbf{Sp}$	ike	MS	MS	SD	Rec.
Surrogate	Resu	ilt Re	sult	Units	Dil.	Amo	ount	Rec.	Re	ec.	Limit
Trifluorotoluene (TFT)	2.2	8 2.	.37	mg/Kg	1	6	2	114	1	18	65.5 - 14
1-Bromofluorobenzene (4-BFB)	2.4	2 2.		mg/Kg	1	4	2	121	11	19	58.6 - 14
Prep Batch: 60876		QC Prej	parauvii	: 2010-06-					110	epared 1	By: AR
Donom	M		Tinita	וים	-	oike		latrix	D	~~	Rec.
Param	Res	ult	Units	Dil.	Am	ount	R	lesult		ec.	Limit
Chloride	Res 175	ult 00 r	mg/Kg_	100	Am 10	ount 000	R	lesult 7910	g	ec. 96	
	Res 175 Dike result.	ult 00 r	mg/Kg_	100 the spike a	Am 10 und spi	ount 000 ke du	R	tesult 7910 result			Limit 85 - 115
Chloride Percent recovery is based on the sp	Res 175 Dike result. MSD	ult 00 r RPD is ł	mg/Kg based on	100 the spike a Spike	Am 10 und spi Ma	ount 000 ke du ıtrix	R , plicate	tesult 7910 result H	Rec.	96	Limit 85 - 115 RPD
Chloride Percent recovery is based on the sp Param	Res 175 Dike result. MSD Result	ult 00 r RPD is l Units	mg/Kg based on Dil.	100 the spike a Spike Amount	Am 10 und spi Ma Re	ount 000 ke du trix sult	R plicate Rec.	tesult 7910 result H L	Rec. .imit	96 RPD	Limit 85 - 11 RPD Limit
Chloride Percent recovery is based on the sp Param Chloride	Res 175 Dike result. MSD Result 17700	ult 00 r RPD is b Units mg/Kg	mg/Kg based on Dil. 100	100 the spike a Spike Amount 10000	Am 10 und spi Ma Re 79	ount 000 ke du utrix sult 910	R plicate Rec. 98	tesult 7910 result H L 85	9 Rec. .imit - 115	96	Limit 85 - 115 RPD
Chloride Percent recovery is based on the sp Param Chloride Percent recovery is based on the sp	Res 175 Dike result. MSD Result 17700	ult RPD is b Units mg/Kg RPD is b	mg/Kg based on Dil. 100 based on aalyzed:	100 the spike a Spike Amount 10000 the spike a 2010-06-5	Am 10 und spi Ma Re 79 und spi	ount 000 ke du utrix sult 910	R plicate Rec. 98	tesult 7910 result H L 85	2	96 RPD	Limit 85 - 113 RPD Limit 20 By: AR
Chloride Percent recovery is based on the sp Param Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 71105	Res 175 Dike result. MSD Result 17700 Dike result.	ult 00 r RPD is b Units mg/Kg RPD is b 34791 Date An QC Prep S	mg/Kg based on Dil. 100 based on aalyzed:	100 the spike a Spike Amount 10000 the spike a 2010-06-5	Am 10 und spi Ma Re 79 und spi 23 22 Sp	ount 000 ke du utrix sult 910	Rec. 98 plicate	tesult 7910 result H L 85	Rec. imit - 115 Ana Pre	06 RPD 1	Limit 85 - 113 RPD Limit 20 By: AR
Chloride Percent recovery is based on the sp Param Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 71105 Prep Batch: 60877	Res 175 Dike result. MSD Result 17700 Dike result. Sample: 23	ult 00 r RPD is t <u>Units</u> mg/Kg RPD is t 34791 Date An QC Prep S ult	mg/Kg based on 100 based on nalyzed: paration	100 the spike a Spike Amount 10000 the spike a 2010-06-3	Am 10 und spi Ma Re 79 und spi 23 22 23 22 23 22	ount 000 ke du utrix sult 910 ke du	Rec. 98 plicate	tesult 7910 result I L 85 result	Rec. imit - 115 Ana Pre	96 RPD 1 alyzed 1 pared 1	Limit 85 - 113 RPD Limit 20 By: AR By: AR By: AR Rec.
Chloride Percent recovery is based on the sp Param Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 71105 Prep Batch: 60877 Param Chloride	Res 175 Dike result. MSD Result 17700 Dike result. Sample: 23 Mi Res 114	ult 00 r RPD is t Units mg/Kg RPD is t 34791 Date An QC Prep S ult 00 r	mg/Kg based on Dil. 100 based on aalyzed: paration Units mg/Kg	100 the spike a Spike Amount 10000 the spike a 2010-06-3 2010-06-3 2010-06-3 Dil. 100	Am 10 und spi Ma Re 79 und spi 23 22 Sp Am 10	ount 000 ke du ttrix sult 010 ke du vike ount 000	Rec. 98 plicate plicate	lesult 7910 result B 85 result fatrix esult 1870	Rec. .imit - 115 - Ana Pre Re 9	RPD 1 alyzed 1 pared 1 ec.	Limit 85 - 113 RPD Limit 20 By: AR By: AR Rec. Limit
Chloride Percent recovery is based on the sp Param Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 71105 Prep Batch: 60877 Param Chloride	Res 175 Dike result. MSD Result 17700 Dike result. Sample: 23 Mi Result 114 Dike result.	ult 00 r RPD is t Units mg/Kg RPD is t 34791 Date An QC Prep S ult 00 r	mg/Kg based on Dil. 100 based on aalyzed: paration Units mg/Kg	100           the spike a           Spike           Amount           10000           the spike a           2010-06-2           2010-06-3           Dil.           100           the spike a	Am 10 und spi Ma Re 79 und spi 23 22 Sp Am 10 und spi	ount 000 ke du ttrix sult 010 ke du ount 000 ke du	Rec. 98 plicate plicate	lesult 7910 result B 85 result latrix esult 1870 result	Rec. .imit - 115 - Pre Re 9	RPD 1 alyzed 1 pared 1 ec.	Limit 85 - 113 RPD Limit 20 By: AR By: AR By: AR Rec. Limit 85 - 115
Chloride Percent recovery is based on the sp Param Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 71105 Prep Batch: 60877	Res 175 Dike result. MSD Result 17700 Dike result. Sample: 23 Mi Res 114	ult 00 r RPD is t Units mg/Kg RPD is t 34791 Date An QC Prep S ult 00 r	mg/Kg based on Dil. 100 based on aalyzed: paration Units mg/Kg	100 the spike a Spike Amount 10000 the spike a 2010-06-3 2010-06-3 2010-06-3 Dil. 100	Am 10 und spi Ma Re 79 und spi 23 22 Sp Am 10 .nd spi Ma	ount 000 ke du ttrix sult 010 ke du vike ount 000	Rec. 98 plicate plicate	lesult 7910 result H L 85 result Iatrix esult 1870 result F	Rec. .imit - 115 - Ana Pre Re 9	RPD 1 alyzed 1 pared 1 ec.	Limit 85 - 113 RPD Limit 20 By: AR By: AR By: AR Rec. Limit 85 - 115 RPD

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114-640052	te: June 25, 201 5	0		k Order: 10052 I/GC Federal 7			umber: 18 of 20 Lea County, NM
Standard	(CCV-1)						
QC Batch:	70544		Date Anal	yzed: 2010-06	-01	Ana	alyzed By: kg
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		mg/Kg	250	291	116	80 - 120	2010-06-01
Standard	(CCV-2)						
QC Batch:	70544		Date Anal	yzed: 2010-06	-01	Ana	alyzed By: kg
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		mg/Kg	250	290	116	80 - 120	2010-06-0
<b>.</b>		T1	True Conc.	Found	Percent Recovery	Recovery Limits	Date Analyzed
		Thu: An	Cone	Cong	Recoverv	Limits	Analyzed
	Flag	Units mg/Kg	100	Conc. 101	101	85 - 115	
Param Chloride Standard						85 - 115	2010-06-02
Chloride Standard	(CCV-1)		100		101		
Chloride Standard	(CCV-1)		100	101	101		2010-06-02
Chloride Standard QC Batch:	(CCV-1) 70556	mg/Kg	100 Date Analy CCVs True	101 vzed: 2010-06- CCVs Found	101 02 CCVs Percent	Anal Percent Recovery	2010-06-02 yzed By: AR Date
Chloride Standard QC Batch: Param	(CCV-1)	ng/Kg Units	100 Date Analy CCVs True Conc.	101 rzed: 2010-06- CCVs Found Conc.	101 02 CCVs Percent Recovery	Anal Percent Recovery Limits	2010-06-02 yzed By: AR Date Analyzed
Chloride	(CCV-1) 70556	mg/Kg	100 Date Analy CCVs True	101 vzed: 2010-06- CCVs Found	101 02 CCVs Percent	Anal Percent Recovery	2010-06-02 yzed By: AR Date
Chloride Standard QC Batch: Param	(CCV-1) 70556 Flag	ng/Kg Units	100 Date Analy CCVs True Conc.	101 rzed: 2010-06- CCVs Found Conc.	101 02 CCVs Percent Recovery	Anal Percent Recovery Limits	2010-06-02 yzed By: AR Date Analyzed
Chloride Standard QC Batch: Param Chloride	(CCV-1) 70556 Flag (CCV-1)	ng/Kg Units	100 Date Analy CCVs True Conc.	101 vzed: 2010-06- CCVs Found Conc. 99.0	101 02 CCVs Percent Recovery 99	Anal Percent Recovery Limits 85 - 115	2010-06-02 yzed By: AR Date Analyzed
Chloride Standard QC Batch: Param Chloride Standard	(CCV-1) 70556 Flag (CCV-1)	ng/Kg Units	100 Date Analy CCVs True Conc. 100	101 vzed: 2010-06- CCVs Found Conc. 99.0	101 02 CCVs Percent Recovery 99	Anal Percent Recovery Limits 85 - 115	2010-06-02 yzed By: AR Date Analyzed 2010-06-02
Chloride Standard QC Batch: Param Chloride Standard	(CCV-1) 70556 Flag (CCV-1)	ng/Kg Units	100 Date Analy CCVs True Conc. 100 Date Analy	101 rzed: 2010-06- CCVs Found Conc. 99.0 rzed: 2010-06-	101 02 CCVs Percent Recovery 99	Anal Percent Recovery Limits 85 - 115 Anal	2010-06-02 yzed By: AR Date Analyzed 2010-06-02
Chloride Standard QC Batch: Param Chloride Standard	(CCV-1) 70556 Flag (CCV-1)	ng/Kg Units	100 Date Analy CCVs True Conc. 100 Date Analy CCVs	101 vzed: 2010-06- CCVs Found Conc. 99.0 vzed: 2010-06- CCVs	101 02 CCVs Percent Recovery 99 02 CCVs	Anal Percent Recovery Limits 85 - 115 Anal Percent	2010-06-02 yzed By: AR Date Analyzed 2010-06-02 yzed By: AG
Chloride Standard QC Batch: Param Chloride Standard QC Batch:	(CCV-1) 70556 Flag (CCV-1) 70573	Ing/Kg Units mg/Kg	100 Date Analy CCVs True Conc. 100 Date Analy CCVs True Conc. 0.100	101 rzed: 2010-06- CCVs Found Conc. 99.0 rzed: 2010-06- CCVs Found Corc. 0.0918	101 02 CCVs Percent Recovery 99 02 CCVs Percent Recovery 92	Anal Percent Recovery Limits 85 - 115 Anal Percent Recovery	2010-06-02 yzed By: AR Date Analyzed 2010-06-02 yzed By: AG Date Analyzed 2010-06-02
Chloride Standard QC Batch: Param Chloride Standard QC Batch: Param	(CCV-1) 70556 Flag (CCV-1) 70573	Units mg/Kg Units	100 Date Analy CCVs True Conc. 100 Date Analy CCVs True Conc.	101 vzed: 2010-06- CCVs Found Conc. 99.0 vzed: 2010-06- CCVs Found Conc.	101 02 CCVs Percent Recovery 99 02 CCVs Percent Recovery	Anal Percent Recovery Limits 85 - 115 Anal Percent Recovery Limits	2010-06-02 yzed By: AR Date Analyzed 2010-06-02 yzed By: AG Date Analyzed

Report Dat 114-640052	te: June 25, 2 25	010		k Order: 10052 G/GC Federal 3			umber: 19 of 20 .ca County, NM
standard co	ntinued						
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Fla	g Units	Conc.	Conc.	Recovery	Limits	Analyzed
Ethylbenzer		mg/Kg	0.100	0.0910		80 - 120	2010-06-02
Xylene		mg/Kg	0.300	0.274	91	80 - 120	2010-06-02
Standard	(CCV-2)						
QC Batch:	70573		Date Analy	yzed: 2010-06-	-02	Anal	yzed By: AG
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Fla	g Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0906	91	80 - 120	2010-06-02
Toluene		mg/Kg	0.100	0.0911	91	80 - 120	2010-06-02
Ethylbenzer	ne	mg/Kg	0.100	0.0879	88	80 - 120	2010-06-02
Xylene		mg/Kg	0.300	0.264	88	80 - 120	2010-06-02
Standard (	. ,						
Standard (	(CCV-1) 70574		Date Analy CCVs True	CCVs	CCVs	Percent	yzed By: AG
Standard ( QC Batch:	70574	Units	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Standard ( QC Batch: Param	. ,	Units mg/Kg	CCVs	CCVs	CCVs	Percent	Date Analyzed
Standard (	70574 Flag (CCV-2)		CCVs True Conc.	CCVs Found Conc. 0.949	CCVs Percent Recovery 95	Percent Recovery Limits 80 - 120	Date Analyzed
Standard ( QC Batch: Param GRO Standard (	70574 Flag (CCV-2)		CCVs True Conc. 1.00 Date Analy	CCVs Found Conc. 0.949 yzed: 2010-06-	CCVs Percent Recovery 95	Percent Recovery Limits 80 - 120 Anal	Date Analyzed 2010-06-02
Standard ( QC Batch: Param GRO Standard (	70574 Flag (CCV-2)		CCVs True Conc. 1.00 Date Analy CCVs	CCVs Found Conc. 0.949 yzed: 2010-06- CCVs	CCVs Percent Recovery 95 -02 CCVs	Percent Recovery Limits 80 - 120 Anal Percent	Date Analyzed 2010-06-02 yzed By: AG
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Standard ( QC Batch: Param GRO Standard ( QC Batch: Param GRO Standard (	70574 Flag (CCV-2) 70574 Flag (ICV-1)	mg/Kg Units	CCVs True Conc. 1.00 Date Analy CCVs True Conc.	CCVs Found Conc. 0.949 yzed: 2010-06- CCVs Found Conc. 1.01	CCVs Percent Recovery 95 -02 -02 CCVs Percent Recovery 101	Percent Recovery Limits 80 - 120 Anal Percent Recovery Limits 80 - 120	Date Analyzed 2010-06-02 yzed By: AG Date Analyzed
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CCVs     CCVs     CCVs     Percent       Param     Flag     Units     Conc.     Conc.     Recovery     Dat       Chloride     mg/Kg     100     98.6     99     85 - 115     2010-0       Standard (ICV-1)     QC Batch:     71105     Date Analyzed:     2010-06-23     Analyzed By:       ICVs     ICVs     ICVs     Percent     Recovery     Dat       Param     Flag     Units     Conc.     Conc.     Recovery     Dat       Param     Flag     Units     Conc.     Conc.     Recovery     Dat       Standard (CCV-1)     QC Batch:     71105     Date Analyzed:     2010-06-23     Analyzed By:       Ghoride     mg/Kg     100     99.4     99     85 - 115     2010-0       Standard (CCV-1)     QC Batch:     71105     Date Analyzed:     2010-06-23     Analyzed By:       QC Batch:     71105     Date Analyzed:     2010-06-23     Analyzed By:     Intit Standard By:       QC Batch:     71105     Date Analyzed:     2010-06-23     Analyzed By:     Intit Standard By:       Param     Flag     Units     Conc.     CCVs     CCVs     Percent       Recovery     Date     Date     Conc.     Conc.     <	Report Dat 114-640052	e: June 25, 20 5	)10		rk Order: 1005 G/GC Federal		0	umber: 20 of 20 Lea County, NM
CCVs       CCVs       CCVs       Percent       Percent       Recovery       Dat         Param       Flag       Units       Conc.       Conc.       Recovery       Limits       Analy         Chloride       mg/Kg       100       98.6       99       85 - 115       2010-0         Standard (ICV-1)       QC Batch:       71105       Date Analyzed:       2010-06-23       Analyzed By:         ICVs       ICVs       ICVs       Percent       Recovery       Date         Param       Flag       Units       Conc.       Conc.       Recovery       Date         Param       Flag       Units       Conc.       Conc.       Recovery       Date         Param       Flag       Units       Conc.       Conc.       Recovery       Date         QC Batch:       71105       Date Analyzed:       2010-06-23       Analyzed By:       Date         Standard (CCV-1)       QC Batch:       71105       Date Analyzed:       2010-06-23       Analyzed By:         QC Batch:       71105       Date Analyzed:       2010-06-23       Analyzed By:       Date         Param       Flag       Units       CCVs       CCVs       Percent       Recovery	Standard	(CCV-1)						
ParamFlagUnitsTrue Conc.Found Conc.Percent RecoveryRecovery LimitsDat AnalyChloridemg/Kg10098.69985 - 1152010-0Standard (ICV-1)Date Analyzed:2010-06-23Analyzed By:QC Batch:71105Date Analyzed:2010-06-23Analyzed By:ParamFlagUnitsICVsICVsPercent RecoveryDate Analyzed By:ParamFlagUnitsConc.Conc.RecoveryDate AnalyzedChloridemg/Kg10099.49985 - 1152010-0Standard (CCV-1)QC Batch:71105Date Analyzed:2010-06-23Analyzed By:QC Batch:71105Date Analyzed:2010-06-23Analyzed By:ParamFlagUnitsCCVsCCVsPercent RecoveryParamFlagUnitsConc.Conc.RecoveryDateParamFlagUnitsConc.Conc.RecoveryDate	QC Batch:	71104		Date Ana	lyzed: 2010-06	5-23	Anal	yzed By: AR
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Param	Flag	Units	True	Found	Percent	Recovery	Date Analyzed
QC Batch:       71105       Date Analyzed:       2010-06-23       Analyzed By:         ICVs       ICVs       ICVs       Percent       Recovery       Date         Param       Flag       Units       Conc.       Conc.       Recovery       Limits       Analyzed         Chloride       mg/Kg       100       99.4       99       85 - 115       2010-06         Standard (CCV-1)       Date Analyzed:       2010-06-23       Analyzed By:       Analyzed By:       Analyzed By:         QC Batch:       71105       Date Analyzed:       2010-06-23       Analyzed By:       Analyzed By:         Param       Flag       Units       CCVs       CCVs       Percent         Param       Flag       Units       Conc.       Conc.       Recovery       Date	Chloride		mg/Kg	100	98.6	99	85 - 115	2010-06-23
ParamFlagUnitsTrue Conc.Found Conc.Percent RecoveryRecoveryDat 				Date Anal	lyzed: 2010-06	5-23	Anal	yzed By: AR
Chloride       mg/Kg       100       99.4       99       85 - 115       2010-0         Standard (CCV-1)       QC Batch: 71105       Date Analyzed: 2010-06-23       Analyzed By:       Analyzed By:         QC Batch: 71105       Date Analyzed: 2010-06-23       Percent         CCVs       CCVs       Percent         True       Found       Percent       Recovery       Date         Param       Flag       Units       Conc.       Conc.       Recovery       Limits       Analy	Param	Flag	Ilnite	True	Found	Percent	Recovery	Date
QC Batch:       71105       Date Analyzed:       2010-06-23       Analyzed By:         CCVs       CCVs       CCVs       Percent         True       Found       Percent       Recovery       Date         Param       Flag       Units       Conc.       Recovery       Limits       Analyzed		r iag						2010-06-23
CCVs CCVs CCVs Percent True Found Percent Recovery Dat Param Flag Units Conc. Conc. Recovery Limits Analy	Standard	(CCV-1)						
TrueFoundPercentRecoveryDateParamFlagUnitsConc.Conc.RecoveryLimitsAnaly	QC Batch:	71105		Date Anal	yzed: 2010-06	-23	Anal	yzed By: AR
				True	Found	Percent	Recovery	Date
Chloride mg/Kg 100 101 101 85 - 115 2010-0	Param Chloride	Flag	• • • • • • • • • • • • • • • • • • • •	<u>Conc.</u> 100			Limits 85 - 115	Analyzed 2010-06-23

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PAGE: V OF: 2	ANALYSIS REGUEST (Circle or Specify Method No.)	ез бн рд и р ез бн рд и р	270/625 660/624	a Ag Ag Ag a Ag Ag a Ag Ag b Ag b Ag b Ag b Ag b Ag b Ag b A		X									SAMPLED BY: [Print & Initial] Date: 5-216-10	(Circlet) BUS	TETRA TECH CONTACT PERSON: RESULT OTHER	- XLA TONGLEZ AUTOMORE	
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		<b>TETRA TECH</b> 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946	SITE MANAGER: IK Tavaret	Feder	Lea C Sample IDER	1-0-1				5-5.5					1605	RECEIVED BY: (Signature)	RECEIVED BY: (Signature)	RECEIVED BY: (54) mature C	
Analysis Baduast of Chain	ais i icducsi	<b>F</b> F		25 CDG CT	T M XIRTAM RARD BARD	1-11 × 12	1- HT	·-₩7	- ##        ## - /	1- +++          +- I	1-HY		1-44	N N Y	Les Date:	/	durre) Darte: Time:	PHONE:	
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ain of Custody Record ANALYSIS REQUEST (Circle or Specify Method No.)	4 4 4 4 5 6 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7	PHESERVATIVE BLACK				a-as'	3-3.5'	4-4.5'	د بر هر ا	6-6.5	7-1.5	8-85'		Date:	Date: SkilpPED BY: (Cir. Tane: FEDEX P. 04	RECEIVED BY: (Signature) Date: Date: TETRA TECH CONTACT PERSON	DATE 5 27.10 The Tavanez	DN WHEN RECEIVED: REMARKS:
Request of Chain	HETRATECH 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 66	SITE MANAGER: TLA	PROJECT NAME: COLA CAR Followal	C-HA X S	د-114	۲.4H	E-HV    /	C-HY	2- HA	A4-3	с- <del>1</del> 19	AH-2	W V AH-2	Time: 1/2010	Date: Time:	Dete: - Time:	PHONE:	SAMPLE CONDITION WHEN RECEIVED:

Report Date: November 19, 2010

## **Summary Report**

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

Report Date: November 19, 2010

Work Order: 10111512

<b>Project Location:</b>	Lea County, NM
Project Name:	COG/GC Federal #27
Project Number:	114-6400549

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
250467	SB-1 0-1'	soil	2010-11-11	00:00	2010-11-15
250468	SB-1 3'	soil	2010-11-11	00:00	2010-11-15
250469	SB-1 5'	soil	2010-11-11	00:00	2010-11-15
250470	SB-1 7'	soil	2010-11-11	00:00	2010-11-15
250471	SB-1 10'	soil	2010-11-11	00:00	2010-11-15
250472	SB-1 15'	soil	2010-11-11	00:00	2010-11-15
250473	SB-1 20'	soil	2010-11-11	00:00	2010-11-15
250474	SB-1 25'	soil	2010-11-11	00:00	2010-11-15
250475	SB-1 30'	soil	2010-11-11	00:00	2010-11-15
250476	SB-1 40'	soil	2010-11-11	00:00	2010-11-15
250477	SB-1 50'	soil	2010-11-11	00:00	2010-11-15
250478	SB-1 60'	soil	2010-11-11	_00:00	2010-11-15

#### Sample: 250467 - SB-1 0-1'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

#### Sample: 250468 - SB-1 3'

Param	Flag	Result	Units	RL
Chloride		1090	mg/Kg	4.00

#### Sample: 250469 - SB-1 5'

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Report Date: Nove	ember 19, 2010	Work Order: 10111512	P#	age Number: 2 of
Param	Flag	Result	Units	RI
Chloride		3520	mg/Kg	4.0
Sample: 250470	- SB-1 7'			
Param	Flag	Result	Units	RI
Chloride		10400	mg/Kg	4.0
Sample: 250471	- SB-1 10'			
Param	Flag	Result	Units	RI
Chloride		11100	mg/Kg	4.0
Sample: 250472	- SB-1 15'			
Param	Flag	Result	Units	RI
Chloride		5560	mg/Kg	4.00
Sample: 250473 Param Chloride	- SB-1 20' Flag	Result 3340	Units mg/Kg	RI 4.00
Sample: 250474	- SB-1 25'			
Param	Flag	Result	Units	RL
Chloride		400	mg/Kg	4.00
Sample: 250475	- SB-1 30'			
-	- SB-1 30' Flag	Result	Units	RL
Param		Result 411	Units mg/Kg	
Param Chloride	Flag			
Sample: 250475 Param Chloride Sample: 250476 Param	Flag			RL 4.00 RL

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Report Date: November 19, 2010		Work Order: 101115	512	Page Number: 3 of 3
Sample: 250477	- SB-1 50'			
Param	Flag	Result	Units	RL
Chloride		211	mg/Kg	4.00
Chloride		211	mg/Kg	4
Sample: 250478	- SB-1 60'			
Param	Flag	Result	Units	RI
Chloride	···	227	mg/Kg	4.00

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