\ _		SIT	E INFORMATION	ON			
Report Tv	pe: Assessm	ent and Clo	sure Report				
	nformation:			AND THE CONTROL OF TH			
Site:		Antelope 36 St	tate 1 Tank Battery				
Company:		COG Operating		FEB 1 7 2010			
Section, Town	nship and Range	Section 21 T17	7S R 31E Unit L	NACCE			
Lease Numbe	r:	API-30-015-320	040	NMOCD ARTESIA			
County:		Eddy County					
GPS:		32.78811° N, 10	3.82625° W				
Surface Owne		State					
Mineral Owne	<u>r:</u>		00 1500				
Directions:				on 529 3.8 miles, turn right go 0.1 miles, turn right go 0 and turn right into tank battery pad.			
		_ ` ` `	0 , 0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
Release Data:			ing war are not a				
Date Released	<u>: </u>	9/7/2009					
Type Release:		Produced water	r				
Source of Con-		Water tank					
Fluid Released	1.	20 bbls					
	red:	5 bbls					
		5 bbls					
	red:	5 bbls		Kim Dorey			
	red: nunication:	5 bbls					
Official Comm Name:	red: nunication: Pat Ellis	5 bbls		Kim Dorey			
Official Comm Name: Company: Address:	red: hunication: Pat Ellis COG Operating, l	5 bbls		Kim Dorey Tetra Tech			
Official Comm Name: Company: Address: P.O. Box	red: hunication: Pat Ellis COG Operating, l	5 bbls LC 5. Ste. 1300		Kim Dorey Tetra Tech			
Official Comm Name: Company: Address: P.O. Box City:	Pat Ellis COG Operating, L 550 W. Texas Ave	5 bbls LC 5. Ste. 1300		Kim Dorey Tetra Tech 1910 N. Big Spring			
Official Comm Name: Company:	Pat Ellis COG Operating, L 550 W. Texas Ave	5 bbls LC 5. Ste. 1300		Kim Dorey Tetra Tech 1910 N. Big Spring Midland, Texas			

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	.0	greater than 300'
WellHead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0

Total BTEX

50

TPH

5,000

Benzene

10



February 4, 2010

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

Re: Closure Report for the COG Operating LLC., Antelope 36 State 1 Tank Battery, Unit K, Section 36, Township 17 South, Range 31 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill at the Antelope 36 State 1 Tank Battery, Unit K, Section 36, Township 17 South, Range 31 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.78811°, W 103.82625°. 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 September 7, 2009. Approximately twenty (20) barrels of produced water was released from a water tank as a result of an electrical failure. Vacuum trucks were utilized to recover five (5) barrels of standing fluids. The initial C-141 is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 21. According to the *Geology* and *Groundwater Resources of Eddy County, New Mexico* (Report 3), one well is located in Section 34, with reported depth to water of 271' below surface.

ietra ied



According to the NMOCD groundwater map, the average depth to groundwater in this area is greater than 300' below surface. The Geology and Groundwater Resources of Eddy County, New Mexico (Report 3) well report data is shown in Appendix B.

Regulatory

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

Soil Assessment and Results

On November 29, 2009, Tetra Tech personnel inspected and sampled the spill area, which measured approximately 40' x 50'. The spill remained on the southeast corner of the tank battery pad. Prior to sampling, COG had performed a surficial scrape. A total of four (4) auger holes (AH-1 through AH-4) were installed using a stainless steel hand auger to assess the impacted soils. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix 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 the submitted samples were below RRAL for TPH and BTEX. Elevated chloride concentrations were detected at AH-1 (0-1') of 3,610 mg/kg, AH-2 (0-1' thru 6-6.5') decreasing from 2,660 to 1,850 mg/kg, and AH-4 (0-1') of 1,810 mg/kg.

Remediation Work Performed

On December 10, 2009, Tetra Tech personnel were onsite to supervise the excavation of impacted material. The areas around AH-1 and AH-4 were excavated approximately 1.0' bgs and the area around AH-2 was excavated to a



depth of approximately 12' bgs. A confirmation sample (T-1) was taken at 12' and showed chloride concentrations <200 mg/kg. Approximately 80 cubic yards were removed and hauled to Controlled Recovery, Inc. of Hobbs, New Mexico. The site was then backfilled and brought up to surface grade with clean soil.

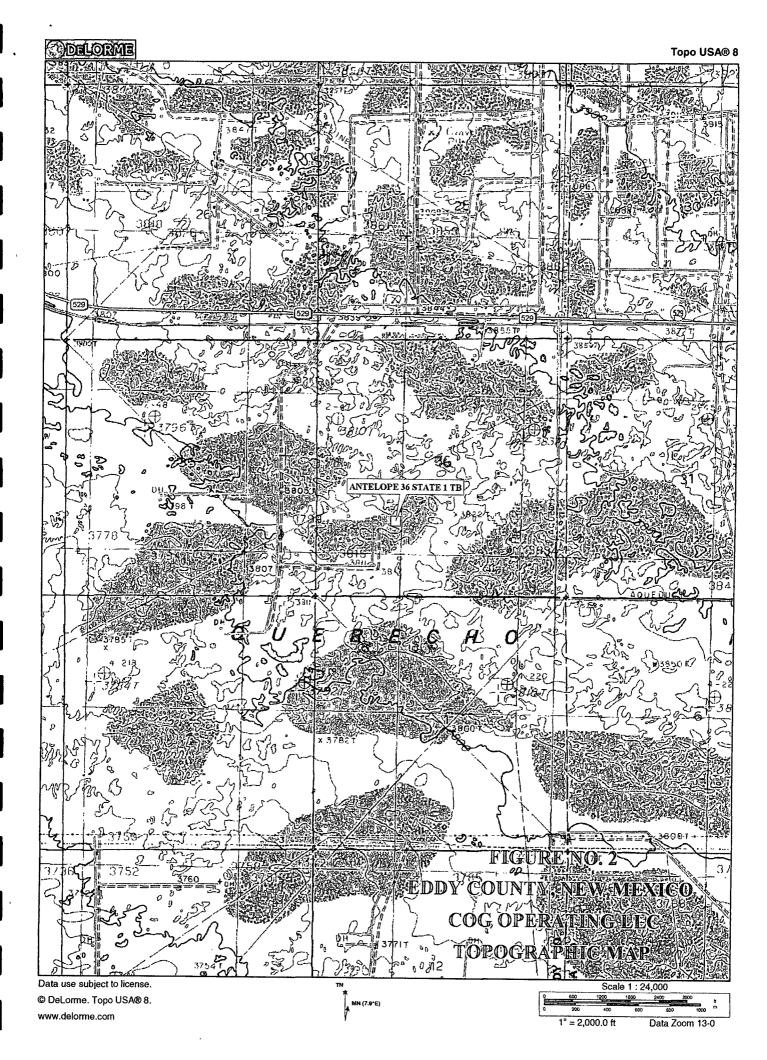
Based upon the investigation and remediation performed at this site, COG respectfully requests closure of this site. The final C-141 is enclosed in Appendix A. If you require any additional information or have any questions or comments concerning this work plan report, please call at (432) 682-4559.

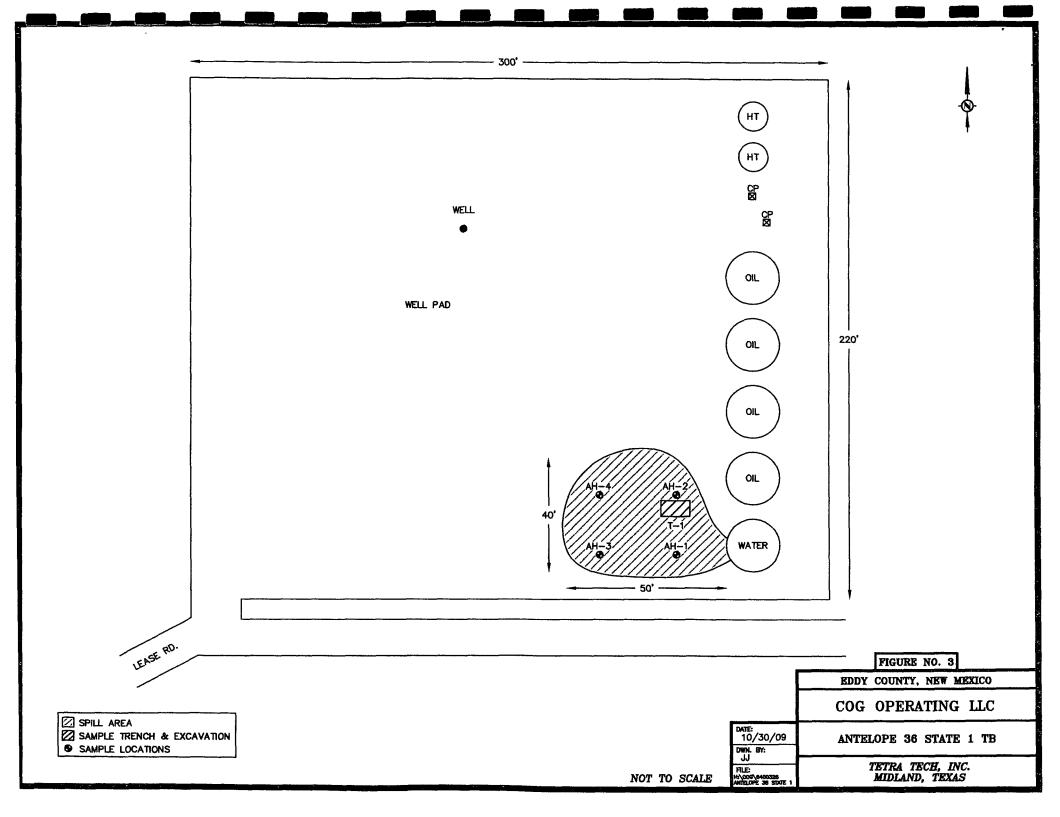
Respectfully submitted, TETRA TECH, INC.

Kim Dorey Staff Geologist

cc: Pat Ellis - COG

FIGURES





TABLES

Table 1 COG Operating LLC Antelope 36 State 1 Tank Battery Eddy County, New Mexico

Sample	Date	Sample	Soil	Status	·	TPH (mg/kg	3)	Benzene	Toluene	Ethlybenzene	Xylene	Total	Chloride
ID.	Sampled	Depth (ft)	In-Situ	Removed	DRO	GRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	BTEX	(mg/kg)
AH-1	10/29/2009	0-1'		X	<50.0	~ 1 :00	<50.0	<0.0100	<0.0100	° 4 < 0.0100«	÷ <0.0100	<0.0100	3610
	10/29/2009	1-1 5'	Х		_	-	-	-	-	-	-	-	<200
	10/29/2009	2-2.5'	Х		•	-	-	-	-	-	-	-	<200
A.I.O.	10/00/0000	0-1'		W. X	**************************************	* (f) 4:000 × (-6505	* 0 01000	2 0°02 00°	13. P. 0 0400 Vis	B4 10 0400		1 0000 Ta
AH-2	10/29/2009			25 4 5 74	*.<50.0. ³	<1.00	₹ 50.0	<0.0100	<0.0100		<0.0100	<0.0100	2660
	10/29/2009	1-1 5'		1 1 1 1 1 1 1 1	· 生态。		274	- 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	The state of the				\$ ~~ 515° (] *
	10/29/2009	2-2 5'		***X	1945 - 1945 E		1		(1)		443.30	Charles and the second	881
	10/29/2009	3-3.5'		78.4	AND A	***	The first of the second of the	3 1 3 m					1040
	10/29/2009	4-4.5'		XXX.X	, 1887 (A. S.)	9,50	1 11 1 1 1 1 1		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 Paris -		,	754
	10/29/2009	5-5.5'		C 12 1	1 2 2 2 2	19 TE . TE	1 5 1 5 1 mg		S. M. T. B.		74.47		867
	10/29/2009	6-6 5'		x		1. A - 1. M.	[2] J. J. T. J. J.			- 10 y		ر - التوليد - / المراكب المراكب	1850
	12/10/2009	12'		Var X();		- 2 , 6% - 2 16	(· · · · · · · · · · · · · · · · · · ·		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -				, :
T-1	12/10/2009	12' Bottom Hole		i vex			112 A	3. Fort 19	3 617 8 2 3 4 4 B	in the state of th			. ,<200
AH-3	10/29/2009	0-1'	X		<50 0	<1 00	<50 0	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<200
7410	10/29/2009	1-1.5'	X					- 100100	20 0100		200100		<200
	10/29/2009	2-2 5'	X		-	-		-	-	-	<u>-</u>		<200
AH-4	10/29/2009	0-1'		TAX X	<50.0 ∴	£ <1,00°	· <50 0	<0.0100° ₃	′<0.01 <u>00</u> ∲	ી	₹0.0100 <u>,</u>	<0.0100	1810
	10/29/2009	1-1 5'	Х		-	-	-	-	-	-	-	-	<200
	10/29/2009	2-2 5'	х			-	-	-	-	-	-	-	<200

(-) not analyzed

Excavated Areas

APPENDIX A

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

State of New Mexico Energy Minerals and Natural Resources

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

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

Form C-141 Revised October 10, 2003

side of form

• • • • • •			Rele	ease Notific	catio	n and Co	rrective A	ction	ì			
NSEALONS	130308	Sealonaran	-An<			OPERA'	ГOR		☐ Initi	al Report	\boxtimes	Final Report
Name of C	ompany (COG Opera	ting LL(229137		Contact Pat						
				<u>nd, Texas 7970</u>	1		No. (432) 685-4					
Facility Na	me Antel	ope 36 State	#1			Facility Typ	e Tank Batte	ry				
Surface Ov	vner State			Mineral C)wner				Lease N	No. 30-015	-32040)
				LOCA		N OF REI	LEASE _					
Unit Letter	Section	Township	Range	Feet from the	North	n/South Line	Feet from the	East/V	Vest Line	County	County	
K	36	178	31E	1650	South	n	1650	West		Eddy		
			L	atitude N 32.8	18480	° Longitud	e W 103.8730	63°				
				NAT	URE	OF RELI	EASE					
Type of Rel		ced water				Volume of	Release 20 bbls			Recovered 5		
Source of R Water Tan						Date and H 09/07/09 A	lour of Occurrenc	e	Date and 09/07/09	Hour of Dis	covery	1
Was Immed						If YES, To			02/0//02	AIVI		
			Yes [] No 🔯 Not Re	equired							
By Whom?							lour 10/08/09					
Was a Wate	course Read		Yes 🗵] No		N/A	lume Impacting t	he Wate	ercourse			
If a Waterco	urse was Im	pacted, Descr	ibe Fully '	*					·			
l N/A												
Describe Ca	use of Probl	em and Reme	dial Action	n Taken.*								
Electrical fa	lure											
												ĺ
Describe Ar	a Affected	and Cleanup A	Action Tak	cen.*								
				to define spills ex								
Inc., Hobbs, review.	NM. Site wa	as then brougl	it up to su	rface grade with c	clean ba	ackfill material	. Tetra Tech prep	ared clo	sure report	and submitt	ed to N	MOCD for
I hereby cert	ıfy that the ı	nformation gi	ven above	is true and comp	lete to	the best of my	knowledge and u	nderstar	nd that purs	suant to NM(OCD rul	les and
regulations a	ll operators	are required to	o report an	d/or file certain r	elease 1	notifications ar	nd perform correc	tive acti	ons for rele	eases which	may end	langer
should their	or the envir operations h	ave failed to a	acceptanc dequately	e of a C-141 repo investigate and re	at by ti emedia	te contamination	on that pose a thre	eport a eat to gr	oes not ren ound water	r, surface wa	ator or i ter, hum	naomty nan health
or the enviro	nment. In a		CD accep	tance of a C-141								
	///	77					OIL CONS	SERV	ATION	DIVISIO	N	
Signature:	6/1/	1				1		14	1 /			
Duntad Nam	a. Ilva Tarran					Approved of	District Supervise	or 🎢				
Printed Nam		C.L					2214			/		
Title. Project	Manager					Approval Date	e: 54/10	I	Expiration 1	Date: P/P		
E-mail Addr	ess: ike tava	rez@tetratech	.com			Conditions of	Approval:			Attached	\Box	
Date.			Phone:	(432) 682-4559				MA		/ muched	NA	4
* Attach Addi	tional Shee	ets If Necess				!				JRP-	375	

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

State of New Mexico Energy Minerals and Natural Resources

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on back
side of form

Form C-141 Revised October 10, 2003

Release Notification and Corrective Action

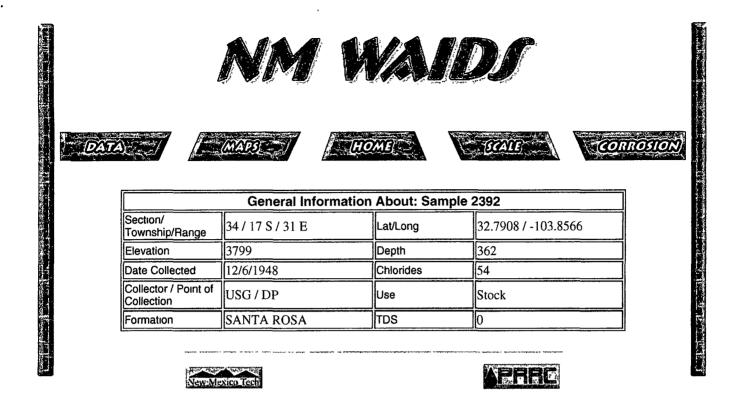
				_		OPERA	IOR			al Report	Final Report
Name of C	ompany C	COG OPERA	ATING L	LC		Contact K	anicia Carrillo				
				nd, TX 79701		Telephone 1	No. 432-685-43	32			
		lope 36 State				Facility Typ					
Surface Ov	ner State			Mineral ()wner				Lease N	No. 30-015-32	2040
Surface Ov	mer State			·							2010
			(ON OF REI				<u></u>	
Unit Letter	Section	Township	Range	Feet from the	1	h/South Line	Feet from the	1	Vest Line	County	
K	36	17S	31E	1650	Sout	ın	1650	West		Eddy	
		<u> </u>		<u>L</u>	atitud	le Longiti	ıde				
				NAT	ruri	E OF RELI	EASE				
Type of Rele	ase-Produc	ed Water					Release-20bbls		Volume I	Recovered- 5bb	ls
Source of Re	elease- Wate	er tank					lour of Occurrence	e-		Hour of Discov	vегу
Was Immed	Was Immediate Notice Given?					9/07/09 an			09/07/09	am	
Was Intinod	auto moneo s		Yes [No 🛛 Not Re	equired		····ioiii				
By Whom?	Pat Ellis					Date and H	lour 10/08/09				
Was a Water							lume Impacting	the Wate	rcourse.		
] Yes ⊠] No							
If a Waterco	urse was lm	pacted, Descr	ribe Fully.	*							
1		em and Reme	dial Actio	n Taken *							
Electrical fa	lure										
Describe Are	a Affected	and Cleanup /	Action Tal	cen *	_				,		
All water rer	nained on lo	ocation. Vacu	ium truck j	picked up water a	nd the	wet soil was du	g up and properly	y dispos	ed of.		
I hereby cert	ify that the i	information gi	iven above	is true and comp	lete to	the best of my	knowledge and u	nderstar	nd that purs	suant to NMOC	D rules and
regulations a	ll operators	are required to	o report ar	nd/or file certain r	release	notifications ar	nd perform correc	tive acti	ons for rel-	eases which ma	y endanger
should their	or the envii	ronment. I ne lave failed to a	acceptant	e of a C-141 repo	ort by t emedia	ne NMOCD mate contaminate	arked as "Final K	eport" d	oes not rela	ieve the operator	or of liability
or the enviro	nment. In a	ddition, NMC	OCD accep	tance of a C-141	report	does not relieve	e the operator of	responsi	bility for c	ompliance water	any other
federal, state	, or local lav	ws and/or regu	ılatıons.								
		.					OIL CON:	<u>SERV</u>	ATION	DIVISION	
Signature:	K.					1	/	. /			
		7.1.7.				Approved by	District Supervise	ог· <i>[]</i>	16/		
Printed Nam	e: Kanicia (Carrillo				<u> </u>					
Title: Regul	atory Analy	st				Approval Dat	e: 330 10	4	expiration :	Date.	·
									p.:. 401011		
E-mail Addr	ess kcarrill	o@conchores	ources.co	n		Conditions of	Approval:			Attached [7
Date: 10/	16/09	1	Phone 43	2-685-4332						JRP. 39	_
		ets If Necess								10 -1.31	<u>~</u>

APPENDIX B

Water Well Data Average Depth to Groundwater (ft) COG - Antelope 36 State #1 Tank Battery Eddy County, New Mexico

	16 9	South		30 East		*********	16	South	3	1 East			16	South	3	2 East	
6	5	4	3	2	1	6	5	4	3	2	1	6	5	4	3 6	5 2 265	1 265
7	8	9	10	11	12	7	8	9	10	11	12 288	7	8	9	10	11	12 215
18	17	16	15	14	13	18	17	16	15	14	13 113	18	17	16 221	15	14	13 215
19	20	21	22	23	24	19	20	21	22	23	24	19 220	20	21 210	22	23 210	24
30	29	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26 243	25
31	32	33	34	35	36	31 290	32	33	34	35	36	31	32	33	34	35	36 260
	17 9	South	;	30 East			17	South	3	1 East			17 9	South	3	2 East	
6	5	4	3	2	1	6	5	4	3	2	1	6	5	4 82	3 175	2 60	1 225
7	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11 70 88	12
18	17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14	13
19	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	24
30	29	28	27	26	25	30	29	28	27	26	25	30 180 dry	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34 271	35	36 SITE	31	32	33	34	35	36
	18 9	South		30 East		· <u></u>	18	South	3	1 East			18 9	South	3:	2 East	
6	5	4	3	2	1	6	5	4	3	2	1	6	5	4 65	3 Pror	ng 2	1
7	8	9	10	11	12	7	8	9	10	11	12 400	7 460 82	8	9	10	11	12
18	17	16	15	14	13	18	17	16	15	14 317	13	18	17	16 84	15	14	13
19	20	21	22	23	24	19	20	21	22	23	24	19	20 164	21	22 429	23	24
30	29	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34	35 261	36	31	32	33	34 117	35	36

- 88 New Mexico State Engineers Well Reports
- 105 USGS Well Reports
- 90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6) Geology and Groundwater Resources of Eddy County, NM (Report 3)
- 34 NMOCD Groundwater Data
- 123 Field water level
- 180 Tetra Tech drilled TMW Total depth 180' Dry well



APPENDIX C

Work Order: 9110209 Page Number: 1 of 4 Report Date: November 5, 2009

Summary Report

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

Report Date: November 5, 2009

Work Order: 9110209

Project Location: Eddy Co., NM

Project Name:

COG/Antelope 36 State 1 TB

Project Number: 114-640326

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
213629	AH-1 0-1	soil	2009-10-29	00:00	2009-10-30
213630	AH-1 1-1 5	soil	2009-10-29	00:00	2009-10-30
213631	AH-1 2-2.5	soil	2009-10-29	00:00	2009-10-30
213632	AH-2 0-1	soil	2009-10-29	00:00	2009-10-30
213633	AH-2 1-1.5	soil	2009-10-29	00:00	2009-10-30
213634	AH-2 2-2.5	soil	2009-10-29	00:00	2009-10-30
213635	AH-2 3-3.5	soil	2009-10-29	00:00	2009-10-30
213636	AH-2 4-4.5	soil	2009-10-29	00:00	2009-10-30
213637	AH-2 5-5.5	soil	2009-10-29	00:00	2009-10-30
213638	AH-2 6-6.5	soil	2009-10-29	00:00	2009-10-30
213639	AH-3 0-1	soil	2009-10-29	00:00	2009-10-30
213640	AH-3 1-1.5	soil	2009-10-29	00:00	2009-10-30
213641	AH-3 2-2.5	soil	2009-10-29	00:00	2009-10-30
213642	AH-4 0-1	soil	2009-10-29	00:00	2009-10-30
213643	AH-4 1-1.5	soil	2009-10-29	00:00	2009-10-30
213644	AH-4 2-2.5	soil	2009-10-29	00:00	2009-10-30

		TPH GRO			
	Benzene	Toluene	Ethylbenzene	Xylene	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
213629 - AH-1 0-1	< 0 0100	< 0.0100	< 0 0100	< 0.0100	<1 00
213632 - AH-2 0-1	< 0.0100	< 0 0100	< 0.0100	< 0.0100	<1 00
213639 - AH-3 0-1	< 0 0100	< 0 0100	< 0.0100	< 0.0100	<1.00
213642 - AH-4 0-1	< 0.0100	< 0.0100	< 0 0100	< 0.0100	<1 00

Sample: 213629 - AH-1 0-1

continued ...

Report Date: November 5, 2009		Work Order: 9110209	Page	Number: 2 of 4
sample 213629 con	tinued			
Param	Flag	Result	Units	RL
Param	Flag	Result	Units	RL
Chloride		3610	mg/Kg	4.00
DRO	4	<50.0	mg/Kg	50.0
Sample: 213630	- AH-1 1-1.5			
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00
Sample: 213631	- AH-1 2-2.5			
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00
Sample: 213632 Param Chloride DRO	Flag	Result 2660 <50.0	Units mg/Kg mg/Kg	RL 4.00 50.0
Sample: 213633	- AH-2 1-1.5			
Param	- AH-2 1-1.5 Flag	Result	Units	m RL
•		Result 515	Units mg/Kg	RL 4.00
Param	Flag			
Param Chloride Sample: 213634	Flag			
Param Chloride Sample: 213634	Flag - AH-2 2-2.5	515	mg/Kg	4.00 RL
Param Chloride Sample: 213634	Flag - AH-2 2-2.5 Flag	515 Result	mg/Kg Units	4.00
Param Chloride Sample: 213634 Param Chloride	Flag - AH-2 2-2.5 Flag	515 Result	mg/Kg Units	4.00 RL

Sample: 213636 - AH-2 4-4.5

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296

This is only a summary Please, refer to the complete report package for quality control data.

Report Date: Nove	ember 5, 2009	Work Order: 9110209	Page	Number: 3 of 4
Param	Flag	Result	Units	RL
Chloride		754	mg/Kg	4.00
Sample: 213637	- AH-2 5-5.5			
Param	Flag	Result	Units	RL
Chloride	1	867	mg/Kg	4.00
Sample: 213638	- AH-2 6-6.5			
Param	Flag	Result	Units	RL
Chloride		1850	mg/Kg	4.00
Sample: 213639	- AH-3 0-1			
Param	Flag	Result	Units	RL
Chloride	1100	<200	mg/Kg	4.00
DRO		<50.0	mg/Kg	50.0
Sample: 213640	- AH-3 1-1.5			
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00
Sample: 213641	- AH-3 2-2.5			
Param	Flag	Result	Units	RL
Chloride	The state of the s	<200	mg/Kg	4.00
Sample: 213642	- AH-4 0-1			
Param	Flag	Result	Units	RL
Chloride		1810	mg/Kg	4.00
DRO		< 50.0	mg/Kg	50.0
Sample: 213643	- AH-4 1-1.5			
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Report Date: November 5, 2009 Work Order: 9110209

Sample: 213644 - AH-4 2-2.5

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

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Certifications

WBENC: 237019

HUB:

1752439743100-86536 WFWB38444Y0909

DBE: VN 20657

NCTRCA

T104704219-08-TX Lubbock:

LELAP-02003

Kansas E-10317

NELAP Certifications 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: November 5, 2009

Work Order: 9110209

Project Location: Eddy Co., NM

Project Name:

COG/Antelope 36 State 1 TB

Project Number:

114-640326

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
213629	AH-1 0-1	soil	2009-10-29	00:00	2009-10-30
213630	AH-1 1-1.5	soil	2009-10-29	00:00	2009-10-30
213631	AH-1 2-2.5	soil	2009-10-29	00:00	2009-10-30
213632	AH-2 0-1	soil	2009-10-29	00:00	2009-10-30
213633	AH-2 1-1.5	soil	2009-10-29	00:00	2009-10-30
213634	AH-2 2-2.5	soil	2009-10-29	00:00	2009-10-30
213635	AH-2 3-3.5	soil	2009-10-29	00:00	2009-10-30
213636	AH-2 4-4.5	soil	2009-10-29	00:00	2009-10-30
213637	AH-2 5-5.5	soil	2009-10-29	00:00	2009-10-30
213638	AH-2 6-6.5	soil	2009-10-29	00:00	2009-10-30

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
213639	AH-3 0-1	soil	2009-10-29	00:00	2009-10-30
213640	AH-3 1-1.5	soil	2009-10-29	00:00	2009-10-30
213641	AH-3 2-2.5	soil	2009-10-29	00:00	2009-10-30
213642	AH-4 0-1	soil	2009-10-29	00:00	2009-10-30
213643	AH-4 1-1.5	soil	2009-10-29	00:00	2009-10-30
213644	AH-4 2-2.5	soil	2009-10-29	00:00	2009-10-30

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

This report consists of a total of 20 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael april

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/Antelope 36 State 1 TB were received by TraceAnalysis, Inc. on 2009-10-30 and assigned to work order 9110209. Samples for work order 9110209 were received intact at a temperature of 3.6 deg. C.

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

		Prep	Prep	QC	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	55554	2009-11-04 at 14:15	65026	2009-11-04 at 13:26
Chloride (Titration)	SM 4500-Cl B	55491	2009-11-03 at 12:15	64984	2009-11-04 at 11:00
Chloride (Titration)	SM 4500-Cl B	55492	2009-11-03 at 12:15	64985	2009-11-04 at 11:01
TPH DRO - NEW	Mod. 8015B	55515	2009-11-03 at 13:26	64968	2009-11-03 at 13:26
TPH GRO	S 8015B	55554	2009-11-04 at 14:15	65028	2009-11-04 at 13:53

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 9110209 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: November 5, 2009 114-640326

Work Order: 9110209 COG/Antelope 36 State 1 TB

Analytical Report

Sample: 213629 - AH-1 0-1

Laboratory: Midland

Analysis: **BTEX** 65026 QC Batch: Prep Batch: 55554

S 8021B Analytical Method: 2009-11-04 Date Analyzed: Sample Preparation: 2009-11-04

Prep Method: S 5035 AG Analyzed By: AGPrepared By.

Page Number: 4 of 20

Eddy Co., NM

RLFlag

Dilution RLParameter Result Units Benzene < 0.0100 mg/Kg 0.0100 Toluene < 0.0100 mg/Kg 1 0.0100 1 0.0100 Ethylbenzene < 0.0100 mg/Kg 0.0100 < 0.0100 1 Xylene mg/Kg

Spike Percent Recovery Limits Flag Units Dilution Amount Recovery Surrogate Result Trifluorotoluene (TFT) 2.00 mg/Kg 1 2.00 100 49 - 129.7 4-Bromofluorobenzene (4-BFB) 1.68 2.00 84 45.2 - 144.3 mg/Kg 1

Sample: 213629 - AH-1 0-1

Laboratory: Midland

Prep Batch:

Analysis: Chloride (Titration) QC Batch: 64984 55491

Analytical Method: SM 4500-Cl B Date Analyzed: 2009-11-04 Sample Preparation: 2009-11-03

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

RLDilution RLParameter Flag Result Units Chloride 3610 mg/Kg 100 4.00

Sample: 213629 - AH-1 0-1

Laboratory: Midland

Analysis: TPH DRO - NEW QC Batch: 64968 Prep Batch: 55515

Analytical Method: Date Analyzed: Sample Preparation:

Mod. 8015B 2009-11-03 2009-11-03

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

RLParameter Flag Result Units Dilution RLDRO < 50.0 mg/Kg 50.0 Report Date: November 5, 2009

114-640326

Work Order: 9110209 COG/Antelope 36 State 1 TB Page Number: 5 of 20 Eddy Co., NM

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane		115	mg/Kg	1	100	115	48.5 - 146

Sample: 213629 - AH-1 0-1

Laboratory: Midland

Analysis:

QC Batch:

TPH GRO 65028 Prep Batch: 55554

Analytical Method: Date Analyzed:

S 8015B 2009-11-04 Sample Preparation: 2009-11-04 Prep Method: S 5035 Analyzed By: AG AG Prepared By:

RL

Parameter	Flag	Result	Units	Dilution	RL
GRO		<1.00	mg/Kg	1	1.00

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		1.99	mg/Kg	1	2.00	100	68.5 - 119.4
4-Bromofluorobenzene (4-BFB)		1.62	mg/Kg	1	2.00	81	31 - 135

Sample: 213630 - AH-1 1-1.5

Laboratory: Midland

Chloride (Titration)

Analysis: QC Batch: 64984 Prep Batch: 55491

Analytical Method: Date Analyzed: Sample Preparation:

SM 4500-Cl B 2009-11-04 2009-11-03

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

RL

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

Sample: 213631 - AH-1 2-2.5

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 64984 Prep Batch: 55491

Analytical Method: Date Analyzed:

SM 4500-Cl B 2009-11-04 Sample Preparation: 2009 - 11 - 03

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

RL

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

Report Date: November 5, 2009 114-640326

Work Order: 9110209 COG/Antelope 36 State 1 TB Page Number: 6 of 20 Eddy Co., NM

Sample: 213632 - AH-2 0-1

Laboratory: Midland

BTEX Analysis: QC Batch: 65026 Prep Batch: 55554

Analytical Method: S 8021B Date Analyzed: 2009-11-04 Sample Preparation: 2009-11-04 Prep Method: S 5035 Analyzed By: AGPrepared By: AG

RL

		2025			
Parameter	Flag	Result	Units	Dilution	RL
Benzene		< 0.0100	mg/Kg	1	0.0100
Toluene		< 0.0100	mg/Kg	1	0.0100
Ethylbenzene		< 0.0100	mg/Kg	1	0.0100
Xylene		< 0.0100	mg/Kg	1	0.0100

					\mathbf{Spike}	$\mathbf{Percent}$	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		1.99	mg/Kg	1	2.00	100	49 - 129.7
4-Bromofluorobenzene (4-BFB)		1.70	mg/Kg	1	2.00	85	45.2 - 144.3

Sample: 213632 - AH-2 0-1

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 64984 Prep Batch: 55491

Analytical Method: SM 4500-Cl B Date Analyzed: 2009-11-04 Sample Preparation: 2009-11-03

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

RL

Parameter	Flag	Result	Units	Dilution	RL
Chloride		2660	mg/Kg	100	4.00

Sample: 213632 - AH-2 0-1

Laboratory: Midland

TPH DRO - NEW Analysis: QC Batch: 64968 Prep Batch: 55515

Analytical Method. Mod. 8015B Date Analyzed: 2009-11-03 Sample Preparation: 2009-11-03

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

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

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane		116	mg/Kg	1	100	116	48.5 - 146

Report Date: November 5, 2009

114-640326

Work Order: 9110209 COG/Antelope 36 State 1 TB Page Number: 7 of 20 Eddy Co., NM

Sample: 213632 - AH-2 0-1

Midland Laboratory:

Analysis: TPH GRO QC Batch: 65028 Prep Batch: 55554

Analytical Method: Date Analyzed:

S 8015B 2009-11-04 Sample Preparation: 2009-11-04

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

RL

Parameter	Flag	Result	Units	Dilution	RL
GRO		<1.00	mg/Kg	1	1.00

					Spike	Percent	$\operatorname{Recovery}$
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		2.00	mg/Kg	1	2.00	100	68.5 - 119.4
4-Bromofluorobenzene (4-BFB)		1.62	mg/Kg	1	2.00	81	31 - 135

Sample: 213633 - AH-2 1-1.5

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 64984 Prep Batch: 55491

Analytical Method: SM 4500-Cl B Date Analyzed: 2009-11-04 Sample Preparation: 2009-11-03

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

RL

Parameter	Flag	Result	Units	Dilution	RL
Chloride		515	mg/Kg	50	4.00

Sample: 213634 - AH-2 2-2.5

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 64984 Prep Batch: 55491

Analytical Method: SM 4500-Cl B Date Analyzed: 2009-11-04 Sample Preparation: 2009-11-03

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

RL

Parameter	Flag	Result	Units	Dilution	RL
Chloride		881	mg/Kg	50	4.00

Sample: 213635 - AH-2 3-3.5

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 64984 Prep Batch: 55491

Analytical Method: SM 4500-Cl B Date Analyzed: 2009-11-04 Sample Preparation: 2009-11-03

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

Report Date: November 5, 2009

Work Order: 9110209

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COG/Antelope 36 State 1 TB

Eddy Co., NM

		RL			
Parameter	Flag	Result	${ m Units}$	Dilution	RL
Chloride		1040	mg/Kg	50	4.00

Sample: 213636 - AH-2 4-4.5

Laboratory:

Midland

QC Batch:

Chloride (Titration)

64984

Analytical Method: Date Analyzed:

SM 4500-Cl B 2009-11-04

Prep Method: N/A Analyzed By: AR

Prep Batch: 55491

Analysis:

Sample Preparation:

2009-11-03

Prepared By: AR

RL

Parameter	Flag	Result	Units	Dilution	RL
Chloride		754	mg/Kg	50	4.00

Sample: 213637 - AH-2 5-5.5

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method: Date Analyzed:

SM 4500-Cl B 2009-11-04

Prep Method: N/A Analyzed By: AR

QC Batch: Prep Batch: 55492

64985

Sample Preparation:

2009-11-03

Prepared By: AR

RL

Parameter	Flag	Result	Units	Dilution	RL
Chloride		867	mg/Kg	50	4.00

Sample: 213638 - AH-2 6-6.5

Laboratory:

Midland

Analysis: Chloride (Titration)

QC Batch: 64985 55492 Analytical Method:

SM 4500-Cl B

Prep Method: N/A Analyzed By: AR

Prep Batch:

Date Analyzed: Sample Preparation: 2009-11-04 2009-11-03

Prepared By: AR

RL

Parameter	Flag	Result	Units	Dilution	RL
Chloride		1850	mg/Kg	50	4.00

Sample: 213639 - AH-3 0-1

Laboratory:

Prep Batch:

Midland

55554

Analysis: **BTEX** QC Batch: 65026

Analytical Method: Date Analyzed:

Sample Preparation:

S 8021B 2009-11-04 2009-11-04 Prep Method: S 5035 Analyzed By: \mathbf{AG} Prepared By: AG

Report Date: November 5, 2009 114-640326

Work Order: 9110209 COG/Antelope 36 State 1 TB Page Number: 9 of 20 Eddy Co., NM

		RL			
Parameter	Flag	Result	\mathbf{Units}	Dilution	RL
Benzene		< 0.0100	mg/Kg	1	0.0100
Toluene		< 0.0100	mg/Kg	1	0.0100
Ethylbenzene		< 0.0100	mg/Kg	1	0.0100
Xylene		< 0.0100	mg/Kg	11	0.0100

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		1.99	mg/Kg	1	2.00	100	49 - 129.7
4-Bromofluorobenzene (4-BFB)		1.65	mg/Kg	1	2.00	82	45.2 - 144.3

Sample: 213639 - AH-3 0-1

Laboratory: Midland

Analysis: Chloride (Titration)
QC Batch: 64985
Prep Batch: 55492

Analytical Method: SM 4500-Cl B Date Analyzed: 2009-11-04 Sample Preparation: 2009-11-03 Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Sample: 213639 - AH-3 0-1

Laboratory: Midland

Analysis: TPH DRO - NEW QC Batch: 64968
Prep Batch: 55515

Analytical Method: Mod. 8015B Date Analyzed: 2009-11-03 Sample Preparation: 2009-11-03

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

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

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane		117	mg/Kg	1	100	117	48.5 - 146

Sample: 213639 - AH-3 0-1

Laboratory: Midland

Analysis: TPH GRO QC Batch: 65028 Prep Batch: 55554 Analytical Method: S 8015B
Date Analyzed: 2009-11-04
Sample Preparation: 2009-11-04

Prep Method: S 5035 Analyzed By: AG Prepared By: AG Report Date: November 5, 2009 114-640326

Work Order: 9110209 COG/Antelope 36 State 1 TB Page Number: 10 of 20 Eddy Co., NM

Parameter Flag		RL Result			Units		RL		
GRO			<1.00		mg/Kg		1	1.00	
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-E			1.99 1.58	mg/Kg mg/Kg	1 1	2.00 2.00	100 79	68 5 - 119.4 31 - 135	

Sample: 213640 - AH-3 1-1.5

Laboratory: Midland

Prep Batch: 55492

Analysis: Chloride (Titration) QC Batch: 64985 Analytical Method: SM 4500-Cl B
Date Analyzed: 2009-11-04
Sample Preparation: 2009-11-03

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

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

Sample: 213641 - AH-3 2-2.5

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 64985 Prep Batch: 55492 Analytical Method: SM 4500-Cl B
Date Analyzed: 2009-11-04
Sample Preparation: 2009-11-03

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

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

Sample: 213642 - AH-4 0-1

Laboratory: Midland

Analysis: BTEX Analytical Method: S 8021B
QC Batch: 65026 Date Analyzed. 2009-11-04
Prep Batch: 55554 Sample Preparation: 2009-11-04

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

		m RL			
Parameter	Flag	Result	Units	Dilution	RL
Benzene		< 0.0100	mg/Kg	1	0.0100
Toluene		< 0.0100	mg/Kg	1	0.0100
Ethylbenzene		< 0.0100	mg/Kg	1	0.0100
Xylene		< 0.0100	mg/Kg	1	0.0100

Report Date: November 5, 2009

Work Order: 9110209 114-640326 COG/Antelope 36 State 1 TB Page Number: 11 of 20

Eddy Co., NM

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.98	mg/Kg	1	2.00	99	49 - 129.7
4-Bromofluorobenzene (4-BFB)		1.63	mg/Kg	1	2.00	82	45.2 - 144.3

Sample: 213642 - AH-4 0-1

Laboratory: Midland

Prep Batch:

Chloride (Titration) Analysis: QC Batch: 64985 55492

Analytical Method: SM 4500-Cl B Date Analyzed: 2009-11-04 Sample Preparation: 2009-11-03

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

Result Parameter Flag Units RLDilution Chloride 1810 mg/Kg 50 4.00

Sample: 213642 - AH-4 0-1

Laboratory: Midland

TPH DRO - NEW Analysis:

QC Batch: 64968 Prep Batch: 55515

Analytical Method: Mod. 8015B Date Analyzed: 2009-11-03 Sample Preparation:

2009-11-03

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

RL

RL

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

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane		114	mg/Kg	1	100	114	48.5 - 146

Sample: 213642 - AH-4 0-1

Laboratory: Midland

TPH GRO Analysis: QC Batch: 65028 Prep Batch: 55554

Analytical Method: S 8015B Date Analyzed: 2009-11-04 Sample Preparation: 2009-11-04

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

RL

Parameter Flag Result Units Dilution RL \overline{GRO} <1.00 mg/Kg 1.00 1

Report Date. November 5, 2009 114-640326

Work Order: 9110209 COG/Antelope 36 State 1 TB Page Number: 12 of 20

Eddy Co., NM

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	····	2.01	mg/Kg	1	2.00	100	68 5 - 119.4
4-Bromofluorobenzene (4-BFB)		1.58	mg/Kg	1	2.00	79	31 - 135

Sample: 213643 - AH-4 1-1.5

55492

Laboratory: Midland

Prep Batch:

Chloride

Analysis: Chloride (Titration) QC Batch: 64985

Analytical Method: SM 4500-Cl B Date Analyzed: 2009-11-04

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

Parameter

RLFlag Result Dilution RLUnits <200 4.00 mg/Kg 50

2009-11-03

Sample: 213644 - AH-4 2-2.5

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 64985 Prep Batch: 55492 Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2009-11-04 Sample Preparation: 2009-11-03

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

RLFlag Parameter Result Units Dilution RLChloride <200 mg/Kg 50 4.00

Method Blank (1) QC Batch: 64968

QC Batch: 64968 Prep Batch: 55515 Date Analyzed: 2009-11-03 QC Preparation: 2009-11-03 Analyzed By: kg Prepared By: kg

MDL Parameter Flag Result Units RLDRO < 5.86 mg/Kg 50

Spike Percent Recovery Surrogate Flag Result Units Dilution Amount Recovery Limits n-Tricosane 102 100 102 48.5 - 146 mg/Kg 1

Report Date: November 114-640326	er 5, 2009			der: 9110209 pe 36 State 1 Ti	3	Page Number: Eddy (
Method Blank (1)	QC Batch: 64984							
QC Batch: 64984 Prep Batch: 55491		Date Ana QC Prepa		2009-11-04 2009-11-03			yzed By: ared By:	AR AR
			MI	DL				
Parameter	Flag		Resi		Un			RL
Chloride			<2.	.18	mg/	Kg		4
Method Blank (1)	QC Batch: 64985							
QC Batch: 64985		Date Ana	dyzed:	2009-11-04		Anal	yzed By:	AR
Prep Batch: 55492		QC Prepa	-	2009-11-03			ared By:	AR
			MI					
Parameter	Flag		Resi		Uni			RL
Chloride			<2.	.18	mg/	Kg		4
Method Blank (1) QC Batch: 65026 Prep Batch: 55554	QC Batch: 65026	Date Ana QC Prepa	•	2009-11-04 2009-11-04			yzed By. ared By:	AG AG
Parameter	Flag			MDL .esult	Ur	its		RL
Benzene	1 145			00100		/Kg		0.01
Toluene			< 0.0	00100		/Kg		0.01
Ethylbenzene				00110		/Kg		0.01
Xylene			<0.0	00360	mg,	/Kg	-	0.01
Camaka	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Reco Lim	_
Surrogate Trifluorotoluene (TFT)	riag	1.97	mg/Kg		2.00	98		130.6
4-Bromofluorobenzene	(4-BFB)	1.78	mg/Kg		2.00	89	51.9 -	
Method Blank (1)	QC Batch: 65028							
QC Batch: 65028 Prep Batch: 55554		Date Ana QC Prepa		2009-11-04 2009-11-04			zed By: ared By:	AG AG
			MI					
Parameter	Flag		Resi		Uni	a contract of the contract of		RL
GRO			< 0.4	82	mg/	Kg		1

Report Date: November 5, 2009

114-640326

Work Order: 9110209 COG/Antelope 36 State 1 TB Page Number: 14 of 20

Eddy Co., NM

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		2.01	mg/Kg	1	2.00	100	71.9 - 115
4-Bromofluorobenzene (4-BFB)		1.72	mg/Kg	1	2.00	86	38.1 - 146.2

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch: 55515

64968

Date Analyzed:

2009-11-03 QC Preparation: 2009-11-03 Analyzed By: kg Prepared By: kg

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO	217	mg/Kg	1	250	< 5.86	87	57 4 - 133.4

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dıl.	Amount	Result	Rec.	\mathbf{Limit}	RPD	Limit
DRO	219	mg/Kg	1	250	< 5.86	88	57.4 - 133.4	1	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	Dıl.	Amount	Rec.	Rec.	Limit
n-Tricosane	96.0	101	mg/Kg	1	100	96	101	48.5 - 146

Laboratory Control Spike (LCS-1)

QC Batch:

64984 Prep Batch: 55491 Date Analyzed:

2009-11-04 QC Preparation: 2009-11-03

Analyzed By: AR Prepared By: AR

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride	98.5	mg/Kg	1	100	<2.18	98	85 - 115

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	100	mg/Kg	1	100	<2.18	100	85 - 115	2	20

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

Laboratory Control Spike (LCS-1)

QC Batch:

64985

Prep Batch: 55492

Date Analyzed:

QC Preparation: 2009-11-03

2009-11-04

Analyzed By: AR Prepared By:

AR

Report Date: November 5, 2009

114-640326

Work Order: 9110209 COG/Antelope 36 State 1 TB Page Number: 15 of 20

Eddy Co., NM

	LCS			Spike	Matrix		Rec.
Param	Result	\mathbf{Units}	Dil.	Amount	Result	Rec.	\mathbf{Limit}
Chloride	101	mg/Kg	1	100	<2.18	101	85 - 115

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	99.7	mg/Kg	1	100	<2.18	100	85 - 115	1	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 65026 Date Analyzed:

Units

2009-11-04

Analyzed By: AG Prepared By: AG

Prep Batch: 55554

Param

Benzene

QC Preparation: 2009-11-04

Spike Matrix Rec. Dil. Amount Result Limit Rec. mg/Kg 1 2.00 < 0.00100 96 72.7 - 129.8

Toluenc 1.94 mg/Kg 1 2.00 < 0.00100 97 71.6 - 129.6 Ethylbenzene 1.94 mg/Kg 1 2.00 < 0.00110 97 70.8 - 129.7 Xylene 5.81 mg/Kg 1 6.00 < 0.00360 97 70 9 - 129.4

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

LCS

Result

1.92

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene	1.96	mg/Kg	1	2.00	< 0.00100	98	72.7 - 129.8	2	20
Toluene	1.98	mg/Kg	1	2.00	< 0.00100	99	71.6 - 129.6	2	20
Ethylbenzene	1.99	mg/Kg	1	2.00	< 0.00110	100	70.8 - 129.7	2	20
Xylene	5.96	mg/Kg	1	6.00	< 0.00360	99	70.9 - 129.4	2	20

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

Surrogate	LCS Result	LCSD Result	Units	Dıl.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.97	1.98	mg/Kg	1	2.00	98	99	65.9 - 132
4-Bromofluorobenzene (4-BFB)	1.81	1.81	mg/Kg	1	2.00	90	90	55.2 - 158.9

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch: 55554 Date Analyzed: 2009-11-04 QC Preparation: 2009-11-04

Analyzed By: AG Prepared By: AG

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO	15.7	mg/Kg	1	20.0	< 0.482	78	60.5 - 120.1

Report Date: November 5, 2009

114-640326

Work Order: 9110209 COG/Antelope 36 State 1 TB Page Number: 16 of 20 Eddy Co., NM

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	16.5	mg/Kg	1	20.0	< 0.482	82	60.5 - 120.1	5	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	2.02	2.10	mg/Kg	1	2.00	101	105	78.8 - 124.7
4-Bromofluorobenzene (4-BFB)	1.77	1.79	mg/Kg	1	2.00	88	90	66.1 - 128.3

Matrix Spike (MS-1) Spiked Sample: 213722

QC Batch: 64968 Prep Batch: 55515 Date Analyzed: 2009-11-03

QC Preparation: 2009-11-03

Analyzed By: kg Prepared By: kg

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO	137	mg/Kg	1	250	< 5.86	55	35.2 - 167.1

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO	122	mg/Kg	1	250	< 5.86	49	35.2 - 167.1	12	20

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

	MS	MSD			$\mathbf{S}_{\mathbf{pike}}$	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dıl.	Amount	Rec.	Rec.	Limit
n-Tricosane	116	90.8	mg/Kg	1	100	116	91	48.5 - 146

Matrix Spike (MS-1) Spiked Sample: 213636

QC Batch: 64984 Prep Batch: 55491 Date Analyzed: 2009-11-04 QC Preparation: 2009-11-03

Analyzed By: AR
Prepared By: AR

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride	10600	mg/Kg	100	10000	754	98	85 - 115

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	10900	mg/Kg	100	10000	754	101	85 - 115	3	20

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

Report Date: November 5, 2009

114-640326

Work Order: 9110209 COG/Antelope 36 State 1 TB Page Number: 17 of 20 Eddy Co., NM

Matrix Spike (MS-1)

Spiked Sample: 213654

QC Batch: 64985 Prep Batch 55492 Date Analyzed: 2009-11-04 QC Preparation: 2009-11-03 Analyzed By. AR. Prepared By: AR

MS			Spike	Matrix
Rocult	Unite	Dil	Amount	Rogult

Rec. Limit Param Rec. Dil. Amount Kesult 85 - 115 Chloride 10000 mg/Kg 100 10000 <218 100

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	10100	mg/Kg	100	10000	<218	101	85 - 115	1	20

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

Matrix Spike (MS-1)

Spiked Sample: 213642

QC Batch: 65026 Prep Batch: 55554 Date Analyzed: 2009-11-04 QC Preparation: 2009-11-04

Analyzed By: AG Prepared By: AG

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene	1.96	mg/Kg	1	2.00	< 0.00100	98	58.6 - 165.2
Toluene	2.00	mg/Kg	1	2.00	< 0.00100	100	64.2 - 153.8
Ethylbenzene	2.03	mg/Kg	1	2.00	< 0.00110	102	61.6 - 159.4
Xylene	6.02	mg/Kg	1	6.00	< 0.00360	100	64.4 - 155.3

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene	2.05	mg/Kg	1	2.00	< 0.00100	102	58.6 - 165.2	4	20
Toluene	2.09	mg/Kg	1	2.00	< 0.00100	104	64.2 - 153.8	4	20
Ethylbenzene	2.12	mg/Kg	1	2.00	< 0.00110	106	61.6 - 159.4	4	20
Xylene	6.30	mg/Kg	1	6.00	< 0.00360	105	64.4 - 155.3	4	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.97	1.98	mg/Kg	1	2	98	99	76 - 127.9
4-Bromofluorobenzene (4-BFB)	1.65	1.65	mg/Kg	1	2	82	82	52 - 127.8

Matrix Spike (MS-1) Spiked Sample: 213639

QC Batch: 65028 Prep Batch: 55554 Date Analyzed: 2009-11-04 QC Preparation: 2009-11-04

Analyzed By: AG Prepared By: AG Report Date: November 5, 2009

114-640326

Work Order: 9110209 COG/Antelope 36 State 1 TB Page Number: 18 of 20 Eddy Co., NM

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dıl.	Amount	Result	Rec.	Limit
GRO	12.2	mg/Kg	1	20.0	< 0.482	61	12.8 - 175.2

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

	MSD			Spike	Matrix		${ m Rec.}$		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	$_{ m Limit}$	RPD	Limit
GRO	12.6	mg/Kg	1	20.0	< 0.482	63	12.8 - 175.2	3	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.94	1.94	mg/Kg	1	2	97	97	60.8 - 132.1
4-Bromofluorobenzene (4-BFB)	1.66	1.63	mg/Kg	1	2	83	82	31.3 - 161.7

Standard (CCV-1)

QC Batch: 64968

Date Analyzed: 2009-11-03

Analyzed By: kg

			CCVs True	CCVs Found	${ m CCVs} \ { m Percent}$	Percent Recovery	Date
Param	Flag	Units	Conc.	$\operatorname{Conc.}$	Recovery	Limits	Analyzed
DRO		mg/Kg	250	246	98	80 - 120	2009-11-03

Standard (CCV-2)

QC Batch: 64968

Date Analyzed: 2009-11-03

Analyzed By: kg

			CCVs True	CCVs Found	$rac{ ext{CCVs}}{ ext{Percent}}$	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		mg/Kg	250	278	111	80 - 120	2009-11-03

Standard (ICV-1)

QC Batch: 64984

Date Analyzed: 2009-11-04

Analyzed By: AR

			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	102	102	85 - 115	2009-11-04

Standard (CCV-1)

QC Batch: 64984

Date Analyzed: 2009-11-04

Analyzed By: AR

Report Date: November 5, 2009 114-640326

Work Order: 9110209 COG/Antelope 36 State 1 TB Page Number: 19 of 20

Eddy Co., NM

			${ m CCVs} \ { m True}$	${ m CCVs}$ Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	97.6	98	85 - 115	2009-11-04

Standard (ICV-1)

QC Batch: 64985

Date Analyzed: 2009-11-04

Analyzed By: AR

			ICVs True	ICVs Found	$\begin{array}{c} \text{ICVs} \\ \text{Percent} \end{array}$	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2009-11-04

Standard (CCV-1)

QC Batch: 64985

Date Analyzed: 2009-11-04

Analyzed By: AR

			CCVs	CCVs	CCVs	Percent	D. /
			True	\mathbf{Found}	Percent	$\operatorname{Recovery}$	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	99.9	100	85 - 115	2009-11-04

Standard (CCV-1)

QC Batch: 65026

Date Analyzed: 2009-11-04

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0973	97	80 - 120	2009-11-04
Toluene		mg/Kg	0.100	0.0985	98	80 - 120	2009-11-04
Ethylbenzene		mg/Kg	0.100	0.0983	98	80 - 120	2009-11-04
Xylene		mg/Kg	0.300	0.294	98	80 - 120	2009-11-04

Standard (CCV-2)

QC Batch: 65026

Date Analyzed: 2009-11-04

Analyzed By AG

Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
	mg/Kg	0.100	0.0922	92	80 - 120	2009-11-04
	mg/Kg	0.100	0.0926	93	80 - 120	2009-11-04
	mg/Kg	0.100	0.0914	91	80 - 120	2009-11-04
	Flag	mg/Kg mg/Kg	Flag Units Conc. mg/Kg 0.100 mg/Kg 0.100	True Found Conc. Conc. mg/Kg 0.100 0.0922 mg/Kg 0.100 0.0926	Flag Units Conc. Found Conc. Percent Recovery mg/Kg 0.100 0.0922 92 mg/Kg 0.100 0.0926 93	Flag Units Conc. Found Conc. Percent Recovery Recovery Limits mg/Kg 0.100 0.0922 92 80 - 120 mg/Kg 0.100 0.0926 93 80 - 120

continued ...

Work Order: 9110209 Page Number: 20 of 20 Report Date: November 5, 2009 114-640326 COG/Antelope 36 State 1 TB Eddy Co., NM standard continued . . **CCVs CCVs CCVs** Percent Recovery Date True Found Percent Flag Units Analyzed Param Conc. Conc. Recovery Limits 80 - 120 2009-11-04 Xylene mg/Kg 0.300 0.27391 Standard (CCV-3) QC Batch: 65026 2009-11-04 Analyzed By: AG Date Analyzed: **CCVs CCVs CCVs** Percent True Found Percent Recovery Date Param Flag Units Conc. Conc. Recovery Limits Analyzed Benzene mg/Kg 80 - 120 2009-11-04 0.100 0.0926 93 Toluene 80 - 120 2009-11-04 mg/Kg 0.100 0.0933 93 Ethylbenzene 92 80 - 120 2009-11-04 mg/Kg 0.1000.0916 Xylene mg/Kg 0.3000.274 91 80 - 120 2009-11-04 Standard (CCV-1) QC Batch: 65028 Analyzed By: AG Date Analyzed: 2009-11-04 **CCVs CCVs** CCVsPercent True Found Percent Recovery Date Param Flag Units Conc Conc. Recovery Limits Analyzed \overline{GRO} 1.00 1.04 104 80 - 120 2009-11-04 mg/Kg Standard (CCV-2) QC Batch: 65028 Date Analyzed: 2009-11-04 Analyzed By: AG **CCVs CCVs CCVs** Percent True Found Percent Recovery Date Param Flag Units Conc. Conc. Recovery Limits Analyzed GRO 0.962 80 - 120 2009-11-04 mg/Kg 1.00 96 Standard (CCV-3)

			CCVs	CCVs	$_{ m CCVs}$	Percent	
			True	Found	Percent	Recovery	\mathbf{Date}
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	1.01	101	80 - 120	2009-11-04

Date Analyzed: 2009-11-04

Analyzed By: AG

QC Batch: 65028

Order #:9110209 Analysis Request of Chain of Custody Record PAGE: ANALYSIS REQUEST (Circle or Specify Method No.) **TETRA TECH** (Ext. to C35) 8 8 1910 N. Big Spring St. 윤 Midland, Texas 79705 2 (432) 682-4559 • Fax (432) 682-3946 CLIENT NAME: SITE MANAGER: PRESERVATIVE NUMBER OF CONTAINERS METHOD The TANAGO PROJECT NO.: PROJECT NAME. GC.MS Semi. Vol. Alpha Beta (Air) PLM (Asbestos) 114 640326 AnteloPe 36 State 1 Eddy Co. NM LAB I.D. MATRIX DATE TIME COMP. GRAB SAMPLE IDENTIFICATION NONE HN03 NUMBER 213629 630 631 632 633 634 635 636 637 Time SAMPLE SHIPPED BY: (Circle) OTHER: VIANDLDSERVERED RELINQUISHED BY (Signature) RECEIVED BY: (Signature) TETRA TECH CONTACT PERSON. Results by:

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

RUSH Charges

T.K. TAVANC

RECEIVED BY (Signature)

tests-Midlaud

REMARKS:

RECEIVING LABORATORY:

SAMPLE CONDITION WHEN RECEIVED

CONTACT

Onder #: 9110209

Analysis Request of Chain of Custody Record **ANALYSIS REQUEST** (Circle or Specify Method No.) TETRA TECH Se Se 1910 N. Big Spring St. 윤 Midland, Texas 79705 Pb (432) 682-4559 • Fax (432) 682-3946 ច ≯ ខ SITE MANAGER: PRESERVATIVE CLIENT NAME: The Taypor **METHOD** PROJECT NAME: PROJECT NO .: 11464032 LAB J.D. MATRIX HCL HN03 TIME SAMPLE IDENTIFICATION NONE GRAB NUMBER 핑 2009 640 (641 (A) 643 644 SAMPLE SHIPPED BY (Circle) AIRBILL # Time: HAND DELIVERED RECEIVED BY: (Signature) RELINQUISHED BY: (Signature) TETRA TECH CONTACT PERSON: Results by: RECEIVED BY: (Signature) RECEIVING LABORATORY: RUSH Charges Authorized: TKO TAVAN CONTACT REMARKS: SAMPLE CONDITION WHEN RECEIVED.

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

Report Date: December 16, 2009 Work Order: 9121412 Page Number: 1 of 1

Summary Report

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

Report Date: December 16, 2009

Work Order: 9121412

Project Location: Eddy Co., NM

Project Name: COG/Antelope 36 State 1 TB

Project Number: 114-6400326

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
217080	T-1 Bottom Hole 12'	soil	2009-12-10	00:00	2009-12-11

Sample: 217080 - T-1 Bottom Hole 12'

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



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

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E-Mail lah@traceanalysis.com

Certifications

WBENC:

237019

HUB:

1752439743100-86536

DBE: VN 20657

NCTRCA WFWB38444Y0909

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: December 16, 2009

Work Order.

Project Location: Eddy Co., NM

Project Name.

COG/Antelope 36 State 1 TB

Project Number:

114-6400326

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

			Date	rine	Date
Sample	Description	Matrix	Taken	Taken	Received
217080	T-1 Bottom Hole 12'	soil	2009-12-10	00:00	2009-12-11

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

Michael april

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

Standard Flags

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

Case Narrative

Samples for project COG/Antelope 36 State 1 TB were received by TraceAnalysis, Inc. on 2009-12-11 and assigned to work order 9121412. Samples for work order 9121412 were received intact at a temperature of 4.0 deg. C.

Samples were analyzed for the following tests using their respective methods

		Prep	Prep	$_{ m QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (Titration)	SM 4500-Cl B	56395	2009-12-15 at 09:05	66031	2009-12-16 at 13:49

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 9121412 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: December 16, 2009

114-6400326

Work Order: 9121412 COG/Antelope 36 State 1 TB Page Number: 4 of 5 Eddy Co., NM

Analytical Report

Sample: 217080 - T-1 Bottom Hole 12'

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method.

SM 4500-Cl B

Prep Method. N/A

QC Batch

66031

Date Analyzed:

2009-12-16

Analyzed By: AR

Prep Batch:

56395

Sample Preparation.

2009-12-15

Prepared By.

RL

Parameter Chloride

Flag Result < 200

Units mg/Kg Dilution

50

RL4.00

AR

Method Blank (1)

QC Batch. 66031

Flag

QC Batch:

66031

Date Analyzed:

2009-12-16

Analyzed By: AR

Prep Batch:

56395

QC Preparation: 2009-12-15

Prepared By:

AR

MDL

Parameter

Result < 2.18

Units mg/Kg RL

Laboratory Control Spike (LCS-1)

QC Batch:

Chloride

66031

Date Analyzed:

2009-12-16

Analyzed By: AR

Prep Batch:

56395

QC Preparation:

2009-12-15

Prepared By. AR

LCS Result

Spike

Matrix Result

Param Chloride 103

Units Dil. mg/Kg

Amount 100

< 2.18

100

Rec. Rec. Limit 103

85 - 115

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

Param Chloride LCSD Result 99 9

Units Dil. mg/Kg 1

Spike Matrix Amount Result < 2.18 100

Rec. Rec. Limit

85 - 115

RPD RPD

Limit 20

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

Matrix Spike (MS-1)

Spiked Sample: 217105

QC Batch:

66031

Date Analyzed:

2009-12-16

Analyzed By: AR

Prep Batch:

56395

QC Preparation:

2009-12-15

Prepared By: AR Report Date: December 16, 2009

114-6400326

Work Order: 9121412 COG/Antelope 36 State 1 TB Page Number: 5 of 5

Eddy Co., NM

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec	Limit
Chloride	5340	mg/Kg	50	5000	703	93	85 - 115

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

	MSD			Spike	Matrix		Rec .		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	$_{ m Limit}$	RPD	Limit
Chloride	5420	mg/Kg	50	5000	703	94	85 - 115	2	20

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

Standard (ICV-1)

QC Batch. 66031

Date Analyzed. 2009-12-16

Analyzed By: AR

			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	\mathbf{Date}
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	105	105	85 - 115	2009-12-16

Standard (CCV-1)

QC Batch: 66031

Date Analyzed: 2009-12-16

Analyzed By: AR

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	95.3	95	85 - 115	2009-12-16

Order #: 9121412 **Analysis Request of Chain of Custody Record** PAGE: OF: ANALYSIS REQUEST (Circle or Specify Method No.) **TETRA TECH** Cr Pb Hg Se Vr Pd Hg Se 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946 CLIENT NAME: SITE MANAGER: **PRESERVATIVE** The Tovarez 006 **METHOD** PROJECT NO .: PROJECT NAME: COG. 114-6406376 LAB I.D. MATRIX COMP. GRAB DATE TIME SAMPLE IDENTIFICATION HCL HN03 ICE NONE NUMBER 700A 217080 Buttom holy SAMPLED BY: (Print & Initial) RELINQUISHED BY: (Signature) Time SAMPLE SHIPPED BY: (Circle) RECEIVED BY. (Signature) RELINQUISHED (Signature) AIRBILL ! OTHER: HAND DELIVERED UPS RELINQUISHED BY (Signature) RECEIVED BY: (Signature)

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

RECEIVED BY: (Signature)

DATE:

RECEIVING LABORATORY:

SAMPLE CONDITION WHEN RECEIVED:

intact

CONTACT:

TETHA TECH CONTACT PERSON:

IK. Tavarez

Results by:

RUSH Charges

No