I		SI	TE INFOR	RMATION							
		Report	t Type: C	losure Re	port						
General Site Ir	nformation:	The second second	The same of the same	A STATE OF THE STA							
Site:			entral Tank E								
Company:		COG Operat	ing LLC		1						
Section, Town	ship and Range	Unit O	Sec 20	T17S	R30E						
Lease Number	r:	NMNM-0467932									
County:			Eddy County								
GPS:		32.8154			103.99518						
Surface Owne		Federal	·								
Mineral Owner	r:					agerman Cutoff Road, go west on					
		ł									
Release Data:		Spill #1	to the state of	Spill #2		Spill#3					
Release Data:	The state of the s	Spill #1	The state of	Spill #2 8/31/20	40						
Date Released. Type Release:		the second secon			10	12/31/2010 produced water					
Date Released Type Release: Source of Cont	: tamination:	8/2/2010 oil and production water tank	ced water	8/31/20 produce 6" steel l	10 d water ine	12/31/2010 produced water equalizer line					
Date Released Type Release: Source of Cont Fluid Released	tamination:	8/2/2010 oil and production water tank 4 bbls oil and	ced water 60 water	8/31/20 produce 6" steel I 100 bbls	10 d water ine	12/31/2010 produced water equalizer line 150 bbls					
Date Released Type Release: Source of Cont Fluid Released Fluids Recover	tamination: l: red:	8/2/2010 oil and production water tank 4 bbls oil and 2 bbls oil and	ced water 60 water 30 water	8/31/20 produce 6" steel I 100 bbls 98 bbls	10 d water ine	12/31/2010 produced water equalizer line 150 bbls 80 bbls					
Date Released Type Release: Source of Cont Fluid Released Fluids Recover	tamination: l: red:	8/2/2010 oil and production water tank 4 bbls oil and 2 bbls oil and	ced water 60 water 30 water	8/31/20 produce 6" steel I 100 bbls 98 bbls	10 d water ine	12/31/2010 produced water equalizer line 150 bbls					
Date Released Type Release: Source of Cont Fluid Released Fluids Recover	tamination: l: red:	8/2/2010 oil and production water tank 4 bbls oil and 2 bbls oil and	ced water 60 water 30 water	8/31/20 produce 6" steel I 100 bbls 98 bbls	10 d water ine	12/31/2010 produced water equalizer line 150 bbls 80 bbls					
Date Released Type Release: Source of Cont Fluid Released Fluids Recover Official Comm	tamination: f: red: runication:	8/2/2010 oil and production water tank 4 bbls oil and 2 bbls oil and	ced water 60 water 30 water	8/31/20 produce 6" steel I 100 bbls 98 bbls	10 d water ine	12/31/2010 produced water equalizer line 150 bbls 80 bbls					
Date Released. Type Release: Source of Cont Fluid Released Fluids Recover Official Comm Name:	tamination: l: red: nunication:	8/2/2010 oil and production water tank 4 bbls oil and 2 bbls oil and	60 water 30 water	8/31/20 produce 6" steel I 100 bbls 98 bbls	d water ine Ike Tavarez	12/31/2010 produced water equalizer line 150 bbls 80 bbls					
Date Released. Type Release: Source of Cont Fluid Released Fluids Recover Official Comm Name: Company:	tamination: tred: nunication: Pat Ellis COG Operating, L	8/2/2010 oil and production water tank 4 bbls oil and 2 bbls oil and	60 water 30 water	8/31/20 produce 6" steel I 100 bbls 98 bbls	d water ine lke Tavarez	12/31/2010 produced water equalizer line 150 bbls 80 bbls					
Date Released. Type Release: Source of Cont Fluid Released Fluids Recover Official Comm Name: Company: Address:	tamination: tred: nunication: Pat Ellis COG Operating, L	8/2/2010 oil and product water tank 4 bbls oil and 2 bbls oil and	ced water 60 water 30 water REC	8/31/20 produce 6" steel I 100 bbls 98 bbls FIVED 2 3 2013	d water ine lke Tavarez	12/31/2010 produced water equalizer line 150 bbls 80 bbls					
Date Released. Type Release: Source of Cont Fluid Released Fluids Recover Official Comm Name: Company: Address: P.O. Box	tamination: f: red: nunication: Pat Ellis COG Operating, L 550 W. Texas Ave	8/2/2010 oil and product water tank 4 bbls oil and 2 bbls oil and	ced water 60 water 30 water REC	8/31/20 produce 6" steel I 100 bbls 98 bbls	d water ine Ike Tavarez Tetra Tech 1910 N. Big Spr	12/31/2010 produced water equalizer line 150 bbls 80 bbls					
Date Released. Type Release: Source of Cont Fluid Released Fluids Recover Official Comm Name: Company: Address: P.O. Box City:	tamination: f: red: nunication: Pat Ellis COG Operating, L 550 W. Texas Ave	8/2/2010 oil and product water tank 4 bbls oil and 2 bbls oil and	ced water 60 water 30 water REC	8/31/20 produce 6" steel I 100 bbls 98 bbls FIVED 2 3 2013	d water ine Ike Tavarez Tetra Tech 1910 N. Big Spr	12/31/2010 produced water equalizer line 150 bbls 80 bbls					

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

Accepta	able Soil RRAL (m	g/kg)
Benzene	Total BTEX	TPH
10	50	5,000



June 20, 2013

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

Re: Closure Report for the COG Operating LLC., Southwest Central Tank Battery, Unit 0, Section 20, Township 17 South, Range 30 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess (3) three spills at the Southwest Central Tank Battery, Unit 0, Section 20, Township 17 South, Range 30 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.81557°, W 103.99519°. The site location is shown on Figures 1 and 2.

Background

COG Operating has reported three spills at the facility and submitted the initial C-141 forms for each spill to the NMOCD. For this work plan, the spills will be referenced as Spill #1, #2 and #3. The approximate spill footprint areas are shown on Figure 3.

Spill #1

According to the State of New Mexico C-141 Initial Report, the leak was discovered on August 2, 2010, and released approximately sixty (60) barrels of produced water and four (4) barrels of crude oil. The spill was caused by a failed water pump and overflowed the water tanks. COG personnel repaired the pump and returned the tank to operation. Thirty (30) barrels of produced water and two (2) barrels of crude oil were recovered. The spill initiated at the battery and impacted the north side of the facility pad measuring approximately 100' x 110' and migrated south off the pad in the pasture measuring approximately 100' x 110'. The initial C-141 form is enclosed in Appendix A.



Spill #2

According to the State of New Mexico C-141 Initial Report, the leak was discovered on August 31, 2010, and released approximately one hundred (100) barrels of produced water. The spill was caused by a corroding 6" steel line which developed a hole. A new poly line was installed to replace the steel line. Ninety eight (98) barrels of produced water were recovered by the use of a vacuum truck. The spill initiated from the steel line located south of tank battery and fluids migrated south into the pasture measuring approximately 35' x 35'. The spill area encompassed part of the 1st spill footprint. The initial C-141 form is enclosed in Appendix A.

Spill #3

According to the State of New Mexico C-141 Initial Report, the leak was discovered on December 31, 2010, and released approximately one hundred and fifty (150) barrels of produced water. The spill was caused by a PVC adaptor freezing and cracking. Eighty (80) barrels of produced water were recovered by the use of a vacuum truck. The spill initiated at the tank battery and migrated off the pad impacting an area of approximately 8' x 100' and 40' x 150' overlapping the two previous spills in the pasture south of the tank battery. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 20. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 250' below surface. The groundwater data is shown in Appendix B.

Regulatory

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

Soil Assessment and Analytical Results Spill#1

Spill #1 and Spill #2

On August 10, 2010, Tetra Tech personnel inspected and sampled the spill area. A total of seven (7) auger holes (AH-1 through AH-7) were installed using a



stainless steel hand auger to assess the impacted soils. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B. The sampling results 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. Auger holes (AH-1, AH-2, AH-3, AH-4 and AH-7) were not vertically defined and showed elevated chloride concentrations of 4,320 mg/kg (9-9.5'), 4,120 mg/kg (7-7.5'), 9,530 mg/kg (5-5.5'), 1,070 mg/kg (9-9.5'), and 2,040 mg/kg (2.5-3') respectively. Auger holes (AH-5 and AH-6) did detect elevated chloride concentrations at surface and significantly declined with depth. In order to define the impact of the chloride concentrations, Tech Tetra installed boreholes using an air rotary drilling rig.

Prior to drilling the soil borings, the second spill occurred at the site. The footprint of the second spill overlapped a portion of the first spill in the pasture. The footprint of the second spill is shown on Figure 3. On November 17, 2010, Tetra Tech supervised the installation of soil borings. The soil boring samples were collected to a maximum depth of 30' below ground surface. The soil boring locations are shown on Figure 3. The sampling results are summarized in Table 1. The soil boring locations are shown on Figure 3. Referring to Table 1, the chloride impact was defined and significantly declined with depth at approximately 10.0' below surface.

Spill #3

On December 31, 2010, the third spill occurred at the site overlapping the first and second spill area in the pasture. On February 15, 2011, Tetra Tech installed additional soil borings. Tech personnel supervised the installation of five soil borings (SB-1 through SB-5) utilizing an air rotary drilling rig. The soil boring locations are shown on Figure 3. The sampling results are summarized in Table 1. The soil boring locations are shown on Figure 3. Referring to Table 1, the chloride impact declined with depth with chloride concentrations declining to 634 mg/kg at SB-1 (10.0'), 240 mg/kg at SB-2 (15.0') and 269 mg/kg at SB-3 (20.0').

Closure Activities

Based on the approved work plan, Tetra Tech personnel supervised the excavation of the site. For safety concerns, COG had moved two of the water tanks located along the east edge of the pad. The tanks were installed on the east side of the pad, which encompassed a portion of the spill area.

The final excavation depths of the soil remediation were met as stated in the approved work plan. The excavation depths are highlighted in Table 1 and shown on Figure 4. Once excavated to the appropriate depths, Tetra Tech collected confirmation samples from the pad and in the pasture area.



Referring to Table 1, all of the bottom hole confirmation samples collected on the pad showed that the maximum extent of chloride contamination was removed. The confirmation samples collected in the pasture showed elevated chloride concentrations present in the excavation bottoms at 7.0' and 10.0' below surface. Based on the data, the areas of AH-1, AH-2 and AH-3 were capped with a 40 mil liner at a depth of approximately 4.0' below surface. The areas of AH-4 and AH-7 on the pad were also capped with clay material at approximately 3.0' below surface. All of the excavated areas were backfilled with clean soil to grade. Approximately 2,100 cubic yards of soil were excavated and hauled to R360 for proper disposal.

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

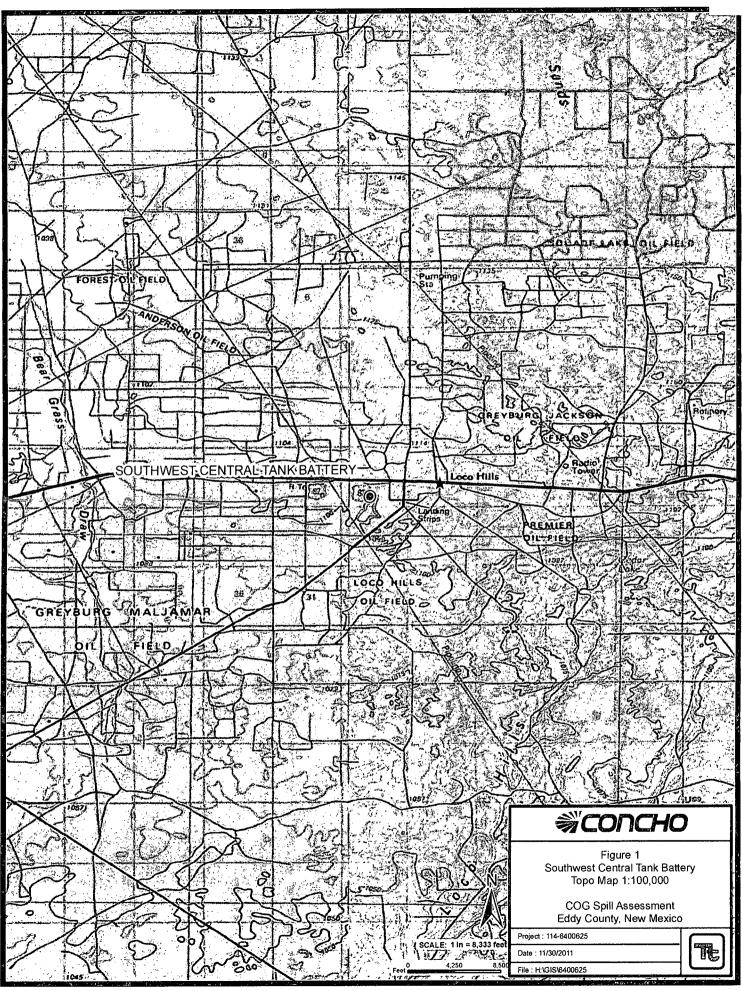
Respectfully submitted, TETRA TECH

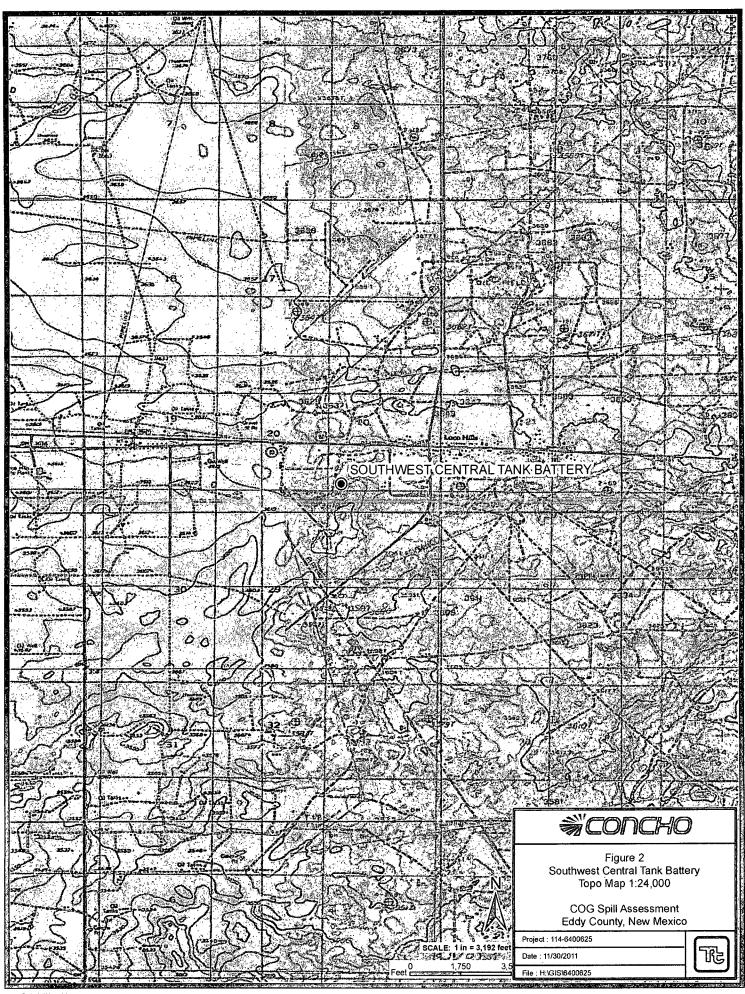
Tke Tavarez PG Project Manager

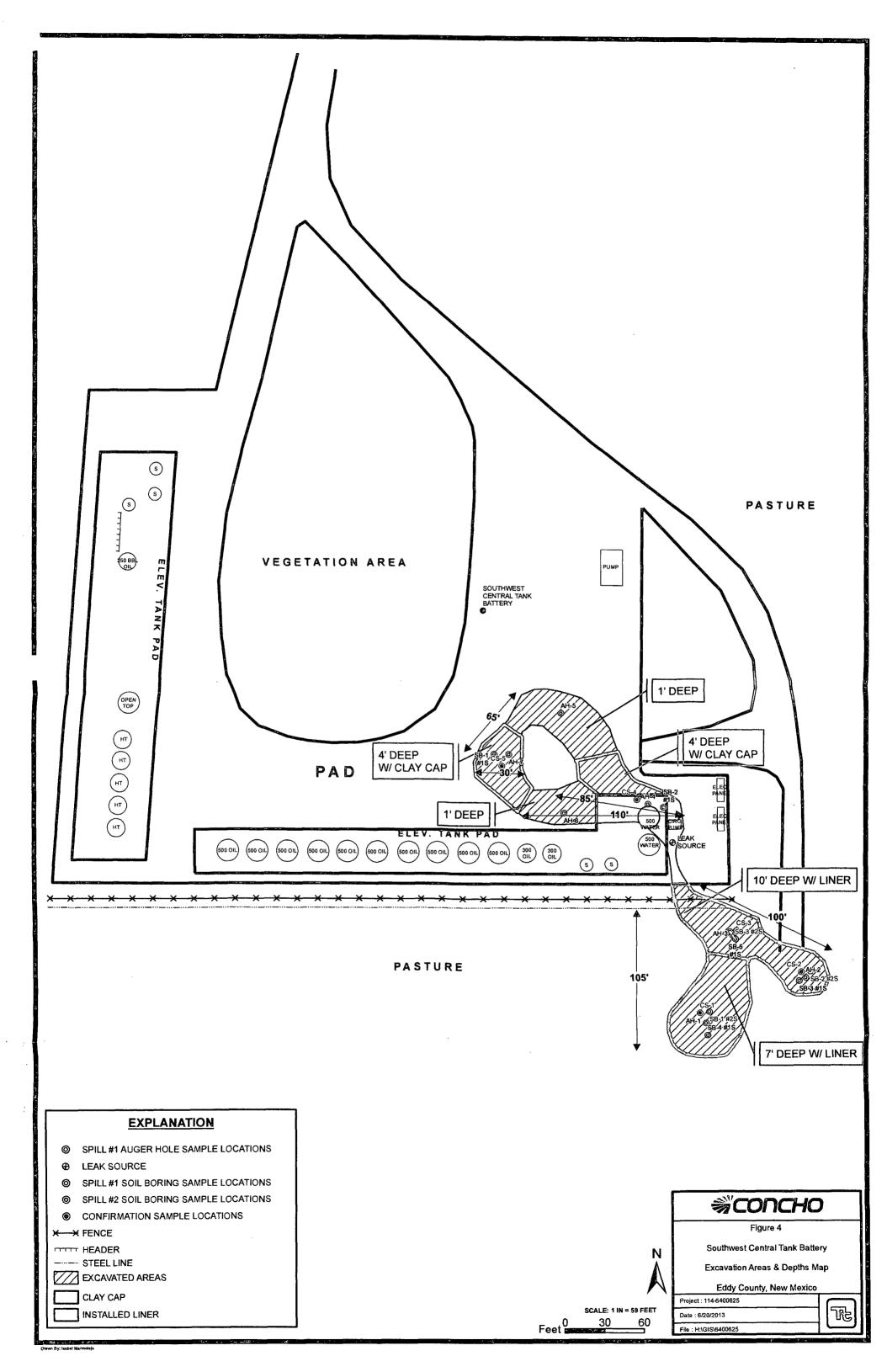
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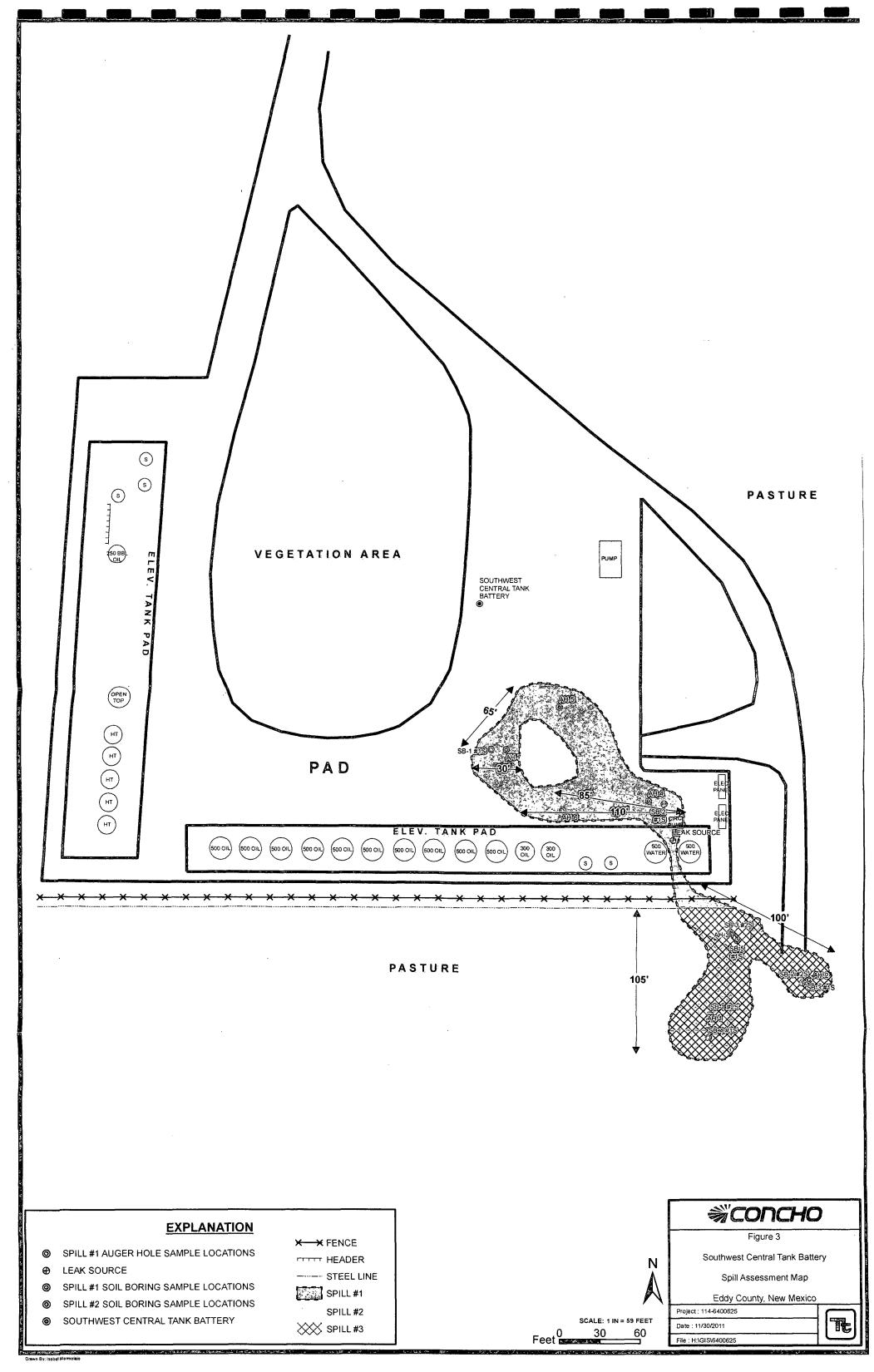
Pat Ellis – COG Mike Burton – BLM

FIGURES









TABLES

Table 1
COG Operating LLC.
SOUTHWEST CENTRAL TANK BATTERY
EDDY COUNTY, NEW MEXICO

	Sample	Sample	Depth	Soi	Status	$\lesssim 10^{\circ}$	H (mg/l	(g)	Benzene	Toluene	Ethlybenzene	Xylene	C-1:54-(
× Sample ID	Date					GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	Chloride (mg/kg)
Pasture - Spill 3 - Spill					1 and 2)			· · · · · ·				Teacher Work in	I will a words a commence commence
SB-1	2/15/11	0-1-4			X	in the	SAME.			at rest		Factors	2. 18.780
Liner			1. 野麦		3.7X.	at Sall A	212		ELMIA!	B MELLON CO.	Mary Days	14.73	3,190
		学 。58 8 3	***		. X . X . 2 . 9		A. 172 - 2 . 9		Les Con			14.12	3,270
			型表	美国企	× X × ×	Sec. 37.55	S. Buy	是原始	CHAPLE	O SHOW CO	125010000000000000000000000000000000000		
		10'		X									639
		15'		Х									<200
•		20'		X									<200
•		25'		X									<200
	<u> </u>	30'		Х					<u> </u>	<u> </u>	<u> </u>		<200
Pasture - Spill 1 and Sp	III 2 - Assess			· .		· · · · · · · · · · · · · · · · · · ·					<u> </u>		<u> </u>
AH-1	8/10/10	0-1'			X	<2.00	234	234	<0.0200	<0.0200	<0.0200	<0:0200	3,220
		1-1.5'			X	/ -	-	-		-		-	5,080
	"	2-2.5'			Χ	- /	-	-	-	-	-	<u>- </u>	5,970
Liner	"	3-3.5'	3 (A.C.)		Х		-	-; - , /	-	-	-	-	12,100
Ţ.	"	4-4.5'			X	-	-	-	-	-	,		12,800
	11	5-5.5'		in garanta	Х	-	-	-	-		÷ ;	:	13,700
	17	6-6.5'	1		, X		-	-	-		- /	-	13,000
	17	7-7.5'		Х		-	-	-	-	-	-	-	10,000
	"	8-8.5'		Х		-	-	-	-	-	-	-	7,010
	"	9-9.5'		Х		<u> </u>	-	-	-		-		4,320
SB-4	11/17/10	0-1	1.5	4.7	X	200	-		- :	-	1	-	3,710
Liner	"	3'			X	-		-	-	-	- '	-	2,080
	"	5'			Х	-	-	-	•	-		T	8,930
	0	7'	191		Х	-	-		- :		-		11,300
	"	10'		Х		-	-	~	-	-	-	-	3,190
	"	15'		Х		-	-	-	-	-	-	-	302
	"	20'		Х		-	-	-	-	-	-	-	<200
	**	25'		Х		-	-	-	-	-	-	-	<200
	"	30'		Х			-	-	-	-			<200
CS-1 South Wall	2/28/13			Х		<u> </u>	_	-	-	<u> </u>	-	-	<20.0
CS-1 East Wall	"	-		Х			-	-	-		-	-	215
CS-1 West Wall	"	-		Х		-	-	-	-	-	-		105
CS-1 Bottom Hole	"	7'		Х		-	-	-	-	-	-	-	8,160

Table 1
COG Operating LLC.
SOUTHWEST CENTRAL TANK BATTERY
EDDY COUNTY, NEW MEXICO

	Sample	Sample	Depth	Soi	l Status	n	PH (mg/	(g)	Benzene	Toluene	Ethlybenzene	Xylene	
Sample ID	Date	Depth (ft)	(BEB)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	Chloride (mg/kg)
Pasture - Spill 3 - Spill	Assessment		Overlap	ped Spil	s 1 and 2)								
SB-2	2/15/11	0-14.5	te de la	100	* X								8,320
Liner		- 2 3 支		200	. X .	1	域區		FANAT			经验证	5,590
		79.5°		学生	X	是图图	連繫公	注意位于	医对心的	Sales Carried	以中国特别的		多数5,700~
		×2.7	R.O.A.	LAK:	. X		200	建 二基	Link		S. As state		45,520⊖€
		10			\$ - X -		12.4.7				MINIE ACT		3,450
		15'		Х					·				240
		20'		Х									<200
		25'		Х									281
		30'		Х									245
Pasture - Spill 1 and Spi	li 2 - Asses	sment Data					."						
AH-2	8/10/10	0-1'			Х	<2.00	323	323	<0.0200	<0.0200	<0.0200	<0.0200	3,210
	н	1-1.5'			X		-	\ \ -		-		-	451
	"	2-2.5'			X	r	-	-	• •		-	-	868
Liner	11	3-3.5'			X	- .	-	-		-	-		963
	11	4-4.5'	. ,		· X	-	-	-	-	-	<u>-</u>	-	2,790
	"	5-5.5'			Х	5 5,2 7	-		•		-	-	3,460
	"	6-6.5'	4000		Х	<u> </u>		-		-	-	-	2,940
	"	7-7.5'	***		Х	· -		•	-	•			4,120
SB-3	11/17/10	0-1'	1.5		Х		-	- : -	-	Γ -		· -	3,340
Liner	Ħ	3'		12.12.	X	-	-	-	2	-			1,120
	11	5'			Х	1		-	'	-		-	2,360
	*1	7'			Х	.		-	-	-	-		2,590
	13	10'	25.25	1.5	Х	-	1.0	-	-	-	· -		1,690
	"	15'		Х		-	-	-		-	-	-	<200
	11	20'		Х		-	-	-	-	-	-	-	<200
	IT	25'		Х		-	-	-	-	-	-	-	<200
CS-2 North Wall	3/1/13	T -	I	×	T	-		T -	Γ -	T -	-	1 -	215
CS-2 South Wall		-		X		 -	-		-	-	-		210
CS-2 East Wall	**	-		Х		-	-	 -	-	-	-	-	653
CS-2 Bottom Hole	11	10'		X	1	 -	T -	 	-	-	-	-	4,300

Table 1
COG Operating LLC.
SOUTHWEST CENTRAL TANK BATTERY
EDDY COUNTY, NEW MEXICO

	Sample	Sample	Depth		l Status 🧦		PH (mg/l	(g)	Benzene	Toluene	Ethlybenzene	Xylene	
Sample ID	Date	Depth (ft)	(BEB)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	Chloride (mg/kg)
Pasture - Spill 3 - Spill /	,			d Spill 1									The Court of the same of the Same
SB-3	2/15/11	¥ 0-1编数	H. Fr					A CONTRACTOR	4.1445. I	2 2			11,800
Liner		% ¥3;÷%	4.3.42	金拉斯	```X:```				F 1. 1.	RESERVED A		新人类的	4,910
		5.5	18419	到第三		ABOVE	學會		1. 大学人	Eso. Mat.	ACALLIT AN	B. LEAN	3:240
		SE 7. 25	1.70 M	香港	У X	Jan. 19 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	A STATE OF THE	3. 1	\$ 3 E.	37.4	HERRITA	10 Jan 19	
		10	不是不知	Pargratus.	× X	通数形 的	STATE OF		CANAL	KARA		WAY THE	4 090
		15'		Х									2,090
		20'		Х									269
		25'		Х									<200
		30'		Х									<200
		40'		Х									<200
		50'		Х									<200
Pasture - Spill 1 and Sp	ill 2 - Asses	sment Data			•								
AH-3	8/10/10	0-1'	1.0		Х	<10.0	3,020	3,020	<0.100	<0:100	<0.100	<0.100	1,220
	**	1-1.5'	- :		X	-	7.		· · ·	-	- , .	-	1,590
	"	2-2.5'		11 6	X		1 12 0	-			-	-	4,980
Liner	11	3-3.5'			Х	1-5		,	-	-	-	-	6,860
	11	4-4.5'	781 Jan	4.	X	5					-	-	7,740
	"	5-5.5'			Х	.j <u>.</u> 1.	-	•		. ~-	-	-	9,530
SB-5	11/17/10	0-1'	J		X	1-2	1 -	 .		T -		· -	2,710
Liner	"	3'	e de la seconda		X	1 =	-	.= .:		-	-	-	7,480
	11	5'	7		Х	-	12.4		-			-	7,320
	II.	7'	44.6		. X	-	-	-		-	-	-	11,000
	"	10'			Х	2 1 1	-	-	-	-	-	-	4,740
	11	15'		Х		-	-	-	-	-	-	-	3,880
	"	20'		Х		-	-	-	-	-	-	-	266
	"	25'		X		-	-	-	-	-		-	<200
	11	30'		Х		-	-		-	-	-	<u> </u>	205
CS-3 Southeast Wall	3/1/13	<u> </u>	T	Х	<u> </u>	-		-	-	-	-	-	352
CS-3 East Wall	"	-		Х	1	-	-	-	-	-	-	-	78.3
CS-3 West Wall	"	-		Х		-	-	-	-	-	-	-	308
CS-3 Bottom Hole	"	10'		X		-	-	-	-	-	-	-	6,130

Table 1
COG Operating LLC.
SOUTHWEST CENTRAL TANK BATTERY
EDDY COUNTY, NEW MEXICO

	Sample	Sample	Depth	Soi	l Status	T Con	PH (mg/l	(g)	Benzene	Toluene	Ethlybenzene	Xylene	
Sample ID	Date	Depth (ft)		In-Situ	Removed	GRO		Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	Chloride (mg/kg)
Pad Area - Spill 1 - A	ssessment Da	ta	٠.	S. 4. 4. 4.	·.		·	-	:				
AH-4	8/10/10		2.251	Euro Hote	, X*:	`≤2.00	<50:0	_<50.0¢	><0.0200	. 0.0200≥يز	<0.0200	· <0.0200	8,740
	19	1-1:5		图 集高	X						Waldy Mal	44.77	₹ £3.720 \$
	11	2-2.5	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	門一點	X		を 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	建设	THE PERSON	PARELESS.			3,500
		3-3:5	er con	NAME:	- X			View The Land		24.50	《公司》在19 13年	180-63	**************************************
	"	4-4.5'		X		-	-	-	-	-	-	-	1,490
	п	5-5.5'		Х		-	-	-	-	-	-	-	3,210
	11	6-6.5'		Х		-	-	-	-	-	-	-	1,220
	11	7-7.5'		Х		-	-	-	-	-	-	-	559
	11	8-8.5'		Х		-	-	-	-	-	-	-	640
	11	9-9.5'		Х		-	-	-	-		-	-	1,070
SB-2	11/17/10	0-1		100	ZXX.X			Control of the contro	AND THE		以外,	377.3.4	11.600
Clay	11	3.3	<u> </u>	17110	X	1	10 2 ×				Train Range		13,400
	11	5'		Х		-	-	-	-	-	-	-	2,270
	"	7'		Х		-	-	-	-	-	-	-	2,770
	"	10'		Х		-	-	-	-	-	-	-	1,320
	"	15'		X		-	-	-	-	-	_	-	<200
	11	20'		Х		-	-	-	-	-	-	-	<200
	"	25'		Х		-	<u> </u>		-		-	-	<200
CS-4 North Wall	3/8/13			Х		_	T -	-	<u> </u>	i -	-	T -	364
CS-4 South Wall	,,	l -		X		-	-	-	-	-	-	-	3,740
CS-4 East Wall	,,	-		Х		-	-	-	-	-	-	-	2,490
CS-3 Bottom Hole	"	-		Х		-	-	-	-	-	-	-	519
CS-4 West Wall	3/11/13	-		Х		-	-	-	-	-	-	-	4,850

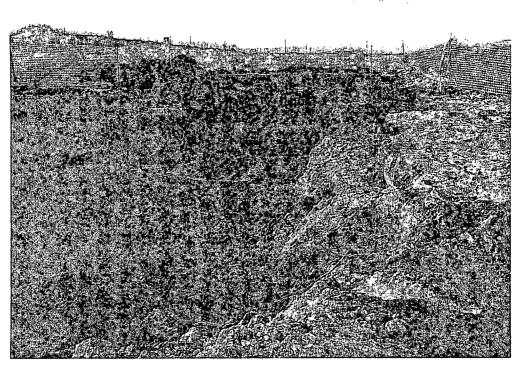
Table 1 COG Operating LLC. SOUTHWEST CENTRAL TANK BATTERY EDDY COUNTY, NEW MEXICO

	Sample	Sample	Depth	* Soi	l Status	Τ	PH (mg/l	(g)	Benzene	Toluene	Ethlybenzene	Xylene	And the second s
Sample ID	Date	Depth (ft)		În-Situ	Removed	1986 ME 2011	DRO	Total .	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	Chloride (mg/kg
Pad Area - Spill 1 - Asse	essment Da	ta	11	1. 1. 1					<u> </u>	·			
AH-5	8/10/10	第0-1岁	建物电	The second	a √X X · S · S · S · S · S · S · S · S · S	₹<2:00	< 50.0°	\$ <50.0°	4.6.3	ili and	TENEST PRO	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	7-900
	11	1-1.5'		Х		-	-	-	-	-	-	-	1,090
	"	2-2.5'		Х		-	-	-	-	-	-	-	255
	"	3-3.5'		Χ		-	-	-	-		-	-	<200
AH-6	8/10/10	0-1-	被實驗	age X	STATE OF THE PARTY	£<2.00%	\$<50:0°	<50.0°				张斯兰教	1 640
	"	1-1.5'		Х		-	-	-	-	-	-	-	208
	11	2-2.5'		Х			-	-	-	-	-	-	223
AH-7	8/10/10	√-0-1'%		1 80 1 1 1 E	X	<2.00	<50.0	<50.0°	[3] XXX 5		ENTER COMPANY OF ENTER		4,250
MIT-I	0/10/10	1-1.5	/317700角	40 - PE - 1	LE TYTE	\$ 12.00 \$ 12.50	, 530.0°,	, 500.0	3 S 3			15-100000000000000000000000000000000000	
	"	2-2.5		485	Y		14.55	13.44.	dia dia	ع يُخ وندار ، مُع هُو			71,090
	11	2:5-3:0'	7.7		X X	A	TENNA TO B		THE VIEW	April 1995		APPENDED TO THE	2 040
SB-1	11/17/10	0-1'	200		X	41.44.50]}}}		4.7. 混竹			USUA	4,450
	11	3'.20	A. 25.	****	X	14 X 14 X 28		12- West.	3 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	PM.57/2		100	3 920
Clay	"	5'		Х		-	-	-	-	-	The second section of the second seco	-	3,160
	"	7'		Х		-	-	-	· -		-	-	2,930
	"	10'		Х		· -	-	_	-	_	_	-	570
	"	15'		Х		-	-	-	-	-	-	-	293
	"	20'		Х		-			-	-	-		370
CS-5 North Wall	3/8/13			Х		-	-	_	T -	-	-	-	349
CS-5 East Wall	*			Х		-	-	-	-	-	-	-	1,140
CS-5 West Wall	"	-		Х		-	-	-		-		-	162
CS-5 Bottom Hole	11	-		Х		-	-	-	-	-	-	-	2,040
CS-5 South Wall	3/11/13	-		Х		-	-	-	-	-	-	-	737

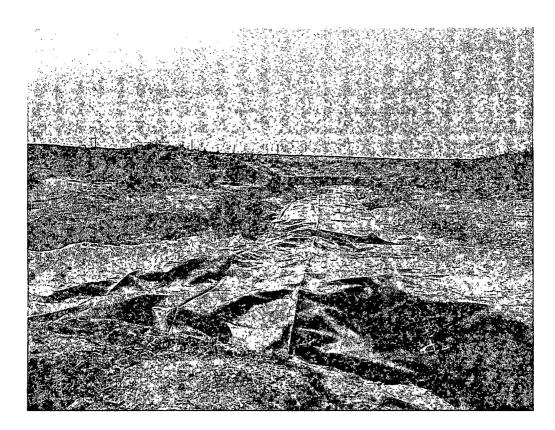
BEB Below Excavation Bottom
(-) Not Analyzed
Excavation Depths
Liner Installation

COG Operating LLC Southwest Central Tank Battery Eddy County, New Mexico





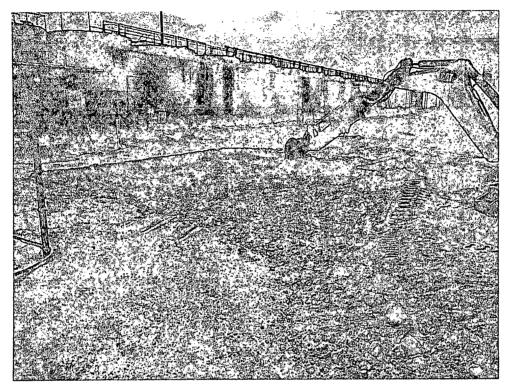
View East – Excavation of AH-2.



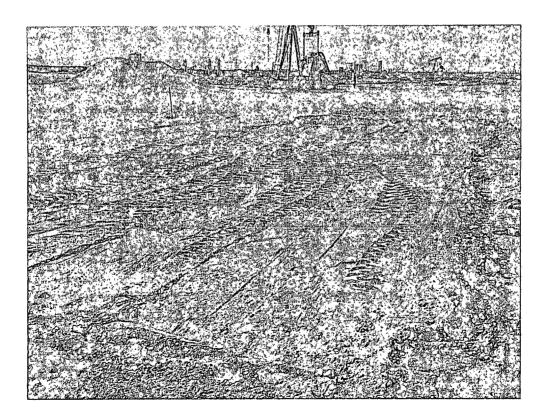
View South – Liner installation in area of AH-1 thru AH-3.

COG Operating LLC Southwest Central Tank Battery Eddy County, New Mexico





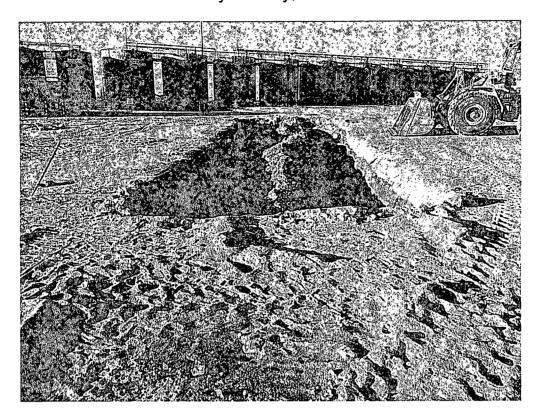
View Southwest – Excavation of AH-6.



View Northeast – Excavation of AH-5.

COG Operating LLC Southwest Central Tank Battery Eddy County, New Mexico





View Southwest – Excavation and clay cap installation in area of AH-7.



View South - Backfill of areas on pad.

A XION399A

<u>District I</u> 1625 N. French Dr., Hobbs, NM 88240 District II
1301 W. Grand Avenue, Artesia, NM 88210
District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV

1220 S. St. Francis Dr., Santa Fe, NM 87505

* Attach Additional Sheets If Necessary

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

						OPERA	TOR		☐ Initia	al Report	\boxtimes	Final Repor	
Name of Co	mpany C	COG Operat	ing LLC			Contact Pat	t Ellis						
Address 55	0 W. Texa	as, Suite 130	0 Midla	nd, Texas 7970	1 '	Telephone N	No. (432) 685-	4332					
Facility Nar	ne South	west Centra	l Tank B	attery		Facility Typ	e Tank Batte	ry					
Surface Ow	ner: Fede	ral		Mineral O	wner				Lease N	lo. NMNM	-0467	932	
				LOCA	TION	OF REI	EACE						
Unit Letter	Section	Township	Range	Feet from the		South Line	Feet from the	Fact/\	Vest Line	County			
O	20	178	30E	reet nom the	NOILII	South Line	rect nom the	Lasu	vest Eme	County	Eddy	,	
]	Latitude N 32.8	31578°	Longitud	e W 103.9951	9°					
				NAT	URE	OF RELI	EASE						
Type of Relea	ase: Produc	ed Water					Release 150 bbl	ls	Volume R	Recovered 8) bbls	oil	
Source of Re	lease; PVC	adaptor at equ	ıalizer line	>		Date and H	our of Occurrent	ce		Hour of Disc 0 7:00 a.m.	overy		
Was Immedia	te Notice C			IN DAGE		If YES, To	Whom?						
			Yes [No Not Re	quirea								
By Whom?		1 10					our 01/30/2011			· · · · · · · · · · · · · · · · · · ·			
Was a Watero	course Reac		Yes 🛚	No		N/A	lume Impacting	RI	ECEI	VED	1		
If a Watercou	rse was Im	pacted, Descri	be Fully.*					i	AUG 23		 		
N/A								1 '	പ്രവ മൃ	2013			
								MM	OCD A	RTESIA			
Describe Cau	se of Proble	em and Remed	lial Action	n Taken.*							<u>. </u>		
		and cracked at plastic coated :		zer line behind the	e tanks.	All the fitting	gs have been rep	laced an	d the tank t	oattery is in t	he prod	cess of	
Describe Area	a Affected a	and Cleanup A	ction Tak	en.*									
RRAL were r	emoved and	d transported t	to proper d	for extents. A wo lisposal. Once ex MOCD for review	cavated								
regulations al public health should their o or the environ	I operators or the envirus perations had ment. In a	are required to conment. The ave failed to a	report an acceptanc dequately CD accept	is true and compl d/or file certain re e of a C-141 repo investigate and re tance of a C-141 r	elease no rt by the emediate	otifications and NMOCD made contamination	nd perform correct arked as "Final Roon that pose a thr	ctive acti leport" d reat to gr	ons for rele oes not reli ound water	eases which a eve the opera , surface was	nay en ator of er, hui	danger liability nan health	
Signatura			4	7			OIL CON	SERV	ATION	DIVISIO	N		
Signature: Printed Name	: Ike Tavar	ez (agent for C	COG)			Approved by District Supervisor:			:				
Title: Project					A	Approval Date:			Expiration Date:				
E-mail Addre	ss: ike.tava	arez@tetratech	ı.com			Conditions of	Approval:		Attached				
Date: 6	, 20	-13	Phone:	(432) 682-4559							_		

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

* Attach Additional Sheets If Necessary

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

				***		OPERA		Initia	al Report	\boxtimes	Final Report		
		COG Operat				Contact Pat Ellis							
				nd, Texas 7970			No. (432) 685-4	_					
Facility Nar	ne South	west Central	Tank B	attery		Facility Typ	e Tank Batter	ry					
Surface Ow	ner: Fede	ral		Mineral C)wner			Lea	ase N	lo. NMNM	-0467	932	
				LOCA	TIO	N OF REI	LEASE						
Unit Letter	Section	Township	Range	Feet from the		/South Line	Feet from the	East/West L	ine	County			
0	20	17S	30E	!	 				Eddy				
·	·	ابر <u>- س</u> ال]	Latitude N 32.8	31578°	Longitud	e W 103.99519	9°					
				NAT	'URE	OF RELI	EASE						
Type of Rele						Volume of	Release 100 bbls			Recovered 9			
Source of Re	lease: 6'' st	eel line				1	lour of Occurrenc	1		Hour of Disc	overy		
Was Immedia	-ta Ni-a' (7'0				08/31/2010 If YES, To		08/3	1/201	0 5:00 a.m.			
Was Immedia	ate Notice (_	Vec [No ☐ Not Re	omired	II 1ES, 10		erry Gregston	_RI	M			
			105	1 140 🗀 1401 140	.quii cu			m Amos-BLN		141			
							N	like Bratcher-	OCD				
By Whom?							lour 08/31/2010						
Was a Water	course Read		_			k .	lume Impacting t	he Watercours	se.			j	
		LJ	Yes 🛭	No		N/A				= 17 / C- F	7		
If a Watercou	rse was Im	pacted, Descri	be Fully.*	:		· · · · · · · · · · · · · · · · · · ·		FIL	C L	EIVEE	#		
N/A		· .	·					Αl	JG 2	3 2013	Ì		
								NIAGO	NMOCD ARTESIA				
Describe Cau	se of Probl	em and Remed	lial Action	n Taken.*				Latair		/31/11/43			
Due to corros			developed	i a hole in it. A 1/	ź inch p	lug was instal	led to repair the li	ne and a new,	plast	ric coasted li	ne is b	eing	
Describe Are	a Affected	and Cleanup A	ction Tak	en.*		- 11 - 1, 1							
The same The sale than		1	***	C.*			1	NIMACOD Co.		1 0.11			
RRAL were r	emoved an	d transported t	o proper o	for extents. A wo lisposal. Once ex MOCD for review	cavated								
regulations al public health should their of or the environ	I operators or the envir operations h nment. In a	are required to conment. The ave failed to a	report an acceptanc dequately CD accep	is true and compid/or file certain ree of a C-141 repoinvestigate and retaince of a C-141	elease n ort by the emediate	otifications ar e NMOCD ma e contamination	nd perform correct arked as "Final Re on that pose a thre	tive actions fo eport" does no eat to ground v	r rele t relie water	ases which reve the opera surface wat	nay en ator of er, hur	danger liability man health	
	///	\mathcal{A}					OIL CONS	<u>SERVATIO</u>	<u>NO</u>	<u>DIVISIO</u>	<u>N</u>		
Signature:	_//_		2_										
Printed Name	: Ike Tavar	ez (agent for C	COG)			Approved by	District Supervise	visor:					
Title: Project	Manager					Approval Date: Expi				Expiration Date:			
E-mail Addre	ss: ike.tav	arez@tetratech	.com		Conditions of Approval:								
Date:	20.	13	Phone:	(432) 682-4559									

District I 1625 N. French Dr., Hohbs. 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

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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

Revised October 10, 2003 Submit 2 Copies to appropriate District Office in accordance

Form C-141

with Rule 116 on back side of form

Eddy

Release Notification and Corrective Action OPERATOR Initial Report Final Report Name of Company COG Operating LLC Contact Pat Ellis Address 550 W. Texas, Suite 1300 Midland, Texas 79701 Telephone No. (432) 685-4332 Facility Name Southwest Central Tank Battery Facility Type Tank Battery Surface Owner: Federal Mineral Owner Lease No. NMNM-0467932 LOCATION OF RELEASE North/South Line County Unit Letter Section Township Range Feet from the Feet from the East/West Line

Latitude N 32.81578°	Longitude W 103.99519°								
NATURE	OF RELEASE								
Type of Release: Crude Oil and Produced Water	Volume of Release 4 bbls oil	Volume Recovered 2 bbls oil							
	60 bbls pw	30 bbls pw							
Source of Release: Water Tank	Date and Hour of Occurrence	Date and Hour of Discovery							
	08/03/2010	08/03/2010 5:00 a.m.							
Was Immediate Notice Given?	ired If YES, To Whom? Mike Bratcher-OCD								
By Whom?	Date and Hour 08/03/2010 3:16	n m.							
Was a Watercourse Reached?	If YES, Volume Impacting the W								
☐ Yes ☒ No	N/A								
		RECEIVED							
If a Watercourse was Impacted, Describe Fully.*	} "	"-OLIALD							
ALLA		AUG 2 3 2013							
N/A		A00 2 0 2013							
	l nia	MOCD ARTESIA							
Describe Cause of Problem and Remedial Action Taken.*		MICCO ARTESIA							
Section State of Freedom and Nonecolar Fletion Failed.		_							
Produced water tanks ran over due to an inoperable water pump because o	f a blown fuse in the panel box. The	e electrical problem has been repaired.							
Describe Area Affected and Cleanup Action Taken.*									
Describe Area Affected and Cleanup Action Taken.									
Tetra Tech inspected and assessed the spill area for extents. A work plan	was prepared and submitted to NMC	OCD for approval Soils exceeding the							
RRAL were removed and transported to proper disposal. Once excavated									
Tech prepared closure report and submitted to NMOCD for review.									
I hereby certify that the information given above is true and complete to the									
regulations all operators are required to report and/or file certain release no									
public health or the environment. The acceptance of a C-141 report by the									
should their operations have failed to adequately investigate and remediate									
or the environment. In addition, NMOCD acceptance of a C-141 report do federal, state, or local laws and/or regulations.	bes not relieve the operator of respon	nsibility for compliance with any other							
redetal, state, or local laws hindred regulations.	OH CONCER	VATION DIVICION							
	<u>OIL CONSER</u>	VATION DIVISION							
Signature:									
	Approved by District Supervisor:								
Printed Name: Ike Tavarez (agent for COG)	Approved by District Supervisor:								
Title: Project Manager	Approval Date:	Expiration Date:							
E-mail Address: ike.tavarez@tetratech.com	Conditions of Approval:	Attached							
- (- 70 17		remember 1							
Date: 0 - 20 - 1 Phone: (432) 682-4559									
Attach Additional Sheets If Necessary									

District I
1625 N. French Dr., Hobbs. NM 88240
District II
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1000 Rio Brazos Road, Aztec. NM 87410
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1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Form C-141 Revised October 10, 2003

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

						OPERA?	FOR	· · · · · · · · · · · · · · · · · · ·		al Report		Final Repo
Name of Co		COG OP				Contact		Pat Elli				····
Address				dland, TX 79701		Telephone 1		2-230-0			han beden same are an architektion be	
Facility Nar	ne	Southwest C	entral la	nk Battery		Facility Typ	<u>je 18</u>	ink Batt	ery			
Surface Ow	ner Fed	eral		Mineral O	wner				Lease 1	Vo. NMN	IM-04	67932
				LOCA	TIO	N OF REI	LEASE					
Unit Letter	Section	Township	Range	Feet from the	North	/South Line	Feet from the	East	West Line	County		
0	20	178	30E					:			Eddy	
		1	I	Latitude 32.8	15578	Longit	ude 103.9951	9				alinearum uronomum surreur uroddi.uu
				NATI	URE	OF REL	EASE					
Type of Rele	ase Crud	e Oil and Proc	luced Wat	er	******************	Volume of			,	Recovered	***************************************	
						4bbls of cr			2bbls of			
63 6 15	11/		····				oroduced water lour of Occurre			produced w Hour of Dis		
Source of Re	iease wa	iter tank				08/02/2010		nce		10 5:00 a.m		
Was Immedia	ite Notice (Given?				If YES, To			1			
		\boxtimes	Yes [No Not Rec	quired			Mike	Bratcher—C	OCD		
By Whom?	Josh Rus	SSO					lour 08/03/20		:16 p.m.			
Was a Water	course Read		Yes 🗵] No		If YES, Vo	olume Impactin	g the Wa	tercourse.			
If a Watercou	rse was lm	pacted, Descr	ibe Fully.	k								
			•									
Describe Cau	se of Probl	em and Reme	dial Actio	n Taken.*								
Produced was	er tanks ra	n over due to a	ın inopera	ble water pump be	cause (of a blown fus	se in the panel t	oox. The	electrical p	roblem has b	een rej	paired.
Describe Are	a Affected	and Cleanup A	Action Tal	«en.*								
dimensions of condition and Sec.20-T17S	f the releas the impac R30E, Edo	e was 15 yard: ted material ha ly Co., NM, A	s x 65 yardıs been di: PI# 30-0	ed water was releaseds on location, and sposed of appropria 15-29561). Tetra Telan to the BLM/N	5 yard ately. (fech w	ls x 70 yards of (The closest will sample the	off of the location to spill site area t	on. The the relea o delinea	well pad has se is the WE ite any possi	been return McIntyre " ble contamin	ed to it E" #4,	s original Unit O,
regulations all public health should their of or the environ	I operators or the envi perations b iment. In a	are required to ronment. The nave failed to a	o report ar acceptance (dequately OCD accep	e is true and complend/or file certain re the of a C-141 report investigate and re otance of a C-141 r	lease r n by the median	notifications a ne NMOCD m te contaminati	nd perform corn arked as "Final ion that pose a feethe operator of	rective as Report" threat to of respon	ctions for rel does not rel ground wate sibility for c	leases which ieve the ope or, surface was compliance v	may er rator of ater, hu vith any	ndanger f liability unan health
Signature:		2 1			,				VATION	DIVISIO	<u>)N</u>	
Printed Name); :	Josh	Russo	Andrews, price and a significant and a		Approved by	District Superv	visor:				
Title:		HSE C	oordinato			Approval Da	te:		Expiration	Date:		
E-mail Addre	ess:	jrusso@conc	thoresourc	es.com		Conditions o	f Approval:			Attached		
Date: 08/13		Phon		2-212-2399								
* Attach Addi	tional She	ets If Necess	ary									

District I
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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 Eorm C-141
Revised October 10, 2003

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					,	OPERAT	ΓOR		✓ Initia	l Report	Final Report
Name of Co		COG OP			(Contact	P	at Ellis			7711471
Address	550 W.	Texas. Suite	100, Mic	Iland, TX 79701	Т	relephone N	lo. 432-	230-00	77		
Facility Nan	ne S	Southwest Co	entral Tai	nk Battery	F	Facility Typ	e Tan	k Batte	гу		
Surface Ow	ner Fede	ral		Mineral O	wner				Lease N	o. NMNM-0	467932
				LOCA	TION	OF REI	LEASE				
Unit Letter O	Section 20	Township 17S	Range 30E	Feet from the	North/S	South Line	Feet from the	East/V	Vest Line	County Eddy	1
				Latitude 32.8	15578	Longitu	ude 103.99519				
				NAT	URE (OF RELI	EASE				
Type of Relea				***************************************			Release 100bbls	-		tecovered 98bbl	
Source of Re.	lease 6" s	teel water line	:			Date and H 08/31/2010	our of Occurrent	ce	Date and 08/31/201	Hour of Discove 0 8:00a.m.	ry
Was Immedia	ate Notice (Jiven?				If YES, To			00/31/201	V 0.10941114	
		\boxtimes	Yes [No Not Rec	quired				regston-B		
									Amos—BLM ratcher—O		
By Whom?							our 08/31/2010	5:24	· p.m.		
Was a Water	course Read	ched?	Yes 🗵	No		lf YES, Vo	lume Impacting	the Wate	ercourse.		
If a Watercor	ırse was Im	pacted, Descr	ibe Fully.*	:	·		· · · · · · · · · · · · · · · · · · ·	• • •			
Describe Cau	ise of Probl	em and Reme	dial Action	ı Taken.*							
Due to corros replace the ex		cel water line	developed	a hole in it. A ½ i	nch plu	g was installe	ed to repair the li	ne and a	new, plasti	e coated line is l	being built to
Describe Are	a Affected	and Cleanup A	Action Tak	en.*							
vacuum truck (The closest v Tetra Tech w	t. The fluid well locatio till sample t	flowed from t in to the releas he spill site ar	the steel line is the Weato delin	from the 6" steel ne, to behind the to D McIntyre E #4, leate any possible ant remediation w	ınk batte 990° FS contami	ery into the p SL 2310' FW:	asture with the d L, Sec.20-T17S-	imensioi R30E, A	ns of the sp .PI#30-015-	ill area measurin 29561, NMNM	ig 35° x 35°. -0467932).
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							OIL CON	SERV	'ATION	DIVISION	
Signature:		4	<u></u>								
Printed Name	<u></u>	Josh	Russo	A A A A A A A A A A A A A A A A A A A	F	Approved by	District Supervis	sor:			·····
Title:		HSE C	oordinator			Approval Dat	ė:		Expiration	Date:	
E-mail Addre	ess:	jrusso(@)cond	choresourc	es.com	(Conditions of	Approvai:			Attached]
Date: 09/07	/2010	Phone:	432-212-	2399							

Revised October 10, 2003

Form C-141

District I 1625 N. French Dr., Hobbs, NM 88240 District I 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

* Attach Additional Sheets If Necessary

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

_						OPERA'	TOR		🛛 Initi:	al Report		Final Repo
Name of Co	mpany	COG OP	ERATIN	G LLC		Contact	Pa	at Ellis				
Address				dland, TX 7970	1	Telephone 1	No. 432-	230-001	77			
Facility Nar	ne	Southw	est Centi	ral		Facility Typ	e Tanl	k Batter	у			
Surface Ow	ner Fede	eral		Mineral O	wner				Lease N	lo. NMNN	1-040	57932
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	·					N OF RE	r————			,		
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				Latitude 32 4	8.908	Longitu	ıde 103 59.683					
				NAT	URE	OF RELI	EASE					
Type of Relea							Release 150bbls			Recovered 8		
Source of Rel	lease PVC	adaptor at eq	ualizer lin	e			lour of Occurrenc	e		Hour of Disc		•
Was Immediate Notice Given?					12/31/2010 If YES, To			12/31/201	.0 /:0	0 a.m	•	
Was Emileate			Yes 🗌	No 🗌 Not Re	quired	11 125, 10		Mike Br	atcher—O	CD		
									egston—B	LM		
By Whom? Josh Russo					lour 01/03/2011		11 a.m.					
Was a Watercourse Reached? ☐ Yes ☒ No					If YES, Vo	lume Impacting t	he Wate	rcourse.				
If a Watercou	rse was imp	pacted, Descri	be Fully.*									
Describe Caus	se of Proble	m and Remed	lial Action	Taken.*					·			
The PVC aday			the equali	zer line behind the	e tanks.	All fittings h	nave been replace	and the	tank batter	y is in the pr	ocess	of upgrading
Describe Area	Affected a	nd Cleanup A	ction Tak	en.*		,						
area measured 30-015-29561	l 8' x 100' t . Tetra Tec	to the southeas th will sample	st and ende the spill s	itting behind the ta ed up 40' x 150' in ite area to delinea t remediation wor	n the pa ite any j	asture. The cl	osest well locatio	n to the	release is t	he W.D. Mc	Intyre	: E#4, API#
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Signature.	-/-		-			4	Di-4-i-4 ()			1		
Printed Name		Josh I	Russo	FF. 17.03	'	npproved by	District Superviso	л: 				
Title:		HSE Co	ordinator			Approval Date):	E	xpiration [Date:		
E-mail Addres	s:	jrusso@conch	oresource	s.com		Conditions of	Approval:			Attached	П	
Date: 01/04	5/2011	Phone:	432-3	212_2300								

8 XION399A

Water Well Data Average Depth to Groundwater (ft) COG - Southwest Central Tank Battery Eddy County, New Mexico

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NMOCD - Groundwater Data

Site Location - Southwest Central Tank Battery



New Mexico Office of the State Engineer Water Column/Average Depth to Water

No records found.

PLSS Search:

Section(s): 1-36

Township: 17S

Range: 30E

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

12/27/10 1:41 PM

Page 1 of 1

WATER COLUMN/ AVERAGE DEPTH TO WATER

Report Date: March 15, 2013 Work Order: 13030828

Summary Report

Ike Tavarez Tetra Tech

1910 N. Big Spring Street Midland, TX 79705

Report Date: March 15, 2013

Page Number: 1 of 2

Work Order: 13030828

Project Location: Eddy Co., NM

Project Name: COG/SW Central TB

Project Number: 114-6400625

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
322880	CS-1 (AH-1) South Wall	soil	2013-02-28	00:00	2013-03-08
322881	CS-1 (AH-1) East Wall	soil	2013-02-28	00:00	2013-03-08
322882	CS-1 (AH-1) West Wall	soil	2013-02-28	00:00	2013-03-08
322883	CS-1 (AH-1) Bottom Hole	soil	2013-02-28	00:00	2013-03-08

Sample: 322880 - CS-1 (AH-1) South Wall

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

Sample: 322881 - CS-1 (AH-1) East Wall

Param	Flag	Result	Units	RL
Chloride		215	mg/Kg	4

Sample: 322882 - CS-1 (AH-1) West Wall

Param	Flag	Result	Units	RL
Chloride		105	mg/Kg	4

Sample: 322883 - CS-1 (AH-1) Bottom Hole

Report Date: March 15, 2013 Work Order: 13030828 Page Number: 2 of 2

Param	Flag	Result	Units	RL
Chloride		8160	mg/Kg	4



5701 Aberdeen Avenue, Suite 9 200 East Sunset Road, Suite E

Lubbock. Texas 79424 Texas 79922 El Paso.

800-378-1296 806-794-1296 915-585-3443

FAX 806 - 794 - 1298 FAX 915 -585 -4944 FAX 432 - 689 - 6313

5002 Basin Street, Suite A1 (BioAquatic) 2501 Mayes Rd., Suite 100

Texas 79703 Midland. Carroliton, Texas 75006

972-242-7750

432-689-6301

E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

NELAP DoD LELAP **WBE NCTRCA** DBEOklahoma ISO 17025 Kansas

Analytical and Quality Control Report

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

Report Date: March 15, 2013

Work Order:

13030828

Project Location:

Eddy Co., NM

Project Name:

COG/SW Central TB

Project Number:

114-6400625

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
322880	CS-1 (AH-1) South Wall	soil	2013-02-28	00:00	2013-03-08
322881	CS-1 (AH-1) East Wall	soil	2013-02-28	00:00	2013-03-08
322882	CS-1 (AH-1) West Wall	soil	2013-02-28	00:00	2013-03-08
322883	CS-1 (AH-1) Bottom Hole	soil	2013-02-28	00:00	2013-03-08

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.

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

Report Contents

Case Narrative	3
Analytical Report Sample 322880 (CS-1 (AH-1) South Wall) Sample 322881 (CS-1 (AH-1) East Wall) Sample 322882 (CS-1 (AH-1) West Wall) Sample 322883 (CS-1 (AH-1) Bottom Hole)	4
Method Blanks QC Batch 99745 - Method Blank (1)	6
Laboratory Control Spikes QC Batch 99745 - LCS (1)	7 7 7
Calibration Standards QC Batch 99745 - CCV (1)	
Appendix Report Definitions Laboratory Certifications Standard Flags Attachments	

Case Narrative

Samples for project COG/SW Central TB were received by TraceAnalysis, Inc. on 2013-03-08 and assigned to work order 13030828. Samples for work order 13030828 were received intact at a temperature of 5.8 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	84430	2013-03-13 at 10:25	99745	2013-03-15 at 14:12

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 13030828 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Report Date: March 15, 2013

114-6400625

Work Order: 13030828 COG/SW Central TB

Page Number: 4 of 10 Eddy Co., NM

Analytical Report

Sample: 322880 - CS-1 (AH-1) South Wall

Laboratory:

Midland

Analysis: Chloride (Titration) Analytical Method: Date Analyzed:

SM 4500-Cl B

Prep Method: N/A Analyzed By: AR.

QC Batch: Prep Batch: 84430

99745

2013-03-15 Sample Preparation: 2013-03-13

Prepared By:

AR.

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride	U		< 20.0	${ m mg/Kg}$	5	4.00

Sample: 322881 - CS-1 (AH-1) East Wall

Laboratory:

Chloride

Midland

Analysis: Chloride (Titration) QC Batch: 99745 Prep Batch: 84430

Analytical Method: Date Analyzed:

SM 4500-Cl B 2013-03-15 2013-03-13

Units

mg/Kg

Prep Method: N/A

Analyzed By: AR. Prepared By: AR

Cert Result Flag Parameter

Sample Preparation: RL

215

Dilution RL4.00

Sample: 322882 - CS-1 (AH-1) West Wall

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 99745 Prep Batch: 84430

Analytical Method: Date Analyzed:

SM 4500-Cl B 2013-03-15 2013-03-13

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

RLFlag Parameter Cert Result Units Dilution RL105 mg/Kg 5 4.00 Chloride

Sample Preparation:

Work Order: 13030828

COG/SW Central TB

Page Number: 5 of 10 Eddy Co., NM

Sample: 322883 - CS-1 (AH-1) Bottom Hole

Laboratory: Midland

114-6400625

Analysis: Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A AR

QC Batch: 99745Prep Batch: 84430 Date Analyzed: Sample Preparation:

2013-03-15 2013-03-13 Analyzed By: Prepared By: AR

RL

Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			8160	${ m mg/Kg}$	10	4.00

Report Date: March 15, 2013 114-6400625

Work Order: 13030828 COG/SW Central TB Page Number: 6 of 10 Eddy Co., NM

Method Blanks

Method Blank (1)

QC Batch: 99745

QC Batch: 99745 Prep Batch: 84430 Date Analyzed: QC Preparation:

2013-03-15 2013-03-13 Analyzed By: AR

Prepared By: AR

Parameter Flag Cert MDL Result

ParameterFlagCertResultUnitsRLChloride<3.85</td>mg/Kg4

114-6400625

Work Order: 13030828 COG/SW Central TB

Page Number: 7 of 10 Eddy Co., NM

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch:

Date Analyzed:

2013-03-15

Analyzed By: AR

Prep Batch: 84430

QC Preparation: 2013-03-13

Prepared By: AR

			LCS			Spike	Matrix		Rec.
Param	\mathbf{F}	$^{\mathrm{C}}$	Result	Units	Dil.	Amount	Result	Rec.	$_{ m Limit}$
Chloride			2790	mg/Kg	1	2500	< 3.85	112	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	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	·		2640	mg/Kg	1	2500	< 3.85	106	85 - 115	6	20

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

Matrix Spike (MS-1)

Spiked Sample: 322885

QC Batch:

99745

Date Analyzed:

2013-03-15

Analyzed By: AR.

Prep Batch: 84430

QC Preparation: 2013-03-13

Prepared By: AR

			MS			Spike	Matrix		Rec.
Param	\mathbf{F}	$^{\rm C}$	Result	Units	Dil.	${f Amount}$	Result	Rec.	Limit
Chloride			2780	mg/Kg	5	2500	210	103	78.9 - 121

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

			MSD			Spike	Matrix		Rec.		RPD
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	\mathbf{Limit}	RPD	Limit
Chloride			2640	mg/Kg	5	2500	210	97	78.9 - 121	5	20

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

Work Order: 13030828 COG/SW Central TB Page Number: 8 of 10 Eddy Co., NM

Calibration Standards

Standard (CCV-1)

QC Batch: 99745

114-6400625

Date Analyzed: 2013-03-15

Analyzed By: AR

CCVsCCVsPercent **CCVs** True Found Percent Recovery Date Analyzed Param Flag Cert Units Conc. Conc. Recovery Limits 2013-03-15 Chloride mg/Kg 100 100 100 85 - 115

Standard (CCV-2)

QC Batch: 99745

Date Analyzed: 2013-03-15

Analyzed By: AR

CCVs CCVsCCVsPercent True Found Percent Recovery Date Flag Conc. Param Cert Conc. Recovery Limits Analyzed Units Chloride 100 100 100 85 - 115 2013-03-15 mg/Kg

Work Order: 13030828 COG/SW Central TB Page Number: 9 of 10

Eddy Co., NM

Report Date: March 15, 2013 114-6400625

Appendix

Report Definitions

Name	Definition
$\overline{\mathrm{MDL}}$	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

	Certifying	Certification	Laboratory
\mathbf{C}	Authority	Number	Location
_	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-12-4	Midland

Standard Flags

- F Description
- B Analyte detected in the corresponding method blank above the method detection limit
- H Analyzed out of hold time
- J Estimated concentration
- Jb The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
- Je Estimated concentration exceeding calibration range.
- MI1 Split peak or shoulder peak
- MI2 Instrument software did not integrate
- MI3 Instrument software misidentified the peak
- MI4 Instrument software integrated improperly
- MI5 Baseline correction
- Qc Calibration check outside of laboratory limits.
- Qr RPD outside of laboratory limits
- Qs Spike recovery outside of laboratory limits.
- Osr Surrogate recovery outside of laboratory limits.
- U The analyte is not detected above the SDL

Attachments

114-6400625

Work Order: 13030828 COG/SW Central TB Page Number: 10 of 10 Eddy Co., NM

The scanned attachments will follow this page.

Please note, each attachment may consist of more than one page.

Analysis Request of Chain of Custody Record						į										GE:		[OF:	: /												
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Report Date: March 25, 2013 Work Order: 13031527

Summary Report

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

Report Date: March 25, 2013

Page Number: 1 of 2

Work Order: 13031527

Project Location: Eddy Co., NM

Project Name: COG/SW Central TB

Project Number: 114-6400625

			Date	${f Time}$	Date
Sample	Description	Matrix	Taken	Taken	Received
323555	CS-3 (AH-3) Southeast Wall	soil	2013-03-01	00:00	2013-03-15
323556	CS-3 (AH-3) East Wall	soil	2013-03-01	00:00	2013-03-15
323557	CS-3 (AH-3) West Wall	soil	2013-03-01	00:00	2013-03-15
323558	CS-3 (AH-3) Bottom Hole	soil	2013-03-01	00:00	2013-03-15

Sample: 323555 - CS-3 (AH-3) Southeast Wall

Param	Flag	Result	Units	RL
Chloride		352	mg/Kg	4

Sample: 323556 - CS-3 (AH-3) East Wall

Param	Flag	Result	Units	RL
Chloride		78.3	mg/Kg	4

Sample: 323557 - CS-3 (AH-3) West Wall

Param	Flag	Result	Units	RL
Chloride		308	mg/Kg	4

Sample: 323558 - CS-3 (AH-3) Bottom Hole

Work Order: 13031527

Page Number: 2 of 2

Param	Flag	Result	Units	RL
Chloride		6130	mg/Kg	4



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

El Paso. Texas 79922 Texas 79703 Midland. (BioAquatic) 2501 Mayes Rd., Suite 100 Carrolton.

800-378-1296 806-794-1296 915-585-3443 FAX 806 - 794 - 1298 FAX 915 -585 -4944

432-689-6301 972-242-7750

FAX 432-689-6313

Texas 75006 E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

NCTRCA NELAP DoD LELAP ISO 17025 WBEHUB DBEKansas Oklahoma

Analytical and Quality Control Report

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

Report Date: March 25, 2013

Work Order:

13031527

Project Location: Eddy Co., NM

Project Name:

COG/SW Central TB

Project Number:

114-6400625

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
323555	CS-3 (AH-3) Southeast Wall	soil	2013-03-01	00:00	$2\overline{013-03-15}$
323556	CS-3 (AH-3) East Wall	soil	2013-03-01	00:00	2013-03-15
323557	CS-3 (AH-3) West Wall	soil	2013-03-01	00:00	2013-03-15
323558	CS-3 (AH-3) Bottom Hole	soil	2013-03-01	00:00	2013-03-15

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

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

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Case Narrative

Samples for project COG/SW Central TB were received by TraceAnalysis, Inc. on 2013-03-15 and assigned to work order 13031527. Samples for work order 13031527 were received intact at a temperature of 18.1 C. Samples were not on ice.

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	84647	2013-03-21 at 09:58	99925	2013-03-22 at 13:45
Chloride (Titration)	SM 4500-Cl B	84647	2013-03-21 at 09:58	99926	2013-03-22 at 13:46

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 13031527 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.

Work Order: 13031527 COG/SW Central TB

Page Number: 4 of 11 Eddy Co., NM

Analytical Report

Sample: 323555 - CS-3 (AH-3) Southeast Wall

Laboratory:

114-6400625

Midland

Chloride (Titration) Analysis:

Analytical Method: Date Analyzed:

SM 4500-Cl B 2013-03-22

Prep Method: N/A

QC Batch: 99925 Prep Batch: 84647

Sample Preparation: 2013-03-21 Analyzed By: AR. Prepared By: AR

RLParameter

Flag Cert Result Units Dilution RL352 4.00 mg/Kg 5

Sample: 323556 - CS-3 (AH-3) East Wall

Laboratory:

Chloride

Midland

84647

Analysis: Chloride (Titration) QC Batch: 99925 Prep Batch:

Analytical Method: Date Analyzed:

SM 4500-Cl B 2013-03-22

Prep Method: N/A

Sample Preparation: 2013-03-21 Analyzed By: ARPrepared By: AR

RLParameter Cert Units Dilution RLFlag Result Chloride mg/Kg 5 4.00 78.3

Sample: 323557 - CS-3 (AH-3) West Wall

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 99925 Prep Batch: 84647

Analytical Method: Date Analyzed: Sample Preparation: SM 4500-Cl B 2013-03-22 2013-03-21

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

RLParameter Flag Cert Result Units Dilution RLChloride 308 4.00 mg/Kg

114-6400625

Work Order: 13031527

COG/SW Central TB

Page Number: 5 of 11

Eddy Co., NM

Sample: 323558 - CS-3 (AH-3) Bottom Hole

Laboratory: Analysis:

Midland

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A Analyzed By: AR

QC Batch: Prep Batch: 84647

99926

Date Analyzed: Sample Preparation:

2013-03-22 2013-03-21

Prepared By: AR

RL

Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			6130	mg/Kg	10	4.00

114-6400625

Work Order: 13031527 COG/SW Central TB

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Method Blanks

Method Blank (1)

QC Batch: 99925

QC Batch:

99925

Date Analyzed:

2013-03-22

Analyzed By: AR

Prepared By: AR

Prep Batch: 84647 QC Preparation: 2013-03-21

MDL

Units RL

Parameter Chloride

 Cert

Result < 3.85

4 mg/Kg

Method Blank (1)

QC Batch: 99926

Flag

QC Batch: Prep Batch: 84647

99926

Date Analyzed: QC Preparation:

2013-03-22 2013-03-21

Analyzed By: AR

Prepared By:

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

114-6400625

Work Order: 13031527 COG/SW Central TB

Page Number: 7 of 11 Eddy Co., NM

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch:

99925

Date Analyzed:

2013-03-22

Analyzed By: AR.

Prep Batch: 84647

QC Preparation: 2013-03-21

Prepared By: AR.

			LCS			Spike	Matrix		Rec.
Param	\mathbf{F}	$^{\mathrm{C}}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			2750	mg/Kg	1	2500	< 3.85	110	85 - 115

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	F	\mathbf{C}_{\cdot}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2560	mg/Kg	1	2500	< 3.85	102	85 - 115	7	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:

99926

Date Analyzed:

2013-03-22

Analyzed By: AR

Prep Batch: 84647

QC Preparation: 2013-03-21

Prepared By: AR.

			LCS		ι	Spike	Matrix		Rec.
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	$_{ m Limit}$
Chloride			2680	mg/Kg	1	2500	< 3.85	107	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	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2610	mg/Kg	1	2500	< 3.85	104	85 - 115	3	20

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

Matrix Spike (MS-1)

Prep Batch: 84647

Spiked Sample: 323557

QC Batch:

99925

Date Analyzed:

2013-03-22

QC Preparation: 2013-03-21

Analyzed By: AR

Prepared By: AR.

114-6400625

Work Order: 13031527 COG/SW Central TB

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			MS			Spike	Matrix		Rec.
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	$\mathbf{A}\mathbf{mount}$	Result	Rec.	Limit
Chloride			2830	mg/Kg	5	2500	308	101	78.9 - 121

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

			MSD			Spike	Matrix		Rec.		RPD
Param	\mathbf{F}	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2880	mg/Kg	5	2500	. 308	103	78.9 - 121	2	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: 323567

QC Batch: Prep Batch: 84647

99926

Date Analyzed: QC Preparation: 2013-03-21

2013-03-22

Analyzed By: AR.

Prepared By: AR

MS Spike Matrix Rec. Param F C Units Dil. Limit Result Amount Result Rec. Chloride 7290 mg/Kg 2500 4850 98 78.9 - 121

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	\mathbf{F}	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			7610	mg/Kg	10	2500	4850	110	78.9 - 121	4	20

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

114-6400625

Work Order: 13031527 COG/SW Central TB Page Number: 9 of 11 Eddy Co., NM

Calibration Standards

Standard (CCV-1)

QC Batch: 99925

Date Analyzed: 2013-03-22

Analyzed By: AR.

				CCVs True	${ m CCVs} \ { m Found}$	$rac{ ext{CCVs}}{ ext{Percent}}$	Percent Recovery	Date
Param	Flag	Cert	$\mathbf{U}_{\mathbf{nits}}$	Conc.	Conc.	Recovery	$\operatorname{Limits}^{"}$	Analyzed
Chloride			mg/Kg	100	99.8	100	85 - 115	2013-03-22

Standard (CCV-2)

QC Batch: 99925

Date Analyzed: 2013-03-22

Analyzed By: AR

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	\mathbf{F} lag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-03-22

Standard (CCV-1)

QC Batch: 99926

Date Analyzed: 2013-03-22

Analyzed By: AR

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	99.3	99	85 - 115	2013-03-22

Standard (CCV-2)

QC Batch: 99926

Date Analyzed: 2013-03-22

Analyzed By: AR

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2013-03-22

 Report Date: March 25, 2013
 Work Order: 13031527
 Page Number: 10 of 11

 114-6400625
 COG/SW Central TB
 Eddy Co., NM

Appendix

Report Definitions

Name	Definition
$\overline{\mathrm{MDL}}$	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

	Certifying	Certification	Laboratory
С	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	$_{ m HUB}$	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis

Standard Flags

- F Description
- B Analyte detected in the corresponding method blank above the method detection limit.
- H Analyzed out of hold time
- J Estimated concentration
- Jb The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
- Je Estimated concentration exceeding calibration range.
- MI1 Split peak or shoulder peak
- MI2 Instrument software did not integrate
- MI3 Instrument software misidentified the peak
- MI4 Instrument software integrated improperly
- MI5 Baseline correction
- Qc Calibration check outside of laboratory limits.
- Qr RPD outside of laboratory limits
- Qs Spike recovery outside of laboratory limits.
- Qsr Surrogate recovery outside of laboratory limits.
- U The analyte is not detected above the SDL

Attachments

Report Date: March 25, 2013 114-6400625

Work Order: 13031527 COG/SW Central TB Page Number: 11 of 11 Eddy Co., NM

The scanned attachments will follow this page.

Please note, each attachment may consist of more than one page.

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Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946 CLIENT NAME: PROJECT NO.: PROJECT NO.: PROJECT NO.: PROJECT NO. C. J. C. J.	ANALYSIS REQUEST	L	_[A LONG				
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200 East Sunset Road, Suite E 5002 Basin Street, Suite A1 (BioAquatic) 2501 Mayes Rd., Suite 100

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972-242-7750

FAX 432 - 689 - 6313

E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

NCTRCA **NELAP** DoD LELAP WBEHUB $_{
m DBE}$ Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: March 15, 2013

Work Order: 13030829

Project Location: Eddy Co., NM

Project Name: COG/SW Central TB

Project Number: 114-6400625

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

			Date	$_{ m 1me}$	Date
Sample	Description	Matrix	Taken	Taken	Received
322884	CS-2 (AH-2) North Wall	soil	2013-03-01	00:00	2013-03-08
322885	CS-2 (AH-2) South Wall	soil	2013-03-01	00:00	2013-03-08
322886	CS-2 (AH-2) East Wall	soil	2013-03-01	00:00	2013-03-08
322887	CS-2 (AH-2) Bottom Hole	soil	2013-03-01	00:00	2013-03-08

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

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

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Sample 322885 (CS-2 (AH-2) South Wall)	
Sample 322886 (CS-2 (AH-2) East Wall)	
Sample 322887 (CS-2 (AH-2) Bottom Hole)	
Method Blanks	ϵ
QC Batch 99745 - Method Blank (1)	(
QC Batch 99746 - Method Blank (1)	
Laboratory Control Spikes	7
QC Batch 99745 - LCS (1)	7
QC Batch 99746 - LCS (1)	
QC Batch 99745 - MS (1)	
QC Batch 99746 - MS (1)	
Calibration Standards	9
QC Batch 99745 - CCV (1)	9
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Case Narrative

Samples for project COG/SW Central TB were received by TraceAnalysis, Inc. on 2013-03-08 and assigned to work order 13030829. Samples for work order 13030829 were received intact at a temperature of 5.8 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	84430	2013-03-13 at 10:25	99745	2013-03-15 at 14:12
Chloride (Titration)	SM 4500-Cl B	84430	2013-03-13 at 10:25	99746	2013-03-15 at 14:13

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 13030829 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

114-6400625

Work Order: 13030829 COG/SW Central TB

Page Number: 4 of 11 Eddy Co., NM

Analytical Report

Sample: 322884 - CS-2 (AH-2) North Wall

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch: Prep Batch:

99745 84430

Date Analyzed:

2013-03-15

Analyzed By: AR.

Sample Preparation:

2013-03-13

Prepared By:

5

AR.

4.00

Parameter

Chloride

Flag

Cert Result

Units mg/Kg Dilution RL

Sample: 322885 - CS-2 (AH-2) South Wall

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch:

99745

Date Analyzed:

Cert

2013-03-15

Analyzed By: AR

Prep Batch: 84430

Sample Preparation:

2013-03-13

Prepared By: AR

RL

RL

4.00

Parameter Chloride

Flag

Result 210

RL

215

Units mg/Kg Dilution 5

Sample: 322886 - CS-2 (AH-2) East Wall

Laboratory:

Midland

Analysis:

Chloride

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A AR

QC Batch: Prep Batch: 84430

99746

Date Analyzed: Sample Preparation:

2013-03-15 2013-03-13

Analyzed By: Prepared By: AR.

RL

653

Parameter Cert Flag

Result

Units mg/Kg Dilution RL4.00 5

114-6400625

Work Order: 13030829 COG/SW Central TB

Page Number: 5 of 11

Eddy Co., NM

Sample: 322887 - CS-2 (AH-2) Bottom Hole

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 99746

Analytical Method: Date Analyzed:

SM 4500-Cl B 2013-03-15

Prep Method: N/A Analyzed By: AR

Prep Batch: 84430

Sample Preparation:

2013-03-13

Prepared By: AR.

RL

Parameter Cert Result Units Dilution RLFlag 4300 4.00 Chloride mg/Kg 10

114-6400625

Work Order: 13030829 COG/SW Central TB

Page Number: 6 of 11 Eddy Co., NM

Method Blanks

Method Blank (1)

QC Batch: 99745

QC Batch:

99745

Date Analyzed:

2013-03-15

Analyzed By: AR

Prep Batch: 84430

QC Preparation: 2013-03-13

Prepared By:

Parameter Chloride

Flag

 Cert

Result < 3.85

MDL

Units mg/Kg RL

Method Blank (1)

QC Batch: 99746

QC Batch:

99746

Date Analyzed:

2013-03-15

Analyzed By: AR

Prep Batch: 84430

QC Preparation:

2013-03-13

Prepared By: AR

Parameter

Chloride

Flag

Cert

MDLResult < 3.85

Units mg/Kg RL4

114-6400625

Work Order: 13030829 COG/SW Central TB

Page Number: 7 of 11 Eddy Co., NM

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch:

99745

Date Analyzed:

2013-03-15

Analyzed By: AR

Prep Batch: 84430

QC Preparation: 2013-03-13

Prepared By: AR

			LCS			Spike	Matrix		Rec.
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			2790	mg/Kg	1	2500	< 3.85	112	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	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	$_{ m Limit}$
Chloride			2640	mg/Kg	1	2500	< 3.85	106	85 - 115	6	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:

99746 Prep Batch: 84430 Date Analyzed:

2013-03-15 QC Preparation: 2013-03-13

Analyzed By: AR Prepared By: AR.

			LCS			Spike	Matrix		Rec.
Param	F	$^{\mathrm{C}}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			2650	mg/Kg	1	2500	< 3.85	106	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	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2460	mg/Kg	1	2500	< 3.85	98	85 - 115	7	20

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

Matrix Spike (MS-1) Spiked Sample: 322885

QC Batch:

99745

Date Analyzed:

2013-03-15

Analyzed By: AR

Prep Batch: 84430

QC Preparation: 2013-03-13

Prepared By: AR.

114 - 6400625

Work Order: 13030829 COG/SW Central TB

Page Number: 8 of 11 Eddy Co., NM

			MS			Spike	Matrix		Rec.
Param	\mathbf{F}	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			2780	mg/Kg	5	2500	210	103	78.9 - 121

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

			MSD			Spike	Matrix		Rec.		RPD
Param	\mathbf{F}	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	$_{ m Limit}$
Chloride			2640	mg/Kg	5	2500	210	97	78.9 - 121	5	20

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

Matrix Spike (MS-1)

Spiked Sample: 322887

QC Batch:

99746 Prep Batch: 84430 Date Analyzed:

QC Preparation:

2013-03-15 2013-03-13

Analyzed By: AR. Prepared By: AR

MS Spike Matrix Rec. Param \mathbf{F} \mathbf{C} Result Units Dil. Limit Amount Result Rec. Chloride 6640 mg/Kg 10 2500 4300 94 78.9 - 121

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

			MSD			$_{ m Spike}$	Matrix		Rec.		RPD
Param	F	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	\mathbf{Limit}
Chloride			7110	mg/Kg	10	2500	4300	112	78.9 - 121	7	20

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

114-6400625

Work Order: 13030829 COG/SW Central TB Page Number: 9 of 11 Eddy Co., NM

Calibration Standards

Standard (CCV-1)

QC Batch: 99745

Date Analyzed: 2013-03-15

Analyzed By: AR

				CCVs True	CCVs Found	$rac{ ext{CCVs}}{ ext{Percent}}$	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-03-15

Standard (CCV-2)

QC Batch: 99745

Date Analyzed: 2013-03-15

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-03-15

Standard (CCV-1)

QC Batch: 99746

Date Analyzed: 2013-03-15

Analyzed By: AR

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	$_{ m Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	99.8	100	85 - 115	2013-03-15

Standard (CCV-2)

QC Batch: 99746

Date Analyzed: 2013-03-15

Analyzed By: AR

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-03-15

 Report Date: March 15, 2013
 Work Order: 13030829
 Page Number: 10 of 11

 114-6400625
 COG/SW Central TB
 Eddy Co., NM

Appendix

Report Definitions

Name	Definition
$\overline{ ext{MDL}}$	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

	Certifying	Certification	Laboratory
\mathbf{C}	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis

Standard Flags

- F Description
- B Analyte detected in the corresponding method blank above the method detection limit
- H Analyzed out of hold time
- J Estimated concentration
- Jb The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
- Je Estimated concentration exceeding calibration range.
- MI1 Split peak or shoulder peak
- MI2 Instrument software did not integrate
- MI3 Instrument software misidentified the peak
- MI4 Instrument software integrated improperly
- MI5 Baseline correction
- Qc Calibration check outside of laboratory limits.
- Qr RPD outside of laboratory limits
- Qs Spike recovery outside of laboratory limits.
- Qsr Surrogate recovery outside of laboratory limits.
- U The analyte is not detected above the SDL

Attachments

Report Date: March 15, 2013 114-6400625

Work Order: 13030829 COG/SW Central TB Page Number: 11 of 11 Eddy Co., NM

The scanned attachments will follow this page.

Please note, each attachment may consist of more than one page.

13030829

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Report Date: March 25, 2013 Work Order: 13031529 Page Number: 1 of 2

Summary Report

Ike Tavarez Tetra Tech

1910 N. Big Spring Street Midland, TX 79705

Report Date: March 25, 2013

Work Order: 13031529

Project Location: Eddy Co., NM

Project Name:

COG/SW Central TB

Project Number: 114-6400625

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
323563	CS-4 (AH-4) North Wall	soil	2013-03-08	00:00	2013-03-15
323564	CS-4 (AH-4) South Wall	soil	2013-03-08	00:00	2013-03-15
323565	CS-4 (AH-4) East Wall	soil	2013-03-08	00:00	2013-03-15
323566	CS-4 (AH-4) Bottom hole	soil	2013-03-08	00:00	2013-03-15
323567	CS-4 (AH-4) West Wall	soil	2013-03-11	00:00	2013-03-15
323568	CS-5 (AH-7) North Wall	soil	2013-03-08	00:00	2013-03-15
323569	CS-5 (AH-7) East Wall	soil	2013-03-08	00:00	2013-03-15
323570	CS-5 (AH-7) West Wall	soil	2013-03-08	00:00	2013-03-15
323571	CS-5 (AH-7) Bottom hole	soil	2013-03-08	00:00	2013-03-15
323572	CS-5 (AH-7) South Wall	soil	2013-03-11	00:00	2013-03-15

Sample: 323563 - CS-4 (AH-4) North Wall

Param	Flag	Result	${ m Units}$	RL
Chloride		364	mg/Kg	4

Sample: 323564 - CS-4 (AH-4) South Wall

Param	Flag	Result	Units	RL
Chloride		3740	m mg/Kg	4

Sample: 323565 - CS-4 (AH-4) East Wall

Report Date: March 25, 2013		Work Order: 13031529	Page Number: 2 of 2	
Param	Flag	Result	Units	RL
Chloride		2490	mg/Kg	4
Sample: 323566 -	CS-4 (AH-4) Botton	m hole		
Param	Flag	Result	Units	RL
Chloride		519	mg/Kg	4
Sample: 323567 -	CS-4 (AH-4) West	Wall		
Param	Flag	Result	Units	RL
Chloride		4850	mg/Kg	4
Sample: 323568 -	CS-5 (AH-7) North	Wall		
Param	Flag	Result	Units	RL
Chloride		349	mg/Kg	4
Sample: 323569 -	CS-5 (AH-7) East V	Vall		
Param	Flag	Result	Units	RL
Chloride		1140	mg/Kg	4
Sample: 323570 -	CS-5 (AH-7) West	Wall		
Param	Flag	Result	Units	RL
Chloride		162	mg/Kg	4
Sample: 323571 -	CS-5 (AH-7) Botton	m hole		
Param	Flag	Result	Units	RL
Chloride		2040	mg/Kg	4
Sample: 323572 -	CS-5 (AH-7) South	Wall		
Param	Flag	Result	Units	RL
Chloride		737	mg/Kg	4



6701 Aberdeen Avenue, Suite 9 200 East Sunset Road, Suite E 5002 Basin Street, Suite A1 (BioAquatic) 2501 Mayes Rd., Suite 100

Texas 79922 El Paso. Midland. Texas 79703 Carroliton. Texas 75006 915-585-3443 432-689-6301 972-242-7750 FAX 806 - 794 - 1298 FAX 915:585 4944. FAX 432-689-6313

E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

NCTRCA NELAP DoD LELAP HUBDBEKansas Oklahoma ISO 17025

Analytical and Quality Control Report

Ike Tavarez Tetra Tech

1910 N. Big Spring Street Midland, TX, 79705

Report Date: March 25, 2013

Work Order: 13031529

Project Location: Eddy Co., NM

Project Name:

COG/SW Central TB

Project Number:

114-6400625

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
323563	CS-4 (AH-4) North Wall	soil	2013-03-08	00:00	2013-03-15
323564	CS-4 (AH-4) South Wall	soil	2013-03-08	00:00	2013-03-15
$3235\hat{6}5$	CS-4 (AH-4) East Wall	soil	2013-03-08	00:00	2013-03-15
323566	CS-4 (AH-4) Bottom hole	soil	2013-03-08	00:00	2013-03-15
323567	CS-4 (AH-4) West Wall	soil	2013-03-11	00:00	2013-03-15
323568	CS-5 (AH-7) North Wall	soil	2013-03-08	00:00	2013-03-15
323569	CS-5 (AH-7) East Wall	soil	2013-03-08	00:00	2013-03-15
323570	CS-5 (AH-7) West Wall	soil	2013-03-08	00:00	2013-03-15
323571	CS-5 (AH-7) Bottom hole	soil	2013-03-08	00:00	2013-03-15
323572	CS-5 (AH-7) South Wall	soil	2013-03-11	00:00	2013-03-15

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 13 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

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Sample 323567 (CS-4 (AH-4) West Wall)	6
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Case Narrative

Samples for project COG/SW Central TB were received by TraceAnalysis, Inc. on 2013-03-15 and assigned to work order 13031529. Samples for work order 13031529 were received intact at a temperature of 18.1 C. Samples were not on ice.

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	84647	2013-03-21 at 09:58	99926	2013-03-22 at 13:46
Chloride (Titration)	SM 4500-Cl B	84647	2013-03-21 at 09:58	99927	2013-03-22 at 13:47

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 13031529 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Report Date: March 25, 2013 114-6400625

Work Order: 13031529 COG/SW Central TB

Page Number: 5 of 13 Eddy Co., NM

Analytical Report

Sample: 323563 - CS-4 (AH-4) North Wall

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch:

99926

Date Analyzed:

2013-03-22

Analyzed By: AR

Prep Batch:

84647

Sample Preparation: 2013-03-21 Prepared By:

AR

RL

Parameter Flag Chloride

Cert Result 364

Units mg/Kg

RLDilution 5

4.00

Sample: 323564 - CS-4 (AH-4) South Wall

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch:

99926

Date Analyzed:

2013-03-22

Analyzed By: AR.

Prep Batch:

Chloride

84647

Sample Preparation:

2013-03-21

Prepared By: AR.

RL

Parameter

Cert

Flag

Result 3740

Units mg/Kg Dilution 10

RL4.00

Sample: 323565 - CS-4 (AH-4) East Wall

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B 2013-03-22

Prep Method: N/A AR.

QC Batch: Prep Batch: 99926

Date Analyzed:

Analyzed By: AR.

84647

Sample Preparation:

2013-03-21

Prepared By:

RT.

			3. 6.4.2			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			2490	mg/Kg	10	4.00

114-6400625

Work Order: 13031529

COG/SW Central TB

Page Number: 6 of 13

Eddy Co., NM

Sample: 323566 - CS-4 (AH-4) Bottom hole

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch:

99926

Date Analyzed:

2013-03-22

Analyzed By: AR

Prep Batch:

84647

Sample Preparation:

2013-03-21

Prepared By:

AR.

RL

Parameter Chloride

Result Cert

Units 519 mg/Kg Dilution

RL

4.00

Sample: 323567 - CS-4 (AH-4) West Wall

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch:

99926

Date Analyzed:

2013-03-22

Analyzed By:

AR.

Prep Batch: 84647 Sample Preparation:

2013-03-21

Prepared By: AR.

RL

Parameter Chloride

Flag Cert

Flag

Result 4850

Units ıng/Kg

Units

mg/Kg

Dilution 10

RL4.00

Sample: 323568 - CS-5 (AH-7) North Wall

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch: Prep Batch:

99927 84647 Date Analyzed: Sample Preparation:

2013-03-22

Analyzed By: AR. AR

Result

Parameter Flag Chloride

349

2013-03-21

Prepared By:

5

Cert

RL

Dilution

RL

4.00

AR

Sample: 323569 - CS-5 (AH-7) East Wall

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A Analyzed By: AR.

QC Batch: Prep Batch:

99927 84647 Date Analyzed: Sample Preparation:

2013-03-22 2013-03-21

Prepared By:

114-6400625

Work Order: 13031529

Page Number: 7 of 13 COG/SW Central TB Eddy Co., NM

RLParameter Flag Cert Result Units Dilution RL1140 mg/Kg 4.00 Chloride 5

Sample: 323570 - CS-5 (AH-7) West Wall

Laboratory:

Midland

Analysis: Chloride (Titration)

Analytical Method: Date Analyzed:

SM 4500-Cl B

Prep Method: N/A

QC Batch: 99927 Prep Batch: 84647

2013-03-22 Sample Preparation: 2013-03-21

Analyzed By: ARPrepared By: AR.

RLResult

Dilution Parameter Flag Cert Units RLChloride 162 mg/Kg 5 4.00

Sample: 323571 - CS-5 (AH-7) Bottom hole

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 99927

Analytical Method: Date Analyzed:

SM 4500-Cl B 2013-03-22

Prep Method: N/A Analyzed By: AR

AR.

Prep Batch: 84647 Sample Preparation: 2013-03-21 Prepared By: RL

Parameter Cert Result Units Dilution RLFlag Chloride 2040 mg/Kg 10 4.00

Sample: 323572 - CS-5 (AH-7) South Wall

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 99927

Analytical Method:

SM 4500-Cl B 2013-03-22

Prep Method: N/A Analyzed By: AR

Prep Batch: 84647 Date Analyzed: Sample Preparation:

2013-03-21

Prepared By: AR

RL

Parameter Flag Cert Result Units Dilution RLChloride 737 5 4.00 mg/Kg

114-6400625

Work Order: 13031529 COG/SW Central TB

Page Number: 8 of 13 Eddy Co., NM

Method Blanks

Method Blank (1)

QC Batch: 99926

QC Batch:

99926 Prep Batch: 84647

Date Analyzed:

2013-03-22

QC Preparation: 2013-03-21

Analyzed By: AR

Prepared By: AR

MDLFlag

Parameter Chloride

Cert

Result < 3.85 Units

mg/Kg

RL4

Method Blank (1)

QC Batch: 99927

QC Batch: Prep Batch:

99927 84647 Date Analyzed:

2013-03-22

Analyzed By: AR. ARPrepared By:

QC Preparation: 2013-03-21

MDLRLParameter Flag Cert Result Units < 3.85 mg/Kg 4 Chloride

114-6400625

Work Order: 13031529 COG/SW Central TB

Page Number: 9 of 13 Eddy Co., NM

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch:

99926

Date Analyzed:

2013-03-22

Analyzed By: AR.

Prepared By: AR

Prep Batch: 84647

QC Preparation: 2013-03-21

			LCS			Spike	Matrix		Rec.
Param	\mathbf{F}	$^{\rm C}$	Result	${ m Units}$	Dil.	${f Amount}$	Result	Rec.	${f Limit}$
Chloride			2680	mg/Kg	1	2500	< 3.85	107	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	\mathbf{F}	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2610	mg/Kg	1	2500	< 3.85	104	85 - 115	3	20

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

Laboratory Control Spike (LCS-1)

QC Batch:

99927

Date Analyzed:

2013-03-22

Analyzed By: AR

Prep Batch: 84647

QC Preparation: 2013-03-21

Prepared By: AR

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

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

			LCSD			$_{ m Spike}$	Matrix		Rec.		RPD
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	$_{ m Limit}$	RPD	$_{ m Limit}$
Chloride			2700	mg/Kg	1	2500	< 3.85	108	85 - 115	8	20

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

Matrix Spike (MS-1)

Spiked Sample: 323567

QC Batch:

99926

Date Analyzed:

2013-03-22

Analyzed By: AR

Prep Batch: 84647

QC Preparation: 2013-03-21

Prepared By: AR.

114-6400625

Work Order: 13031529 COG/SW Central TB

Page Number: 10 of 13 Eddy Co., NM

				MS			Spike	Matri	X		Rec.
Param		\mathbf{F}	C = 1	Result	Units	Dil.	Amount	Resul	t Rec		Limit
Chloride				7290	mg/Kg	10	2500	4850	98	78	.9 - 121
Percent recovery is b	ased on the spike	e res		is based	on the s		•	cate result			
			MSD			$_{ m Spike}$	Matrix		$\mathrm{Rec}.$		RPD

10

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

7610

Matrix Spike (MS-1)

Spiked Sample: 323572

QC Batch:

Chloride

99927

Date Analyzed:

2013-03-22

2500

4850

110

78.9 - 121

Prep Batch: 84647

QC Preparation: 2013-03-21

mg/Kg

Analyzed By: AR.

Prepared By: AR

20

			MS			Spike	Matrix		Rec.
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			3200	mg/Kg	5	2500	737	98	78.9 - 121

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

			MSD			$_{ m Spike}$	Matrix		${ m Rec.}$		RPD
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	${f Limit}$	RPD	Limit
Chloride			3090	mg/Kg	5	2500	737	94	78.9 - 121	4	20

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

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Calibration Standards

Standard (CCV-1)

QC Batch: 99926

Date Analyzed: 2013-03-22

Analyzed By: AR

		<i>a</i> .		CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	$\operatorname{Conc.}$	Recovery	Limits	Analyzed
Chloride		- 11	mg/Kg	100	99.3	99	85 - 115	2013-03-22

Standard (CCV-2)

QC Batch: 99926

Date Analyzed: 2013-03-22

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride	1100		mg/Kg	100	101	101	85 - 115	2013-03-22

Standard (CCV-1)

QC Batch: 99927

Date Analyzed: 2013-03-22

Analyzed By: AR

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2013-03-22

Standard (CCV-2)

QC Batch: 99927

Date Analyzed: 2013-03-22

Analyzed By: AR.

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	$\operatorname{Conc.}$	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	98.8	99	85 - 115	2013-03-22

 Report Date: March 25, 2013
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 Eddy Co., NM

Appendix

Report Definitions

Name	Definition
$\overline{\mathrm{MDL}}$	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

	Certifying	Certification	Laboratory
\mathbf{C}	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis

Standard Flags

- F Description
- B Analyte detected in the corresponding method blank above the method detection limit
- H Analyzed out of hold time
- J Estimated concentration
- Jb The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
- Je Estimated concentration exceeding calibration range.
- MI1 Split peak or shoulder peak
- MI2 Instrument software did not integrate
- MI3 Instrument software misidentified the peak
- MI4 Instrument software integrated improperly
- MI5 Baseline correction
 - Qc Calibration check outside of laboratory limits.
 - Qr RPD outside of laboratory limits
- Qs Spike recovery outside of laboratory limits.
- Qsr Surrogate recovery outside of laboratory limits.
- U The analyte is not detected above the SDL

Attachments

Report Date: March 25, 2013 114-6400625 Work Order: 13031529 COG/SW Central TB Page Number: 13 of 13 Eddy Co., NM

The scanned attachments will follow this page.

Please note, each attachment may consist of more than one page.

Analysis Request of Chain of Custody Record								PAGE: , OF: /																				
									ANALYSIS REQUEST (Circle or Specify Method No.)																			
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