SITE INFORMATION **Report Type: Closure Report** General Site Information: Site: **SRO 102 SWD** Company: COG Operating LLC Section, Township and Range Unit G - Sec 16 **T26S** R28E Lease Number: API-30-015-21398 County: **Eddy County** GPS: 32.04381° N 104.09047° W Surface Owner: State Mineral Owner: South of Malaga at the intersection of Hwy 285 and CR 274 (White City Rd.) travel west on CR Directions: 274 for 2.0 miles, turn left and travel 1.6 miles, turn right and travel 0.1 miles to site. Release Data: Date Released: 12/31/2013 2/21/2013 Type Release: Produced Water Produced Water Source of Contamination: Header Durco Pump Discharge Fluid Released: 320 bbls 20 bbls Fluids Recovered: 280 bbls 15 bbls Official Communication: Name: Robert McNeill lke Tavarez Company: COG Operating, LLC Tetra Tech Address: One Concho Center 4000 N. Big Spring 600 W. Illinois Ave. Suite 401 City: Midland Texas, 79701 Midland, Texas Phone number: (432) 686-3023 (432) 682-4559 Fax: (432) 684-7137 Email: rmcneill@conchoresources.com ike.tavarez@tetratech.com

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

Acceptable Soil RRAL (mg/kg)									
Benzene	Total BTEX	TPH							
10	50	1,000							

MAR 0 5 2014

NMOCD ARTESIA



November 20, 2013

Mr. Mike Bratcher Environmental Engineer Specialist Oil Conservation Division, District 2 811S. First Street Artesia, New Mexico 88210

Re: Work Plan for the COG Operating LLC., SRO 102 SWD, Unit G, Section 16, Township 26 South, Range 28 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess two (2) spills from the SRO 102 SWD located in Unit G, Section 16, Township 26 South, Range 28 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.04381°, W 104.09047°. The site location is shown on Figures 1 and 2.

Background

Spill #1

According to the State of New Mexico C-141 Initial Report, the leak was discovered on December 31, 2012, and released approximately three hundred and twenty (320) barrels of produced water from a the header. To alleviate the problem, COG personnel repaired the header. Two hundred and eighty (280) barrels of standing fluids were recovered. The spill initiated on the backside of the SWD in the secondary containment firewall, affecting an area approximately 10' X 340' around the SWD. The release then migrated south out into the pasture affecting an area approximately 35' x 100' and 5' x 180'.



Spill #2

According to the State of New Mexico C-141 Initial Report, on February 21, 2013, a leak was discovered from a Durco pump discharge 3X2 swage that released twenty (20) barrels of produced water. Fifteen (15) barrels of fluid were recovered with a vacuum truck. The majority of the release remained inside the lined facility. However, the release breached the fire wall and affected an area measuring approximately 60' X 15' on the pad. The initial C-141 forms are enclosed in Appendix A.

Hydrogeology and Groundwater

According to the Geology and Groundwater Resources of Eddy County, New Mexico (Report 3), the Rustler and Castile formation (Ochoa Series) is present west and east of the Pecos River. The Salado formation overlies the Castile formation east of the Pecos River and was removed by solution west of the river. The Rustler and Castile formations consist of anhydrite, gypsum, inter-bedded sandy clay and beds of dolomite. Groundwater from the Castile and Rustler formations west of the Pecos River is historically high in chloride and sulfate concentrations which increase towards the river.

According to the USGS, no water wells are listed in Section 16. One water well is reported in Section 18, with a depth to groundwater of 25' bgs. According to the NMOCD groundwater map the reported depth to groundwater in this area is approximately 80.0' 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 1,000 mg/kg.



Spill Assessment and Analytical Results

On January 24, 2013, Tetra Tech personnel inspected and sampled the spill area. Due to a previous excavation and liners being installed, only three (3) trenches (T-1, T-2, and T-3) were installed behind the SWD battery using a backhoe to assess the impacted soils at depths from 3.0' to 6.0' below surface. 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 C. The results of the sampling are summarized in Table 1. The trench locations are shown on Figure 3.

Referring to Table 1, none of the samples exceeded the TPH or Total BTEX RRAL. Elevated chloride concentrations were detected in T-1 and T-2, with chloride highs of 5,690 mg/kg at 1.0', and 1,170 mg/kg at 1.0', respectively. The chloride concentrations declined to a depth of 2.0' below surface and were vertically defined. The area of T-3 had elevated chloride concentrations from 0 to 4.0' below surface with a chloride high of 11,400 mg/kg at 1.0'. The impact was vertically defined at a depth of 5.0' below surface.

Site Remediation and Conclusion

On May 28, 2013, Tetra Tech personnel supervised the excavation of the impacted soils. At Spill #1, the areas of T-1 and T-2 were excavated to 1.0' below surface, and T-3 was excavated to a depth of 5.0' below surface. The excavated areas and depths are highlighted in Table 1 and shown on Figure 4.

Using a backhoe, a trench was installed in the Spill #2 area in front of the SWD to vertically define the spill. Elevated chloride concentrations were detected from 1.0' to 8.0' below surface with concentrations ranging from 5,000 mg/kg to 1,140 mg/kg. The chloride concentration declined with depth to 944 mg/kg at 9.0' below surface. Based on the results, the area was excavated to a depth of approximately 8.0' below surface. The excavated depths are highlighted in Table 2 and show on Figure 4.

Once excavated to appropriate depths, all areas were backfilled with clean material and brought to surface grade. 400 yards of excavated soil were transported to the proper disposal.



Based on the remedial actions taken, COG requests closure of this site. The Final C-141s are enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

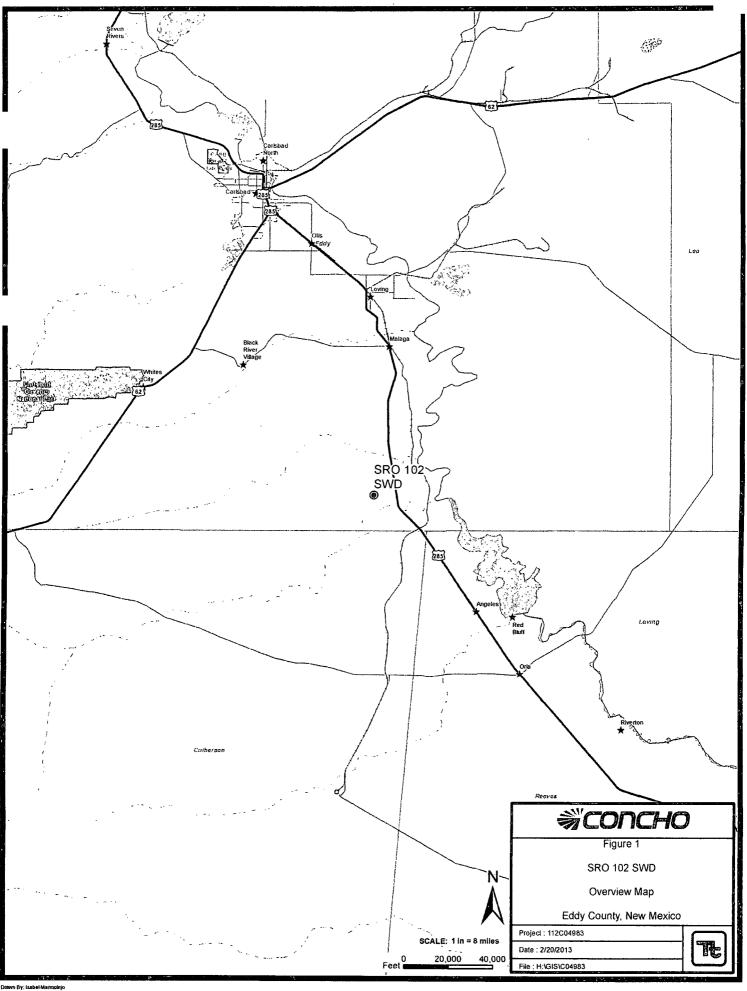
Respectfully submitted,

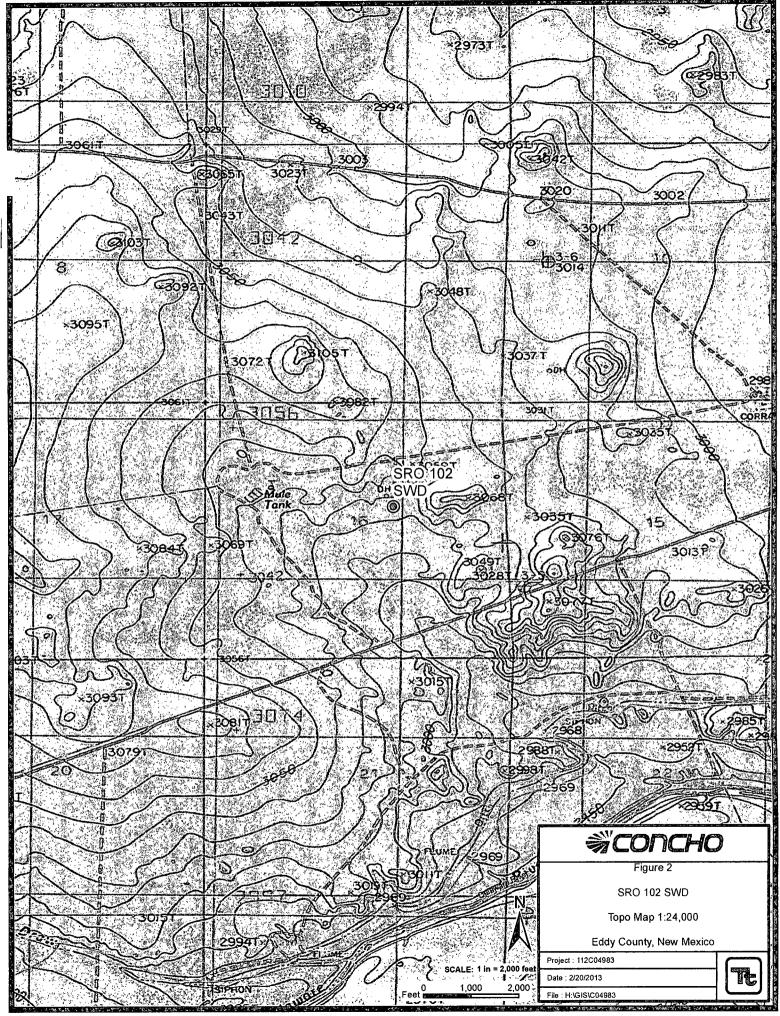
Marcus Kujawski Staff Scientist

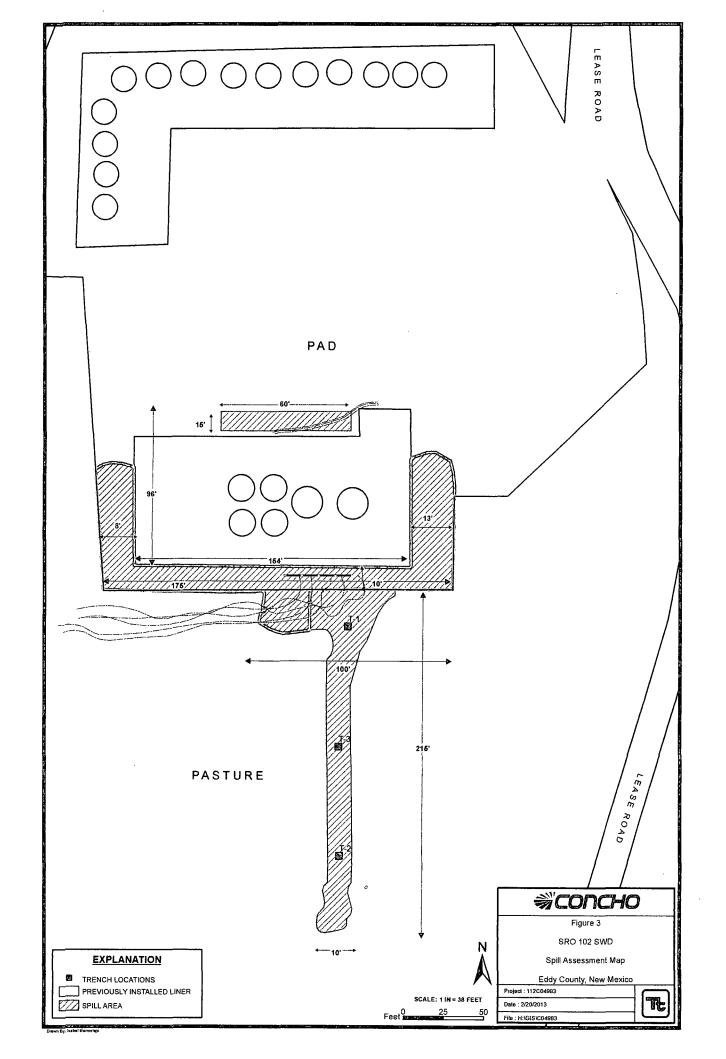
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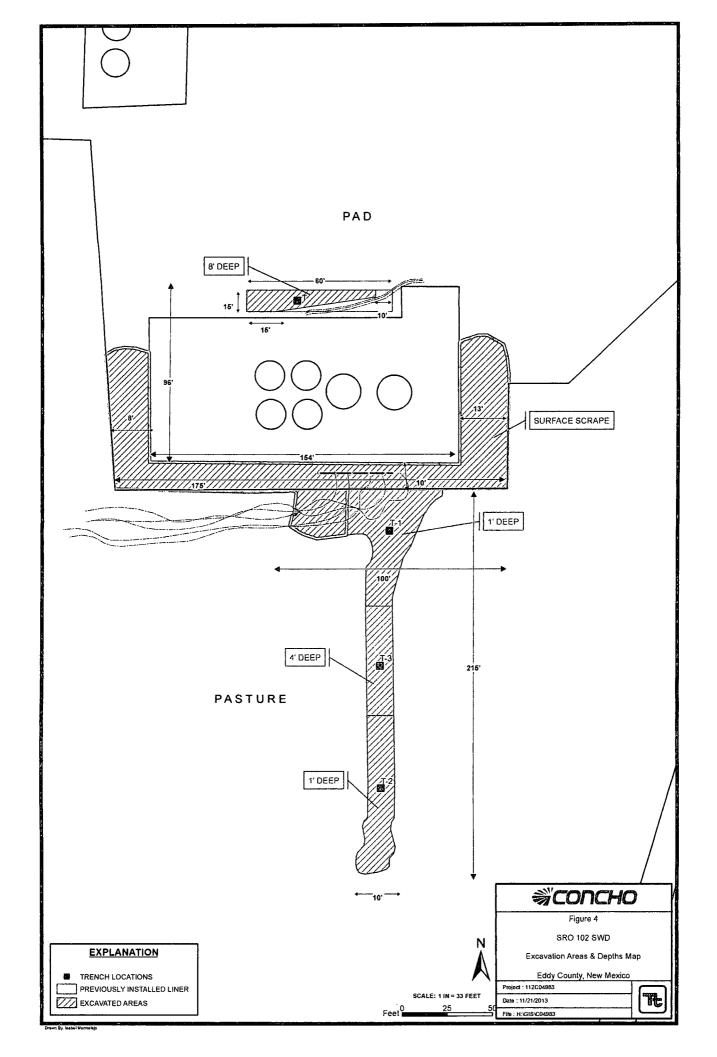
cc: Robert McNeill - COG

Figures









Tables

Table 1 COG Operating LLC. e Unit Commingle 102 Salt Water

SRO State Unit Commingle 102 Salt Water Disposal Spill #1

Eddy County, New Mexico

Commis ID	Commis Data	Sample	Soil	Status	-	ΓΡΗ (mg/k	g)	Benzene	Toluene	Ethiybenzene	Xylene	Total	Chloride
Sample ID	Sample Date	Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	BTEX (mg/kg)	(mg/kg)
Trench-1	1/21/2013	0-1		X	<4.00	<50.0	*<50.0	<0.0200	<0.0200	.:/<0.0200± ·	<0.0200	<0.0200	5,690
	ц	2	Х		-	-	-	-	-	-	-	-	169
	n	3	Х		-	-	_	-	-	-	-	-	284
	п	4	Х		-	-	-	-	-	-	-	_	448
Trench-2	₃ 1/21/2013 _€	0-0.5	Strike Strike	X-:-	<4.00	.<50.0	;<50:0·÷	<0:0200	<0.0200	<0.0200	<0.0200	:<0.0200*	3,220
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	11	6	X	<u></u>	-	-	-	-	-	-	-	-	278
Trench-3	1/21/2013	0-1		X	<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1,170
	11	1	Х		-	-	-	-	-	-	-	-	655
	11	2	Х		-	-	-	-	-	-	-	-	1,090
	11	3	Х		-	-	-	-	-	-	-	-	368



Excavated Depths

(-) Not Analyzed

Table 2 COG Operating LLC. SRO State Unit Commingle 102 Salt Water Disposal Spill #2

Eddy County, New Mexico

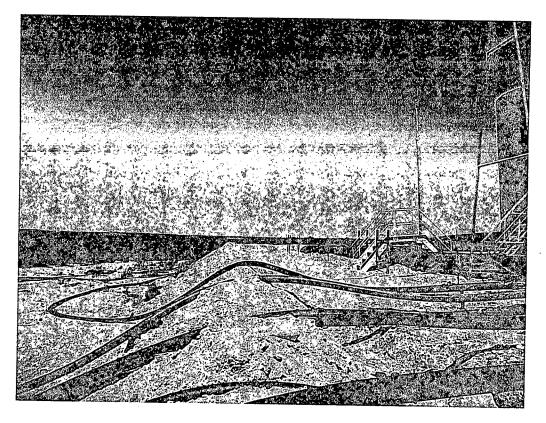
Sample ID	Sample Date	BEB Sample	Excavation Bottom	Soil	Status		ΓΡΗ (mg/k	g)	Benzene	Toluene	Ethlybenzene	Xylene	Total	Chloride
Sample ID		Depth (ft)	Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	BTEX (mg/kg)	(mg/kg)
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		6		- 18.00 - 19.00 - 19.00	X									2,880
	1	7			X								\$5.0	2,390
	II	8' Bottom Hole	II.	Х		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1,140
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	is .	10	ıs	Х		-	-	_	-	-	-	-	-	261
	u	11	n	Х		-	-	-	-	-	-	-	-	35.1
	11	12	41 ,	Х		-	-	_	-	-	-	-	-	140

Ecavated depths

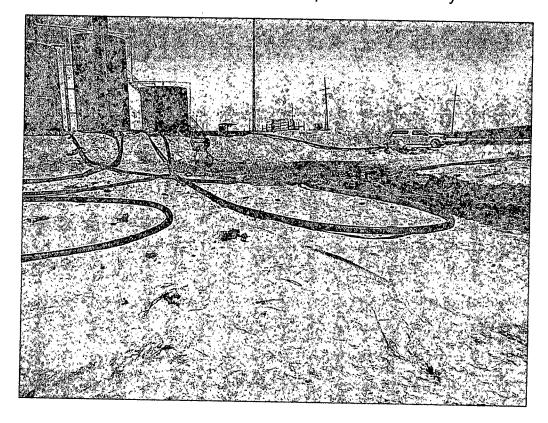
(-) Not Analyzed

Photos



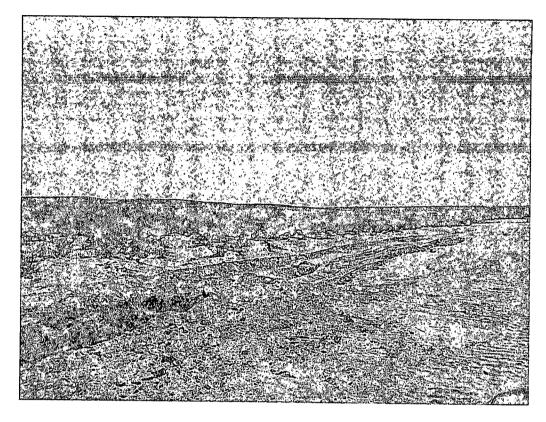


View West - Surface scrape behind battery

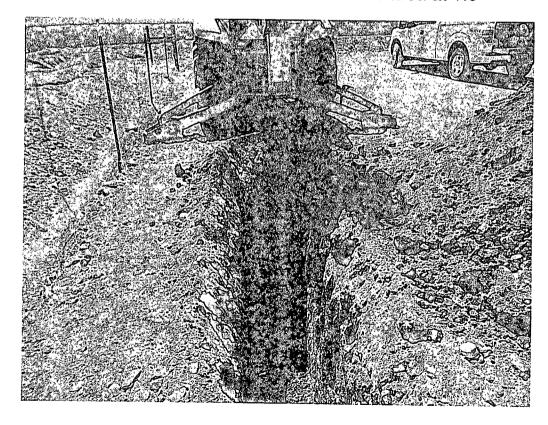


View North - T-1 area at 1.0'



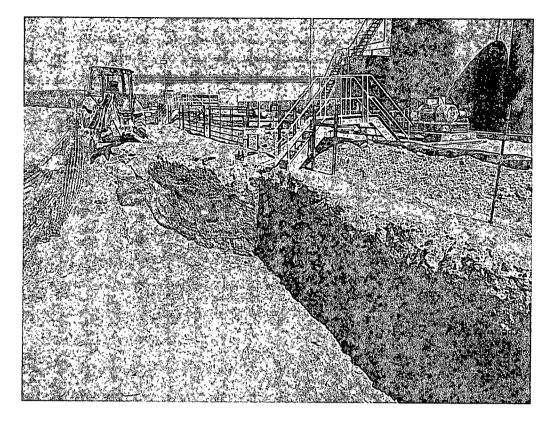


View South - T-2 area at 4.0' and T-3 area at 1.0'

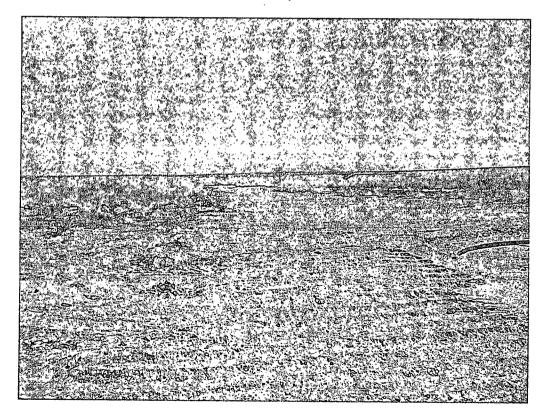


View West - Trench for 2nd spill



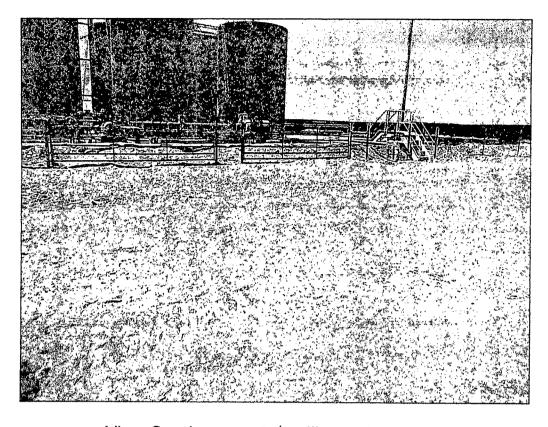


View East - 2nd spill area at 8.0'



View South - T-1, T-2, and T-3 areas backfilled





View Southwest – 2nd spill area backfilled

Appendix A

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

District III

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

Revised October 10, 2003

Form C-141

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

Release Notification and Corrective Action

						OPERA	FOR		🔲 Initia	l Report	\boxtimes	Final Repo
Name of Co	mpany C	OG Operat	ing LLC			Contact Ro	bert McNeill					
		ois, Midland	l, Texas	79701		Telephone N	lo. (432) 685-4	332				
Facility Nar	ne SRO 1	02 SWD				Facility Typ	e Tank Batter	ry				
Surface Ow	ner: State			Mineral O	wner				Lease N	lo. (API#)	30-01	5-21398
				LOCA	TIO	ION OF RELEASE						
Unit Letter	Section	Township	Range	Feet from the		h/South Line	Feet from the	East/W	est Line	County		
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	L	L	<u> </u>	Latitude N 32.1	4430	° Longitud	e W 104.09031	l 1°				
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Source of Rel	lease: Durc	o pump discha	irge 3X2 s	wage		Date and H 2/21/2013	our of Occurrence	e	Date and 2/21/2013	Hour of Dis	covery	
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regulations al	l operators	are required to	report ar	d/or file certain re	elease r	notifications an	id perform correct	tive actio	ons for rele	ases which	may en	idanger
public health	or the envir	ronment. The	acceptano	e of a C-141 repor	rt by th	e NMOCD ma	arked as "Final Re	eport" do	es not reli	eve the oper	ator of	liability
should their o	perations h	ave failed to a	dequately	investigate and re	media	te contamination	on that pose a thre	eat to gro	ound water	, surface wa	ter, hui	man health
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THIO. TTOJOCE	unagoi					ripprovai Date			APHARION I	Jate.		
E-mail Addre	ess: Ike.Tav	arez@TetraTe	ch.com			Conditions of	Approval:			Attached		
Date:	11.11	-13	Phone:	(432) 682-4559						1		

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

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

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

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

Submit 2 Copies to appropriate District Office in accordance

with Rule 116 on back side of form

Form C-141

Revised October 10, 2003

Release Notification and Corrective Action

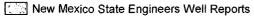
						OPERAT	FOR		Initial	al Report	\boxtimes	Final Repo
		COG Operat				Contact Ro	bert McNeill					
Address 60	0 W. Illin	ois Ave, Mic	dland, T	exas 79701		Telephone N	No. (432) 685-4	4332				
Facility Na	ne SRO I	02 SWD				Facility Typ	e Tank Batte	ry				
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facility. Tetra	Tech inspe	ected site and	collected:	eader, but 280 bbls samples to define s de with clean back	spills 6	extent. Soil that	exceeded RRAL	was ren	noved and	hauled away	y for pr	oper
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Signature:	: Ike Tavar	rez (A	gent.	In Cob)	Approved by	District Supervis	or:				
Title: Project	Manager	` '		•		Approval Date	e:	E	Expiration I	Date:		
		arez@TetraTe	ech.com			Conditions of				Attached		
Date: 11/14/2	.013		Phone:	(432) 682-4559								

^{*} Attach Additional Sheets If Necessary

Appendix B

Water Well Data Average Depth to Groundwater (ft) COG - SRO 102 SWD Eddy County, New Mexico

	24 S	outh		27 Eas	t		2	24 S	outl	h	. :	28 Ea	ıst				24	South	2	29 Eas	it
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1	32	33	34	35	36	31	32		33	13	4	35		36	7	31	32	33	34	35	36



USGS Well Reports

Geology and Groundwater Conditions in Southern Eddy, County, NM

NMOCD - Groundwater Data

Field water level

New Mexico Water and Infrastructure Data System

Appendix C

Report Date: January 30, 2013 Work Order: 13012301 Page Number: 1 of 3

Summary Report

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

Report Date: January 30, 2013

Work Order: 13012301

Project Location: Eddy Co., NM

Project Name: COG/SRO State Unit Com. 102 SWD

Project Number: 112C04983

			Date	${f Time}$	Date
Sample	Description	Matrix	Taken	Taken	Received
319014	Trench-1 0-1'	soil	2013-01-21	00:00	2013-01-22
319015	Trench-1 2'	soil	2013-01-21	00:00	2013-01-22
319016	Trench-1 3'	soil	2013-01-21	00:00	2013-01-22
319017	Trench-1 4'	soil	2013-01-21	00:00	2013-01-22
319018	Trench-2 0-0.5'	soil	2013-01-21	00:00	2013-01-22
319019	Trench-2 1'	soil	2013-01-21	00:00	2013-01-22
319020	Trench-2 2'	soil	2013-01-21	00:00	2013-01-22
319021	Trench-2 3'	soil	2013-01-21	00:00	2013-01-22
319022	Trench-2 4'	soil	2013-01-21	00:00	2013-01-22
319023	Trench-2 5'	soil	2013-01-21	00:00	2013-01-22
319024	Trench-2 6'	soil	2013-01-21	00:00	2013-01-22
319025	Trench-3 0-0.5;	soil	2013-01-21	00:00	2013-01-22
319026	Trench-3 1'	soil	2013-01-21	00:00	2013-01-22
319027	Trench-3 2'	soil	2013-01-21	00:00	2013-01-22
319028	Trench-3 3'	soil	2013-01-21	00:00	2013-01-22

			BTEX		TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(ing/Kg)	(ing/Kg)	(mg/Kg)	(mg/Kg)
319014 - Trench-1 0-1'	< 0.0200	< 0.0200	< 0.0200	< 0.0200	<50.0 Qs	<4.00
319018 - Trench-2 0-0.5'	< 0.0200	< 0.0200	< 0.0200	< 0.0200	< 50.0	< 4.00
319025 - Trench-3 0-0.5'	< 0.0200	< 0.0200	< 0.0200	< 0.0200	< 50.0	< 4.00

Sample: 319014 - Trench-1 0-1'

Param	Flag	Result	Units	RL
Chloride		5690	mg/Kg	4

Report Date: January 30, 2013		Work Order: 13012301	Page	Number: 2 of 3
Sample: 319015 -	Trench-1 2'			
Param	Flag	Result	Units	RL
Chloride		169	mg/Kg	4
Sample: 319016 -	Trench-1 3'			
Param	Flag	Result	Units	RL
Chloride		284	mg/Kg	4
Sample: 319017 -	Trench-1 4'			
Param	Flag	Result	Units	RL
Chloride		448	mg/Kg	4
Sample: 319018 -	Trench-2 0-0.5'			
Param	Flag	Result	Units	RL
Chloride		3220	mg/Kg	4
Sample: 319019 -	Trench-2 1'			
Param	Flag	Result	Units	RL
Chloride		11400	nig/Kg	4
Sample: 319020 -	Trench-2 2'			
Param	Flag	Result	Units	RL
Chloride		8700	mg/Kg	4
Sample: 319021 -	Trench-2 3'			
Param	Flag	Result	Units	RL
Chloride		7560	mg/Kg	4
Sample: 319022 -	Trench-2 4'			
Param	Flag	Result	Units	R.L
Chloride		3210	mg/Kg	4

Report Date: Janua	ary 30, 2013	Work Order: 13012301	Page	Number: 3 of 3
Sample: 319023	- Trench-2 5'			
Param	Flag	Result	Units	RL
Chloride		688	mg/Kg	4
Sample: 319024	- Trench-2 6'			
Param	Flag	Result	Units	RL
Chloride		278	mg/Kg	4
Sample: 319025	- Trench-3 0-0.5'			
Param	Flag	Result	Units	RL
Chloride		1170	mg/Kg	4
Sample: 319026	- Trench-3 1'			
Param	Flag	Result	Units	RL
Chloride		655	mg/Kg	4
Sample: 319027 -	- Trench-3 2'			
Param	Flag	Result	Units	RL
Chloride		1090	mg/Kg	4
Sample: 319028 ·	- Trench-3 3'			
Param	Flag	Result	Units	RL
Chloride		368	mg/Kg	4



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Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Oklahoma ISO 17025 Kansas

Analytical and Quality Control Report

Ike Tavarez

Tetra Tech

1910 N. Big Spring Street

Midland, TX, 79705

Report Date: January 30, 2013

Work Order:

13012301

Project Location: Eddy Co., NM

Project Name: COG/SRO State Unit Com. 102 SWD

Project Number: 112C04983

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
319014	Trench-1 0-1'	soil	2013-01-21	00:00	2013-01-22
319015	Trench-1 2'	soil	2013-01-21	00:00	2013-01-22
319016	Trench-1 3'	soil	2013-01-21	00:00	2013-01-22
319017	Trench-1 4'	soil	2013-01-21	00:00	2013-01-22
319018	Trench-2 0-0.5'	soil	2013-01-21	00:00	2013-01-22
319019	Trench-2 1'	soil	2013-01-21	00:00	2013-01-22
319020	Trench-2 2'	soil	2013-01-21	00:00	2013-01-22
319021	Trench-2 3'	soil	2013-01-21	00:00	2013-01-22
319022	Trench-2 4'	soil	2013-01-21	00:00	2013-01-22
319023	Trench-2 5'	soil	2013-01-21	00:00	2013-01-22
319024	Trench-2 6'	soil	2013-01-21	00:00	2013-01-22
319025	Trench-3 0-0.5'	soil	2013-01-21	00:00	2013-01-22
319026	Trench-3 1'	soil	2013-01-21	00:00	2013-01-22
319027	Trench-3 2'	soil	2013-01-21	00:00	2013-01-22
319028	Trench-3 3'	soil	2013-01-21	00:00	2013-01-22

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 29 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 319022 (Trench-2 4')	1(
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Case Narrative

Samples for project COG/SRO State Unit Com. 102 SWD were received by TraceAnalysis, Inc. on 2013-01-22 and assigned to work order 13012301. Samples for work order 13012301 were received intact at a temperature of 1.3 C.

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

		Prep	Prep	QC	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	83373	2013-01-24 at 12:00	98395	2013-01-24 at 12:00
Chloride (Titration)	SM 4500-Cl B	83354	2013-01-24 at 08:05	98485	2013-01-29 at 14:27
Chloride (Titration)	SM 4500-Cl B	83354	2013-01-24 at 08:05	98486	2013-01-29 at 14:28
TPH DRO - NEW	S 8015 D	83389	2013-01-24 at 13:00	98413	2013-01-25 at 15:45
TPH DRO - NEW	S 8015 D	83395	2013-01-24 at 11:00	98418	2013-01-28 at 08:25
TPH GRO	S 8015 D	83375	2013-01-24 at 12:00	98408	2013-01-24 at 12:00

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 13012301 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: January 30, 2013

112C04983

Work Order: 13012301 COG/SRO State Unit Com. 102 SWD Page Number: 6 of 29 Eddy Co., NM

Analytical Report

Sample: 319014 - Trench-1 0-1'

Laboratory:

Midland

Analysis: QC Batch:

Parameter

Ethylbenzene

Benzene

Toluene

Xylene

BTEX 98395

Analytical Method: Date Analyzed:

Cert

S 8021B2013-01-24 Prep Method: Analyzed By: Prepared By:

S 5035YGYG

0.0200

AR.

83373 Prep Batch:

Sample Preparation:

2013-01-24

RLResult Units Dilution RL0.0200 < 0.0200 mg/Kg 1 0.0200 < 0.0200 mg/Kg 1 0.0200 < 0.0200 mg/Kg 1

Spike Percent Recovery Surrogate Flag Cert Result Units Dilution Amount Recovery Limits Trifluorotoluene (TFT) 2.39 mg/Kg 2.00 120 79.5 - 108 4-Bromofluorobenzene (4-BFB) 2.14 mg/Kg 1 2.00 107 71.4 - 108

< 0.0200

Sample: 319014 - Trench-1 0-1'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 98485 Prep Batch: 83354

Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2013-01-29

2013-01-24

mg/Kg

Prep Method: Analyzed By: AR

Prepared By:

Flag

Ü

Ü

RLDilution Parameter Flag Cert Result Units RLChloride 5690 10 4.00 mg/Kg

Sample: 319014 - Trench-1 0-1'

Laboratory:

Midland

Analysis: TPH DRO - NEW QC Batch: 98418 Prep Batch: 83395

Analytical Method: Date Analyzed: Sample Preparation:

S 8015 D 2013-01-28 2013-01-24 Prep Method: N/A Analyzed By: CWPrepared By: CW

RLParameter Flag Cert Result Units Dilution RLDRO < 50.0 mg/Kg 50.0 Jb,Qs 1 1

Report Date: January 30, 2013

112C04983

Work Order: 13012301 COG/SRO State Unit Com. 102 SWD Page Number: 7 of 29

Eddy Co., NM

						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane			102	mg/Kg	1	100	102	70 - 130

Sample: 319014 - Trench-1 0-1'

Laboratory:

Midland

Analysis:

TPH GRO

98408

Analytical Method:

S 8015 D 2013-01-24 Prep Method: S 5035 Analyzed By:

YG YG

QC Batch: Prep Batch: 83375

Date Analyzed: Sample Preparation: 2013-01-24

Prepared By:

			RL	•		
Parameter	Flag	Cert	Result	Units	Dilution	RL
GRO	υ	1	<4.00	mg/Kg	1	4.00

						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)	_		2.37	nig/Kg	1	2.00	118	70 - 130
4-Bromofluorobenzene (4-BFB)			2.05	mg/Kg	1	2.00	102	70 - 130

Sample: 319015 - Trench-1 2'

Laboratory: Midland

Analysis: Chloride (Titration) 98485

Analytical Method: Date Analyzed:

SM 4500-Cl B 2013-01-29

Prep Method: N/A Analyzed By: AR.

QC Batch: Prep Batch: 83354

Sample Preparation: 2013-01-24

Prepared By: AR

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			169	mg/Kg	5	4.00

Sample: 319016 - Trench-1 3'

Laboratory:

Midland

98485

83354

Analysis: QC Batch:

Prep Batch:

Chloride (Titration)

Analytical Method: Date Analyzed:

SM 4500-Cl B

Prep Method: N/A Analyzed By: ARAR

Sample Preparation:

2013-01-29 2013-01-24

Prepared By:

continued ...

Report Date:	January	30,	2013
112C04983			

Work Order: 13012301 COG/SRO State Unit Com. 102 SWD Page Number: 8 of 29 Eddy Co., NM

sample 319016 continued ...

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			284	mg/Kg	5	4.00

Sample: 319017 - Trench-1 4'

Laboratory:

Midland

Analysis: Chloride (Titration)

98485

Analytical Method:

SM 4500-Cl B

Prep Method: N/A AR.

QC Batch:

Date Analyzed: 2013-01-29 Analyzed By:

Prep Batch: 83354

Sample Preparation: 2013-01-24

Prepared By:

AR

RLParameter Flag Cert Result Units Dilution RLChloride 448 mg/Kg 4.00 5

Sample: 319018 - Trench-2 0-0.5'

Laboratory: Midland

Analysis:

BTEX 98395

Analytical Method: Date Analyzed:

S 8021B

Prep Method: S 5035 YG

QC Batch: Prep Batch:

83373

Sample Preparation:

2013-01-24 2013-01-24 Analyzed By: Prepared By: YG

			KL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Benzene	υ	1	< 0.0200	mg/Kg	1	0.0200
Toluene	L7	1	< 0.0200	m mg/Kg	1	0.0200
Ethylbenzene	υ	1	< 0.0200	${ m mg/Kg}$	1	0.0200
Xylene	υ	1	< 0.0200	mg/Kg	1	0.0200

							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)	Qsr	Qsr		2.34	mg/Kg	1	2.00	117	79.5 - 108
4-Bromofluorobenzene (4-BFB)				2.03	mg/Kg	1	2.00	102	71.4 - 108

Report Date: January 30, 2013 112C04983

Work Order: 13012301 COG/SRO State Unit Com. 102 SWD Page Number: 9 of 29 Eddy Co., NM

Sample: 319018 - Trench-2 0-0.5'

Laboratory:

Midland

Analysis:

Chloride (Titration)

98485

Analytical Method:

SM 4500-Cl B

Prep Method: N/A Analyzed By: AR.

QC Batch: Prep Batch: 83354

Date Analyzed: 2013-01-29 Sample Preparation: 2013-01-24

Prepared By: AR

RL

Flag

 \mathbf{U}

Parameter Chloride

Cert Flag

Result 3220

Dilution Units mg/Kg

RL10 4.00

Sample: 319018 - Trench-2 0-0.5'

Laboratory:

Midland

Analysis:

TPH DRO - NEW

98413

Analytical Method:

S 8015 D 2013-01-25 Prep Method: N/A

QC Batch:

Date Analyzed:

Analyzed By:

CW

Prep Batch: 83389 Sample Preparation: 2013-01-24 Prepared By: CW

RL

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

						$_{ m Spike}$	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	\mathbf{Amount}	Recovery	Limits
n-Tricosane			114	mg/Kg	1	100	114	70 - 130

Sample: 319018 - Trench-2 0-0.5'

Laboratory:

Midland

Analysis: QC Batch: TPH GRO 98408

Analytical Method: Date Analyzed:

Cert

1

S 8015 D 2013-01-24 Prep Method: S 5035 Analyzed By: YG

YG

Prepared By:

Prep Batch:

Parameter

GRO

83375

Sample Preparation:

2013-01-24

RLResult Units Dilution RL< 4.00 mg/Kg 4.00 1

						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			2.11	mg/Kg	1	2.00	106	70 - 130
4-Bromofluorobenzene (4-BFB)			1.96	mg/Kg	1	2.00	98	70 - 130

112C04983	January 30, 2013		k Order: 130 State Unit C	Page Number: 10 of 29 Eddy Co., NM		
Sample: 319	9019 - Trench-2 1'					
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 98485 83354	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-01-29 2013-01-24	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Parameter	Flag	Cert	RL Result	$\mathbf{U}_{\mathbf{nits}}$	Dilution	RL
Chloride	4		11400	mg/Kg	10	4.00
Sample: 319 Laboratory: Analysis: QC Batch: Prep Batch:	9020 - Trench-2 2' Midland Chloride (Titration) 98485 83354	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-01-29 2013-01-24	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			8700	mg/Kg	10	4.00
Sample: 319	9021 - Trench-2 3'					
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 98485 83354	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-01-29 2013-01-24	Prep Method: Analyzed By: Prepared By:	N/A AR AR
	Flag	Cert	RL Result	Units	Dilution	RL
Parameter Chloride			7560	mg/Kg	10	4.00

Analytical Method:

Sample Preparation: 2013-01-24

Date Analyzed:

SM 4500-Cl B

2013-01-29

Prep Method: N/A

Analyzed By: AR

Prepared By:

Laboratory: Midland

Prep Batch: 83354

98485

Chloride (Titration)

Analysis:

QC Batch:

112C04983

Work Order: 13012301

COG/SRO State Unit Com. 102 SWD

Page Number: 11 of 29

Eddy Co., NM

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			3210	mg/Kg	10	4.00

Sample: 319023 - Trench-2 5'

Laboratory: Midland

Chloride (Titration) Analysis:

QC Batch: 98485 Prep Batch: 83354 Analytical Method:

SM 4500-Cl B Date Analyzed: 2013-01-29 Sample Preparation: 2013-01-24

Prep Method: N/A Analyzed By: AR.

Prepared By: AR.

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			688	nıg/Kg	5	4.00

Sample: 319024 - Trench-2 6'

Laboratory:

Midland

Analysis: Chloride (Titration)

QC Batch: 98486 Prep Batch: 83354

Analytical Method: Date Analyzed:

SM 4500-Cl B 2013-01-29 Sample Preparation: 2013-01-24

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

RLParameter Flag Cert ResultUnits Dilution RLChloride 278 mg/Kg 4.00

Sample: 319025 - Trench-3 0-0.5'

Laboratory: Analysis: QC Batch:

Midland BTEX

98395Prep Batch: 83373 Analytical Method: Date Analyzed:

S 8021B2013-01-24 Sample Preparation:

2013-01-24

Prep Method: S 5035

Analyzed By: YG Prepared By: YG

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Benzene	υ	1	< 0.0200	mg/Kg	1	0.0200
Toluene	\mathbf{v}	1	< 0.0200	m mg/Kg	1	0.0200
Ethylbenzene	υ	1	< 0.0200	mg/Kg	1	0.0200

continued ...

112C04983

Work Order: 13012301 COG/SRO State Unit Com. 102 SWD Page Number: 12 of 29

Eddy Co., NM

sample 319025 continued ...

					RL				
Parameter	Flag		Cert		Result	Unit	ts	Dilution	RL
Xylene	υ		1	<	0.0200	mg/K	g	1	0.0200
							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Triffuorotoluene (TFT)	Qsr	Qsr		2.31	mg/Kg	1	2.00	116	79.5 - 108
4-Bromofluorobenzene (4-BFB)				1.95	mg/Kg	1	2.00	98	71.4 - 108

Sample: 319025 - Trench-3 0-0.5'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch:

98486 Prep Batch: 83354 Analytical Method: Date Analyzed:

SM 4500-Cl B 2013-01-29 Sample Preparation: 2013-01-24

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

RL

Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			1170	mg/Kg	10	4.00

Sample: 319025 - Trench-3 0-0.5'

Laboratory: Midland

Analysis: TPH DRO - NEW QC Batch: 98413 Prep Batch: 83389

Analytical Method: Date Analyzed:

S 8015 D 2013-01-25 Sample Preparation: 2013-01-24

Prep Method: N/A Analyzed By: CWPrepared By: CW

			m RL			
Parameter	Flag	Cert	Result	\mathbf{Units}	Dilution	RL
DRO		1	< 50.0	mg/Kg	1	50.0
					_	

						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane			111	mg/Kg	1	100	111	70 - 130

Sample: 319025 - Trench-3 0-0.5'

Laboratory: Midland

TPH GRO Analysis: QC Batch: 98408 Prep Batch: 83375

Analytical Method: Date Analyzed: Sample Preparation:

S 8015 D 2013-01-24 2013-01-24

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

112C04983

Work Order: 13012301 COG/SRO State Unit Com. 102 SWD Page Number: 13 of 29 Eddy Co., NM

Parameter	Flag		Cert		RL Result	Uni	ts	Dilution	RL
GRO			1		<4.00	nig/k	(g	1	4.00
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			~ ~	2.10	mg/Kg	1	2.00	105	70 - 130
4-Bromofluorobenzene (4-BFB)				1.90	mg/Kg	1	2.00	95	70 - 130

Sample: 319026 - Trench-3 1'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 98486

Analytical Method:

SM 4500-Cl B 2013-01-29

Prep Method: N/A Analyzed By: AR.

> RL4.00

Prep Batch: 83354

Date Analyzed: Sample Preparation: 2013-01-24

Prepared By: AR.

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	
Chloride			655	mg/Kg	5	

Sample: 319027 - Trench-3 2'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 98486 Prep Batch: 83354

Analytical Method: Date Analyzed:

SM 4500-Cl B 2013-01-29 2013-01-24

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

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			1090	mg/Kg	5	4.00

Sample Preparation:

Sample: 319028 - Trench-3 3'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 98486 Prep Batch: 83354

Analytical Method: Date Analyzed: Sample Preparation:

 $\mathrm{SM}\ 4500\text{-}\mathrm{Cl}\ \mathrm{B}$ 2013-01-29 2013-01-24

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

Report Date: January 30, 2013 112C04983

Work Order: 13012301

COG/SRO State Unit Com. 102 SWD

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Eddy Co., NM

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			368	mg/Kg	5	4.()()

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Work Order: 13012301 COG/SRO State Unit Com. 102 SWD Page Number: 15 of 29 Eddy Co., NM

Method Blanks

Method Blank (1)

QC Batch: 98395

QC Batch: 98395Prep Batch: 83373

Date Analyzed: QC Preparation: 2013-01-24

2013-01-24

Analyzed By: YG

Prepared By:

MDL Parameter Units Flag Cert Result < 0.00810 mg/Kg

RLBenzene 0.02 Toluene < 0.00750 mg/Kg 0.02Ethylbenzene mg/Kg 0.02 < 0.00730 Xylene < 0.00700 mg/Kg 0.02

							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Triffuorotoluene (TFT)	Qsr	Qsr		2.32	mg/Kg	1	2.00	116	79.5 - 108
4-Bromofluorobenzene (4-BFB)				1.93	mg/Kg	1	2.00	96	71.4 - 108

Method Blank (1)

QC Batch: 98408

QC Batch: 98408 Prep Batch: 83375

Date Analyzed: QC Preparation:

2013-01-24 2013-01-24 Analyzed By: YG Prepared By: YG

MDL

Result Parameter Flag Cert Units RLGRO < 2.32 mg/Kg

						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	${f Amount}$	Recovery	Limits
Trifluorotoluene (TFT)			1.77	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			1.88	mg/Kg	1	2.00	94	70 - 130

Method Blank (1)

QC Batch: 98413

QC Batch: 98413 Prep Batch: 83389 Date Analyzed: 2013-01-25 QC Preparation: 2013-01-24 Analyzed By: CW Prepared By: CW Report Date: January 30, 2013 112C04983

Work Order: 13012301 COG/SRO State Unit Com. 102 SWD Page Number: 16 of 29 Eddy Co., NM

Parameter Flag DRO		Fla	ıg	Cert	M Res	DL sult	Units	RL
			ı	<6	5.88	mg/Kg	50	
<i>(</i> 3	E1	C14	D14	Haita	Dilution	Spike	Percent	Recovery Limits
Surrogate	Flag	Cert	Result	Units	Duffion	Amount	Recovery	Limites
n-Tricosane			96.0	mg/Kg	1	100	96	70 - 130

Method Blank (1) QC Batch: 98418

QC Batch: 98418 Prep Batch: 83395 Date Analyzed: 2013-01-28 QC Preparation: 2013-01-24 Analyzed By: CW Prepared By: CW

Parameter		Fla	ag	Cert		DL sult	Units	RL
DRO				1	ĺ	31.0	mg/Kg	50
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			123	mg/Kg	1	100	123	70 - 130

Method Blank (1) QC Batch: 98485

QC Batch: 98485 Prep Batch: 83354 Date Analyzed: 2013-01-29 QC Preparation: 2013-01-24 Analyzed By: AR Prepared By: AR

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

Method Blank (1) QC Batch: 98486

QC Batch: 98486 Prep Batch: 83354 Date Analyzed: 2013-01-29 QC Preparation: 2013-01-24

Analyzed By: AR Prepared By: AR

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

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Work Order: 13012301 COG/SRO State Unit Com. 102 SWD Page Number: 17 of 29 Eddy Co., NM

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch:

98395

Date Analyzed:

2013-01-24

Analyzed By: YG

Prep Batch: 83373

QC Preparation: 2013-01-24

Prepared By: YG

Param F	С	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1	1.82	mg/Kg	1	2.00	< 0.00810	91	72.4 - 120
Toluene	1	1.87	mg/Kg	1	2.00	< 0.00750	94	77 - 120
Ethylbenzene	1	2.01	mg/Kg	1	2.00	< 0.00730	100	71.8 - 120
Xylene	1	6.21	mg/Kg	1	6.00	< 0.00700	104	78.3 - 120

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	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		1	1.76	mg/Kg	1	2.00	< 0.00810	88	72.4 - 120	3	20
Toluene		ι	1.82	mg/Kg	1	2.00	< 0.00750	91	77 - 120	3	20
Ethylbenzene		1	1.95	mg/Kg	1	2.00	< 0.00730	98	71.8 - 120	3	20
Xylene		1	6.08	mg/Kg	1	6.00	< 0.00700	101	78.3 - 120	2	20

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

			LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate			Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	Qsr	Qsr	2.36	2.38	mg/Kg	1	2.00	118	119	79.5 - 108
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	2.16	2.10	mg/Kg	1	2.00	108	105	71.4 - 108

Laboratory Control Spike (LCS-1)

QC Batch:

98408

Date Analyzed:

2013-01-24

Prep Batch: 83375

QC Preparation: 2013-01-24

Analyzed By: YG Prepared By: YG

			LCS			Spike	Matrix		Rec.
Param	\mathbf{F}	С	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO		1	17.5	mg/Kg	1	20.0	< 2.32	88	70 - 130

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

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Eddy Co., NM

control spikes	continued		•	
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Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
	753		LCSD	TT	D:1	Spike	Matrix	D.	Rec.	DDD	RPD
Param	F	C	Result	$_{ m Units}$	Dil.	Amount	Result	Rec.	$_{ m Limit}$	RPD	Limit
GRO		ı	14.6	mg/Kg	1	20.0	< 2.32	73	70 - 130	18	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	$_{ m Limit}$
Trifluorotoluene (TFT)	1.69	1.90	mg/Kg	1	2.00	84	95	70 - 130
4-Bromofluorobenzene (4-BFB)	1.76	2.02	mg/Kg	1	2.00	88	101	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch:

98413

Date Analyzed:

2013-01-25

Analyzed By: CW

Prep Batch: 83389

QC Preparation: 2013-01-24

Prepared By: CW

			LCS			\mathbf{Spike}	Matrix		Rec.
Param	\mathbf{F}	C	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO		1	240	mg/Kg	1	250	<6.88	96	70 - 130

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	F	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO		1	238	mg/Kg	1	250	<6.88	95	70 - 130	1	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	122	119	mg/Kg	1	100	122	119	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch:

98418

Date Analyzed:

2013-01-28

Analyzed By: CW

Prep Batch: 83395

QC Preparation: 2013-01-24

Prepared By: CW

LCS Spike Matrix Rec. Result Units Dil. Param Amount Result Rec. Limit DRO 232 mg/Kg 250 31 80 70 - 130

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Work Order: 13012301 COG/SRO State Unit Com. 102 SWD Page Number: 19 of 29 Eddy Co., NM

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	F	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO		ı	250	m mg/Kg	1	250	31	88	70 - 130	8	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	$_{ m Limit}$
n-Tricosane	108	106	mg/Kg	1	100	108	106	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch: 83354

98485

Date Analyzed:

2013-01-29 QC Preparation: 2013-01-24

Analyzed By: AR.

Prepared By: AR

			LCS			Spike	Matrix		Rec.
Param	F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			2510	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			Spike	Matrix		Rec.		RPD
Param	\mathbf{F}	C	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2640	mg/Kg	1	2500	< 3.85	106	85 - 115	5	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: Prep Batch: 83354

98486

Date Analyzed:

2013-01-29 QC Preparation: 2013-01-24

Analyzed By: AR Prepared By: AR.

			LCS			Spike	Matrix		Rec.
Param	F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			2700	mg/Kg	1	2500	<3.85	108	85 - 115

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	$_{ m Limit}$
Chloride			2590	mg/Kg	1	2500	< 3.85	104	85 - 115	4	20

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

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Matrix Spike (MS-1) Spiked Sample: 319018

QC Batch: 98395 Prep Batch: 83373 Date Analyzed: 2013-01-24 QC Preparation: 2013-01-24 Analyzed By: YG Prepared By: YG

			MS			Spike	Matrix		Rec.
Param	\mathbf{F}	$^{\rm C}$	Result	Units	Dil.	${f Amount}$	Result	Rec.	Limit
Benzene		١	2.28	mg/Kg	1	2.00	< 0.00810	114	66.3 - 138
Toluene		1	2.30	$_{ m mg/Kg}$	1	2.00	< 0.00750	115	64.8 - 142
Ethylbenzene		ι	2.50	mg/Kg	1	2.00	< 0.00730	125	72 - 132
Xylene		1	7.67	mg/Kg	1	6.00	< 0.00700	128	60.8 - 148

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

•			MSD			Spike	Matrix		Rec.		RPD
Param	F	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		1	2.26	mg/Kg	1	2.00	< 0.00810	113	66.3 - 138	1	20
Toluene		1	2.32	mg/Kg	1	2.00	< 0.00750	116	64.8 - 142	1	20
Ethylbenzene		1	2.46	mg/Kg	1	2.00	< 0.00730	123	72 - 132	2	20
Xylene		1	7.72	mg/Kg	1	6.00	< 0.00700	129	60.8 - 148	1	20

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

			MS	MSD			Spike	MS	MSD	Rec.
Surrogate			Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	Qsr	Qsr	2.35	2.32	mg/Kg	1	2	118	116	79.5 - 108
4-Bromofluorobenzene (4-BFB)			2.04	2.01	mg/Kg	1	2	102	100	71.4 - 108

Matrix Spike (MS-1) Spiked Sample: 319018

QC Batch: 98408 Prep Batch: 83375 Date Analyzed: 2013-01-24 QC Preparation: 2013-01-24

Analyzed By: YG Prepared By: YG

			MS			Spike	Matrix		Rec.
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO		1	22.0	mg/Kg	1	20.0	< 2.32	110	70 - 130

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.	$\mathbf{A}\mathbf{m}\mathbf{o}\mathbf{u}\mathbf{n}\mathbf{t}$	Result	Rec.	Limit	RPD	Limit
GRO		1	21.3	mg/Kg	1	20.0	< 2.32	106	70 - 130	3	20

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

continued ...

Report Date: January 30, 2013 112C04983

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matrix spikes continued								
Tradit de Opinico Comunicada III	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	${f Amount}$	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	2.07	2.42	mg/Kg	1	2	104	121	70 - 130
4-Bromofluorobenzene (4-BFB)	1.98	2.00	mg/Kg	1	2	99	100	70 - 130

Matrix Spike (MS-1) Spiked Sample: 319018

QC Batch: 98413 Prep Batch: 83389 Date Analyzed:

2013-01-25 QC Preparation: 2013-01-24 Analyzed By: CW

Prepared By: CW

			MS			Spike	Matrix		Rec.
Param	\mathbf{F}	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO		1	249	mg/Kg	1	250	11.4	95	70 - 130

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
DRO	-	1	273	mg/Kg	1	250	11.4	105	70 - 130	9	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	100	110	mg/Kg	1	100	100	110	70 - 130

Matrix Spike (MS-1) Spiked Sample: 319164

QC Batch:

98418

Date Analyzed:

2013-01-28

Analyzed By: CW

Prep Batch: 83395

QC Preparation: 2013-01-24

Prepared By: CW

				$_{ m MS}$			\mathbf{Spike}	Matrix		Rec.
Param		F	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO	Qs	Q۶	1	389	mg/Kg	1	250	223	66	70 - 130

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
DRO		1	438	mg/Kg	1	250	223	86	70 - 130	12	20

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

			MS	MSD			Spike	MS	MSD	Rec.
Surrogate			Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	Qsr	Qsr	139	151	mg/Kg	5	100	139	151	70 - 130

Matrix Spike (MS-1) Spiked Sample: 319023

QC Batch: 98485 Prep Batch: 83354 Date Analyzed: 2013-01-29 QC Preparation: 2013-01-24 Analyzed By: AR. Prepared By: AR.

			MS			Spike	Matrix		Rec.
Param	F	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			3280	mg/Kg	5	2500	688	104	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	F	$^{\mathrm{C}}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			3080	mg/Kg	5	2500	688	96	78.9 - 121	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: 319039

 QC Batch:
 98486
 Date Analyzed:
 2013-01-29

 Prep Batch:
 83354
 QC Preparation:
 2013-01-24

Analyzed By: AR Prepared By: AR

			MS			Spike	Matrix		Rec.
Param	F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			2430	mg/Kg	5	2500	<19.2	97	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	F	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2570	mg/Kg	5	2500	< 19.2	103	78.9 - 121	6	20

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

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Work Order: 13012301 COG/SRO State Unit Com. 102 SWD Page Number: 23 of 29 Eddy Co., NM

Calibration Standards

Standard (CCV-1)

QC Batch: 98395

Date Analyzed: 2013-01-24

Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		l	mg/kg	0.100	0.107	107	80 - 120	2013-01-24
Toluene		1	mg/kg	0.100	0.108	108	80 - 120	2013-01-24
Ethylbenzene		1	mg/kg	0.100	0.112	112	80 - 120	2013-01-24
Xylene		1	mg/kg	0.300	0.355	118	80 - 120	2013-01-24

Standard (CCV-2)

QC Batch: 98395

Date Analyzed: 2013-01-24

Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		ı	mg/kg	0.100	0.106	106	80 - 120	2013-01-24
Toluene		1	mg/kg	0.100	0.106	106	80 - 120	2013-01-24
Ethylbenzene		1	mg/kg	0.100	0.108	108	80 - 120	2013-01-24
Xylene		1	mg/kg	0.300	0.331	110	80 - 120	2013-01-24

Standard (CCV-3)

QC Batch: 98395

Date Analyzed: 2013-01-24

Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.100	100	80 - 120	2013-01-24
Toluene		1	mg/kg	0.100	0.101	101	80 - 120	2013-01-24
Ethylbenzene		1	mg/kg	0.100	0.100	100	80 - 120	2013-01-24
Xylene		1	mg/kg	0.300	0.311	104	80 - 120	2013-01-24

Report Date: January 30, 2013 112C04983			COG_{f}	Work Or SRO State	Page Number: 24 of 29 Eddy Co., NM			
Standard (CCV-1	1)							
QC Batch: 98408			Date	Analyzed:	2013-01-24		Analy	zed By: YG
Param GRO	Flag	Cert	Units mg/Kg	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits 80 - 120	Date Analyzed 2013-01-24
dito		I .	mg/ reg	1.00	1.11	111	80 - 120	2013-01-24
Standard (CCV-2	2)							
QC Batch: 98408			Date .	Analyzed:	2013-01-24		Analy	zed By: YG
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param GRO	Flag	Cert	Units mg/Kg	Conc. 1.00	Conc. 1.02	Recovery 102	Limits 80 - 120	Analyzed 2013-01-24
		1			1102		ON TEN	DOTO, OT DI
Standard (CCV-3	3)							
QC Batch: 98408			Date .	Analyzed:	2013-01-24		Analy	zed By: YG
_				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param GRO	Flag	Cert	Units	Conc. 1.00	Conc.	Recovery	Limits	Analyzed
Standard (CCV-1	.)	1	mg/Kg	1.00	1.15	115	80 - 120	2013-01-24
QC Batch: 98413	,		ъ.	Analyzed:	2013-01-25		Analyz	zed Bv: CW

CCVs

True

Conc.

250

CCVs

Found

Conc.

240

CCVs

Percent

Recovery

96

Percent

Recovery

Limits 80 - 120

Date Analyzed

2013-01-25

Analyzed By: CW

Standard (CCV-2)

 Flag

 $\frac{\text{Param}}{\text{DRO}}$

QC Batch: 98413 Date Analyzed: 2013-01-25

Units

mg/Kg

Cert

1

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Eddy Co., NM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	294	118	80 - 120	2013-01-25

Standard (CCV-3)

QC Batch: 98413

Date Analyzed: 2013-01-25

Analyzed By: CW

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	266	106	80 - 120	2013-01-25

Standard (CCV-4)

QC Batch: 98413

Date Analyzed: 2013-01-25

Analyzed By: CW

				$rac{ ext{CCVs}}{ ext{True}}$	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	264	106	80 - 120	2013-01-25

Standard (CCV-1)

QC Batch: 98418

Date Analyzed: 2013-01-28

Analyzed By: CW

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	244	98	80 - 120	2013-01-28

Standard (CCV-2)

QC Batch: 98418

Date Analyzed: 2013-01-28

Analyzed By: CW

112C04983

Work Order: 13012301 COG/SRO State Unit Com. 102 SWD Page Number: 26 of 29 Eddy Co., NM

				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	291	116	80 - 120	2013-01-28

Standard (CCV-3)

QC Batch: 98418

Date Analyzed: 2013-01-28

Analyzed By: CW

				CCVs	CCVs	CCVs	Percent	_
				True	\mathbf{Found}	$\operatorname{Percent}$	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DR.O		ı	m mg/Kg	250	239	96	80 - 120	2013-01-28

Standard (CCV-1)

QC Batch: 98485

Date Analyzed: 2013-01-29

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	98.2	98	85 - 115	2013-01-29

Standard (CCV-2)

QC Batch: 98485

Date Analyzed: 2013-01-29

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	102	102	85 - 115	2013-01-29

Standard (CCV-1)

QC Batch: 98486

Date Analyzed: 2013-01-29

Analyzed By: AR

Report Date: January 30, 2013 112C04983

Work Order: 13012301 COG/SRO State Unit Com. 102 SWD Page Number: 27 of 29

Eddy Co., NM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride	1100	0010	mg/Kg	100	99.7	100	85 - 115	2013-01-29

Standard (CCV-2)

QC Batch: 98486

Date Analyzed: 2013-01-29

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	2013-01-29

 Report Date: January 30, 2013
 Work Order: 13012301
 Page Number: 28 of 29

 112C04983
 COG/SRO State Unit Com. 102 SWD
 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
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-12-4	Midland

Standard Flags

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т.	$-D_{0}$	11.00	ption

- 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: January 30, 2013 112C04983

Work Order: 13012301 COG/SRO State Unit Com. 102 SWD Page Number: 29 of 29 Eddy Co., NM

The scanned attachments will follow this page.

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

An	Analysis Request of Chain of Custody Record																		\GE:				OF:	2		
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	1910 N. Big Spring St. 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946 LIENT NAME: SITE MANAGER: PRESER												5 (Ext. to C35)	G C	Vr Pd Hg								DS			
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LAB I.D. NUMBER	DATE 2013	TIME	MATRIX	GRAB	EYS	ENDENTIFICATION	NUMBER OF CONTAINERS	HOL	HNO3	ICE	NONE	втех 8021в	тРН 8015 РАН 8270	RCRA Metais Ag	TCLP Metals Ag As	TCLP Semi Volatiles	RCI GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080	Pest. 808/608	Garnma Spec.	Alpha Beta	PLM (Asbestos) Major Anions/Cations, pH, TDS			
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lease fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

50 mg/kg run deeper sample. Millard - all

l Δn	Analysis Request of Chain of Custody Record										L							. P.	AGE	: 2	<u> </u>)F:	<u>a</u> _							
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Report Date: June 11, 2013 Work Order: 13060337 Page Number: 1 of 3

Summary Report

Ike Tavarez Tetra Tech

1910 N. Big Spring Street Midland, TX 79705 Report Date: June 11, 2013

Work Order: 13060337

Project Location: Eddy Co., NM

Project Name:

COG/SRO State Unit Com. 102 SWD

Project Number: 112C04983

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
330876	T-1 1'	soil	2013-05-29	00:00	2013-06-03
330877	T-1 2'	soil	2013-05-29	00:00	2013-06-03
330878	T-1 3'	soil	2013-05-29	00:00	2013-06-03
330879	T-1 4'	soil	2013-05-29	00:00	2013-06-03
330880	T-1 5'	soil	2013-05-29	00:00	2013-06-03
330881	T-1 6'	soil	2013-05-29	00:00	2013-06-03
330882	T-1 7'	soil	2013-05-29	00:00	2013-06-03
330883	T-1 8' Bottom Hole	soil	2013-05-29	00:00	2013-06-03
330884	T-1 9'	soil	2013-05-29	00:00	2013-06-03
330885	T-1 10'	soil	2013-05-29	00:00	2013-06-03
330886	T-1 11'	soil	2013-05-29	00:00	2013-06-03
330887	T-1 12'	soil	2013-05-29	00:00	2013-06-03

]	3TEX	TPH DRO - NEW	TPH GRO	
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
330883 - T-1 8' Bottom Hole	< 0.0200	< 0.0200	< 0.0200	< 0.0200	<50.0	<4.00

Sample: 330876 - T-1 1'

Param	Flag	Result	${ m Units}$	RL
Chloride		5000	nıg/Kg	4

Sample: 330877 - T-1 2'

Report Date: June 11, 2013	Work Order: 13060337	Page I	Number: 2 of 3
Param Flag Chloride	Result 2630	Units mg/Kg	RL 4
Sample: 330878 - T-1 3'			
Param Flag	Result	Units	RL
Chloride	2460	mg/Kg	4
Sample: 330879 - T-1 4'			
Param Flag	Result	Units	RL
Chloride	2830	mg/Kg	4
Sample: 330880 - T-1 5'			
Param Flag Chloride	Result 3070	Units mg/Kg	$\frac{RL}{4}$
ОПОЛКО	0010	1116/1116	-
Sample: 330881 - T-1 6'			
Param Flag	Result	Units	RL
Chloride	2880	mg/Kg	4
Sample: 330882 - T-1 7'			
Param Flag	Result	Units	RL
Chloride	2390	mg/Kg	4
Sample: 330883 - T-1 8' Bottom Ho.	le		
Param Flag	Result	Units	RL
Chloride	1140	mg/Kg	4
Sample: 330884 - T-1 9'			
Param Flag	Result	Units	RL
Chloride	944	mg/Kg	4

Report Date: June	11, 2013	Work Order: 13060337	Page	Number: 3 of 3
Sample: 330885	- T-1 10'			
Param	Flag	Result	Units	RL
Chloride		261	mg/Kg	4
Sample: 330886	- T-1 11'			
Param	Flag	Result	Units	RL
Chloride		35.1	mg/Kg	4
Sample: 330887	- T-1 12'			
Param	Flag	Result	Units	RL
Chloride		140	mg/Kg	4



6701 Aberdeen Avenue; Sville 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 800-378-1298 915-585-3443 432-689-6301 FAX 806 • 794 • 1298 FAX 915:585 -4944 FAX 432-689-6313

972-242-7750 Carroliton. Texas 75006 E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Ike Tavarez Tetra Tech

1910 N. Big Spring Street Midland, TX, 79705

Report Date: June 11, 2013

Work Order: 13060337 कोर्पण क्षेत्रपेत्र कोर्पण कोर्पण कोर्पण कोर्पण कोर्पण कोर्पण कोर्पण कोर्पण

Project Location: Eddy Co., NM

Project Name:

COG/SRO State Unit Com. 102 SWD

Project Number:

112C04983

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
330876	T-1 1'	soil	2013-05-29	00:00	2013-06-03
330877	T-1 2'	soil	2013-05-29	00:00	2013-06-03
330878	T-1 3'	soil	2013-05-29	00:00	2013-06-03
330879	T-1 4'	soil	2013-05-29	00:00	2013-06-03
330880	T-1 5'	soil	2013-05-29	00:00	2013-06-03
330881	T-1 6'	soil	2013-05-29	00:00	2013-06-03
330882	T-1 7'	soil	2013-05-29	00:00	2013-06-03
330883	T-1 8' Bottom Hole	soil	2013-05-29	00:00	2013-06-03
330884	T-1 9'	soil	2013-05-29	00:00	2013-06-03
330885	T-1 10'	soil	2013-05-29	00:00	2013-06-03
330886	T-1 11'	soil	2013-05-29	00:00	2013-06-03
330887	T-1 12'	soil	2013-05-29	00:00	2013-06-03

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

Michael Wal

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

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Sample 330877 (T-1 2')	6
Sample 330878 (T-1 3')	6
Sample 330879 (T-1 4')	6
Sample 330880 (T-1 5')	7
Sample 330881 (T-1 6')	7
Sample 330882 (T-1 7')	7
Sample 330883 (T-1 8' Bottom Hole)	8
Sample 330884 (T-1 9')	9
Sample 330885 (T-1 10')	9
Sample 330886 (T-1 11')	10
Sample 330887 (T-1 12')	10
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QC Batch 102130 - CCV (2)	19
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QC Batch 102164 - CCV (1)	 	 	 			 						 				
QC Batch 102164 - CCV (2)	 	 	 			 										
Appendix																
Report Definitions																
Laboratory Certifications .	 	 	 			 									٠	
Standard Flags	 	 	 		 	 										
Attachments	 	 	 			 						 				

Case Narrative

Samples for project COG/SRO State Unit Com. 102 SWD were received by TraceAnalysis, Inc. on 2013-06-03 and assigned to work order 13060337. Samples for work order 13060337 were received intact at a temperature of 2.4 C.

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

		Prep	Prep	$_{ m QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	86555	2013-06-09 at 21:00	102164	2013-06-11 at 10:59
Chloride (Titration)	SM 4500-Cl B	86493	2013-06-07 at 09:02	102130	2013-06-10 at 11:24
Chloride (Titration)	SM 4500-Cl B	86493	2013-06-07 at 09:02	102135	2013-06-10 at 12:52
TPH DRO - NEW	S 8015 D	86484	2013-06-06 at 08:00	102081	2013-06-07 at 09:16
TPH GRO	S 8015 D	86503	2013-06-06 at 10:30	102101	2013-06-07 at 14:40

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 13060337 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Report Date: June 11, 2013 112C04983

Work Order: 13060337 COG/SRO State Unit Com. 102 SWD

Page Number: 6 of 22 Eddy Co., NM

Analytical Report

Sample: 330876 - T-1 1'

Laboratory:

Prep Batch:

Midland

Analysis: QC Batch:

Chloride (Titration)

102130 86493

Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2013-06-10 2013-06-07

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

RL

Parameter Flag Cert Result RLUnits Dilution Chloride 5000 4.00 mg/Kg 10

Sample: 330877 - T-1 2'

Laboratory: Midland

Chloride (Titration) Analysis: QC Batch: 102130 Prep Batch: 86493

Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2013-06-10 2013-06-07

Prep Method: N/A Analyzed By: AR.

AR

Prepared By:

RL

Parameter Flag Cert Result Units Dilution RLChloride 2630 mg/Kg 10 4.00

Sample: 330878 - T-1 3'

Laboratory: Midland

Chloride (Titration) Analysis: QC Batch: 102130 Prep Batch: 86493

Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2013-06-10 2013-06-07

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

RL

 Cert Parameter Flag Result Dilution Units RLChloride 2460 4.00 mg/Kg 10

Page Number: 7 of 22 Work Order: 13060337 Report Date: June 11, 2013 Eddy Co., NM 112C04983 COG/SRO State Unit Com. 102 SWD Sample: 330879 - T-1 4' Laboratory: Midland Prep Method: N/A Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Analyzed By: QC Batch: 102130 Date Analyzed: 2013-06-10 ARPrep Batch: 86493 Sample Preparation: 2013-06-07 Prepared By: AR. RLParameter Result Units Dilution RLFlag Cert 2830 10 4.00 Chloride mg/Kg

Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 2013-06-10 Analyzed By: AR 102130 Date Analyzed: Prep Batch: 86493 2013-06-07 Prepared By: AR. Sample Preparation:

Sample: 330881 - T-1 6'

Sample: 330880 - T-1 5'

Laboratory: Midland

Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 102130 Date Analyzed: 2013-06-10 Analyzed By: AR Prep Batch: 86493 Sample Preparation: 2013-06-07 Prepared By: AR

Sample: 330882 - T-1 7'

Laboratory: Midland

Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 102130 Date Analyzed: 2013-06-10 Analyzed By: AR Prep Batch: 86493 Sample Preparation: 2013-06-07 Prepared By: AR

Report Date: June 11, 2013 112C04983

, 2013 Work Order: 13060337 COG/SRO State Unit Com. 102 SWD Page Number: 8 of 22 Eddy Co., NM

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			2390	mg/Kg	10	4.00

Sample: 330883 - T-1 8' Bottom Hole

Laboratory: Midland

Analysis: BTEX QC Batch: 102164 Prep Batch: 86555 Analytical Method: S 8021B Date Analyzed: 2013-06-11 Sample Preparation: 2013-06-09 Prep Method: S 5035 Analyzed By: KC Prepared By: KC

			m RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Benzene	U]	< 0.0200	mg/Kg	1	0.0200
Toluene	u	1	< 0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	< 0.0200	$_{ m mg/Kg}$	1	0.0200
Xylene	U	1	< 0.0200	mg/Kg	1	0.0200

						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.72	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			1.76	mg/Kg	1	2.00	88	70 - 130

Sample: 330883 - T-1 8' Bottom Hole

Laboratory: Midland

Chloride (Titration) Analysis: Analytical Method: SM 4500-Cl B Prep Method: N/A 102130 QC Batch: Date Analyzed: 2013-06-10 Analyzed By: ARPrep Batch: 86493 Sample Preparation: 2013-06-07 Prepared By: AR

Sample: 330883 - T-1 8' Bottom Hole

Laboratory: Midland

TPH DRO - NEW Analysis: Analytical Method: S 8015 D Prep Method: N/AQC Batch: 102081 Date Analyzed: 2013-06-07 Analyzed By: CW Prep Batch: 86484 Sample Preparation: 2013-06-06 Prepared By: CW

Report Date: June 11, 2013 112C04983

Work Order: 13060337 COG/SRO State Unit Com. 102 SWD Page Number: 9 of 22 Eddy Co., NM

Parameter		Flag	Cert	Į.	RL Result	Units	Dilution	RL
DRO		υ	ì		<50.0	mg/Kg	1	50.0
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	<u></u>		90.7	mg/Kg	1	100	91	55.1 - 135.7

Sample: 330883 - T-1 8' Bottom Hole

Laboratory: Midland

TPH GRO Analysis: QC Batch: 102101 Prep Batch: 86503

Analytical Method: Date Analyzed:

S 8015 D 2013-06-07 Sample Preparation: 2013-06-06 Prep Method: S 5035 Analyzed By: KCPrepared By: KC

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
GRO		1	<4.00	mg/Kg	1	4.00
				Snike	Percent	Recovery

Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.82	mg/Kg	1	2.00	91	70 - 130
4-Bromofluorobenzene (4-BFB)			1.89	mg/Kg	1	2.00	94	70 - 130

Sample: 330884 - T-1 9'

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 102130 Prep Batch: 86493

Analytical Method: Date Analyzed:

SM 4500-Cl B 2013-06-10 Sample Preparation: 2013-06-07

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

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			944	mg/Kg	5	4.00

Sample: 330885 - T-1 10'

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 102130 Prep Batch: 86493

Analytical Method: SM 4500-Cl B Date Analyzed: 2013-06-10 Sample Preparation: 2013-06-07

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

112C04983		COG/SRO S	tate Unit Cor	Eddy Co., NM		
Parameter Chloride	Flag	Cert	RL Result	Units mg/Kg	Dilution 5	RL 4.00
				6/6		
Sample: 33	0886 - T-1 11'					
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 102135 86493	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-06-10 2013-06-07	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	- 116		35.1	nig/Kg	5	4.00
Sample: 33	0887 - T-1 12'					
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 102135 86493	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-06-10 2013-06-07	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			140	mg/Kg	5	4.00

Work Order: 13060337

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Report Date: June 11, 2013

112C04983

Work Order: 13060337 COG/SRO State Unit Com. 102 SWD Page Number: 11 of 22 Eddy Co., NM

Method Blanks

Method Blank (1)

QC Batch: 102081

QC Batch:

102081

Date Analyzed:

2013-06-07

Analyzed By: CW

Prep Batch: 86484

QC Preparation: 2013-06-06

Prepared By: CW

Parameter		F	lag	Cert		MDL lesult	Units	RL
DRO				1		<10.2	mg/Kg	50
	121	a .	D. Iv	11	m.i	Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane			85.0	mg/Kg	1	100	85	55.1 - 135.7

Method Blank (1)

QC Batch: 102101

QC Batch: Prep Batch: 86503

102101

Date Analyzed:

2013-06-07 QC Preparation: 2013-06-06 Analyzed By: KC

Prepared By: KC

			MDL		
Parameter	Flag	Cert	Result	Units	RL
GRO		1	6.99	mg/Kg	4
				Crilea Dorgani	Pagarary

						Spike	Percent	Recovery
Surrogate	\mathbf{Flag}	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.80	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			1.73	mg/Kg	1	2.00	86	70 - 130

Method Blank (1)

QC Batch: 102130

QC Batch: 102130 Prep Batch: 86493

Date Analyzed: QC Preparation: 2013-06-07

2013-06-10

Analyzed By: AR Prepared By: AR

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

Report Date: June 11, 2 112C04983		Work Order OG/SRO State Ui	: 13060337 nit Com. 102 SWD		Page Number: 12 of 22 Eddy Co., NM		
Method Blank (1)	QC Batch: 102135						
QC Batch: 102135		Date Analyzed:	2013-06-10	Analyzed By	: AR		
Prep Batch: 86493		QC Preparation:	2013-06-07	Prepared By:	: AR.		
			MDL				
Parameter	Flag	Cert	Result	Units	RL		
Chloride			< 3.85	mg/Kg	4		

Method Blank (1)) (
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QC Batch: 102164

QC Batch: 102164 Prep Batch: 86555 Date Analyzed: 2013-06-11 QC Preparation: 2013-06-09 Analyzed By: KC Prepared By: KC

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	< 0.00810	mg/Kg	0.02
Toluene		1	< 0.00750	mg/Kg	0.02
Ethylbenzene		ı	< 0.00730	mg/Kg	0.02
Xylene		1	< 0.00700	mg/Kg	0.02

						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	${f Amount}$	Recovery	Limits
Trifluorotoluene (TFT)			1.72	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			1.72	mg/Kg	11	2.00	86	70 - 130

Work Order: 13060337 COG/SRO State Unit Com. 102 SWD Page Number: 13 of 22 Eddy Co., NM

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch:

102081

Date Analyzed:

2013-06-07

Analyzed By: CW

Prep Batch: 86484

QC Preparation: 2013-06-06

Prepared By: CW

			LCS			Spike	Matrix		Rec.
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO		1	247	mg/Kg	1	250	<10.2	99	66.9 - 119.9

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.	\mathbf{Limit}	RPD	Limit
DRO		1	258	mg/Kg	1	250	<10.2	103	66.9 - 119.9	4	20

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

	$_{ m LCS}$	LCSD			$_{ m Spike}$	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	99.9	104	mg/Kg	1	100	100	104	76.8 - 140.2

Laboratory Control Spike (LCS-1)

QC Batch:

102101

Date Analyzed:

2013-06-07

Analyzed By: KC Prepared By: KC

Prep Batch: 86503 QC Preparation: 2013-06-06

LCS Spike Matrix Rec. Param Result Units Dil. Amount Result Rec. Limit 20.3 mg/Kg < 2.32102 70 - 130

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	С	Result	Units	Dil.	${ m Amount}$	Result	Rec.	Limit	RPD	Limit
GRO		1	20.3	mg/Kg	1	20.0	< 2.32	102	70 - 130	0	20

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

	LCS	LCSD			Spike	LCS	LCSD	${ m Rec.}$
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	$_{ m Limit}$
Triffuorotoluene (TFT)	1.83	1.83	mg/Kg	1	2.00	92	92	70 - 130
4-Bromofluorobenzene (4-BFB)	1.94	1.89	mg/Kg	1	2.00	97	94	70 - 130

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COG/SRO State Unit Com. 102 SWD

Eddy Co., NM

Laboratory Control Spike (LCS-1)

QC Batch:

102130

Date Analyzed:

2013-06-10

Analyzed By: AR

Prep Batch: 86493

QC Preparation: 2013-06-07

Prepared By: AR.

			LCS			Spike	Matrix		Rec.
Param	F	C	Result	Units	Dil.	Amount	Result	Rec.	$_{ m Limit}$
Chloride			2630	mg/Kg	1	2500	< 3.85	105	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	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	\mathbf{Limit}	RPD	Limit
Chloride			2510	mg/Kg	1	2500	<3.85	100	85 - 115	5	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:

102135

Date Analyzed:

2013-06-10

Analyzed By: AR

QC Preparation: 2013-06-07 Prep Batch: 86493

Prepared By: AR.

			LCS			Spike	Matrix		Rec.
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			2460	mg/Kg	1	2500	< 3.85	98	85 - 115

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	\mathbf{F}	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2550	mg/Kg	1	2500	< 3.85	102	85 - 115	4	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:

102164

Prep Batch: 86555

Date Analyzed:

2013-06-11

QC Preparation: 2013-06-09

Analyzed By: KC

Prepared By: KC

			LCS			Spike	Matrix		Rec.
Param	\mathbf{F}	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene		1	1.72	mg/Kg	1	2.00	< 0.00810	86	70 - 130
Toluene		1	1.84	mg/Kg	1	2.00	< 0.00750	92	70 - 130
Ethylbenzene		1	1.88	mg/Kg	1	2.00	< 0.00730	94	70 - 130

continued ...

Work Order: 13060337

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COG/SRO State Unit Com. 102 SWD

control spikes continued . . .

			LCS			Spike	Matrix		Rec.
Param	F	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	$_{ m Limit}$
Xylene		1	5.47	mg/Kg	1	6.00	< 0.00700	91	70 - 130

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	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		1	1.76	mg/Kg	1	2.00	< 0.00810	88	70 - 130	2	20
Toluene		1	1.86	mg/Kg	1	2.00	< 0.00750	93	70 - 130	1	20
Ethylbenzene		J	1.90	mg/Kg	1	2.00	< 0.00730	95	70 - 130	1	20
Xylene		1	5.56	mg/Kg	1	6.00	<0.00700	93	70 - 130	2	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.77	1.69	mg/Kg	1	2.00	88	84	70 - 130
4-Bromofluorobenzene (4-BFB)	1.83	1.72	mg/Kg	1	2.00	92	86	70 - 130

Matrix Spike (xMS-1)

Spiked Sample: 330714

QC Batch: Prep Batch: 86484

102081

Date Analyzed:

2013-06-07

Analyzed By: CW

Prepared By: CW

			MS			Spike	Matrix		Rec.
Param	\mathbf{F}	C	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO		1	222	mg/Kg	1	250	88.8	53	36.1 - 147.2

QC Preparation: 2013-06-06

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.	Limit	RPD	Limit
DRO		1	249	mg/Kg	1	250	88.8	64	36.1 - 147.2	12	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	91.3	104	$_{ m mg/Kg}$	1	100	91	104	78.3 - 131.6

Matrix Spike (MS-1)

Spiked Sample: 330830

QC Batch: 102101 Prep Batch: 86503

Date Analyzed: QC Preparation: 2013-06-06

2013-06-07

Analyzed By: KC Prepared By: KC

Work Order: 13060337 COG/SRO State Unit Com. 102 SWD Page Number: 16 of 22 Eddy Co., NM

			MS			Spike	Matrix		Rec.
Param	F	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO		1	18.2	mg/Kg	1	20.0	< 2.32	91	70 - 130

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

			MSD			Spike	Matrix		Rec.		RPD
Param	F	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO		ı	17.4	mg/Kg	1	20.0	< 2.32	87	70 - 130	4	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Triffuorotoluene (TFT)	1.80	1.83	mg/Kg	1	2	90	92	70 - 130
4-Bromoffuorobenzene (4-BFB)	1.92	1.95	mg/Kg	1	2	96	98	70 - 130

Matrix Spike (MS-1) Spiked Sample: 330885

QC Batch: 102130 Prep Batch: 86493 Date Analyzed: 2013-06-10 QC Preparation: 2013-06-07

Analyzed By: AR, Prepared By: AR,

			MS			Spike	Matrix		Rec.
Param	F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			2620	mg/Kg	5	2500	261	94	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			2720	mg/Kg	5	2500	261	98	78.9 - 121	4	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: 331257

QC Batch: 102135 Prep Batch: 86493 Date Analyzed: 2013-06-10 QC Preparation: 2013-06-07

Analyzed By: AR
Prepared By: AR

			MS			$_{ m Spike}$	Matrix		Rec.
Param	\mathbf{F}	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	$_{ m Limit}$
Chloride			4230	nig/Kg	10	2500	1780	98	78.9 - 121

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

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Work Order: 13060337 COG/SRO State Unit Com. 102 SWD Page Number: 17 of 22

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			MSD			Spike	Matrix		Rec.		RPD
Param	F	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			4470	mg/Kg	10	2500	1780	108	78.9 - 121	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: 330883

QC Batch: Prep Batch: 86555

102164

Date Analyzed:

2013-06-11

Analyzed By: KC

QC Preparation: 2013-06-09

Prepared By: KC

			MS			Spike	Matrix		Rec.
Param	\mathbf{F}	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene		1	1.85	mg/Kg	1	2.00	< 0.00810	92	70 - 130
Toluene		1	1.97	mg/Kg	1	2.00	< 0.00750	98	70 - 130
Ethylbenzene		1	2.00	mg/Kg	1	2.00	< 0.00730	100	70 - 130
Xylene		1	5.84	mg/Kg	1	6.00	< 0.00700	97	70 - 130

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

Param	T.	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	R.PD Limit
Larani	I.	\circ	resure	Omes	D11.	Amount	ricour	H.CC.	Limit	ענונו	DIIIII
Benzene		1	1.70	mg/Kg	1	2.00	< 0.00810	85	70 - 130	8	20
Toluene		1	1.80	mg/Kg	1	2.00	< 0.00750	90	70 - 130	9	20
Ethylbenzene		1	1.84	mg/Kg	1	2.00	< 0.00730	92	70 - 130	8	20
Xylene		1	5.37	mg/Kg	1	6.00	< 0.00700	90	70 - 130	8	20

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

	MS	MSD			$_{ m Spike}$	$_{ m MS}$	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.65	1.75	mg/Kg	1	2	82	88	70 - 130
4-Bromofluorobenzene (4-BFB)	1.91	1.80	mg/Kg	1	22	96	90	70 - 130

Work Order: 13060337 COG/SRO State Unit Com. 102 SWD Page Number: 18 of 22 Eddy Co., NM

Calibration Standards

Standard (CCV-1)

QC Batch: 102081

Date Analyzed: 2013-06-07

Analyzed By: CW

				CCVs	CCVs	CCVs	Percent	_
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	256	102	80 - 120	2013-06-07

Standard (CCV-2)

QC Batch: 102081

Date Analyzed: 2013-06-07

Analyzed By: CW

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc .	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	229	92	80 - 120	2013-06-07

Standard (CCV-3)

QC Batch: 102081

Date Analyzed: 2013-06-07

Analyzed By: CW

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	\mathbf{Flag}	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	284	114	80 - 120	2013-06-07

Standard (CCV-1)

QC Batch: 102101

Date Analyzed: 2013-06-07

Analyzed By: KC

				CCVs	CCVs	CCV_8	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		1	mg/Kg	1.00	1.15	115	80 - 120	2013-06-07

Report Date: 112C04983	June 11, 2013				er: 13060337 Juit Com. 102	SWD		mber: 19 of 22 Eddy Co., NM
Standard (C	CCV-2)							
QC Batch: 1	.02101		Date	Analyzed:	2013-06-07		Analy	zed By: KC
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	.Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GR()		1	mg/Kg	1.00	1.04	104	80 - 120	2013-06-07
Standard (C	•		Date	Analyzed:	2013-06-07		Analy	zed By: KC
							_	
				CCVs	CCVs	CCVs	Percent	T
D	T21	Cl	Units	True Conc.	Found Conc.	Percent	Recovery Limits	Date
Param GRO	Flag	Cert	mg/Kg	1.00	1.11	Recovery 111	80 - 120	Analyzed 2013-06-07
Standard (C	CCV-1)							
QC Batch: 1	02130		Date	Analyzed:	2013-06-10		Analy	zed 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	101	101	85 - 115	2013-06-10
Standard (C	CCV-2)							
QC Batch: 1	02130		Date .	Analyzed:	2013-06-10		Analy	zed By: AR
				CCVs	CCVs	CCVs	Percent	

Standard (CCV-1)

Flag

 Cert

Units

mg/Kg

 Param

Chloride

QC Batch: 102135 Date Analyzed: 2013-06-10 Analyzed By: AR

True

Conc.

100

Found

Conc.

98.6

Percent

Recovery

99

Recovery

Limits

85 - 115

Date

Analyzed

2013-06-10

Work Order: 13060337 COG/SRO State Unit Com. 102 SWD Page Number: 20 of 22 Eddy Co., NM

1	T	L	v	()	4	.,	O	۲,)

		_		CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			me/Ke	100	101	101	85 - 115	2013-06-10

Standard (CCV-2)

QC Batch: 102135

Date Analyzed: 2013-06-10

Analyzed By: AR.

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	99.5	100	85 - 115	2013-06-10

Standard (CCV-1)

QC Batch: 102164

Date Analyzed: 2013-06-11

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0858	86	80 - 120	2013-06-11
Toluene		i	mg/kg	0.100	0.0890	89	80 - 120	2013-06-11
Ethylbenzene		1	mg/kg	0.100	0.0879	88	80 - 120	2013-06-11
Xylene		i	mg/kg	0.300	0.256	85	80 - 120	2013-06-11

Standard (CCV-2)

QC Batch: 102164

Date Analyzed: 2013-06-11

Analyzed By: KC

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/kg	0.100	0.0930	93	80 - 120	2013-06-11
Toluene		1	mg/kg	0.100	0.0960	96	80 - 120	2013-06-11
Ethylbenzene		1	mg/kg	0.100	0.0930	93	80 - 120	2013-06-11
Xylene		1	mg/kg	0.300	0.269	90	80 - 120	2013-06-11

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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.
- Qsr Surrogate recovery outside of laboratory limits.
 - U The analyte is not detected above the SDL

Attachments

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The scanned attachments will follow this page.

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

SAMPLE CONDITION WHEN RECEIVED:	ADDRESS:	REMUCISIED OF: (Signature)	Lane	RELINQUISHED BY: (Signature)	RELINQUISHED BY: (Signature)	5%	488	883	982	881	889	1978	818	877	330876 5/29	LAB I.D. NUMBER DATE	PROJECT NO.: // こ Co49 & 3	CLIENT NAME:			Analysis
CEIVED: PHONE: PREMARKS: DATE:	ZIP:	Time:	1607 (TY)	Date: 6-3-13 RECEMBERY (Signature)	Control RECEIVED BY: (Signature)	J + T-1 10'		TI 8' BOTTOM Hole	1 1-1 7'	T-1 6'	7-1 5	1 7-1 4	7.1 38	1 1 7-1 2'	S X T-1 1'	Early SA	PROJECT NAME:	SITE MANAGER: The Tavaces	1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946		s Request of Chain of Custody
TIME:		Time:	Date: /b / D	HS10 amo	Date: 6-3-1- Time: 1530	~<			- C	-	_		-	2	- '	NUMBER OF FILTERED (HCL HNO3 ICE NONE		PRESERVATIVE METHOD			v Record
res	TKC TAVAREL Authorized:	TETRA TECH CONTACT PERSON: Results by:	HAND DELIVERED UPS OTHER:	SAMPLE SHIPPED-BY: (Circle) AIRBILL #:	MARCUS Kingus KE / K Time:	×	~	XX		×.	×.	. ×	×	***	>	PAH 8270 RCRA Meta	als Ag als Ag iles Volatile . 8240/8 mi. Vol. .0/608 608	As Ba C As Ba C Ses 3260/624 B270/625	d Cr Pb Hg Se	ANALYSIS REQUEST (Circle or Specify Method No.)	PAGE: / OF: 2

Analysis Request of Chain of Custody Record											PAGE: 2 OF: 2 ANALYSIS REQUEST																				
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