		SI		ATION		· · · · · · · · · · · · · · · · · · ·		
		Repor	t Type: Clo	sure Re	eport			
General Site Info	rmation:					ROLW		
Site:		GJ West Co	op Unit #7					
Company:		COG Operat	ting LLC	•				
Section, Townsh	ip and Range	Unit H	Sec 28	T17S	R29E			
Lease Number:		API-30-015-	03170					
County:		Eddy Count	У					
GPS:			32.80643° N			104.07	7265° W	
Surface Owner:		State				·		
Mineral Owner:					7 1		for a find we the area for the	
Directions:		onto CR212 a	nd travel 0.7 miles	to site.				
Rélease Data:								
Date Released:		9/4/2010						
Type Release:		Produced Flu	uid					
Source of Contam	nination:	Steel Flowlin	e					
Fluid Released:		10 bbls						
Fluids Recovered	•	8 bbls						
Official Commun	ication:	STREE WAR						
Name:	Pat Ellis	•		Ike Tavarez				
Company:	COG Operating, LL	C		Tetra Tech				
Address:	550 W. Texas Ave.	Ste. 1300		1910 N. Big Spring				
P.O. Box								
City:	Midland Texas 797	/01		Midland Toyas				
Dhono numbor:	(420) 696 2022	01			(422) 425 2	070		
	(432) 000-3023				(432) 420-3	070		
Fax:	(432) 684-7137				ilia tavara	@tatuata ala		
Email:	pellis@conchoreso	urces.com			IKe.tavarez	wtetratech	.com	
Ranking Criteria								
Depth to Groundw	ater		Banking Score	1		Site Data		
<50 ft			20					
50-99 ft			10					
>100 ft.			0			0		
WellHead Protection	on:		Ranking Score			Site Data		
Water Source <1,0	00 ft., Private <200 fi	t.	20					
Water Source >1,0	00 ft., Private >200 ft	t.	0	<u> </u>	·····	0		
Surface Body of W	ater:		Ranking Score	1		Site Data		
<200 ft.	······	-	20	1				
200 ft - 1,000 ft.			10					
>1,000 ft.			0			0	generation of the second second second second	
्र के बेंग्रे के बिल्क्स के बिल्क् स्टब्स के बिल्क्स के बिल	al Ranking Score:		0					
		Accept	able Soil RRAL	mg/kg)				
		Benzene	Total BTEX	ТРН				
		10	50	5,000				



RECEIVED FEB 2 8 2012 NMOCD ARTESIA

February 2, 2012

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., GJ West Coop Unit #7 Flow Line, Unit H, Section 28, Township 17 South, Range 29 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the GJ West Coop Unit #7 Flow Line located in Unit H, Section 28, Township 17 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.80643°, W 104.07265°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on September 4, 2010, and released approximately ten (10) barrels of produced fluid from a steel flow line. To alleviate the problem, COG personnel replaced the line with a poly line. Eight (8) barrels of standing fluids were recovered. The spill initiated southwest of the well pad and affected an area 15' x 70' in the pasture. The initial and final C-141 forms are enclosed in Appendix A.

Groundwater

No water wells were listed within Section 28. The Geology and Groundwater Resources of Eddy County, New Mexico (Report 3) shows wells in Section 29 and Section 22, with a depth to groundwater of 210' and 80' below surface. According to the NMOCD groundwater map, the average



depth to groundwater in this area is greater than 100' below surface. The average depth to groundwater map is shown in Appendix B.

Regulatory

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

Soil Assessment and Analytical Results

On September 1, 2010, Tetra Tech personnel inspected and sampled the spill area. One (1) auger hole (AH-1) was installed using a stainless steel hand auger to assess the impacted soils. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1. The auger hole location is shown on Figure 3.

Referring to Table 1, none of the samples for TPH and BTEX exceeded the RRAL. Elevated chloride concentrations were detected ranging from 1,740 mg/kg at 0-1' to 14,300 mg/kg at 3-3.5'. The chloride impact was not vertically defined. In order to delineate the chloride impact, a soil boring was installed utilizing an air rotary drilling rig.

On February 17, 2011, Tetra Tech personnel supervised the installation of one soil boring (SB-1). Soil samples were collected to a depth of 30.0' below surface. Referring to Table 1, the soil boring did show a shallow impact to soil, compared AH-1. Elevated chloride concentrations were detected from surface to 5.0' and significantly declined to 399 mg/kg at 7.0' below surface. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The soil boring results are summarized in Table 1. The soil boring location is shown on Figure 3.



Closure Activities

Based on the approved work plan, Tetra Tech personnel supervised the excavation of the site. The final excavation depths of the soil remediation were met as stated in the approved work plan. The spill area was excavated to approximately 8.0' below surface. A total of 540 cubic yards of soil were excavated and hauled away for proper disposal. The excavation depths are highlighted in Table 1 and shown on Figure 4. Once excavated to the appropriate depths, the excavation was backfilled with clean soil to grade.

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

Respectfully submitted,

TETRATECH Ike Tavarez, P&

Senior Project Manager

cc: Pat Ellis - COG

FIGURES

dor Seco Wind mail		Runch 3			
. E-2	35 arr	Ninze III			
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Organ By Isabel Marmoh





Drawn By Isabel Marmolejo

TABLES

Table 1 COG Operating LLC. GJ WEST CO-OP #7 Eddy County, New Mexico

Sample	Sample	Sample	Depth	Soil	Status	т	PH (mg/k	g)	Benzene	Toluene	Ethlybenzene	Xvlene	Chloride
מו	Date	Depth (ft)	(BEB)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-1	9/22/2010	0-1			X	· 940	3,270	4,210	<0.500	6.58	10.5	-13:5	1,740
	в	1-1.5	1	11 2 4 3 2 3 4 3	X	2,360	2,380	4,740	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	يند بيلو ويدر			3,720
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	ч	3-3.5			X					1. C.			14,300
	а	4-4.5			Ŷ								* ³ 8,560
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	u	8-8,5	\$ *		X	•	2. Y. S. A.	34.4					3,660
	n	9-9.5'		х		-	-	-	•	-	-	-	3,230
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SB-1	2/17/2011	0-1'			X	N						ê. 4	a 1,040
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	u	5			X	1	2						4,180
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	11	10'		х		-	-	-	-	-	-	-	<200
	n	15'		х		-	-	-	-	•	-	-	<200
	в	20'		х		-	-	-	-	-	-	-	<200
	в	25'	·····	X		-	-	-	-	•	-	-	<200
	u	30'		x		-	-	-	-	-	-	-	<200

BEB Below Excavation Bottom

(--) Not Analyzed

Excavated Depths

APPENDIX A

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District I 1625 N. French DL., 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 FEB 2 8 2012

NMOCD ARTES At Copies to appropriate

Form C-141 Revised October 10, 2003

with Rule 116 on back

side of form

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

Santa Fe, NM 87505 Release Notification and Corrective Action

	Refease Polificat	ion and corrective Actio	11	
		OPERATOR	Initial Report	Final Report
Name of Company COG Operati	ng LLC	Contact Pat Ellis		
Address 550 W. Texas, Suite 130	Midland, Texas 79701	Telephone No. (432) 230-0077		
Facility Name GJ West Coop Unit	#7	Facility Type Flowline		
Surface Owner: State	Mineral Own	er	Lease No. B-255	170

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	28	178	29E					Eddy
[-

Latitude 32 48.380 Longitude 104 04.374

NATURE OF RELEASE

Type of Release: Produced Fluid	Volume of Release 10 bbls	Volume Re	ecovered 8 bbls
Source of Release: Steel Flowline	Date and Hour of Occurrence 09/04/2010	Date and F 09/04/2010	Iour of Discovery) 4:00p.m.
Was Immediate Notice Given?	If YES, To Whom?	1.	
🗌 Yes 🛛 No 🖾 Not Required			
By Whom? Josh Russo	Date and Hour		
Was a Watercourse Reached?	If YES, Volume Impacting the Wa	atercourse.	
L Yes 🛛 No	N/A		
If a Watercourse was Impacted, Describe Fully.*			······
N/A			
Describe Cause of Problem and Remedial Action Taken.*	illi ≣inti que en en en entre en esta e		
The steel flowline developed a weak spot and eventually ruptured causin	g this release. The steel flowline will	be replaced w	ith a new poly flowline.
Describe Area Affected and Cleanup Action Taken.*			
	~		
letra Tech personal inspected the site and collected samples to define sp.	ills extent. Soil that exceeded RRAL v	was removed a	ind hauled away for proper
for review.	n material. Tetra Tech prepared a clos	sure report and	submitted it to the typiced
I hereby certify that the information given above is true and complete to	the best of my knowledge and underst	and that pursu	ant to NMOCD rules and
regulations all operators are required to report and/or file certain release in the abult of the certain release in the certa	notifications and perform corrective a	ctions for relea	ases which may endanger
should their operations have failed to adequately investigate and remedia	te contamination that pose a threat to	ground water	surface water human health
or the environment. In addition, NMOCD acceptance of a C-141 report of	does not relieve the operator of respor	sibility for co	mpliance with any other
federal, state, or local lays and/or regulations.			• • • • • • • • • • • • • • • • • • •
1hcD	<u>OIL CONSER</u>	VATION I	DIVISION
Signatura			
Signature.	American Internet in Construction		
Printed Name: Ike Tavarez (AgonT Su COG)	Approved by District Supervisor:		
Title: Project Manager	Approval Date:	Expiration D	ate:
F-mail Address: Ike Tavarez@TetraTech.com	Conditions of Approval:		
	conditions of Approval.		Attached
Date: 2-13-12 Phone: (432) 682-4559			

^c 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

			Ren	ease Notific	catio	n and Co	prective A	ction				
						OPERA'	<u>FOR</u>		🛛 Initi	al Report		Final Rep
Name of Co	ompany	COG OP	ERATIN	IG LLC		Contact	P	at Ellis				
Address	550 W.	Texas. Suite	e 100. Mi	dland, TX 7970	1	Telephone 1	<u>No. 432-</u>	230-007	7			
Facility Na	me	GI WEST	COOPI	JNIT #7		Facility Typ	e Fl	owline				
Surface Ow	ner State	9		Mineral C	Owner				Lease N	No. B-25 (API	5 #)30-0	15-03170
				LOC	ATIC	N OF RE	LEASE					
Unit Lotter H	Section 28	Fownship 178	Range 29E	Feet from the	Nort	h/South Line	Feet from the	East/W	'est Line	County	Eddy	
	<u></u>	I <u>, </u>		Latitude 32	48.380	Longiti	ude 104 04.374	A				
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Was Immedi	ate Notice (Diven?	Yes 🗵	No 🛛 Not R	equired	If YES. To	Whom?					
By Whom?						Date and H	lour					
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APPENDIX B

Water Well Data Average Depth to Groundwater (ft) COG - GJ West Coop Unit #7 Eddy County, New Mexico

16 9	South	2	28 East			16 Se	outh	2	29 East			16	South	3	0 East
5	4	3	2	1	6	5	4	3	2	1	6	5	4	3	2
8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11
17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14
20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23
29	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26
32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35
17 :	South		28 East			17 S	outh	2	29 East		1	17	South	3	0 East
5	4	З	2	1	6	5	4	3	2	1	6	5	4	3	2
8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11
17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14
20	21	22	23	24	19	20	21	22	80 23	24	19	20	21	22	23
29	28	27	26	25	30	29 210	28 Site	27	26	25	30	29	28	27	26
32	33	34 53	35	36	31	32	33	34	35 153	36	31	32	33	34	35
18 9	South		28 East			18 Se	outh		29 East			18	South	3	0 East
5	4	3	2	1	6	5	4	3	2	1	6	5	4	3	2
8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11
17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14
20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23
29	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26
32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35
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New Mexico State Engineers Well Reports

USGS Well Reports

Geology and Groundwater Conditions in Southern Eddy, County, NM

NMOCD - Groundwater Data

APPENDIX C

-

Summary Report

Tom Franklin Tetra Tech 1910 N. Big Spring Street Midland, TX 79705

Report Date: February 24, 2011

Work Order: 11022110

Project Location:Eddy County, NMProject Name:COG/GJ West Co-op #7Project Number:114-6400689

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
258143	SB-1 0-1'	soil	2011-02-17	00:00	2011-02-21
258144	SB-1 3'	soil	2011-02-17	00:00	2011-02-21
258145	SB-1 5'	soil	2011-02-17	00:00	2011-02-21
258146	SB-1 7'	soil	2011-02-17	00:00	2011-02-21
258147	SB-1 10'	soil	2011-02-17	00:00	2011-02-21
258148	SB-1 15'	soil	2011-02-17	00:00	2011-02-21
258149	SB-1 20'	soil	2011-02-17	00:00	2011-02-21
258150	SB-1 25'	soil	2011-02-17	00:00	2011-02-21
258151	SB-1 30'	soil	2011-02-17	00:00	2011-02-21

Sample: 258143 - SB-1 0-1'

Param	Flag	Result	Units	\mathbf{RL}
Chloride		1040	mg/Kg	4.00

Sample: 258144 - SB-1 3'

Param	Flag	\mathbf{Result}	Units	\mathbf{RL}
Chloride		9380	mg/Kg	4.00

Sample: 258145 - SB-1 5'

continued ...

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Report Date: Febru	nary 24, 2011	Work Order: 11022110	Page	Number: 2 of 2
sample 258145 cont	tinued			
Param	Flag	Result	Units	RL
Param	Flag	Result	Units	RL
Chloride		4180	mg/Kg	4.00
Sample: 258146	- SB-1 7'			
Param	Flag	Result	Units	\mathbf{RL}
Chloride		399	mg/Kg	4.00
Sample: 258147 -	- SB-1 10'			
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00
Sample: 258148	- SB-1 15'			
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00
Sample: 258149	- SB-1 20'			
Param	Flag	Result	Units	\mathbf{RL}
Chloride		<200	mg/Kg	4.00
Sample: 258150 -	- SB-1 25'			
Param	Flag	Result	Units	\mathbf{RL}
Chloride		<200	mg/Kg	4.00
Sample: 258151 -	- SB-1 30'			
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

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6701 Aberdeen Avenuel Suite 9 200 East Sunset Road, Suite E 5002 Basin Street, Suite Ar 6015 Harris Parkway, Sinte 110 - Ft. Worth, Texas 76132

El Paso, Texas 79922 888+558+3443 Midland, lexas 79703 F-Mail lab@traceanalysis.com

806 • 794 • 1296 FAX 806 • 794 • 1298 915+585+3443 432 • 689 • 6301 817 • 201 • 5260

FAX 915+585+4944 FAX 432 • 689 • 6313

WBENC: 237019

1752439743100-86536 HUB: NCTRCA WFWB38444Y0909

DBE: VN 20657

NELAP Certifications

Certifications

Lubbock: T104704219-08-TX LELAP-02003 Kansas E-10317

T104704221-08-TX El Paso: LELAP-02002

Midland: T104704392-08-TX

Analytical and Quality Control Report

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

Report Date: February 24, 2011

Work Order: 11022110

Project Location: Eddy County, NM Project Name: COG/GJ West Co-op #7 **Project Number:** 114-6400689

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

			Date	lime	Date
Sample	Description	Matrix	Taken	Taken	Received
258143	SB-1 0-1'	soil	2011-02-17	00:00	2011-02-21
258144	SB-1 3'	soil	2011-02-17	00:00	2011-02-21
258145	SB-1 5'	soil	2011-02-17	00:00	2011-02-21
258146	SB-1 7'	soil	2011-02-17	00:00	2011-02-21
258147	SB-1 10'	soil	2011-02-17	00:00	2011-02-21
258148	SB-1 15'	soil	2011-02-17	00:00	2011-02-21
258149	SB-1 20'	soil	2011-02-17	00:00	2011-02-21
258150	SB-1 25'	soil	2011-02-17	00:00	2011-02-21
258151	SB-1 30'	soil	2011-02-17	00:00	2011-02-21

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

Michael abel

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

Standard Flags

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

Samples for project COG/GJ West Co-op #7 were received by TraceAnalysis, Inc. on 2011-02-21 and assigned to work order 11022110. Samples for work order 11022110 were received intact at a temperature of 0.7 C.

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

		Prep	\mathbf{Prep}	\mathbf{QC}	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (Titration)	SM 4500-Cl B	66730	2011-02-22 at 09:19	77850	2011-02-23 at 14:41
Chloride (Titration)	SM 4500-Cl B	66730	2011-02-22 at $09:19$	77851	2011-02-23 at 14:42

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 11022110 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

.

Analytical Report

Sample: 258143 - SB-1 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride 77850 66730	(Titration)	Analytical Method: Date Analyzed: Sample Preparation	SM 4500-Cl B 2011-02-23 : 2011-02-22	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Parameter		Flag	RL Result	Units	Dilution	BL
Chloride			1040	mg/Kg	50	4.00

Sample: 258144 - SB-1 3'

Parameter	Flag	Result	Units	Dilution	RL
		RL			
Prep Batch:	66730	Sample Preparation:	2011-02-22	Prepared By:	\mathbf{AR}
QC Batch:	77851	Date Analyzed:	2011-02-23	Analyzed By:	AR.
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland				

Sample: 258145 - SB-1 5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 77851 66730	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-02-23 2011-02-22	Prep Method: Analyzed By: Prepared By:	N/A AR AR
		RL			
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		4180	mg/Kg	100	4.00

Sample: 258146 - SB-1 7'

Prep Batch:	66730	Sample Preparation:	2011-02-22	Prepared By:	AR
QC Batch:	77851	Date Analyzed:	2011-02-23	Analyzed By:	\mathbf{AR}
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland				

 $continued \ldots$

Report Date: February 24, 2011	Work Order: 11022110	Page Number: 5 of 9
114-6400689	COG/GJ West Co-op #7	Eddy County, NM

sample 258146 continued ...

		RL			
Parameter	Flag	Result	Units	Dilution	RL
		BL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		399	mg/Kg	50	4.00

Sample: 258147 - SB-1 10'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 77851 66730	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-02-23 2011-02-22	Prep Method: Analyzed By: Prepared By:	N/A AR AR
		RL			
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		<200	mg/Kg	50	4.00

.

Sample: 258148 - SB-1 15'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 77851 66730	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-02-23 2011-02-22	Prep Method: Analyzed By: Prepared By:	N/A AR AR
		RL			
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		<200	mg/Kg	50	4.00

Sample: 258149 - SB-1 20'

Chloride		<200	mg/Kg	50	4.00
Parameter	Flag	RL Result	Units	Dilution	RL
Prep Batch:	66730	Sample Preparation:	2011-02-22	Prepared By:	AR
QC Batch:	77851	Date Analyzed:	2011-02-23	Analyzed By:	AR
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland				

Report Date 114-6400689	: February 24, 2011	Work Order: 11022110 COG/GJ West Co-op #7		Page Number: 6 of Eddy County, N	
Sample: 25	8150 - SB-1 25'				
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 77851 66730	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-02-23 2011-02-22	Prep Met Analyzed Prepared	hod: N/A By: AR By: AR
D		RL		D .1	
Parameter Chloride	Flag	<pre>Result <200</pre>	mg/Kg	Dilution 50	<u>RL</u> 4.00
Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch:	8151 - SB-1 30' Midland Chloride (Titration) 77851 66730	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-02-23 2011-02-22	Prep Met Analyzed Prepared	hod: N/A By: AR By: AR
Parameter	Flag	RL Result	Units	Dilution	RL
Chloride	· · · · · · · · · · · · · · · · · · ·	<200	mg/Kg	50	4.00
Method Bla	ank (1) QC Batch: 77850				
QC Batch: Prep Batch:	77850 66730	Date Analyzed: 2011- QC Preparation: 2011-	-02-23 -02-22	Analyzed Prepared	l By: AR By: AR
Parameter	Flag	MDL Result		Units	\mathbf{RL}
Chloride		<2.18		mg/Kg	4
Method Bla	ank (1) QC Batch: 77851				
QC Batch: Prep Batch:	77851 66730	Date Analyzed: 2011- QC Preparation: 2011-	-02-23 -02-22	Analyzed Prepared	l By: AR. l By: AR.
Parameter Chloride	Flag	MDL <u>Result</u> <2.18		Units mg/Kg	RL4
	······································	· · · · · · · · · · · · · · · · · · ·			

Report Date: February 24, 201 114-6400689	Work Order: 11022110Page Number: 7 oCOG/GJ West Co-op #7Eddy County, N						er: 7 of 9 unty, NM		
Laboratory Control Spike (LCS-1)								
QC Batch: 77850		Date Ar	nalvzed:	2011-02-23	3		Ar	nalvzed F	By: AR
Prep Batch: 66730		QC Pre	paration:	2011-02-22	2		Pr	epared E	By: AR
	LC	S			Spike	Ma	atrix		Rec.
Param	Rest	ılt	Units	Dil.	Amount	Re	sult I	lec.	Limit
Chloride	96.	1 :	mg/Kg	1	100	<2	2.18	96	85 - 115
Percent recovery is based on the	e spike result.	RPD is l	based on t	the spike an	d spike du	plicate r	esult.		
	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	105	mg/Kg	; 1	100	<2.18	105	85 - 115	9	20
Percent recovery is based on the	e spike result.	RPD is l	based on t	the spike an	d spike du	plicate r	esult.		
	-			-					
Laboratory Control Spike (LCS-1)								
QC Batch: 77851		Date Ar	nalyzed:	2011-02-23	3		An	alyzed B	By: AR
Prep Batch: 66730		QC Prep	paration:	2011-02-22	2		\Pr	epared B	y: AR
	LC	s			Spike	Ma	trix		Rec.
Param	Resu	ılt	Units	Dil.	Amount	Rea	sult F	lec.	Limit
Chloride	97.	3 1	mg/Kg	1	100	<2	.18	97	85 - 115
Percent recovery is based on the	e spike result.	RPD is l	based on t	the spike an	d spike duj	olicate r	esult.		
	LCSD			Spike	Matrix		Rec		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	103	mg/Kg	1	100	<2.18	103	85 - 115	6	20
Percent recovery is based on the	e spike result.	RPD is l	based on t	the spike an	d spike du	olicate r	esult.		
U U	1			•					
Matrix Spike (MS-1) Spil	ed Sample: 25	8143							
QC Batch: 77850		Date An	alyzed:	2011-02-23	}		An	alyzed B	y: AR
Prep Batch: 66730		QC Prej	paration:	2011-02-22	2		Pre	epared B	y: AR
	MS	5			Spike	Ma	trix		Rec.
Param	Resu	ılt	Units	Dil.	Amount	Res	sult R	.ec.	Limit
Chloride	1090	ю 1	mg/Kg	100	10000	10	40	99	85 - 115
Percent recovery is based on the	e spike result.	RPD is b	based on t	he spike an	d spike dup	olicate re	esult.		
_	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Uhloride	11400	mg/Kg	100	10000	1040	104	85 - 115	4	20

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

Report Date 114-6400689	e: February 24)	4, 2011		Work O COG/GJ	rder: 11022 West Co-o	2110 p #7			Page N Eddy	umber 7 Cour	: 8 of 9 ity, NM
Matrix Spi	ike (MS-1)	Spiked Sample: 2	58151								
QC Batch: Prep Batch:	77851 66730		Date A QC Pre	nalyzed: paration:	2011-02-2 2011-02-2	3 2			Analyz Prepar	ed By ed By:	AR AR
		Ν	ſS			Spike	Ma	trix	_		Rec.
Param		Rea	sult	Units		Amount	Re	sult	<u>Rec.</u>		Limit
Chloride		100		mg/Kg	100	10000	<:		100	8	9 - 119
Percent reco	overy is based of	on the spike result	. RPD is	based on t	the spike ar	nd spike duj	plicate r	esult.			
Param		MSD Besult	Linits	Dil	Spike Amount	Matrix Result	Rec	Rec Limi	:. it B	מפ	RPD Limit
Chloride		10400	mg/K	z 100	10000	<218	104	85 - 1	15	$\frac{4}{4}$	20
Percent reco	overy is based o	on the spike result	RPD is	based on t	he spike ar	nd spike dur	olicate r	esult.			
	2	-			-						
Standard ((ICV-1)										
QC Batch:	77850		Date A	nalyzed:	2011-02-23				Analyz	ed By	AR.
			ICVs	IC	Vs	ICVs		Percent	t		
			True	Fou	ınd	Percent		Recover	У	I	Date
Param	Flag	Units	Conc.	Co	nc.	Recovery		Limits		An	alyzed
Chloride		mg/Kg	100	98	.1	98		85 - 115	5	201	1-02-23
Standard ((CCV-1)										
Standard (QC Batch:	(CCV-1) 77850		Date A	nalyzed:	2011-02-23				Analyz	ed By:	AR
Standard (QC Batch:	(CCV-1) 77850		Date Ar	nalyzed: CC	2011-02-23 Vs	CCVs		Percent	Analyz	ed By:	AR
Standard (QC Batch:	(CCV-1) 77850		Date Ar CCVs True	nalyzed: CC Foi	2011-02-23 Ws md	CCVs Percent]	Percent Recovery	Analyz ; y	ed By: I	AR Date
Standard (QC Batch: Param	(CCV-1) 77850 Flag	Units	Date An CCVs True Conc.	nalyzed: CC Fou Co	2011-02-23 Vs ind nc.	CCVs Percent Recovery]	Percent Recover Limits	Analyz ; y	ed By: E Ana	AR Date alyzed
Standard (QC Batch: Param Chloride	(CCV-1) 77850 Flag	Units mg/Kg	Date An CCVs True Conc. 100	nalyzed: CC Fou Co 1(2011-02-23 Vs ind nc.)2	CCVs Percent Recovery 102]	Percent Recover Limits 85 - 115	Analyz ; y 5	ed By: E <u>An</u> 2011	AR Date alyzed 1-02-23
Standard (QC Batch: Param Chloride Standard ((CCV-1) 77850 Flag (ICV-1)	Units mg/Kg	Date An CCVs True Conc. 100	nalyzed: CC Fou Co 1(2011-02-23 Ws ind nc.)2	CCVs Percent Recovery 102]	Percent Recover Limits 85 - 115	Analyz ; y 5	ed By: I And 2011	AR Date alyzed I-02-23
Standard (QC Batch: Param Chloride Standard (QC Batch:	(CCV-1) 77850 Flag (ICV-1) 77851	Units mg/Kg	Date An CCVs True Conc. 100 Date An	nalyzed: CC Fou Co 10 nalyzed:	2011-02-23 Ws ind nc.)2 2011-02-23	CCVs Percent Recovery 102]	Percent Recover Limits 85 - 115	Analyz y 5 Analyz	ed By: I <u>Ana</u> 2011 ed By:	AR Date alyzed I-02-23 AR
Standard (QC Batch: Param Chloride Standard (QC Batch:	(CCV-1) 77850 Flag (ICV-1) 77851	Units mg/Kg	Date An CCVs True Conc. 100 Date An	nalyzed: CC Fou Co 10 nalyzed:	2011-02-23 Vs ind nc.)2 2011-02-23 Vs	CCVs Percent Recovery 102		Percent Recover Limits 85 - 115 Percent	Analyz y 5 Analyz	ed By: I An: 2011 ed By:	AR Date alyzed I-02-23 AR
Standard (QC Batch: Param Chloride Standard (QC Batch:	(CCV-1) 77850 Flag (ICV-1) 77851	Units mg/Kg	Date An CCVs True Conc. 100 Date An ICVs True	nalyzed: Fou Co 10 nalyzed: IC Fou	2011-02-23 Ws ind nc. 02 2011-02-23 Vs ind	CCVs Percent Recovery 102 ICVs Percent]	Percent Recover Limits 85 - 115 Percent Recover	Analyz y Analyz	ed By: I And 2011 ed By: I	AR Date <u>alyzed</u> -02-23 AR AR
Standard (QC Batch: Param Chloride Standard (QC Batch: Param	(CCV-1) 77850 Flag (ICV-1) 77851 Flag	Units mg/Kg Units	Date An CCVs True Conc. 100 Date An ICVs True Conc.	nalyzed: Fou Co 10 nalyzed: IC Fou Co	2011-02-23 Vs ind nc.)2 2011-02-23 Vs ind nc.	CCVs Percent Recovery 102 ICVs Percent Recovery]	Percent Recover Limits 85 - 115 Percent Recover Limits	Analyz y Analyz y	ed By: I Ana 2011 ed By: I Ana	AR Date alyzed I-02-23 AR Date alyzed

Standard (CCV-1)

QC Batch: 77851

Date Analyzed: 2011-02-23

Analyzed By: AR

Report Date: February 24, 2011 114-6400689			C	Work Order: 11 OG/GJ West O	Page Number: 9 of 9 Eddy County, NM		
Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.9	99	85 - 115	2011-02-23

XW0#!11022110		
Analysis Request of Chain of Custody	Record	PAGE: OF:
	,	ANALYSIS REQUEST (Circle or Specify Method No.)
TETRATECH 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946		DS (Ext. to C35) d Cr Pb Hg Se rd Vr Pd Hg Se TDS
CLIENT NAME: COG Ike Guare 2	PRESERVATIVE	TX10 5 Ba C 5 Ba C 560/624 015, pH,
PROJECT NO.: 114-6400689 PROJECT NAME: GJ West COOP #7	CONTAL CONTAL	5 MOD. 5 MOD. 5 MOD. 6 MOD. 6 Mol. Vol. 8 Mil. Vol. 8 Mil. Vol. 8 Mol. Vol. 8 Mil. Vol. 8 Mol. Vol. 8 Mil. 10 Mil. Vol. 8 Mil. 10 Mil.
LAB I.D. NUMBER DATE TIME TIME TIME TIME TIME SAMPLE IDENTIFICATION	NUMBER OF FILTERED (HCL HNO3 ICE NONE	BTEX 80211 TPH 8015 PAH 8270 RCRA Meta TCLP Volati TCLP Volati TCLP Sami RCI GC.MS Sami RCI GC.MS Sami RCI Alpha Beta Pest 8080/6 Alpha Beta Alpha Beta PLM Asbeta PLM Asbeta
258143 2117 S X SB-1 0-1'	I X	
144 SB-1 3'		
145 50-1 5'		
146 SB-1 7'	\ X	
147 SB-1 10'	\ X	
148 SB-1 15'	1 X	
149 SD-1 20'	I X	
150 SB-1 25'	1 X	
151 1 1 SB-1 30'		
RELINQUISHED BY: (Signature) Date: <u>"L-C)-11</u> RECEIVED BY: (Signature) Time: <u>UT50</u>	0.70 Time: 2:50	SAMPLED BY: (Print & Initial) Kin Date: 2/17/11-
RELINQUISHED BY: (Signature) / Date: PECEIVED BY: (Signature) / Time:	Date: Time:	SAMPLE SHIPPED BY: (Circle) AIRBILL #:
RELINQUISHED BY: (Signature) Date: RECEIVED BY: (Signature) Time:	Date: Time:	TETRA TECH CONTACT PERSON: Results by:
RECEIVING LABORATORY: TRACE RECEIVED BY: (Signature) ADDRESS: (OCAND) STATE: ZIP: CITY: ZIP:		- Dice Evance RUSH Charges Authorized:
SAMPLE CONDITION WHEN RECEIVED: REMARKS:	IIME:	Yes No
10,7° cintant XULL LODTS - Min	tland	

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

Summary Report

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

Report Date: October 5, 2010

Work Order: 10092339

Project Location:	Eddy County, NM
Project Name:	COG/GJ West Co-op #7
Project Number:	114-6400689

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
245657	AH-1 0-1'	soil	2010-09-22	00:00	2010-09-23
245658	AH-1 1-1.5'	soil	2010-09-22	00:00	2010-09-23
245659	AH-1 2-2.5'	soil	2010-09-22	00:00	2010-09-23
245660	AH-1 3-3.5'	soil	2010-09-22	00:00	2010-09-23
245661	AH-1 4-4.5'	soil	2010-09-22	00:00	2010-09-23
245662	AH-1 5-5.5'	soil	2010-09-22	00:00	2010-09-23
245663	AH-1 6-6.5'	soil	2010-09-22	00:00	2010-09-23
245664	AH-1 7-7.5'	soil	2010-09-22	00:00	2010-09-23
245665	AH-1 8-8.5'	soil	2010-09-22	00:00	2010-09-23
245666	AH-1 9-9.5'	soil	2010-09-22	00:00	2010-09-23

	BTEX				TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
245657 - AH-1 0-1'	< 0.500	6.58	10.5	13.5	3270	940
245658 - AH-1 1-1.5'					2380	2360
245659 - AH-1 2-2.5'					289	330

Sample: 245657 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		1740	mg/Kg	4.00

Sample: 245658 - AH-1 1-1.5'

continued ...

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Report Date: Octo	ber 5, 2010	Work Order: 10092339	Page	Number: 2 of 3
sample 245658 con	tinued			
Param	Flag	Result	Units	RL
Param	Flag	Result	Units	RL
Chloride		3720	mg/Kg	4.00
Sample: 245659	- AH-1 2-2.5'			
Param	Flag	Result	Units	RL
Chloride		12600	mg/Kg	4.00
Sample: 245660	- AH-1 3-3.5'			
Param	Flag	Result	Units	RL
Chloride		14300	mg/Kg	4.00
Sample: 245661	- AH-1 4-4.5'			
Param	Flag	Result	Units	RL
Chloride		8560	mg/Kg	4.00
Sample: 245662	- AH-1 5-5.5'			
Param	Flag	Result	Units	\mathbf{RL}
Chloride		6390	mg/Kg	4.00
Sample: 245663	- AH-1 6-6.5'			
Param	Flag	Result	Units	\mathbf{RL}
Chloride		7900	mg/Kg	4.00
Sample: 245664 -	- AH-1 7-7.5'			
Sample: 245664 - Param	- AH-1 7-7.5' Flag	Result	Units	RL

Sample: 245665 - AH-1 8-8.5'

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Report Date: October 5, 2010		Work Order: 10092339	Pag	Page Number: 3 of 3	
Param	Flag	Result	Units	RL	
Chloride		3660	mg/Kg	4.00	
Sample: 245666	- AH-1 9-9.5'				
Param	Flag	Result	Units	RL	
Chloride		3230	mg/Kg	4.00	

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E-Mail: lab@traceanalysis.com

WBENC: 237019

HUB:1752439743100-86536NCTRCAWFWB38444Y0909

Certifications

DBE: VN 20657

NELAP Certifications

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

Analytical and Quality Control Report

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

Report Date: October 5, 2010

Work Order: 10092339

Project Location:Eddy County, NMProject Name:COG/GJ West Co-op #7Project Number:114-6400689

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
245657	AH-1 0-1'	soil	2010-09-22	00:00	2010-09-23
245658	AH-1 1-1.5'	soil	2010-09-22	00:00	2010-09-23
245659	AH-1 2-2.5'	soil	2010-09-22	00:00	2010-09-23
245660	AH-1 3-3.5'	soil	2010-09-22	00:00	2010-09-23
245661	AH-1 4-4.5'	soil	2010-09-22	00:00	2010-09-23
245662	AH-1 5-5.5'	soil	2010-09-22	00:00	2010-09-23
245663	AH-1 6-6.5'	soil	2010-09-22	00:00	2010-09-23
245664	AH-1 7-7.5'	soil	2010-09-22	00:00	2010-09-23
245665	AH-1 8-8.5'	soil	2010-09-22	00:00	2010-09-23
245666	AH-1 9-9.5'	soil	2010-09-22	00:00	2010-09-23

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

Michael abel

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

Standard Flags

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

Case Narrative

Samples for project COG/GJ West Co-op #7 were received by TraceAnalysis, Inc. on 2010-09-23 and assigned to work order 10092339. Samples for work order 10092339 were received intact at a temperature of 3.1 C.

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

		Prep	Prep	\mathbf{QC}	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	63331	2010-09-24 at 16:00	73941	2010-09-28 at 11:21
Chloride (Titration)	SM 4500-Cl B	63409	2010-09-28 at 10:14	74096	2010-10-05 at 10:22
TPH DRO - NEW	S 8015 D	63364	2010-09-24 at 09:40	73844	2010-09-24 at 09:40
TPH DRO - NEW	S 8015 D	63468	2010-09-29 at 11:13	73971	2010-09-29 at 11:13
TPH GRO	S 8015 D	63331	2010-09-24 at 16:00	73937	2010-09-28 at 11:48
TPH GRO	S 8015 D	63453	2010-09-29 at 09:00	73975	2010-09-29 at 11:25

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 10092339 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Analytical Report

Sample: 245657 - AH-1 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 73941 63331			Analytical I Date Analy Sample Pre	Method: zed: paration:	S 8021B 2010-09-28 2010-09-24		Prep Met Analyzed Prepared	hod: S 5035 By: AG By: AG
				\mathbf{RL}					
Parameter		Flag		Result		Units]	Dilution	RL
Benzene				< 0.500		mg/Kg		50	0.0100
Toluene				6.58		mg/Kg		50	0.0100
Ethylbenzene				10.5		mg/Kg		50	0.0100
Xylene				13.5		mg/Kg		50	0.0100
~							Spike	Percent	Recovery
Surrogate			Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)			43.1	mg/Kg	50	50.0	86	66.5 - 108
4-Bromofluor	obenzene (4-BF	Ъ)		49.5	mg/Kg	50	50.0	99	50 - 139

Sample: 245657 - AH-1 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 74096 63409	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2010-10-05 2010-09-28	Prep Method: Analyzed By: Prepared By:	N/A AR AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		1740	mg/Kg	100	4.00

Sample: 245657 - AH-1 0-1'

DRO		3270	mg/Kg	5	50.0
Parameter	Flag	Result	Units	Dilution	RL
		RI.			
Prep Batch:	63364	Sample Prep	aration: 2010-09-24	Prepared By:	kg
QC Batch:	73844	Date Analyz	ed: 2010-09-24	Analyzed By:	kg
Analysis:	TPH DRO - NEW	Analytical M	lethod: S 8015 D	Prep Method:	N/A
Laboratory:	Midland				

Report Date: October 5, 2010 114-6400689			Work Order: 10092339 COG/GJ West Co-op #7				Page Number: 5 of 19 Eddy County, NM	
Surrogate	Flag	Result	Units	Dilu	tion	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	1	389	mg/Kg	5		100	389	70 - 130
Sample: 245	657 - AH-1 0-:	L'						
Laboratory:	Midland							
Analysis:	TPH GRO		Analytical	Method:	S 8015 D		Prep Met	hod: S 5035
QC Batch:	73937		Date Anal	yzed:	2010-09-28		Analyzed	By: AG
Prep Batch:	63331		Sample Pr	eparation:	2010-09-24		Prepared	By: AG
			BL					
Parameter	Flag	g	Result		Units		Dilution	RL
GRO		·	940		mg/Kg		50	1.00
						Spike	Percent	Recoverv
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ne (TFT)		51.3	mg/Kg	50	50.0	103	73.4 - 122
4-Bromofluor	obenzene (4-BFB)	63.1	mg/Kg	50	50.0	126	50 - 138
Sample: 245	658 - AH-1 1-3 Midland	1.5'						
Analysis:	Chloride (Titrat	ion)	Analyt	tical Metho	d· SM 450	00-Cl B	Prep M	ethod: N/A
QC Batch:	74096)	Date A	Analyzed:	2010-10)-05	Analyze	ed By: AR
Prep Batch:	63409		Sampl	e Preparati	on: 2010-09	9-28	Prepare	ed By: AR
			RL					
Parameter	Flag	5	Result		Units		Dilution	RL
Chloride			3720		mg/Kg		100	4.00

Sample: 245658 - AH-1 1-1.5'

DRO		2380	mg/Kg	1	50.0
Parameter	Flag	RL Result	Units	Dilution	RL
Prep Batch:	63468	Sample Prep	paration: 2010-09-29	Prepared By:	kg
QC Batch:	73971	Date Analyz	ed: 2010-09-29	Analyzed By:	kg
Analysis:	TPH DRO - NEW	Analytical M	fethod: S 8015 D	Prep Method:	N/A
Laboratory:	Midland				

¹High surrogate recovery due to peak interference.

Report Date: October 5, 2010 114-6400689			Work Order: 10092339 COG/GJ West Co-op #7				Page Number: 6 of 19 Eddy County, NM	
Surrogate	Flag	Result	Units	Dilu	tion	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	2	396	mg/Kg		1	100	396	70 - 130
Sample: 24	5658 - AH-1 1-3	1.5'						
Laboratory:	Midland							
Analysis:	TPH GRO		Analytical	Method:	S 8015 D		Prep Met	hod: S 5035
QC Batch:	73975		Date Anal	yzed:	2010-09-29)	Analyzed	By: AG
Prep Batch:	63453		Sample Pr	reparation:	2010-09-29)	Prepared	By: AG
			RL					
Parameter	Flag	5	Result		Units		Dilution	RL
GRO			2360		mg/Kg		20	1.00
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	n Amount	Recovery	Limits
Trifluorotolu	ene (TFT)		20.2	mg/Kg	20	20.0	101	73.4 - 122
4-Bromofluor	obenzene (4-BFB) 3	42.0	mg/Kg	20	20.0	210	50 - 138

Sample: 245659 - AH-1 2-2.5'

.

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 74096 63409	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2010-10-05 2010-09-28	Prep Method: Analyzed By: Prepared By:	N/A AR AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		12600	mg/Kg	100	4.00

Sample: 245659 - AH-1 2-2.5'

DRO		289	mg/Kg	1	50.0
Parameter	Flag	RL Result	Units	Dilution	RL
Prep Batch:	63468	Sample Prep	aration: 2010-09-29	Prepared By:	kg
QC Batch:	73971	Date Analyz	ed: 2010-09-29	Analyzed By:	kg
Analysis:	TPH DRO - NEW	Analytical M	ethod: S 8015 D	Prep Method:	N/A
Laboratory:	Midland				

²High surrogate recovery due to peak interference.
³High surrogate recovery due to peak interference.

Report Date: October 5, 2010 114-6400689			Work Order: 10092339 COG/GJ West Co-op #7				Page Number: 7 of 19 Eddy County, NM		
Surrogate	Flag	Result	Units	Dilu	tion	Spike Amount	Percent Recovery	Recovery Limits	
n-Tricosane		114	mg/Kg]		100	114	70 - 130	
Sample: 24	5659 - AH-1 2-2	.5'							
Laboratory: Analysis:	Midland TPH GRO		Analytical	Method:	S 8015 D		Prep Metl	hod: S 5035	
QC Batch:	73975		Date Anal	yzed:	2010-09-29)	Analyzed	By: AG	
Flep Datch.	03403		Sample r I	eparation.	2010-09-25	,	i lepateu	by. AG	
Parameter	Flag		${ m RL} { m Result}$		Units		Dilution	RL	
GRO			330		mg/Kg		5	1.00	
						Spike	Percent	Recovery	
Surrogate		Flag	Result	Units	Dilution	n Amount	Recovery	Limits	
Trifluorotolu	ene (TFT)		5.56	mg/Kg	5	5.00	111	73.4 - 122	
4-Bromofluor	obenzene (4-BFB)	4	9.05	mg/Kg	5	5.00	181	50 - 138	

Sample: 245660 - AH-1 3-3.5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 74096 63409	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2010-10-05 2010-09-28	Prep Method: Analyzed By: Prepared By:	N/A AR AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		14300	mg/Kg	100	4.00

Sample: 245661 - AH-1 4-4.5'

Chloride		8560	mg/Kg	100	4.00
Parameter	Flag	RL Result	Units	Dilution	RL
Prep Batch:	63409	Sample Preparation:	2010-09-28	Prepared By:	AR
QC Batch:	74096	Date Analyzed:	2010-10-05	Analyzed By:	\mathbf{AR}
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland				

⁴High surrogate recovery due to peak interference.

Report Date: October 5, 2010 114-6400689		Work Order: 100 COG/GJ West Co	Page Number: 8 of 19 Eddy County, NM						
Sample: 24	ample: 245662 - AH-1 5-5.5'								
Laboratory:	Midland								
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A				
QC Batch:	74096	Date Analyzed:	2010-10-05	Analyzed By:	AR				
Prep Batch:	63409	Sample Preparation:	2010-09-28	Prepared By:	AR				
		RL							

Parameter	Flag	Result	Units	Dilution	RL
Chloride		6390	mg/Kg	100	4.00

Sample: 245663 - AH-1 6-6.5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 74096 63409	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2010-10-05 2010-09-28	Prep Method: Analyzed By: Prepared By:	N/A AR AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		7900	ng/Kg	100	4.00

Sample: 245664 - AH-1 7-7.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	74096	Date Analyzed:	2010-10-05	Analyzed By:	AR
Prep Batch:	63409	Sample Preparation:	2010-09-28	Prepared By:	AR
		RL			
Parameter	\mathbf{Flag}	Result	Units	Dilution	RL
Chloride		2790	ng/Kg	100	4.00

Sample: 245665 - AH-1 8-8.5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 74096 63409	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2010-10-05 2010-09-28	Prep Method: Analyzed By: Prepared By:	N/A AR AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		3660	mg/Kg	100	4.00

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Report Date 114-6400689	: October 5,	2010	Work Order: 10092339 COG/GJ West Co-op #7					Page Number: 9 of 1 Eddy County, NN			
Sample: 24	5666 - AH-	1 9-9.5'									
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (7 74096 63409	litration)	Analyt Date A Sample	ical Met Analyzed e Prepar	hod: : ation:	SM 45 2010-1 2010-0	00-Cl B 0-05 9-28	Prep M Analyze Prepare	ethod: ed By: ed By:	N/A AR AR	
			RL								
Parameter		Flag	Result			Units		Dilution		RL	
Chloride			3230		n	ng/Kg		100		4.00	
Method Bla	ank (1)	QC Batch: 73844									
QC Batch:	73844		Date Ana	lyzed:	2010-	09-24		Analy	zed By:	kg	
Prep Datch:	05504		QC F Tepa	anation.	2010-	09-24		гтера	red by:	кд	
				MF)Т.						
Parameter		Flag		Resu	ilt		U	nits		\mathbf{RL}	
DRO		0		<14	.6		m	g/Kg		50	
							~				
Champion and the	Flor	Decult	I In:to	D	ilution		Spike	Percent	Rec	overy	
n-Tricosane	riag	77.6	mg/Kg	D.	1		100	78	70	130	
Method Bla	unk (1)	QC Batch: 73937									
OC Patch	72027	·	Data Anal	wood	2010.0	0.28		Applug	od Bur	٨C	
Prep Batch:	63331		QC Prepa	ration:	2010-0)9-28)9-24		Prepare	ed By:	AG	
-				ME	DL				·		
Parameter		Flag		Resi	ılt		Ŭ	nits		RL	
GRO	, <u></u>			<0.4	82		m	g/Kg		1	
Surrogate		Flag	Result	Units	I	Dilution	Spike Amoun	Percent t Recovery	Reco Lir	overy nits	
Trifluorotolue	ne (TFT)	0	2.17	mg/Kg	g	1	2.00	108	76.9	- 115	
4-Bromofluor	obenzene (4-	BFB)	1.95	mg/Kg	g	1	2.00	98	45.8	- 147	
Method Bla	nk (1)	QC Batch: 73941									

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QC Batch:	73941	Date Analyzed:	2010-09-28	Analyzed By:	AG
Prep Batch:	63331	QC Preparation:	2010-09-24	Prepared By:	\mathbf{AG}

Report Date: October 5 114-6400689	, 2010	W CO	ork Order: G/GJ West	Page Num Eddy	Page Number: 10 of 19 Eddy County, NM			
			MD	L				
Parameter	Flag		Resu	lt	Un	its		RL
Benzene			< 0.0010	00	mg/	'Kg	(0.01
Toluene			< 0.0010	00	mg/	Kg	(0.01
Ethylbenzene			< 0.0011	10	mg/	'Kg	(0.01
Xylene			<0.0036	50	mg/	′Kg		0.01
					Spike	Percent	Recov	very
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limi	its
Trifluorotoluene (TFT)		1.81	mg/Kg	1	2.00	90	75.6 -	110
4-Bromofluorobenzene (4	4-BFB)	1.76	mg/Kg	1	2.00	88	41.5 -	139
Method Blank (1) QC Batch: 73971 Prep Batch: 63468	QC Batch: 73971	Date Ana QC Prep	alyzed: 20 aration: 20)10-09-29)10-09-29		Analy Prepa	zed By: red By:	kg kg
			MDL					
Parameter	Flag		Result		Uni	ts		RL
DRO			<14.6		mg/l	Kg		50
					Spike	Percent	Recov	verv
Surrogate Flag	Result	Units	Dilut	ion	Amount	Recovery	Lim	its
n-Tricosane	72.4	mg/Kg	1	/	100	72	70 - 1	130
Method Blank (1)	QC Batch: 73975							
OC Batch: 73975		Date Ana	lvzed· 20	10-09-29		Analyz	ed Bv·	AG
Prep Batch: 63453		QC Prepa	ration: 20	10-09-29		Prepare	ed By: A	AG
			MDL					
Parameter	Flag		Result		Uni	ts		RL
GRO	·····		< 0.482		mg/l	Kg		1
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recov Limi	'ery its
Sarrogato		217	mg/Kg	1	2.00	108	769-	115
Trifluorotoluene (TFT)		20 + 3L	···· () ()	-		~~~	10.0	***

QC Batch:	74096	Date Analyzed:	2010-10-05	Analyzed By:	AR
Prep Batch:	63409	QC Preparation:	2010-09-28	Prepared By:	\mathbf{AR}

Report Date: October 5, 114-6400689		Work Order: 10092339 COG/GJ West Co-op #7						Page Number: 11 of 19 Eddy County, NM			
_					MDL			TT			
Parameter	Fl	ag		R	lesult			Units			RL
Chloride					<2.18			mg/Kg			4
Laboratory Control Sp	vike (LCS	S-1)									
OC Batch: 73844	()	Data A	nalvzod	· 2010-0	0-94			Ans	luzod F	lu ka
Pron Batch: 63364			OC Pre	naryzeu	2010-0	9-24 9-24			Pre	nyzeu I nared F	v ko
			QUIN	paratio		0 21			110	parca E	y. Kg
		\mathbf{LC}	S			Spik	e N	Iatrix			Rec.
Param		Resi	ilt 1	Units	Dil.	Amou	int F	Result	Rec.	I	_imit
DRO		204	4 n	ıg/Kg	1	250		<14.6	82	47.5	- 144.1
Percent recovery is based	on the spi	ike result.	RPD is	based o	n the spike	and spi	ke duplic	ate resul	t.		
		LCSD			Spike	Matr	ix	F	Rec.		RPD
Param		Result	Units	Dil.	Amount	Resu	lt Rec	. L	imit	RPD	Limit
DRO		222	mg/Kg	1	250	<14	6 89	47.5	- 144.1	8	20
Percent recovery is based	on the spi	ike result.	RPD is	based of	n the spike	and spi	ke duplic	ate resul	t.		
	LCS	LCSD				Spi	ke	LCS	LCSD)	Rec.
Surrogate	Result	Result	U	nits	Dil.	Amo	unt	Rec.	Rec.		Limit
n-Tricosane	106	102	me	/Kg	1	10	0	106	102		70 - 130
Aboratory Control Sp QC Batch: 73937 Prep Batch: 63331	ike (LCS	8-1)	Date Ar QC Prej	alyzed: paration	2010-09 a: 2010-09)-28)-24			Anal Prepa	yzed By ared By	r: AG : AG
		\mathbf{LC}	S			Spil	ke l	Matrix			Rec.
Param		Resu	ılt	Units	Dil.	Amo	int 2	Result	Rec.]	Limit
GRO	-	16.	6 п	ıg/Kg	1	20.	0 .	< 0.482	83	56.	5 - 98.2
Percent recovery is based of	on the spi	ke result.	RPD is l	based of	n the spike	and spi	ke duplic	ate resul	t.		
		LCSD			Spike	Mat	rix	F	Rec.		RPD
Param		Result	Units	Dil.	Amount	Resi	ilt Rec	<u>L</u>	imit	RPD	Limit
		17.7	mg/Kg	1	20.0	< 0.4	82 88	56.5	- 98.2	6	20
JRO					n the spike	and sni	ke duplica	ate result	t.		
GRO Percent recovery is based of	on the spi	ke result.	RPD is l	based of	n me spike	und opi	1				
GRO Percent recovery is based of	on the spi	ke result. LCS	RPD is l 5 LC	based of SD	п ше зріке	und opr	Spike	LCS	LCSE)	Rec.
GRO Percent recovery is based of Surrogate	on the spi	ke result. LCS Resu	RPD is l 5 LC lt Res	Dased of SD Sult	Units	Dil.	Spike Amount	LCS Rec.	LCSE Rec.)	Rec. Limit
GRO Percent recovery is based o Surrogate Frifluorotoluene (TFT)	on the spi	ke result. LCS Resu 2.21	RPD is l 5 LC lt Res 2.1	SD SD Sult 28	Units mg/Kg	Dil.	Spike Amount 2.00	LCS Rec. 110	LCSE Rec. 114) 76	Rec. Limit .5 - 118

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch:	73941 63331		Date Analy QC Prepar	zed: 201 ation: 201	0-09-28 0-09-24	Analy Prepa	zed By: AG red By: AG	
Param		LC: Resu	S ilt Unit	s Dil.	Spike Amoun	Matrix t Result	Rec.	Rec. Limit
Benzene		1.7	7 mg/I	Kg 1	2.00	< 0.00100	88	81.7 - 120
Toluene		1.8^{-1}	4 mg/I	Kg 1	2.00	< 0.00100	92	81.8 - 120
Ethylbenzene		1.8	5 mg/H	Kg 1	2.00	< 0.00110	92	79.8 - 120
Xylene		5.53	2 mg/F	۲g 1	6.00	< 0.00360	92	74 - 123

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	\mathbf{Result}	Rec.	Limit	RPD	Limit
Benzene	1.78	mg/Kg	1	2.00	< 0.00100	89	81.7 - 120	1	20
Toluene	1.86	mg/Kg	1	2.00	< 0.00100	93	81.8 - 120	1	20
Ethylbenzene	1.88	mg/Kg	1	2.00	< 0.00110	94	79.8 - 120	2	20
Xylene	5.62	mg/Kg	1	6.00	< 0.00360	94	74 - 123	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)	1.80	1.82	mg/Kg	1	2.00	90	91	77.4 - 110
4-Bromofluorobenzene (4-BFB)	1.73	1.77	mg/Kg	1	2.00	86	88	46 - 140

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch:	73971 63468		Date A QC Pr	Analyzed: eparation:	2010-09 2010-09)-29)-29		Ar Pr	Analyzed By: kg Prepared By: kg					
Param		LC Rest	S ılt	Units	Dil.	Spike Amount	Mat Res	trix ault Rec.	I	Rec. Jimit				
DRO		16'	7 r	ng/Kg	1	250	<1	4.6 67	47.5	- 144.1				
Percent recov	very is based on th	e spike result.	RPD is	based on	the spike	and spike o	luplicate	e result.						
		LCSD			Spike	Matrix		Rec.		RPD				
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit				
DRO		166	mg/Kg	1	250	<14.6	66	47.5 - 144.1	1	20				
Percent recov	ery is based on th	e spike result.	RPD is	based on	the spike	and spike o	luplicate	e result.						

	LCS	LCSD			Spike	\mathbf{LCS}	LCSD	Rec.
Surrogate	Result	\mathbf{Result}	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	113	113	mg/Kg	1	100	113	113	70 - 130

Report Date: October 5, 2010 114-6400689		Page 1 E	13 of 19 nty, NM							
Laboratory Control Spike (LC	CS-1)									
OC Batch: 73075	n	ato Analyze	4. 2010-00	1.90		Δng	lyzed By	· AG		
Prep Batch: 63453	0	C Preparatio	2010-03	-29		Pre	nyzed Dy pared By	r: AG		
	4	,o i ropuruun					pan			
	LCS			Spike	Matri	x		Rec.		
Param	Result	Units	Dil.	Amount	Resul	t Rec.	.]	Limit		
GRO	16.2	mg/Kg	1	20.0	< 0.48	2 81	56.	5 - 98.2		
Percent recovery is based on the s	pike result. R	PD is based	on the spike	and spike d	uplicate re	sult.				
	LCSD		Spike	Matrix		Rec.		RPD		
Param	Result	Units Dil	. Amount	Result	Rec.	Limit	RPD	Limit		
GRO	<u>17.4</u> m	ng/Kg 1	20.0	< 0.482	87 3	56.5 - 98.2	7	20		
Percent recovery is based on the s	pike result. R	PD is based	on the spike	and spike d	uplicate re	sult.				
	LCS	LCSD		Sp	ike L	CS LCS	D	Rec.		
Surrogate	Result	Result	Units	Dil. Am	ount R	lec. Re	3.	Limit		
Trifluorotoluene (TFT)	2.18	2.31	mg/Kg	$1 \qquad 2.$	00 1	09 11	ð 76	.5 - 118		
4-Bromofluorobenzene (4-BFB)	2.00	2.13	mg/Kg	1 2.	00 1	00 10	$\frac{5}{51}$.1 - 150		
QC Batch: 74096 Prep Batch: 63409	D Q	ate Analyzeo C Preparatio	1: 2010-10 on: 2010-09	-05 -28 Spiles	Mot	Ana Pre	lyzed By pared By	AR AR		
Param	LUS	Unite	БI	Spike Amount	Mat	rix ult R	20	Rec.		
Chloride	97.4	mg/Ki		100	<2	$\frac{10}{18}$ 10	<u>7</u> ξ	$\frac{11111}{85 - 115}$		
Percent recovery is based on the s	pike result. RI	PD is based	on the spike	and spike d	uplicate re	sult.				
	LCSD		Spike	Matrix		Rec.		RPD		
Param	Result	Units Di	l. Amoun	t Result	Rec.	Limit	RPD	Limit		
Chloride	102 r	ng/Kg 1	100	<2.18	102	85 - 115	5	20		
Percent recovery is based on the spin Matrix Spike (MS-1) Spiked	pike result. Rl Sample: 2457	PD is based	on the spike	and spike di	iplicate re	sult.				
OC Potch. 72944	r i r	ata Angluna	d. 2010 0	2.94		۸	alwood D			
Prep Batch: 63364	L G	C Preparati	on: 2010-09	9-24		Pro	epared B	y: kg		
-	MS		D .1	Spike	Matrix		I	Rec.		
Param	Result Units Dil. Amount Resu					Rec. Limit				
DKO	273	mg/Kg	1	250	18.8	102	11.7	- 152.3		

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

Report Date: October 5, 114-6400689	2010	·	C			Page Nu Edo	umber: ly Coι	14 of 19 inty, NM			
Param DRO		MSD Result 292	Units mg/Kg	Dil.	Spike Amount 250	Matrix Result 18.8	Rec.	Re Lin 11.7 -	c. nit 152.3	RPD 7	RPD Limit 20
Percent recovery is based	on the sp	ike result.	RPD is	based (on the spike	and spike d	uplicat	e result.			
		MOD				G '1			MOD		D
Surrogate	M5 Result	MSD Besult	т	Inits	Dil	Amount		MS Rec	MSD Bec		Rec. Limit
n-Tricosane	111	108	m	g/Kg	1	100		111	108		70 - 130
Matrix Spike (MS-1) QC Batch: 73937 Prep Batch: 63331	Spiked	Sample: 24	45725 Date A QC Pre	nalyzed	l: 2010-09 on: 2010-09	9-28 9-24			Analy Prepa	vzed B	y: AG y: AG
Param		MS Rest	S ult	Units	Dil.	Spike Amount 20.0	t I	Matrix Result	Rec 68	•	Rec. Limit 50 - 150
Percent recovery is based	on the sp	ike result	BPD is	hased o	on the spike	and spike d	unlicat	e result			
	on one op	MCD	101 20 10	Subou (Cuiles	M-tu:	apnoat	D			ממת
Param		MSD Result	Unite	Di	Spike	t Result	Rec	n Li	ec. mit	RPD	Limit
GRO	5	18.2	mg/Kg	$\frac{1}{1}$	20.0	<0.482	91	50 -	150	29	20
Percent recovery is based	on the sp	ike result.	RPD is	based of	on the spike	and spike d	uplicat	e result.			
U	•	MO		ran.	-	- -		MC	MOD		D
Surrogate		Resu	lt Re	lou sult	Units	Dil An	pike	M5 Rec	Rec	I	nec. Limit
Trifluorotoluene (TFT)		2.01		.94	mg/Kg	1	2	100	97	7	1.6 - 117
4-Bromofluorobenzene (4-	BFB)	1.94	1 1	.92	mg/Kg	1	2	97	96	5	60 - 170
Matrix Spike (MS-1) QC Batch: 73941 Prep Batch: 63331	Spiked	Sample: 24	15508 Date Ai QC Pre	nalyzed paratio	: 2010-09 n: 2010-09)-28)-24			Analy Prepa	zed B	y: AG y: AG
		MS				Spike	Ma	atrix			Rec.
Param		Resul	ltT	Jnits	Dil.	Amount	Re	esult	Rec.		Limit
Benzene		1.80	m	g/Kg	1	2.00	<0.	00100	90	75	5.7 - 125
Toluene		1.87	m	g/Kg	1	2.00	<0.	00100	94	74	4.4 - 125
Ethylbenzene Xylono		1.96 ະ ໑໑	m	g/Kg	1	2.00	<0.	00110	98 07	72	2.2 - 128 3 - 121
		0.00		6/ ng		0.00	<u><0.</u>	00000	91	0	0 - 191

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

⁵MS/MSD RPD out of RPD Limits. Use LCS/LCSD to demonstrate analysis is under control.

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		MSD			Spike	Mat	trix		R	ec.		RPD	
Param		Result	Units	Dil.	Amount	Res	ult	Rec.	Li	mit	RPD	Limit	
Benzenc		1.78	mg/Kg	g 1	2.00	<0.0	0100	89	75.7	- 125	1	20	
Toluene		1.85	mg/Kg	g 1	2.00	< 0.0	0100	92	74.4	- 125	1	20	
Ethylbenzene		1.95	mg/Kg	g 1	2.00	<0.0	0110	98	72.2	- 128	0	20	
Xylene		5.79	mg/Kg	<u>g 1</u>	6.00	<0.0	0360	96	63 -	131	1	20	
Percent recovery is based o	n the sp	oike result.	RPD i	s based or	n the spike	e and sp	ike dı	iplicate	e result.				
		M	S :	MSD			$\mathbf{S}\mathbf{p}$	oike	\mathbf{MS}	MSD)	Rec.	
Surrogate		Rest	ult F	Result	Units	Dil.	Am	ount	Rec.	Rec.		Limit	
Trifluorotoluene (TFT)		1.7	8	1.90	mg/Kg	1		2	89	95	79	9.1 - 109	
4-Bromofluorobenzene (4-B	FB)	1.7	1	1.82	mg/Kg	1		2	86	91	5	60 - 136	
QC Batch: 73971 Prep Batch: 63468	Shived	Sampie. 2	Date QC P	Analyzed: reparation	2010-0 n: 2010-0	9-29 9-29				Ana Prep	lyzed I bared H	By: kg By: kg	
		MS	3			Spil	ĸe	Mat	rix			Rec.	
Param		Resi	ılt	Units	Dil.	Amo	unt	Res	ult	Rec.		Limit	
DRO		388	0	mg/Kg	1	250)	38	80		11.	7 - 152.3	
Percent recovery is based or	n the sp	ike result.	RPD is	s based or	ı the spike	and sp	ike du	iplicate	e result.				
		MSD			Snike	Mati	riv		Be	r		RPD	
Param		Result	Units	Dil	Amount	Resi	ilt	Bec	Lin	o. nit	RPD	Limit	
DRO	7	3630	mg/K	g 1	250	388	0	0	11.7 -	$\frac{11}{152.3}$	7	20	
Percent recovery is based of	n the sp	ike result.	RPD is	s based or	the spike	and sp	ike dı	iplicate	e result.			· · · · ·	
	MS	MSI)			S	nike		MS	MSD		Bec.	
Surrogate	Result	Resu	lt	Units	Dil.	An	iount		Rec.	Rec.		Limit	
n-Tricosane 89	558	529		mg/Kg	1	-	100		558	529		70 - 130	
Matrix Spike (MS-1) QC Batch: 73975 Prep Batch: 63453	Spiked	Sample: 2	45441 Date A QC Pr	Analyzed: reparation	2010-09 : 2010-09	9-29 9-29				Analy Prepa	vzed B ared B	y: AG y: AG	
Param		M Res	S ult	Units	Dil.	Sı Am	oike Iount	N F	Aatrix Result	Rec	•	Rec. Limit	
GRO		15.4 mg/Kg 1 20.0 <0						0.482 77 50 - 150					
Percent recovery is based or	the sp	ike result.	RPD is	s based on	the spike	and sp	ike dı	plicate	e result.				

⁶Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control. ⁷Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control. ⁸High surrogate recovery due to peak interference. ⁹High surrogate recovery due to peak interference.

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114-6400689		V CC			Page	Number Eddy Co	: 16 of 19 ounty, NM			
	MSD			Spike	Ma	trix		Rec.		RPD
Param	Result	Units	Dil.	Amoun	t <u>Re</u>	sult R	.ec.	Limit	RPD	Limit
GRO	16.0	mg/Kg	1	20.0	<0	.482 8	30	50 - 150	4	20
Percent recovery is based on th	e spike result.	RPD is b	based on	n the spike	and spi	ke duplic	ate res	ult.		
	MS	s Ms	SD			Spike	λ	AS N	ISD	Rec
Surrogate	Rest	ilt Res	sult	Units	Dil.	Amount	R	ec. F	lec.	Limit
Trifluorotoluene (TFT)	2.1	9 2.	14	mg/Kg	1	2	1	10 1	107	71.6 - 117
4-Bromofluorobenzene (4-BFB)	2.1	1 2.0	07	mg/Kg	1	2	1	06 1	104	50 - 170
Matrix Spike (MS-1) Spi QC Batch: 74096 Prep Batch: 63409	ked Sample: 2	45666 Date An QC Prep	alyzed: paration	2010-10 : 2010-09	-05 -28			Ar Pr	nalyzed I repared F	By: AR By: AR
	М	s			Sp	ike	Matr	ix		Rec.
Param	Res	ult i	Units	Dil.	Amo	ount	Resu	lt E	Rec.	Limit
Chloride	133	00 n	mg/Kg		100	000	3230)	101	85 - 115
Percent recovery is based on th	e spike result.	RPD is b	ased on	the spike	and spil	ke duplica	ate res	ult.		
	MCD			Cuilio		·		D		DDD
	N/1 S 1 1			20060	1/10	I FI V		RAC		RED
Param	M5D Result	Units	Dil	Атоци	Ma t Res	urix sult R	ec	Rec. Limit	RPD	RPD Limit
Param Chloride	Result 13600	Units mg/Kg	Dil. 100	Amount 10000	Ma t Res 32	$\frac{1}{30}$ $\frac{1}{10}$	ec	Rec. Limit 85 - 115	RPD 2	Limit 20
Param Chloride Percent recovery is based on the	Result 13600 e spike result.	Units mg/Kg RPD is b	Dil. 100 ased on	Amount 10000 the spike	Ma t Res 32 and spil	sult R 30 1 ce duplica	ec. 04 ate rest	Limit 85 - 115 ult.	RPD 2	Limit 20
Param Chloride Percent recovery is based on the Standard (CCV-3)	Result 13600 e spike result.	Units mg/Kg RPD is b	Dil. 100 ased on	Amoun 10000 the spike	Ma t Res 32 and spil	sult R 30 10 ce duplica	ec. 04 ate resi	Rec. Limit 85 - 115 ult.	RPD 2	Limit 20
Param Chloride Percent recovery is based on th Standard (CCV-3) QC Batch: 73844	Result 13600 e spike result.	Units mg/Kg RPD is b Date An	Dil. 100 ased on alyzed:	Amoun 10000 the spike 2010-09-	Ma t Res 32 and spil	sult R 30 10 ce duplica	ec. 04 ate rest	Rec. Limit 85 - 115 ult.	RPD 2	By: kg
Param Chloride Percent recovery is based on th Standard (CCV-3) QC Batch: 73844	Result 13600 e spike result.	Units mg/Kg RPD is b Date An CCVs	Dil. 100 ased on alyzed: CO	Amoun 10000 the spike 2010-09-	Ma t Res 32 and spil 24 CCV	vinx sult R 30 10 ce duplica	ec. 04 ate resi	Rec. Limit 85 - 115 ult. A	RPD 2	RPD Limit 20 By: kg
Param Chloride Percent recovery is based on th Standard (CCV-3) QC Batch: 73844	Result 13600 e spike result.	Units mg/Kg RPD is b Date An CCVs True	Dil. 100 ased on alyzed: CC Fo	Amoun 10000 the spike 2010-09- CVs und	Ma t Res 32 and spil 24 CCV Perce	vix sult R 30 10 ce duplica vs vs	ec. 04 ate rest Pe Re	Rec. Limit 85 - 115 ult. A ercent covery	RPD 2	RPD Limit 20 By: kg Date
Param Chloride Percent recovery is based on th Standard (CCV-3) QC Batch: 73844 Param Flag U	nits	Units mg/Kg RPD is b Date An CCVs True Conc.	Dil. 100 ased on alyzed: CO Fo Co	Amoun 10000 the spike 2010-09- CVs und onc.	Ma Res 32 and spil 24 CCV Perce Recov	vinx sult R 30 10 ce duplicz ve duplicz vent very	ec. 04 ate rest Re L	Rec. Limit 85 - 115 ult. A ercent covery imits	RPD 2 .nalyzed	RPD Limit 20 By: kg Date Malyzed
Param Chloride Percent recovery is based on th Standard (CCV-3) QC Batch: 73844 Param Flag U DRO mg	nits	Units mg/Kg RPD is b Date An CCVs True Conc. 250	Dil. 100 ased on alyzed: CO Fo Co 2	Amoun 10000 the spike 2010-09- CVs und onc. 00	Ma t Res 32 and spil 24 CCV Perco Recov 80	vinx sult R 30 10 ce duplicz ce duplicz very	ec. 04 ate rest Pe Re L 80	Rec. Limit 85 - 115 ult. A ercent covery imits - 120	RPD 2 .nalyzed	RPD Limit 20 By: kg Date analyzed 110-09-24
Param Chloride Percent recovery is based on th Standard (CCV-3) QC Batch: 73844 Param Flag U DRO mg Standard (CCV-4)	nits g/Kg	Units mg/Kg RPD is b Date An CCVs True Conc. 250	Dil. 100 ased on alyzed: CC Fo Cc 2	Amoun 10000 the spike 2010-09- CVs und onc. 00	Ma Res 32 and spil 24 CCV Perce Recov 80	very	ec. 04 ate resu Pe Re L 80	Rec. Limit 85 - 115 ult. A ercent covery imits - 120	RPD 2 .nalyzed A 20	RPD Limit 20 By: kg Date analyzed 110-09-24
Param Chloride Percent recovery is based on th Standard (CCV-3) QC Batch: 73844 Param Flag U DRO mg Standard (CCV-4) QC Batch: 73844	nits g/Kg	Units mg/Kg RPD is b Date An CCVs True Conc. 250 Date An	Dil. 100 ased on alyzed: CC Fo Cc 2 alyzed:	Amoun 10000 the spike 2010-09- CVs und onc. 00 2010-09-	Ma t Res 32 and spil 24 CCV Perce Recov 80	vs	ec. 04 Ate rest Pe Re L 80	Rec. Limit 85 - 115 ult. A ercent covery imits - 120 A	RPD 2 .nalyzed A 20 .nalyzed	RPD Limit 20 By: kg Date Malyzed 010-09-24 By: kg
Param Chloride Percent recovery is based on th Standard (CCV-3) QC Batch: 73844 Param Flag U DRO mg Standard (CCV-4) QC Batch: 73844	nits g/Kg	Units mg/Kg RPD is b Date An CCVs True Conc. 250 Date An CCVs	Dil. 100 ased on alyzed: CC Fo Cc 2 alyzed: CC	Amoun 10000 the spike 2010-09- CVs und onc. 00 2010-09- CVs	Ma t Res 32 and spil 24 CCV Perce Recov 80 24 24	Vs	ec. 04 ate resu Re L 80 Pe	Rec. Limit 85 - 115 ult. A ercent covery imits - 120 A ercent	RPD 2 analyzed A 20 nalyzed	RPD Limit 20 By: kg Date malyzed 010-09-24 By: kg
Param Chloride Percent recovery is based on th Standard (CCV-3) QC Batch: 73844 Param Flag U DRO mg Standard (CCV-4) QC Batch: 73844	nits g/Kg	Units mg/Kg RPD is b Date An CCVs True Conc. 250 Date An CCVs True	Dil. 100 ased on alyzed: CC Fo Cc alyzed: CC Fo	Amoun 10000 the spike 2010-09- CVs und onc. 00 2010-09- CVs und	Ma t Res 32 and spil 24 CCV Perce 80 24 24 CCV Perce	Vs vs vs vs vs vs vs vs vs vs vs vs vs vs	ec. 04 Ate resu Pe Re L 80 Pe Rea	Rec. Limit 85 - 115 ult. A ercent covery imits - 120 A ercent covery	RPD 2 .nalyzed 20 nalyzed	RPD Limit 20 By: kg Date malyzed D10-09-24 By: kg Date
Param Chloride Percent recovery is based on th Standard (CCV-3) QC Batch: 73844 Param Flag U DRO mg Standard (CCV-4) QC Batch: 73844 Param Flag U	nits nits	Units mg/Kg RPD is b Date An CCVs True Conc. 250 Date An CCVs True CCVs	Dil. 100 ased on alyzed: CC Fo Cc alyzed: CC Fo Cc	Amoun 10000 the spike 2010-09- CVs und onc. 2010-09- CVs und onc.	Ma t Res 32 and spil 24 CCV Perce 80 24 24 CCV Perce Recov	Vs vs vs vr very vs ent very	ec. 04 ate resu Pe Re L 80 Pe Ree L	Rec. Limit 85 - 115 ult. A ercent covery imits - 120 A ercent covery imits	RPD 2 analyzed A 20 nalyzed	RPD Limit 20 By: kg Date malyzed Di0-09-24 By: kg Date nalyzed

Report Dat 114-640068	te: October 5, 24	010	Wor COG	k Order: 1009 /GJ West Co-c	2339 pp #7	Page Nu Ed	umber: 17 of 19 dy County, NM
Standard	(CCV-2)						
QC Batch:	73937		Date Analy	zed: 2010-09-	28	Anal	yzed By: AG
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	1.04	104	80 - 120	2010-09-28
Standard	(CCV-3)						
QC Batch:	73937		Date Analy	zed: 2010-09-	28	Anal	yzed By: AG
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	0.986	99	80 - 120	2010-09-28
Standard	(CCV-2)						
QC Batch:	73941		Date Analy	zed: 2010-09-	28	Anal	yzed By: AG
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0912	91	80 - 120	2010-09-28
Toluene		mg/Kg	0.100	0.0929	93	80 - 120	2010-09-28
Ethylbenzer	ne	mg/Kg	0.100	0.0949	95	80 - 120	2010-09-28
Xylene		mg/Kg	0.300	0.282	94	80 - 120	2010-09-28
Standard ((CCV-3)						
QC Batch:	73941		Date Analy	zed: 2010-09-	28	Anal	yzed By: AG
			CCVs	CCVs	$\rm CCVs$	Percent	

Param	Flag	Units	True Conc.	Found Conc.	Percent Recovery	Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0869	87	80 - 120	2010-09-28
Toluene		mg/Kg	0.100	0.0891	89	80 - 120	2010-09-28
Ethylbenzene		mg/Kg	0.100	0.0890	89	80 - 120	2010-09-28
Xylene		mg/Kg	0.300	0.265	88	80 - 120	2010-09-28

Standard (CCV-1)

QC Batch: 73971

Date Analyzed: 2010-09-29

Analyzed By: kg

Report Da 114-640068	te: October 5 39	5, 2010	W CC	Vork Order: 100 OG/GJ West Co	92339 ≻op #7	Page N Ec	umber: 18 of 19 ldy County, NM
Param DRO	Flag	Units mg/Kg	CCVs True Conc. 250	CCVs Found Conc. 200	CCVs Percent Recovery 80	Percent Recovery Limits 80 - 120	Date Analyzed 2010-09-29
Standard	(UUV-2)						
QC Batch:	73971		Date An	alyzed: 2010-0)9-29	Ana	alyzed By: kg
Param DRO	Flag	Units mg/Kg	CCVs True Conc. 250	CCVs Found Conc. 207	CCVs Percent Recovery 83	Percent Recovery Limits 80 - 120	Date Analyzed 2010-09-29
Standard	(CCV-3)						
QC Batch:	73971		Date An	alyzed: 2010-()9-29	Ana	alyzed By: kg
-		TT T	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param DRO	Flag	Units mg/Kg	<u> </u>	<u> </u>	Recovery 100	80 - 120	2010-09-29
Standard	(CCV-2)						
QC Batch:	73975		Date Ana	alyzed: 2010-0	9-29	Anal	yzed By: AG
Param GRO	Flag	Units mg/Kg	CCVs True Conc. 1.00	CCVs Found Conc. 1.01	CCVs Percent Recovery 101	Percent Recovery Limits 80 - 120	Date Analyzed 2010-09-29
Standard	(CCV-3)						
QC Batch:	73975		Date Ana	alyzed: 2010-0	9-29	Anal	yzed By: AG
Param	Flag	Units mg/Kg	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed

QC Batch: 74096

Date Analyzed: 2010-10-05

Analyzed By: AR

Report Dat 114-640068	te: October 5, 9	2010	We CO	ork Order: 1009 G/GJ West Co	92339 op #7	Page N Ec	umber: 19 of 19 ldy County, NM
Param Fla Chloride Standard (CCV-1	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.4	99	85 - 115	2010-10-05
Report Date: Oct 114-6400689 Param F Chloride Standard (CCV QC Batch: 74096 Param F Chloride	(CCV-1)						
QC Batch:	74096		Date Anal	lyzed: 2010-10)-05	Anal	yzed By: AR
			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Report Date: Octor 114-6400689 Param Fla Chloride Standard (CCV-1 QC Batch: 74096 Param Fla Chloride	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2010-10-05

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

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