Diamedial means Read, Aster, NM 87410 Oil Conservation Division Diameter V 1220 S. SL Francis Dr., Sama Fe, NM 87505 Santa Fe, NM 87505 Santa Fe, NM 87505 Release Notification and Corrective Action Mame of Company COG Operating LLC Contact Pat Ellis Final Report Address S50 W. Texas, Suite 1000 Midland, Texas 79701 Telephone No. (432) 685-4332 Final Report Penditry Name RC Federal Mineral Owner Lease No. (APIH) 30-025-34932 Loc Cartics Pat Ellis Cartice Socian Township Range Feer from the Team Path Lease No. (APIH) 30-025-34932 Loc Cartice Pat Ellis Cartice Owner: Federal Mineral Owner Lease No. (APIH) 30-025-34932 Loc Cartice Owner: Federal Unit Letter Socian Township Range Fer from the Team Path Lease Lease No. (APIH) 30-025-34932 Lattitude N 32.82263° Longitude W 103.78315° Nature OF Release: Willnead Dor Nor Required Date and Hour of Cocurrence Solat and Hour of Discovery Was Immediate Notice Given? Yes No No Required Mr/16 Solat and Hour of Cocurrence Solat and Hour of Cocurrence <th>District I 1625 N. French Dr., Hobbs, NM 88240 District II 1301 W. Grand Avenue, Artesia, NM 88210</th> <th>State Energy Mine</th> <th>e of rals</th> <th>New Mexa</th> <th>co Resources HC</th> <th>DBBS (</th> <th></th> <th>Re</th> <th>H vised Oc</th> <th>Form C tober 10</th> <th>2-141 , 2003</th>	District I 1625 N. French Dr., Hobbs, NM 88240 District II 1301 W. Grand Avenue, Artesia, NM 88210	State Energy Mine	e of rals	New Mexa	co Resources HC	DBBS (Re	H vised Oc	Form C tober 10	2-141 , 2003
120 S. St. Prancis Dr., Santa Fe, NM 87018 Santa Fe, NM 87505 side of for Release Notification and Corrective Action Initial Report Initial Report Final Rep Name of Company COG Operating LLC Contact Pat Ellis Initial Report Final Rep Address 550 W. Texas, Suite 1300 Mulland, Texas 79701 Telepione No. (432) 685-4332 Facility Name BC Pederal #3 Facility Name BC Pederal #3 LocATION OF RELEASE Unit Letter Section Township Range Foet from the North Bas/West Line Commy Lease No. (API#) 30-025-34932 LocATION OF RELEASE Unit Letter Section Township Range Foet from the North Bas/West Line Commy Lea Lastitude N 32.622838' Longitude W 103.78315° NATURE OF RELEASE Type of Release: Oil/Produced Fluids Volume Recovered 50 bbls Source of Secore y S7/10 S7/10 Stop a.m. ILary Johnson -OCD Geoffreq Letting Colspan="2">Letting Colspan="2">Letting Colspan="2">Colspan="2">Colspan="2">Colspan="2" Source of Release:	District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV	Oil Co 1220 S	inser lout	rvation Div h St. Franc	is Dr. Jl	JL 0 J	ζυπ	District (Office i office i	n accor 116 on	dance back
Release Notification and Corrective Action OPERATOR Initial Report Mine Report Name of Company COC Operating LLC Contact Pat Ellis Address S50 W, Texas, Suite 1300 Midland, Texas 79701 Telephone No. (432) 685-4332 Fracility Name Ele Pederal #3 Fracility Type Well Surface Owner: Federal Mineral Owner Lcase No. (API#) 30 025-34932 LocATION OF RELEASE Unit Letter Section Township Range Feel from the Bas/West Line County Lea H 20 175 32E Feel from the SarWast Line County Lea Latitude N 32.82283° Longitude W 103.76315° NATURE OF RELEASE Volume Recovered. 50 hbbs Source of Release: OWProduced Flyids Data and Hour of Occurrence Date and Hour of Discovery 37710 8:00 a.m. HY 155, To Whom? Start All Nor of Discovery 37710 Sto a.m. III arry Johnson – OCD Geoffrey Leking – OCD Matercourse was Impacted, Describe Fully.* N/A III YES, Volume Impacting the Watercourse. N/A If a Watercourse was Impacted, Describe Fu	1220 S. St. Francis Dr., Santa Fe, NM 87505	Sant	ta F	e, NM 875	05	THE	WED	•		side of	form
OPERATOR □ Initial Report ☑ Final Rep Address 550 W. Texae, Suite 1300 Midland, Texas 79701 Telephone No. (432) 685-4332 Facility Yape Facility Name. BC Federal #3 Facility Type Well Surface Owner: Federal Mineral Owner Lease No. (API#) 30-025-34932 Unit Letter Section Township Range Fed from the North Bast County Lease No. (API#) 30-025-34932 Unit Letter Section Township Range Fee from the North Section County Lease County Lea Lease County Lease County<]	Release Notifica	tio	n and Co	rrective A	ction					
Natice of Company COG Operating LLC Contact Par Enils Address 5200 W. Texus, Suite 1300 Midland, Texus 79701 Telephone No. (432) 685-4332 Facility Name BC Federal #3 Facility Type. Well Surface Owner: Federal Mineral Owner Lease No. (API#) 30-025-34932 LocA TION OF RELEASE LocA TION OF RELEASE County Lease Unit Letter Section Township Range Feet from the North/South Line Feet from the East/West Line County Lease Source of Release: Oil/Produced Fluids Volume Recovered 50 bbb Source of Release: Sbbs Volume Recovered 50 bbb Source of Release: Oil/Produced Fluids Date and Hour of Occurrence Date and Hour of Discovery 57/10 8:60 a.m. 11 YES, To Whon? Was Immediate Notice Given? Yes No Not Required Date and Hour of Scource 510 bbs By Whom? Josh Russo Date and Hour of Course No Not Required No Was Vatercourse Reached? If YES, To Whom? Itary Johnson - OCD Context Lease Of Problem and Remedial Action Taken.* NA The packing blew out of the BC Foderal #3 well. The well has been re-packed and put back into service Describe Cause of Problem and Centrol Fully.* N/A Describe Cause of Problem and Remedial Action Taken.* The packing blew out				OPERAT	FOR		🗌 Initi	al Report	\boxtimes	Final]	Repor
Procinty Name BC Federal #3 Facility Type Well Surface Owner: Federal Mineral Owner Lcase No. (API#) 30-025-34932 LocATION OF RELEASE Lcase No. (API#) 30-025-34932 Unit Latter Section Township Range Feet from the 150 North/South Line Feet from the 940 East County Latitude N 32.62283° Longitude W 103.76315° NATURE OF RELEASE Volume Recovered 50 bbb Source of Release: Oil/Produced Fluids Volume of Release 55 bbb Volume Recovered 50 bbs Source of Release: Oil/Produced Fluids Volume of Release 55 bbb Volume Recovered 50 bbs Source of Release: Wellhead Solve of Release Solve of Release 50 bbs Was Immediate Notice Given? YES No If YES, TO Whom? Solve of Release Was a Watercourse Reached? Yes Ø No Date and Hour of Oiceovery. Strill a Watercourse. NA If a Watercourse was Impacted, Describe Fully.* N/A N/A NA Describe Cause of Problem and Remedial Action Taken.* The packing blew out of the BC Federal #3 well. The well has been re-packed and put back into service Describe Area Affected and Cleanu Action Taken.*	Address 550 W. Texas, Suite 1300 N	LLC Aidland, Texas 79701	_	Telephone N	enis lo. (432) 685-4	332		.			
Surface Owner; Federal Mineral Owner Lease No. (API#) 30-025-34932 Unit Letter Section Township Range Feet from the 1650 Peet from the North Peet from the 1650 County Least Unit Letter Section Township Range Feet from the 1650 North Peet from the 940 East/West Line County Least Latitude N 32.82E83° Longitude W 103.78315° NATURE OF RELEASE North Date and Hour of Discovery S/710 S/7	Facility Name BC Federal #3			Facility Typ	e Well						
LOCATION OF RELEASE Unit Letter Section Township Range Feet from the North/South Line Feet from the East/West Line County Latitude N 32.82283° Longitude W 103.78315° Lea Lea NATURE OF RELEASE Type of Release: Oil/Produced Fluids Volume of Release: S5 bbls Volume Recovered 50 bbls Source of Release Date and Hour of Occurrence Date and Hour of Occurrence Source of Release: Oil/Produced Fluids Volume of Release: S5 bbls Volume Recovered 50 bbls Source of Release Source of Release: Wellhead Date and Hour of Occurrence Date and Hour of Occurrence 57/10 8:00 a.m. Was Immediate Notice Given? Yes No Not Required First YES, To Whon? If YES, To Whon? Was a Watercourse Reached? Yes No No No No No If a Watercourse was Impacted. Describe Fully.* N/A N/A N/A Describe Cause of Problem and Remedial Action Taken.* The packing blew out of the BC Federal #3 well. The well has been re-packed and put back into service Describe Area Affected and Cleanup Action Taken.* Tera Tech inspected is the and collected	Surface Owner: Federal	Mineral Ow	ner				Lease N	No. (API#)	30-025	-3493	2
Unit Letter Section Township Range Peet from the 1650 North/Nouth Line Feet from the 940 East/West Line County Latitude N 32,82283° Longitude W 103.78315° Latitude N 32,82283° Longitude W 103.78315° NATURE OF RELEASE Volume of Release: Object Date and Hour of Discovery Source of Release: Volume of Release: So bils Source of Release: Oil/Produced Fluids Volume of Release: Source of Release: Date and Hour of Discovery S7/10 Store of Discovery Was Immediate Notice Given? If YES, To Whon? Larry Johnson – OCD Geffrey Leking – OCD Geffrey Leking – OCD By Whon? Josk Russo Date and Hour S7/710 5:53 p.m. If YES, To Whon? If YES, To Whon? Was a Watercourse Reached? Yes No No No No No VA Describe Cause of Problem and Remedial Action Taken.* If YES, Volume Impacting the Watercourse. N/A It as bispected site and collected samples to define spills extent. Soil with elevated chlorides was removed and hauled away for proper disposal. Site was then brought up to surface grade with clean backfill material. Tetra Tech prepared closure report and submitted to NMOCD for review. I hereby/certify tha			n n	N OF REI	EASE		_				
Latitude N 32.82283° Longitude W 103.78315° NATURE OF RELEASE Type of Release: Oil/Produced Fluids Volume of Release: 55 bbls Volume Recovered 50 bbls Source of Release: Wellhead Date and Hour of Decovery Date and Hour of Decovery Was Immediate Notice Given? Pression No Not Required Larry Johnson – OCD Gedfrey Leking – OCD Gedfrey Leking – OCD By Whom? Josh Russo Date and Hour 57/10 5:53 p.m. Was a Watercourse Reached? If YES, No Winner If YES, Nolume Impacting the Watercourse. N/A N/A N/A If a Watercourse was Impacted, Describe Fully.* N/A Describe Cause of Problem and Remedial Action Taken.* The packing blew out of the BC Federal #3 well. The well has been re-packed and put back into service Describe Area Affected and Cleanup Action Taken.* Tetra Tech inspected site and collected samples to define spills extent. Soil with elevated chlorides was removed and hauled away for proper disposal. Site was then broopath up to surface grade with clean backfill material. Tetra Tech prepared closure report and of file centain release notifications and perform corrective actions for releases which may endanger public health or the onyrionnent. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of releases which may endanger public health or the onyrionnent. The acceptance of a C-141 repo	Unit Letter Section Township R H 20 17S 3	ange Feet from the 1 32E 1650	North	/South Line North	Feet from the 940	East/V E	Vest Line East	County	Lea		
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Signature: If arcure: If arcure: Approved by District Supervisor: Printed Name: Patrick L. Ellis Approved by District Supervisor: Title: Environmental and Safety Supervisor Approval Date:	Simony OF 12. 21	<i>I</i> .			OIL CONS	ERV.	ATION	DIVISIO	<u>N</u>		
Title: Environmental and Safety Supervisor Approval Date: Expiration Date:	Printed Name: Patrick L. Ellis	·····		Approved by	District Superviso	r:					
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E-mail Address: pellis@conchoresources.com Conditions of Approval: Attached	E-mail Address: pellis@conchoresources.	com		Conditions of	Approval:			Attached			
Date: 6-Z-11 Phone: (432) 686-3023	Date: 6-2-11	Phone: (432) 686-3023									

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District II	5, NM 582-10		Energy Mir	nerals a	and Natura	l Resources	in 01 i	2011	Re	vised October	10,200
1301 W. Grand Avenue, A District III	rtesia, NM 88210		Oil C	lonser	vation Div	ر vision			Submit 2 (Copies to ap	propria
1000 Rio Brazos Road, Ag District IV	tec, NM 87410		1220	South	St. Franc	eis Dr.	GECEN	ED	District	Office in action of the office office of the office office office office office office office office	ordan on ba
1220 S. St. Francis Dr., Sa	nia Fc, NM 87505		Sa	nta Fe	, NM 875	505	illewar.			side	of for
		Rele	ase Notific	ation	and Co	orrective	Action	1		<u></u>	
			·		OPERA	FOR		🛛 Initi	al Report	Fin	al Rep
Name of Company	COG OPI	ERATIN	G LLC		Contact		Pat Ellis				
Address 550 V Facility Name	V. Texas, Suite RC FF	TOU, MIC	$\frac{11and}{43}$ 1X 7970	<u> </u>	Facility Tyr	NO. 4	32-230-00 WELL				<u> </u>
Taemey Name		DEIGIE				<u>, , , , , , , , , , , , , , , , , , , </u>					
Surface Owner	FEDERAL		Mineral C)wner				Lease]	No. (API#	1) 30-025-3	4932
	- (m			TIO	OF RE	LEASE					
H 20	17S	Range 32E	Peet from the 1650	North/ N	ORTH	940	East/V	West Line EAST	County	LEA	
			Latitude 32.	82283	Longitu	ide 103.7831	5		1		
·			NAT	URE	OF REL	EASE		1			
Type of Release	Oil / Produce Wellbea	d Fluids			Volume of Date and F	Release 55	tence	Volume Date and	Recovered Hour of Dis	50bbls	
source of rescare	,, cinca	u			05/07/2010			05/07/20	10 8:	00 <u>a.m.</u>	
Was Immediate Notice	e Given?	Vor 🗆	No. 🗌 Not Ro	mirad	If YES, Te	Whom?	l arrev 1	ohueon (YC D		
				quirea			Geothe	y Leking -	OCD		
By Whom? Josh Ri	isso				Date and I	lour 05/07/2	010 5	:53 p.m.			
Was a Watercourse Re	ached?	Yes 🛛	No		HYES, VO	slume Impacti	ng the Wal	ercourse.			
If a Watercourse was I	mpactod Deceri	be Fully *			<u> </u>						
	injucico. Deseri										
Describe Cause of Pro	hlem and Remed	lial Action	Taken *					_			
The packing blew out	of the BC Federa	al #3 wetl.	The well has been	en re-pa	eked and put	back into serv	vice.				
					<u> </u>						
Describe Area Affecte	d and Cleanup A	ction Tak	en.*								
55bbls of oil and prod	uced fluids was i	nitially rel	leased from the w	ellhead	and we were	able to recove	er 50bbls. 7	All free flui	id from the i	elcase remai	ned o
the well pad and the di	inensions of the	spill area	were 15'x30'. Tl	ie well j	bad has been	scraped and th	te contamin	lated pad n	aterial has b	neen remove	d. (A
oil gravity of 36) Tetra	as released would Tech will samp	d have had le the spil	an estimated chi site area to delin	eate any	possible cor	tamination fr	om the relea	ase and we	will present	e nad an esu a remediati-	matee on we
plan to the BLM / NM	OCD for approv	al prior to	any significant re	emediati	on work.						
I hereby certify that th	e information giv	ven above	is true and compl	ete to th	e best of my	knowledge ar	nd understa	nd that pur	suant to NM	OCD rules a	nd
regulations all operato	rs are required to	o report an	d/or file certain ro	clease no	otifications a	nd perform co orbed as "Eini	rrective act	ions for rel	leases which	may endang	er Liss
should their operation	s have failed to a	dequately	investigate and re	emediate	e contaminati	on that pose a	threat to g	found wate	r, surface wa	ater, human	health
or the environment. In	n addition, NMO	CD accep	tance of a C-141	report de	oes not reliev	e the operator	of respons	ibility for a	ompliance v	vith any othe	4
tederal, state, or local	laws and/or regu	lations.		<u> </u>			NICEDV	ATION	DIVISI	ואר	
	7 T	$\overline{}$					NIJEKV	ATION	<u>171710</u>	<u>NC</u>	
Signature:	í ·	\leftarrow	<u>ు</u>								
Printed Name:	Josh	Russo	— —		Approved by	District Super	rvisor:				
Title:	HSE Co	ordinator			Approval Dat	te:		Expiration	Date:		
E-mail Address:	jrusso@concl	loresourc	es.com	•	Conditions of	f Approval:			Attached	I 🗋 ·	
Date: 05/10/2010	Pho	ne: 43	2-212-2399			•		-			
Attach Additional SI	neets If Necessa	агу									

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SITE INFORMATION

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		Rep	ort Type: W	ork Pla	n
General Site Info	ormation:				
Site:		BC Federal	#3		
Company:		COG Operat	ting LLC		·····
Section, Townsl	hip and Range		Т	-17S R-32E	Sec. 20 Unit H
Lease Number:		30-025-3493	2		
County:		Lea County			
GPS:		1	32.82283° N	<u>.</u>	103.78315° W
Surface Owner:		Federal	<u></u>		
<u>Mineral Owner:</u>					
Directions:		From the inter	section of Conoco F	Road and CR	-126 (South of Maljamar, NM), travel west on
			so miles, turn right i	0.0 miles, tur	There or a miles to location.
		<u></u>			
		<u></u>			
		1			
Release Data:		an a			
Date Released:		5/7/2010			
Type Release:		Produced W	ater and oil		· · · · · · · · · · · · · · · · · · ·
Source of Contan	nination:	Stuffing box	blow out		
Fluid Released:		55 bbls			
Fluids Recovered	<u>:</u>	50 bbis			
Official Commun	ication:				
Name:	Pat Ellis	1			lke Tavarez
Company:	COG Operating, L	C		-	Tetra Tech
Address	550 W Tevas Ave	Ste 1300	······································		1010 N. Big Spring
	350 W. 10AB AVE	. 016: 1000			1910 N. big Spring
<u>F.U. B0x</u>	Adultand Town 70				
	IMidiand Texas, 79	701			Midland, lexas
Phone number:	(432) 686-3023				(432) 631-0348
Fax:	(432) 684-7137				
Email:	pellis@conchoresc	ources.com	<u> </u>		ike.tavarez@tetratch.com
Ranking Criteria					
		<u> </u>			
Depth to GroundW	ater:		Ranking Score	· · · · ·	Site Data
<00 /i			20		
>100 ft.	<u></u>		0		0
· · · · · · · · · · · · · · · · · · ·					
WellHead Protecti	on:	·	Ranking Score		Site Data
Water Source <1,0	00 ft., Private <200	<u>ft.</u>	20		
Water Source >1,0	00 ft., Private >200 f	t	0		0
Surface Body of M	later.	· · · · ·	Renking Score	···-	Site Data
<200 ft.			20		
200 ft - 1,000 ft.			10		
>1,000 ft.			0		0
In the second second second	al[Ranking Score				
				·	
		Accepta	ible)Soil(RRALT(n	ng/kg)	
		Benzene	Total BTEX	TPH	150
•		10	50	5,000	150



January 7, 2011

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

Re: Work Plan for the COG Operating LLC., BC Federal #3, Unit H, Section 20, Township 17 South, Range 32 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the BC Federal #3, Unit H, Section 20, Township 17 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.82283°, W 103.78315°. The site location is shown on Figures 1 and 2.

Background

On May 7, 2010 the leak was discovered and released approximately fifty-five (55) barrels of produced water and oil due to the wellhead packing being blown out. To alleviate the problem, COG personnel repacked the well head and put the unit back into service. Fifty (50) barrels of standing fluids were recovered. The spill was contained on the well pad. The initial C-141 form is enclosed in Appendix C.

Groundwater

The United States Geological Survey (USGS) Well Reports did not list any wells in Section 20. According to the NMOCD groundwater map, the average depth to groundwater in this area is greater than 175' below surface. The groundwater data is shown in Appendix A.



Regulatory

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

Soil Assessment and Analytical Results

On August 16, 2010, Tetra Tech personnel inspected and sampled the spill area, which measured approximately 15' x 30'. A single 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 B. The results of the sampling are summarized in Table 1. The auger hole location is shown on Figure 3.

Referring to Table 1, all of the submitted samples were below the RRAL for BTEX and TPH. Elevated chloride concentrations were detected at the surface and declined significantly with depth. However, the bottom hole sample at 9-9.5' showed an increasing chloride concentration of 1,620 mg/kg.

On November 11, 2010, Tetra Tech personnel supervised the installation of one soil bore (SB-1) near AH-1 utilizing an air rotary drilling rig. The soil boring was installed to define the extent of the chloride impact detected at 9' below surface. Soil samples were collected to a depth of 25' to define the extent of the chloride impact. Referring to Table 1, the chloride concentrations significantly declined at 5' and decreased to 231 mg/kg at 15' bgs. Based on soil boring data, the auger hole sample collected at 9-9.5' may have been cross-contaminated with the upper soils during the sampling.



Work Plan

Tetra Tech proposes to supervise the removal of impacted material to approximately 4' to 5' below surface as shown in attached Table 1. Once the impacted area is excavated to the appropriate depth, the excavation will be backfilled with clean soil.

If the proposed excavation depths cannot be reached due to wall cave ins, safety concerns for lines, equipment and onsite personnel. As such, Tetra Tech will excavate the soils to the maximum extent practicable. Upon completion a final closure report will be submitted to the NMOCD.

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

Respectfully submitted, TETRA TECH

Ike Tavarez Project Manager, PG

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







Lea County, New Mexico COG Operating LLC. **BC Federal #3** Table 1

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senzene Xylene Chloride 3/ka) (ma/ka) (ma/ka)		0200 <0.0200 5,100	0200 <0.0200 5,100 938	0200 <0.0200 5,100 - 938 1,160	0200 <0.0200 5,100 - 938 - 1,160 - 1,370	0200 <0.0200 5,100 938 1,160 1,370 1,090	0200 <0.0200 5,100 938 - 1,160 - 1,370 - 459	0200 <0.0200 5,100 938 1,160 1,370 1,090 459 462	0200 <0.0200 5,100 938 - 1,160 - 1,370 - 1,370 - 459 - 462 - 441	0200 <0.0200 5,100 938 1,160 1,370 1,090 462 441 441 275	0200 <0.0200 5,100 938 1,160 - 1,370 1,370 459 - 459 462 - 441 441 462 	0200 <0.0200 5,100 938 - 1,160 - 1,160 - 1,370 1,090 - 459 441 441 275 1,620	0200 <0.0200 5,100 	0200 <0.0200 5,100 - - 938 - - 1,160 - - 1,370 - - 1,370 - - 1,090 - - 1,090 - - 459 - - 441 - - 275 - - 1,620 - - 9,320 - - 9,320	0200 <0.0200	0200 <0.0200 5,100 - - 938 - - 1,160 - - 1,370 - - 1,370 - - 1,090 - - 1,090 - - 1,090 - - 441 - - 441 - - 275 - - 275 - - 9,320 - - 9,320 - - 9,320 - - 9,320 - - 9,320 - - 9,320 - - 9,320 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - <th>0200 <0.0200</th> 5,100 - - 938 - - 1,160 - - 1,370 - - 1,370 - - 1,370 - - 1,370 - - 1,090 - - 459 - - 462 - - 441 - - 275 - - 275 - - 9,320 - - 9,320 - - 9,320 - - 9,320 - - 9,320 - - 9,320 - - 9,320 - - 9,320 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - <t< th=""><th>0200 <0.0200</th> 5,100 - - 938 - - 1,160 - - 1,370 - - 1,370 - - 1,370 - - 1,090 - - 441 - - 441 - - 275 - - 275 - - 9,320 - - 9,320 - - 9,320 - - 9,320 - - 9,320 - - 9,320 - - 9,320 - - 9,320 - - 9,320 - - 1,620 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -</t<>	0200 <0.0200	0200 <0.0200	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
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0000 > 0000																			
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C2:00	, , ,	•	•		•	1				1 1 1									
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0-1'	1-1.5'		2-2.5'	3-3.5'	4-4.5'	5-5,5	, , ,	6-6.5'	6-6.5' 7-7.5'	6-6.5' 7-7.5' 8-8.5'	6-6.5' 7-7.5' 8-8.5' 9-9.5'	6-6.5 7-7.5 8-8.5 9-9.5	6-6.5' 7-7.5' 8-8.5' 9-9.5' 0-1'	6-6.5 6-6.5 8-8.5 9-9.5 0-1	6-6.5 7-7.5 8-8.5 9-9.5 9-9.5 3 3	6-6.5 6-6.5 8-8.5 9-9.5 3 3' 3' 7' 7'	6-6.5 6-6.5 8-8.5 9-9.5 9-9.5 3' 3' 5' 7' 7'	6-6.5 6-6.5 8-8.5 9-9.5 3' 3' 3' 3' 10' 15' 15'	6-6.5' 6-6.5' 8-8.5' 9-9.5' 9-9.5' 3' 3' 5' 7' 7' 7' 10' 10' 15' 20'
8/16/2010		=	5					=	= =				11/11/2010	11/11/2010	11/11/2010	11/11/2010	11/11/2010	11/11/2010	1/11/2010
	An-I																		

Below Excavation Bottom 858

Not Analyzed

Proposed excavated depth

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Water Well Data Average Depth to Groundwater (ft) COG - BC Federal #3 Well Lea County, New Mexico

32 East

16 South

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

6	5	4	3	2	1
			65	265	265
7	8	9	10	11	12
	1	1	1	1	215
18	17	16	15	14	13
		221			215
19	20	21	22	23	24
220		210		210	
30	29	28	27	26	25
			I	243	
31	32	33	34	35	36
					260
	<u>17 S</u>	outh	32	East	
6	5	4	3	2	1 225
	[82	175	60	
7.	.8	9	10	11	12
	I			70 88	120
18	17	16	15	14	13
	-				
19	20	21	22	23	24
	SITE				
30 180	29	28	27	26	25
			L		
31	32	33	34	35	36
					I
	<u>18 S</u>	outh	32	East	
6	5	4 65	3	2	1
7 460	6	9	10	11	12
82					[i
18	17	16	15	14	13
		84			
19	20	21	22	23	24
	164		429		
30	29	28	27	26	25

34 117

35

36

	16 S	outh	33		
6	5 160	4 150	3 130	2 148	1 142
7	8 200	9	10 182	11	12 142
18	17 182	16 180	15 175	14 143	13 110
18	20	21	22	23 120	24
30 191	29	28 190	27 130	26 143	25 120
31 190	32 168	33	34 160	35	36

17 9	South	33 East					
5	4	3 155	2 158	1 150			
8	9	10	11	12			
173	161						
17	16	15	14	13			
180				165			
20	21	22	23	24			
190			115				
29	28	27	26	25			
32	33	34	35	36			
	17 \$ 5 8 173 17 180 20 190 29 32	17 South 5 4 8 9 173 161 17 16 180 20 20 21 190 29 32 33	17 South 33 5 4 3 155 8 9 10 173 161 177 16 15 180 20 21 22 190 29 28 27 32 33 34	17 South 33 East 5 4 3 155 2 158 8 9 10 11 173 161 1 11 17 16 15 14 180 20 21 22 23 190 115 14 15 14 20 21 22 23 190 115 29 28 27 26 32 33 34 35			

	18 Sc	outh	3	33 East	1
6	5	4	3	2	1
7	8 100	9	10 62	-11-	12 143
18	17 85	16	15	14 36	13 60
19 >140	20	21	22	23	24 195
30 35	29	28	27	26	25
31	32	33	34 177	35	36

New Mexico State Engineers Well Reports

USGS Well Reports

Geology and Groundwater Conditions in Southern Eddy, County, NM

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NMOCD - Groundwater Data

Field water level

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New Mexico Water and Infrastructure Data System

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

Summary Report

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

Report Date: August 25, 2010

Work Order: 10081710

Project Location:Lea County, NMProject Name:COG/BC Fed. #3Project Number:114-6400526

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
241471	AH-1 0-1'	soil	2010-08-16	00:00	2010-08-16
241472	AH-1 1-1.5'	soil	2010-08-16	00:00	2010-08-16
241473	AH-1 2-2.5'	soil	2010-08-16	00:00	2010-08-16
241474	AH-1 3-3.5'	soil	2010-08-16	00:00	2010-08-16
241475	AH-1 4-4.5'	soil	2010-08-16	00:00	2010-08-16
241476	AH-1 5-5.5'	soil	2010-08-16	00:00	2010-08-16
241477	AH-1 6-6.5'	soil	2010-08-16	00:00	2010-08-16
241478	AH-1 7-7.5'	soil	2010-08-16	00:00	2010-08-16
241479	AH-1 8-8.5'	soil	2010-08-16	00:00	2010-08-16
241480	AH-1 9-9.5'	soil	2010-08-16	00:00	2010-08-16

	[]	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)
241471 - AH-1 0-1'	< 0.0200	<0.0200	<0.0200	< 0.0200	<50.0	<2.00

Sample: 241471 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		5100	mg/Kg	4.00

Sample: 241472 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		938	mg/Kg	4.00

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296 This is only a summary. Please, refer to the complete report package for quality control data. Report Date: August 25, 2010

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Sample: 241473 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		1160	mg/Kg	4.00
Sample: 241474	- AH-1 3-3.5'			
Param	Flag	Result	Units	RL
Chloride		1370	mg/Kg	4.00
Sample: 241475	- AH-1 4-4.5'			
Param	Flag	Result	Units	RL
Chloride	<u>_</u> <u>_</u>	1090	mg/Kg	4.00
Sample: 241476	- AH-1 5-5.5'			
Param	Flag	Result	Units	RL
Chloride		459	• mg/Kg	4.00
Sample: 241477 - Param	- AH-1 6-6.5' Flag	Result	Units	RL
Chloride	· · · · · · · · · · · · · · · · · · ·	462	mg/Kg	4.00
Sample: 241478	- AH-1 7-7.5'			
Param	Flag	Result	Units	RL
Chloride		441	mg/Kg	4.00
Sample: 241479	- AH-1 8-8.5'			
Param	Flag	Result	Units	RL
Chloride		275	mg/Kg	4.00
Sample: 241480 -	- AH-1 9-9.5'			
Param	Flag	Result	Units	RL
Chloride		1620	mg/Kg	4.00

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296 This is only a summary. Please, refer to the complete report package for quality control data.

SITE INFORMATION

	Report	ure Rep	ort			
General Site Info	rmation:					
Site:		BC Federal	#3			
Company:		COG Operat	ing LLC			
Section, Townsh	nip and Range		Uni	H Sec. 2	0 T-17S	R-32E
Lease Number:		30-025-3493	2			
County:		Lea County				· · · · ·
GPS:	<u> </u>		32.82283° N			103.78315° W
Surface Owner:		Federal				
Mineral Owner:					100 (0 11	
Directions:		Conoco road (section of Conoco F).3 miles, turn right (load and CH 0.3 miles, tur	-126 (South n left 0.7 ml	of Maljamar, NM), travel west on les to location.
Release Data:						
Date Released: 5/7/2010						
Type Release: Produced Wa			ater and oil			<u> </u>
Source of Contamination: Stuffing box t			plow out			
Fluid Released: 55 bbls						
Fluids Recovered: 50 bbls			S STAT WALL SHOP AT 1997 LAT 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	and the second second	and an include	
Official Commun	nication:					
Name:	Pat Ellis	···			Kim Dorey	
Company:	COG Operating, LLC				Tetra Tech	
Address:	550 W. Texas Ave. Ste. 1300				1910 N. Big	a Spring
P.O. Box		•			¥	
City:	Midland Texas 797	01			Midland Te	2225
Phone number:	(432) 686-3023	•••			(122) 631-0	1248
Fav:	(422) 694 7127	·····				
rax. Emoile	(432) 004-7137		kim.dorey@tetratech.com			Atatratach com
Eman.	pens w concrioreso	urces.com			<u>kini.uorey</u>	eratech.com
Ranking Criteria						
Depth to Groundw	ater:		Ranking Score			Site Data
<50 ft			20	····		· · · · · · · · · · · · · · · · · · ·
50-99 ft			10			
>100 ft.	•		0			· 0
WallHead Protoctic	0.07		Ranking Secre			Site Data
Water Source <1.0	00 ft., Private <200 ft	t.	20	Site Data		
Water Source >1.0	00 ft., Private >200 ft		0	0		0
Surface Body of W	/ater:		Ranking Score			Site Data
<200 ft.		·	20			· · · · · · · · · · · · · · · · · · ·
200 ft - 1,000 ft.		· · · · ·	10			0
- 1,000 11.	•					
Tota	al Ranking Score:		0			HOBBSOCD
		Accepta	ble Soil RRAL (n	a/ka)		JUL 01 2011
		Benzene	Total BTEX	TPH		
		10	50	5,000	,	PECEIVED
		······	<u>.</u>		Ł	



June 1, 2011

HOBBS OCD

Mr. Geoffrey Leking Environmental Engineer Specialist Oil Conservation Division, District 1 1625 North French Drive Hobbs, New Mexico 88240 JUL 01 2011

RECEIVED

Re: Remedial Activities and Closure Report for the COG Operating LLC., BC Federal #3, Unit H, Section 20, Township 17 South, Range 32 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the BC Federal #3, Unit H, Section 20, Township 17 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.82283°, W 103.78315°. The site location is shown on Figures 1 and 2.

Background

On May 7, 2010 the leak was discovered and released approximately fifty-five (55) barrels of produced water and oil due to the wellhead packing being blown out. To alleviate the problem, COG personnel repacked the well head and put the unit back into service. Fifty (50) barrels of standing fluids were recovered. The spill was contained on the well pad. The initial C-141 form is enclosed in Appendix C.

Groundwater

The United States Geological Survey (USGS) Well Reports did not list any wells in Section 20. According to the NMOCD groundwater map, the average depth to groundwater in this area is greater than 175' below surface. The groundwater data is shown in Appendix A.



Regulatory

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

Soil Assessment and Analytical Results

On August 16, 2010, Tetra Tech personnel inspected and sampled the spill area, which measured approximately 15' x 30'. A single 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 B. The results of the sampling are summarized in Table 1. The auger hole location is shown on Figure 3.

Referring to Table 1, all of the submitted samples were below the RRAL for BTEX and TPH. Elevated chloride concentrations were detected at the surface and declined significantly with depth. However, the bottom hole sample at 9-9.5' showed an increasing chloride concentration of 1,620 mg/kg.

On November 11, 2010, Tetra Tech personnel supervised the installation of one soil bore (SB-1) near AH-1 utilizing an air rotary drilling rig. The soil boring was installed to define the extent of the chloride impact detected at 9' below surface. Soil samples were collected to a depth of 25' to define the extent of the chloride impact. Referring to Table 1, the chloride concentrations significantly declined at 5' and decreased to 231 mg/kg at 15' bgs. Based on soil boring data, the auger hole sample collected at 9-9.5' may have been cross-contaminated with the upper soils during the sampling.



Remedial Work and Closure Request

On March 30, 2011, Tetra Tech personnel supervised the excavation of the site. The remediation was performed as stated in the approved work plan. The excavation measured approximately 30' x 15', with a depth of 3' to 4' below surface. Approximately 120 yards³ of soil were removed and transported to CRI Inc. for proper disposal. The excavation depths are highlighted in Table 1 and shown on Figure 4. Once excavated, the excavation was backfilled with clean material. A copy of the C-141 (Final) is included in Appendix C.

Based on the remedial activities performed at this site, COG request closure of this site. If you require any additional information or have any questions or comments concerning this report, please call at (432) 682-4559.

> Respectfully submitted, TETRA TECH-

Ike Tavarez Project Manager

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









COG Operating LLC BC Federal #3 Lea County, New Mexico





Excavating material from spill path



Final depth approximately 3-4' bgs

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		I
		a LLC.
	Table 1	Doeratir
		0000

معاد المعادين المحمد المحمد BC Federal #3 Lea County, New Mexico

Imple	Sample	Sample	Depth	Soil	Status	TF	H (mg/k	g)	Benzene	Toluene	Ethlvhanzana	Yvlana	Chlorida
	Date	Depth (ft)	(BEB)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Ţ	8/16/2010	0-1*			×	<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	5,100
	-	1-1.5'	· · · ·	•	×	í	-	•	•		•		938
	=	2-2.5'			Х	•	1		•	•	÷	, r	1,160
	=	3-3.5'			×	•	•	r			a a		1,370
	-	4-4.5'.		·	×		•	•	•	 	E		1,090
	=	5-5.5'		×		1	4	•	4	U		,	459
	T	6-6.5'		×		•	t	•	,			•	462
_	=	7-7.5'		×		٠	•	•	•	1		•	441
	-	8-8.5'		×		1	•		•	1		,	275
	Ŧ	9-9.5'		×		'	•	•	-	•	•		1,620
-	11/11/2010	0-1			×	,	•	•		•	1	-	9,320
	Ŧ	o,		:	×	1.5		•	•	•	-	-	3,820
	=	2 [.]		×		•	•	-	•	1	٠	-	703
	-	7'		×		1	,	-	4	-	·	'	326
	±	10'		×		ı	•	•	•	-	ı	'	482
	=	15'		×		1	,	•	ı	r	•	-	231
	-	20'		×		,			1		1	,	<200

Below Excavation Bottom BEB

 \times

25'

¥

231

Not Analyzed Ĵ 🗌

Excavation depth

.

Water Well Data Average Depth to Groundwater (ft) COG - BC Federal #3 Well Lea County, New Mexico

	16 \$	South	3	31 East	
6	5	4	3	2	1
7	8	9	10	11	12 288
18	17	16	15	14	13 113
19	20	21	22	23	24
30	29	28	27	26	25
31 290	32	33	34	35	36
	17 :	South	3	81 East	
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34 271	35	36
	18 :	South	3	81 East	
6	5	4	3	2	1
7	8	9	10	11	12 400
18	17	16	15	14 317	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 261	36

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

6	5	4	3	2	1 225
		82	175	60	
7	8	9	10	11	12
				70 88	120
18	17	16	15	14	13
19	20	21	22	23	24
	SITE				
30 1 80	29	28	27	26	25
31	32	33	34	35	36
				1	

		18 So	uth	32	East	
6		5	4 65	3	2	1
7 82	460	8	9	10	11	12
18		17	16 84	15	14	13
19		20 1 64	21	22 429	23	24
30		29	28	27	26	25
31		32	33	34 117	35	36

	16 Sc	outh	- 33	East	
6	5 160	4	3 130	2	1
		150		148	142
7	8	9	10	11	12
	200		182		142
18	17	16	15	14	13
	182	180	175	143	110
19	20	21	22	23	24
				120	
30	29	28	27	26	25
191		190	130	143	120
31	32	33	34	35	36
190	168		160		
	17 Sc	outh	33	East	
6	15	4	3 155	2 158	1 150

6	(5	4	3 155	2 158	1 150
90	-				
7 167	8	9	10	11	12
	173	161			
18	17	16	15	14	13
188	160				165
19	20	21	22	23	24
	190			115	
30	29	28	27	26	25
31	32	33	34	35	36

	18 Sc	outh	33	East	
6	5	4	3	2	1
7	8 100	9	10 62	11	12 143 140
18	17 85	16	15	14 36	13 60
19 > 140	20	21	55	23	24 195
30 35	29	28	27	26	25
31	32	33	34 177	35	36

New Mexico State Engineers Well Reports

USGS Well Reports

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Geology and Groundwater Conditions in Southern Eddy, County, NM

NMOCD - Groundwater Data

Field water level

New Mexico Water and Infrastructure Data System

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

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Summary Report

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

Report Date: August 25, 2010

Work Order: 10081710

Project Location:	Lea County, NM
Project Name:	COG/BC Fed. #3
Project Number:	114-6400526

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
241471	AH-1 0-1'	soil	2010-08-16	00:00	2010-08-16
241472	AH-1 1-1.5'	soil	2010-08-16	00:00	2010-08-16
241473	AH-1 2-2.5' `	soil	2010-08-16	00:00	2010-08-16
241474	AH-1 3-3.5'	soil	2010-08-16	00:00	2010-08-16
241475	AH-1 4-4.5'	soil	2010-08-16	00:00	2010-08-16
241476	AH-1 5-5.5'	soil	2010-08-16	00:00	2010-08-16
241477	AH-1 6-6.5'	soil	2010-08-16	00:00	2010-08-16
241478	AH-1 7-7.5'	soil	2010-08-16	00:00	2010-08-16
241479	AH-1 8-8.5'	soil	2010-08-16	00:00	2010-08-16
241480	AH-1 9-9.5'	soil	2010-08-16	. 00:00	2010-08-16

· · · · ·			BTEX	TPH DRO - NEW	TPH GRO	
	Benzene	Toluene	Ethylbenzene	Xylene	DRO (GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(m g/ Kg)	(mg/Kg)	(mg/Kg)
241471 - AH-1 0-1'	< 0.0200	< 0.0200	< 0.0200	< 0.0200	<50.0	<2.00

Sample: 241471 - AH-1 0-1'

Param	Flag	Result	Units	\mathbf{RL}
Chloride		5100	mg/Kg	4.00

Sample: 241472 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		938	mg/Kg	4.00

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296 This is only a summary. Please, refer to the complete report package for quality control data.

Report Date: Aug	ust 25, 2010	Work Order: 10081710	rk Order: 10081710 Page Nu	
Sample: 241473	- AH-1 2-2.5'			
Param	Flag	\mathbf{Result}	Units	\mathbf{RL}
Chloride		1160	mg/Kg	4.00
Sample: 241474	- AH-1 3-3.5'			
Param	Flag	Result	Units	RL
Chloride		1370	mg/Kg	4.00
Sample: 241475	- AH-1 4-4.5'			
Param	Flag	Result	Units	RL
Chloride		1090	mg/Kg	4.00
-				
Sample: 241476	- AH-1 5-5.5'			
Param	Flag	Result	Units	RL
Chloride		459	mg/Kg	4.00
Sample: 241477	- AH-1 6-6.5'			
Param	Flag	Result	Units	\mathbf{RL}
Chloride		462	mg/Kg	4.00
Sample: 241478	- AH-1 7-7.5'			
Param	Flag	~ Result	Units	\mathbf{RL}
Chloride		441	mg/Kg	4.00
Sample: 241479	- AH-1 8-8.5'			
Param	Flag	Result	Units	RL
Chloride	<u></u>	275	mg/Kg	4.00
Sample: 241480	- AH-1 9-9.5'			
Param	Flag	Result	Units	\mathbf{RL}
Chloride		1620	mg/Kg	4.00

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296 This is only a summary. Please, refer to the complete report package for quality control data.



6701 Aberdeen Avenue, Suite 9Lubbock, Texas 79424200 East Sunset Road, Suite EEl Paso, Texas 799225002 Basin Street, Suite A1Midland, Texas 797036015 Harris Parkway, Suite 110Ft. Worth, Texas 76132

Lubbock, Texas 79424 800 • 378 • 1296 El Paso, Texas 79922 888 • 588 • 3443 Midland, Texas 79703 t. Worth, Texas 76132 E-Mail: lab@traceanalysis.com

800 • 378 • 1295 806 • 794 • 1296 888 • 588 • 3443 915 • 585 • 3443 432 • 689 • 6301 817 • 201 • 5260 FAX 806+794+1298 FAX 915+585+4944 FAX 432+689+6313

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: August 25, 2010

Work Order: 10081710

Project Location:Lea County, NMProject Name:COG/BC Fed. #3Project Number:114-6400526

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
241471	AH-1 0-1'	soil	2010-08-16	00:00	2010-08-16
241472	AH-1 1-1.5'	soil	2010-08-16	00:00	2010-08-16
241473	AH-1 2-2.5'	soil	2010-08-16	00:00	2010-08-16
241474	AH-1 3-3.5'	soil	2010-08-16	00:00	2010-08-16
241475	AH-1 4-4.5'	soil	2010-08-16	00:00	2010-08-16
241476	AH-1 5-5.5'	soil	2010-08-16	00:00	2010-08-16
241477	AH-1 6-6.5'	soil	2010-08-16	00:00	2010-08-16
241478	AH-1 7-7.5'	soil	2010-08-16	00:00	2010-08-16
241479	AH-1 8-8.5'	soil	2010-08-16	00:00	2010-08-16
241480	AH-1 9-9.5'	soil	2010-08-16	00:00	2010-08-16

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 15 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/BC Fed. #3 were received by TraceAnalysis, Inc. on 2010-08-16 and assigned to work order 10081710. Samples for work order 10081710 were received intact at a temperature of 19.6 C.

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

X		Prep	Prep	\mathbf{QC}	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	62423	2010-08-21 at 17:00	72813	2010-08-22 at 10:38
Chloride (Titration)	SM 4500-Cl B	62442	2010-08-23 at $09:04$	72833	2010-08-23 at 14:44
Chloride (Titration)	SM 4500-Cl B	62443	2010-08-23 at 09:04	72834	2010-08-23 at 14:44
TPH DRO - NEW	S 8015 D	62428	2010-08-20 at 13:56	72812	2010-08-20 at 13:56
TPH GRO	S 8015 D	62423	2010-08-21 at 17:00	72815	2010-08-22 at 11:05

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 10081710 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.

Samples were received on ice.

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

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Sample: 241471 - AH-1 0-1'

Laboratory:	Midland							
Analysis:	BTEX		Analytical M	lethod:	S 8021B		Prep Met	hod: S 5035
QC Batch:	72813		Date Analyz	ed:	2010-08-22		Analyzed	By: AG
Prep Batch:	62423		Sample Prep	aration:	2010-08-21		Prepared	By: AG
			RL					
Parameter		Flag	Result		Units		Dilution	\mathbf{RL}
Benzene			 < 0.0200		mg/Kg		1	0.0200
Toluene			< 0.0200		mg/Kg		1	0.0200
Ethylbenzene	е		< 0.0200		mg/Kg		1	0.0200
Xylene	· ·		 < 0.0200		mg/Kg		1	0.0200
_			 			Spike	Percent	Recovery

Surrogate	Flag	\mathbf{Result}	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)	1	0.906	mg/Kg	1	2.00	45	52.8 - 137
4-Bromofluorobenzene (4-BFB)		0.794	mg/Kg	1	2.00	40	38.4 - 157

Sample: 241471 - AH-1 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 72833 62442	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2010-08-23 2010-08-23	Prep Method: Analyzed By: Prepared By:	N/A AR AR
		RL			
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		5100	mg/Kg	100	4.00

Sample: 241471 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical M	ethod: S 8015 D	Prep Method	N/A
QC Batch:	72812	Date Analyz	ed: 2010-08-20	Analyzed By:	kg
Prep Batch:	62428	Sample Prep	aration: 2010-08-20	Prepared By:	kg
		RL			
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
DRO		<50.0	mg/Kg	1	50.0

¹SPECIAL-TFT is out of control limits due to an unknown anomaly. However, 4-BFB is within control limits and shows the method to be in control.

Report Date: August 25, 2010 114-6400526			Work Order: 10081710 COG/BC Fed. #3			Page Number: 5 of 15 Lea County, NM			
Surrogate	Flag	Result	Units	Dilu	tion	Spike Amount	Percent Recovery	R. I	ecovery Limits
n-Tricosane	2	202	mg/Kg	1		100	202	7	0 - 130
Sample: 24	1471 - AH-1 0	-1'							
Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 72815 62423		Analytical Date Anal; Sample Pr	Method: yzed: eparation:	S 8015 D 2010-08-22 2010-08-21	2	Prep Met Analyzed Prepared	hod: By: By:	S 5035 AG AG
			RL						
Parameter	Fla	ng .	\mathbf{Result}		Units		Dilution		RL
GRO			<2.00		mg/Kg		1		2.00
Surrogate		Flag	Becult	Unite	Dilution	Spike A mount	Percent	Re	covery
Trifluorotolu			1 01	mg/Kg	1	2.00	<u>50</u>	48	$\frac{111103}{5 - 152}$
4-Bromofluor	obenzene (4-BFl	B)	0.859	mg/Kg	1	2.00	43	42	2 - 159
Sample: 24 Laboratory: Analysis: QC Batch: Prep Batch:	1472 - AH-1 1 Midland Chloride (Titra 72833 62442	-1.5' tion)	Analyt Date A Sample	ical Methoo nalyzed: 2 Preparatio	l: SM 456 2010-04 on: 2010-04	00-Cl B 8-23 8-23	Prep M Analyze Prepare	ethod: ed By: ed By:	N/A AR AR
			BI						
Parameter	Fla	ıg	Result		Units		Dilution		\mathbf{RL}
Chloride			938		mg/Kg		100		4.00
Sample: 24 Laboratory: Analysis: QC Batch: Prep Batch:	1473 - AH-1 2- Midland Chloride (Titra 72833 62442	- 2.5'	Analyt Date A Sample	ical Methoo nalyzed: 2 Preparatio	d: SM 450 2010-0 on: 2010-0	00-Cl B 8-23 8-23	Prep M Analyze Prepare	ethod: ed By: d By:	N/A AR AR

		\mathbf{RL}			
Parameter	,Flag	\mathbf{Result}	Units	Dilution	\mathbf{RL}
Chloride		1160	mg/Kg	100	4.00

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²High surrogate recovery. Sample non-detect, result bias high.

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Report Date: August 25, 2010	Work Order: 10081710	Page Number: 6 of 15
114-6400526	COG/BC Fed. #3	Lea County, NM

Sample: 241474 - AH-1 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72833	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62442	Sample Preparation:	2010-08-23	Prepared By:	\mathbf{AR}
		\mathbf{RL}			
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		1370	mg/Kg	100	4.00

Sample: 241475 - AH-1 4-4.5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 72833 62442	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2010-08-23 2010-08-23	Prep Method: Analyzed By: Prepared By:	N/A AR AR
		\mathbf{RL}			
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		1090	mg/Kg.	100	4.00

Sample: 241476 - AH-1 5-5.5'

Laboratory:		A 1 (* 1 3 K (1 1	CM 4FOO CU D		NT / A
Analysis:	Chloride (Titration)	Analytical Method:	SIM 4500-CI B	Prep Method:	IN/A
QC Batch:	72833	Date Analyzed:	2010-08-23	Analyzed By:	\mathbf{AR}
Prep Batch:	62442	Sample Preparation:	2010-08-23	Prepared By:	\mathbf{AR}
-					
		\mathbf{RL}			
Parameter	Flag	\mathbf{Result}	Units	Dilution	\mathbf{RL}
Chloride	· · · · · · · · · · · · · · · · · · ·	459	mg/Kg	50	4.00

Sample: 241477 - AH-1 6-6.5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 72834 62443	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2010-08-23 2010-08-23	Prep Method: Analyzed By: Prepared By:	N/A AR AR
		RL	T T ', _		DT
Parameter	Flag	Result	Units	Dilution	RL
Chloride		462	mg/Kg	50	4.00

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Report Date: August 25, 2010	Work Order: 10081710	Page Number: 7 of 15
114-6400526	COG/BC Fed. #3	Lea County, NM

Sample: 241478 - AH-1 7-7.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72834	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62443	Sample Preparation:	2010-08-23	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		441	mg/Kg	50	4.00

Sample: 241479 - AH-1 8-8.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72834	Date Analyzed:	2010-08-23	Analyzed By:	AR
Prep Batch:	62443	Sample Preparation:	2010-08-23	Prepared By:	AR
		TG			
		3617			
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		275	mg/Kg	50	4.00

Sample: 241480 - AH-1 9-9.5'

Chloride		1620	mg/Kg	100	4.00
Parameter	Flag	RL Result	Units	Dilution	\mathbf{RL}
Prep Batch:	62443	Sample Preparation:	2010-08-23	Prepared By:	AR
QC Batch:	72834	Date Analyzed:	2010-08-23	Analyzed By:	\mathbf{AR}
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland				

Method Blank (1) QC Batch: 72812

DRO

QC Batch:	72812	Date Analyzed:	2010-08-20		Analyzed By:	kg
Prep Batch:	62428	QC Preparation	: 2010-08-20		Prepared By:	kg
Parameter		Flag Re	IDL sult	Units		\mathbf{RL}

<14.5

mg/Kg

50

Report Date: August 25, 2010 114-6400526			V	Work Orde COG/BC	er: 10081710 C Fed. #3		Page Nu Le	Page Number: 8 of 15 Lea County, NM		
Surrogate n-Tricosane	Flag	Result 98.6	Units mg/Kg	Dil	lution	Spike Amount 100	Percent Recovery 99	Recovery Limits 70 - 130		
Method Blan		C Batch: 72813								
QC Batch: 7 Prep Batch: 6	72813 52423	C 20000, 12010	Date Ana QC Prep	alyzed: aration:	2010-08-22 2010-08-21		Analyz Prepar	zed By: AG red By: AG		
Parameter		Flag		M Rea	IDL sult	Uni	ts	\mathbf{RL}		
Benzene				<0.0	150	mg/	Kg	0.02		
Toluene	-			<0.00	950	mg/	Kg	0.02		
Ethylbenzene				< 0.0	0106	mg/	Kg	0.02		
Xylene				<0.00	930	mg/	Kg	0.02		
						Spike	Percent	Recovery		
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits		
Trifluorotoluen	e (TFT)		1.83	mg/Kg	1	2.00	92	66.6 - 122		
4-Bromofluorob	penzene (4-B)	FB)	1.32	mg/Kg	1	2.00	66	55.4 - 132		
Method Blan QC Batch: 7 Prep Batch: 6	k (1) Q 2815 2423	C Batch: 72815	Date Ana QC Prep	alyzed: 2 aration: 2	2010-08-22 2010-08-21		Analy2 Prepar	ed By: AG ed By: AG		
				MDI	L					
Parameter		Flag		Resul	t	Unit	S	\mathbf{RL}		
GRO				<1.6	5	mg/H	(g	2		
Surrogate		Flag	Recult	Units	Dilution	Spike A mount	Percent	Recovery		
Trifluorotoluen	<u>e (ፐፑ</u> ፐ)	1 mg	2.07	mg/Kg	1	2.00	104	67.6 - 150		
4-Bromofluorob	enzene (4-B)	FB)	1.43	mg/Kg	1	2.00	72	52.4 - 130		
	<u> </u>	,					·····			
Method Blan	k (1) Q	C Batch: 72833								
QC Batch: 7 Prep Batch: 6	2833 2442		Date Ana QC Prepa	ilyzed: 2 aration: 2	2010-08-23 2010-08-23		Analyz Prepar	ed By: AR ed By: AR		
				MDI	£					
Parameter		Flag		Resul	t	Unit	s	\mathbf{RL}		
Chloride		<u>v</u>		<2.1	8	mg/F	g	4		

Report Date: August 114-6400526	25, 2010	Work Order: 10081710Page NumbeCOG/BC Fed. #3Lea Co						Number Lea Cou	: 9 of 1 nty, NN		
Method Blank (1)	QC Bat	ch: 72834									
QC Batch: 72834 Prep Batch: 62443			Date A QC Pr	Analyzed: reparation:	2010-08 2010-08	3-23 3-23			Anal Prep	yzed By ared By	y: AR 7: AR
Parameter	I	Flag		M Re	IDL sult		U	nits			RI
Chloride				<:	2.18		mg	/Kg			4
Laboratory Control	Spike (LC	CS-1)									
QC Batch: 72812 Prep Batch: 62428			Date . QC P	Analyzed: reparation	2010-00 : 2010-00	8-20 8-20			Ana Prej	dyzed E pared B	ly: kg y: kg
Param		LC Resi	S ult	Units	Dil.	Spike Amount	Mat Res	rix ult	Rec.	Ţ	Rec. Jimit
DRO		24	1	mg/Kg	1	250	<14	1.5	96		- 133.4
Percent recovery is bas	sed on the s	pike result.	RPD is	s based on	the spike	and spike d	uplicate	result.			
jj		-			a a			_			
Doram		LCSD	I Inita	Dil	Spike	Matrix	Dee	Rec). 14	חחח	RPD
		234	mg/Ka	$\frac{DII.}{\tau}$	250	<14.5	<u>94</u>	574.1	10	$\frac{\Lambda F D}{2}$	20
Percent recovery in her	und on the e	niko rogult		borod on	the spike	and enike d		rocult			
r ercent recovery is bas	eu on the s	pike result.		o based on	the spike	and spike u	upilcate	reaute.			
A	LCS	LCSD				Spike	L	CS	LCSD	•	Rec.
Surrogate	Result	Result		Units	Dil.	Amount	Re	ec	Rec.		Limit
n-incosane	<u>, 110</u>	108	<u>n</u>	Ig/ Kg	<u> </u>	100	I.	10	100		10 - 130
Laboratory Control	Spike (LC	CS-1)									
QC Batch: 72813			Date A	analyzed:	2010-08	-22			Analy	yzed By	: AG
Prep Batch: 62423			QC Pr	eparation:	2010-08	-21			Prepa	ared By	: AG
		LC	S			Spike	Mat	trix			Rec.
Param		Resu	ılt	Units	Dil.	Amount	Res	ult	Rec.	-	Limit
Benzene		1.9	8 1	mg/Kg	1	2.00	<0.0	0150	99	81	.9 - 108
Toluene		1.8	7 1	mg/Kg	1	2.00	< 0.0	0950	94	81	.9 - 107
PEnvibenzene		1.5 5.0	9 1 0 1	mg/Kg mg/Kg	1	2.00	<0.0	1030 1100	84 85	78	.4 - 107 1 - 107
Xylono		0.0	J 1	ing/itg		0.00	<u></u>	result	- 00		.1 - 107
Xylene Percent recovery is has	ed on the s	nike result	RPDie	heed on	the snike	and enike di	inningato.				
Xylene Percent recovery is bas	ed on the s	pike result.	RPD is	based on	the spike	and spike d	upiicate	result.			
Xylene Percent recovery is bas	ed on the s	pike result. LCSD	RPD is	based on	the spike Spike	and spike d	upiicate	Re	С.		RPD
Notification Xylene Percent recovery is bas Param	ed on the s	pike result. LCSD Result	RPD is Units	based on Dil.	the spike Spike Amount	and spike di Matrix Result	Rec.	Re Lin	c. nit	RPD	RPD Limit

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Report Date: August 25, 2010	Work Order: 10081710	Page Number: 10 of 15
114-6400526	COG/BC Fed. #3	Lea County, NM

control spikes continued

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	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Toluene	1.95	mg/Kg	1	2.00	< 0.00950	98	81.9 - 107	4	20
Ethylbenzene	1.81	mg/Kg	1	2.00	< 0.0106	90	78.4 - 107	7	20
Xylene	5.43	mg/Kg	1	6.00	<0.00930	90	79.1 - 107	6	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	\mathbf{Result}	\mathbf{Result}	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.66	1.61	mg/Kg	1	2.00	83	80	70.2 - 114
4-Bromofluorobenzene (4-BFB)	1.49	1.43	mg/Kg	1	2.00	74	72	69.8 - 121

Laboratory Control Spike (LCS-1)

QC Batch:	72815	Date Analyzed:	2010-08-22	Analyzed By:	\mathbf{AG}
Prep Batch:	62423	QC Preparation:	2010-08-21	Prepared By:	AG

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO	14.3	mg/Kg	1	20.0	<1.65	72	69.9 - 95.4

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

	LCSD			Spike	Matrix		Rec.		\mathbf{RPD}
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	14.2	mg/Kg	1	20.0	<1.65	71	69.9 - 95.4	1	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	2.05	1.86	mg/Kg	1	2.00	102	93	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.64	1.51	mg/Kg	1	2.00	82	76	68.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch:	72833 62442	D: Q:	ate Analyzed: C Preparation:	2010-08-23 2010-08-23	3		Analyzec Preparec	l By: AR l By: AR
Param		LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		96.2	mg/Kg	1	100	<2.18	96	85 - 115

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

Report Date: August 25, 2010 114-6400526)		Page	Page Number: 11 of 15 Lea County, NM					
_	LCSD			Spike	Matrix	_	Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	102	mg/K	<u>g 1</u>	100	<2.18	102	85 - 115	6	20
Percent recovery is based on the	he spike result.	RPD is	based on	the spike a	nd spike d	uplicate r	result.		
Laboratory Control Spike	(LCS-1)								
QC Batch: 72834		Date A	nalyzed:	2010-08-2	23		An	alyzed B	y: AR
Prep Batch: 62443		QC Pre	eparation:	2010-08-2	23		Pre	epared B	y: AR
	LC	CS			Spike	Ma	trix		Rec.
Param	Res	sult	Units	Dil.	Amount	: Re	sult R	ec.	Limit
Chloride	96	.5	mg/Kg	1	100	<2	2.18 9	96	85 - 115
Percent recovery is based on t	he spike result.	RPD is	based on	the spike a	nd spike d	uplicate r	esult.		
	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	102	mg/K	g <u>1</u>	100	<2.18	102	<u> 85 - 115 </u>	6	20
QC Batch: 72812 Prep Batch: 62428		Date A QC Pro	analyzed: eparation:	2010-08-2 2010-08-2	20 20		Ar Pr	nalyzed I epared E	3y: kg 3y: kg
	MS	\$			Spike	Matri	x		Rec.
Param	Resu	It	Units	Dil.	Amount	Resul	t Rec.]	Limit
DRO	216	3 n	ng/Kg	1	250	<14.5	5 86	35.2	2 - 167.1
Percent recovery is based on the	ne spike result.	RPD is	based on	the spike a	nd spike d	uplicate r	esult.		
	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO	226	mg/Kg	1	250	<14.5	90 3	35.2 - 167.1	4	20
Percent recovery is based on the	he spike result.	RPD is	based on	the spike a	nd spike d	uplicate r	esult.		
MS	MSD				Spike	\mathbf{M}	S MS	D	Rec.
Surrogate Resu	lt Result	t	Jnits	Dil.	Amount	Re	c. Rec	2.	Limit
n-Tricosane 98.4	1 104	m	g/Kg	11	100	98	3 104	1	70 - 130
Matrix Spike (MS-1) Sp	iked Sample: 24	41471							
QC Batch: 72813		Date A	nalvzed:	2010-08-2	2		Ana	dvzed By	7: AG
Prep Batch: 62423		QC Pre	paration:	2010-08-2	1		Pre	pared By	: AG

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	imber: 12 of 1 ea County, NN
_	Rec.
Rec.	Limit
119	80.5 - 11
116	82.4 - 11
114	83.9 - 114
113	84 - 114
lt.	
Rec.	RPI
Limit	RPD Limi
).5 - 112	10 20
.4 - 113	8 20
5.9 - 114	8 20
4 - 114	8 20
lt.	
S MSF) Rec
c. Rec.	Limit
<u>. 1000</u> 1 79	41.3 - 11
64	35.5 - 129
Analy Prepa	vzed By: AG ared By: AG
	Rec.
Rec.	Limit
83	61.8 - 114
lt.	
Rec.	RPD
Limit	RPD Limi
.8 - 114	1 20
 lt.	
AS MS	D Rec.
ec. Re	c. Limit
35 10	2 50 - 162
77 9f	50 - 16
11 4 6 3 7 -	t. S MS <u>2c. Re</u> 5 10 7 90

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⁴Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

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Report Dat 114-640052	te: August 25, 6	2010		Work Ord COG/E	ler: 100817 3C Fed. #3	10		Page	Number: Lea Cou	13 of 15 unty, NM
Matrix Sp	ike (MS-1)	Spiked Sample:	241476						`	
QC Batch:	72833		Date A	nalvzed:	2010-08-2	23		An	alvzed B	v: AR
Prep Batch	62442		QC Pr	eparation:	2010-08-2	23		Pre	epared B	y: AR
		r	AS			Spike	Ma	trix		Rec.
Param		Re	esult	Units	Dil.	Amount	Re	sult R	ec.	Limit
Chloride		10	600	mg/Kg	100	10000	4	59 1	01	85 - 115
Percent reco	overy is based	on the spike result	. RPD is	based on	the spike as	nd spike du	plicate r	esult.		
		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride		11000	mg/K	g 100	10000	459	105	85 - 115	4	20
Percent reco	overy is based	on the spike result	t. RPD is	based on	the spike a	nd spike du	plicate r	esult.		
Matrix Sp	ike (MS-1)	Spiked Sample:	241493							
	7009 4		Dete A		0010 00 0	9		A		AD
QU Batch: Prop Batch	72834		Date A	nalyzed:	2010-08-2	3 12		Ana	alyzed B	Y: AR
riep Daten	02440		QUIN	eparation:	2010-06-2	J		L I E	pared D	y: An
		Ν	ЛS			Spike	Ма	trix		Rec.
Param		Re	sult	Units	Dil.	Amount	Re	sult R	ec.	Limit
Chloride		17	300	mg/Kg	100	10000	70	60 1	02	85 - 115
Percent reco	overy is based	on the spike result	. RPD is	based on	the spike a	nd spike duj	olicate r	esult.		
		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride		17700	mg/K	g 100	10000	7060	106	85 - 115	2	20
Percent reco	overy is based	on the spike result	. RPD is	based on	the spike a	nd spike duj	olicate r	esult.		
Standard	(CCV-1)									
QC Batch:	72812		Date A	nalyzed:	2010-08-20)		Aı	nalyzed l	By: kg
			CCVs	CC	Vs	CCVs		Percent		
			True	Fou	ind	Percent	I	Recovery		Date
Param	Flag	Units	Conc.	Cor	nc.	Recovery		Limits	Α	nalyzed
DRO		mg/Kg	250	22	3	89		80 - 120	20	10-08-20
Standard		,								
Standard	$(\bigcirc \lor -2)$									
QC Batch:	72812		Date A	nalyzed:	2010-08-20)		Ar	nalyzed I	3y: kg

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Report Date 114-6400526	e: Augus 5	t 25, 2	010	Wo C	rk Order: 1008 COG/BC Fed. ;	#3 	Page N I	umber: 14 of 15 ea County, NM
Param	Flag		Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		•	mg/Kg	250	230	92	80 - 120	2010-08-20
Standard (QC Batch:	CCV-1) 72813)		Date Anal	yzed: 2010-08	-22	Anal	yzed By: AG
				CCVs	\mathbf{CCVs}	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param		Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene			mg/Kg	0.100	0.101	101	80 - 120	2010-08-22
Toluene			mg/Kg	0.100	0.0964	96	80 - 120	2010-08-22
Ethylbenzen	e		mg/Kg	0.100	0.0882	88	80 - 120	2010-08-22
Xylene			mg/Kg	0.300	0.266	89	80 - 120	2010-08-22

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Standard (CCV-2)

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QC Batch: 7281	3		Date Analyz	ed: 2010-08-2	22	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	0.105	105	80 - 120	2010-08-22
Toluene		mg/Kg	0.100	0.0994	99	80 - 120	2010-08-22
Ethylbenzene		mg/Kg	0.100	0.0915	92	80 - 120	2010-08-22
Xylene		mg/Kg	0.300	0.274	91	80 - 120	2010-08-22

Standard (CCV-1)

QC Batch:	72815		Date Ana	alyzed: 2010-0	8-22	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	0.892	89	80 - 120	2010-08-22

Standard (CCV-2)

QC Batch: 72815

Date Analyzed: 2010-08-22

Analyzed By: AG

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Report Dat 114-640052	te: August 25 6	, 2010	W	ork Order: 100 COG/BC Fed.	81710 #3	Page N I	umber: 15 of 15 Lea County, NM
Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.860	86	80 - 120	2010-08-22
Standard	(ICV-1)						
QC Batch:	72833		Date Ana	lyzed: 2010-0	8-23	Anal	yzed By: AR
_			ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param Chlorido	Flag	Units mg/Kg	Conc.	Conc.	Recovery	Limits	Analyzed
		mg/Kg	100	99.4		00 - 110	2010-08-23
Standard	(CCV-1)						
QC Batch:	72833		Date Ana	lyzed: 2010-08	3-23	Anal	yzed By: AR
			CCVs True	CCVs Found	CCVs Percent	Percent Becovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2010-08-23
Standard	(ICV-1)						
QC Batch:	72834		Date Ana	lyzed: 2010-08	3-23	Anal	yzed By: AR
			ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2010-08-23
Standard	(CCV-1)						
QC Batch:	72834		Date Ana	lyzed: 2010-08	3-23	Anal	yzed By: AR
			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	99.8	100	85 - 115	2010-08-23

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	25	2	Σ∥.						}		Τ			~	Sircle	NLYSI or Spe	IS RE(scify h	Aetho	d No.	~			
					TRAT 0 N. Big Spi lland, Texas	FCH ring St. 79705 × (432) 682-3946					1	(Ext. to C35)	Cr Pb Hg Se	AL NO HÀ 29						St			
CLIENT NAME: COG				SIT	TE MANAGER: I /4 /0000	10	NERS	–	ME	ETHOD	<u>I</u>	SOO IXL	PO TEL	P2 1847 9		510/852 80/854				IT HO BO			
PROJECT NO .: 114-6400520		<u>لة</u>	<u>डि</u> री	ECT NAME:	Fed #3		CONTAI	L(N//				COM	A gA a	69 69	elihekov	8240/82 81	809/		.Э. (Ан)	(eation)			
LAB I.D. DATE NUMBER	TIME	XIATAM	COMP	BARD	C, NM	DENTIFICATION	NUMBER OF	HCL FILTERED (HN03	NONE	11508 X308	9108 Hab	RCRA Metal		RCI Semi	GC.MS Sem	Pest. 808/60	Chloride	ere Barres Apple Beta	eedeA) M.I.9			·
nya Khint		12		X AH-1	1-0					×'		×						X					
4rr		\geq		1-44)	1-1.5																		
647	·			1-H4	, <u>5</u> ,2																		
nt h		<u> </u>		1-HĐ	3'35'																		
1 Step				1-44	ц'-4.S'																		
d The				1- 14	ئ- جنكر																		
14th		 		AH-1	ر <u>َ</u> دِيَّ																		
1867		\vdash		(-H+-)	7-7.5'								·										
476/				1-H4	ري د ع													\sim					
► 0817				4 4H-1	9'-9.S'		-											\$					
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RECEIVING LABORATOR	<u>7</u> - 7	111			REC	EVED BY: (Signature)								Ľ	/					RUS	Cred	12	
CITY: PS: 4/c.4	STAT	 الآر	۳,	HONE: ZIP:	ILAC	Ĩ	Ē	ų					•	t Ka	(a)	10127	<u>م</u> .			AUTHOR A	i) Delini Delini	Ŵ	
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Summary Report

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

Report Date: November 19, 2010

Work Order: 10111515

Project Location:Lea County, NMProject Name:COG/BC Fed. #3Project Number:114-6400526

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
250497	SB-1 0-1'	soil	2010-11-11	00:00	2010-11-15
250498	SB-1 3'	soil	2010-11-11	00:00	2010 - 11 - 15
250499	SB-1 5'	soil	2010-11-11	00:00	2010-11-15
250500	SB-1 7'	soil	2010-11-11	00:00	2010-11-15
250501	SB-1 10'	soil	2010-11-11	00:00	2010-11-15
250502	SB-1 15'	soil	2010-11-11	00:00	2010-11-15
250503	SB-1 20'	soil	2010-11-11	00:00	2010-11-15
250504	SB-1 25'	soil	2010-11-11	00:00	2010-11-15

Sample: 250497 - SB-1 0-1'

Param	Flag	Result	Units	RL
Chloride		9320	mg/Kg	4.00

Sample: 250498 - SB-1 3'

Param	Flag	Result	Units	RL
Chloride		3820	mg/Kg	4.00

Sample: 250499 - SB-1 5'

Param	Flag	\mathbf{Result}	Units	RL
Chloride		703	mg/Kg	4.00

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296 This is only a summary. Please, refer to the complete report package for quality control data.

Report Date: Nove	ember 19, 2010	Work Order: 10111515	Page	• Number: 2 of 2
Sample: 250500	- SB-1 7'			
Param	Flag	Result	Units	\mathbf{RL}
Chloride		326	mg/Kg	4.00
Sample: 250501	- SB-1 10'			
Param	Flag	\mathbf{Result}	Units	RL
Chloride		482	mg/Kg	4.00
Sample: 250502	- SB-1 15'			
Param	\mathbf{Flag}	\mathbf{Result}	Units	\mathbf{RL}
Chloride		231	mg/Kg	4.00
Sample: 250503	- SB-1 20'			
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00
Sample: 250504	- SB-1 25'			
Param	Flag	Result	Units	RL
Chloride	· · · · · · · · · · · · · · · · · · ·	231	mg/Kg	4.00
	-			

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296 This is only a summary. Please, refer to the complete report package for quality control data.

			RACEAN	alysis, Inc.∭		
		6701 Aberdeen Avenue, Suite 9 200 East Sunset Road, Suite E 5002 Basin Street, Suite A1 6015 Harris Parkway, Suite 110	Lubbock, Texas 79424 El Paso, Texas 79922 Midland, Texas 79703 Ft. Worth, Texas 76132 E-Mail: lab@	800+378+1296 806+794+1296 888+588+3443 915+585+3443 432+689+6301 817+201+5260 traceanalysis.com	FAX 806•794•1298 FAX 915•585•4944 FAX:432•689•6313	
			Cer	tifications		
	WE	BENC: 237019	HUB: NCTRCA	1752439743100-86536 WFWB38444Y0909	DBE: VN 206	ð7
			NELAP	Certifications	3	
L	ubbock:	T104704219-08-TX LELAP-02003 Kansas E-10317	El Paso	: T104704221-08-TX LELAP-02002	Midland: T10	4704392-08-TX
		Analyti	cal and G	Juality Contro	ol Report	

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

Report Date: November 19, 2010

Work Order: 10111515

Project Location:Lea County, NMProject Name:COG/BC Fed. #3Project Number:114-6400526

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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
250497	SB-1 0-1'	soil	2010-11-11	00:00	2010-11-15
250498	SB-1 3'	soil	2010-11-11	00:00	2010-11-15
250499	SB-1 5'	• soil	2010-11-11	00:00	2010-11-15
250500	SB-1 7'	soil	2010-11-11	00:00	2010-11-15
250501	, SB-1 10'	soil	2010-11-11	00:00	2010-11-15
250502	SB-1 15'	soil	2010-11-11	00:00	2010-11-15
250503	SB-1 20'	soil	2010-11-11	00:00	2010-11-15
250504	SB-1 25'	soil	2010-11-11	00:00	2010-11-15

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch

basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 7 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michae aber

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

Standard Flags

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

Case Narrative

Samples for project COG/BC Fed. #3 were received by TraceAnalysis, Inc. on 2010-11-15 and assigned to work order 10111515. Samples for work order 10111515 were received intact at a temperature of 3.0 C.

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

		Prep	Prep	\mathbf{QC}	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (Titration)	SM 4500-Cl B	64661	2010-11-16 at 08:29	75453	2010-11-18 at 10:32

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 10111515 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: 250497 - SB-1 0-1'

Chloride		9320 1	ng/Kg	100	4.00
Parameter	Flag	RL Result	Units	Dilution	RL
Prep Batch:	64661	Sample Preparation:	2010-11-16	Prepared By:	AR
QC Batch:	75453	Date Analyzed:	2010-11-18	Analyzed By:	\mathbf{AR}
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland				

Sample: 250498 - SB-1 3'

Laboratory:	Midland	4			N7 / A
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-CI B	Prep Method:	N/A
QC Batch:	75453	Date Analyzed:	2010-11-18	Analyzed By:	AR
Prep Batch:	64661	Sample Preparation	2010-11-16	Prepared By:	AR
		RL			
Parameter	Flag	\mathbf{Result}	Units	Dilution (\mathbf{RL}
Chloride		3820	mg/Kg	100	$\overline{4.00}$

Sample: 250499 - SB-1 5'

Chloride		703	mg/Kg	50	4.00
Parameter	Flag	RL Result	Units	Dilution	RL
Prep Batch:	64661	Sample Preparat	ion: 2010-11-16	Prepared By:	AR
QC Batch:	75453	Date Analyzed:	2010-11-18	Analyzed By:	\mathbf{AR}
Analysis:	Chloride (Titration)	Analytical Metho	od: SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland				

Sample: 250500 - SB-1 7'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	75453	Date Analyzed:	2010-11-18	Analyzed By:	\mathbf{AR}
Prep Batch:	64661	Sample Preparation:	2010-11-16	Prepared By:	AR

continued ...

Report Date 114-6400526	:: November 19, 2010	Work Order: COG/BC	10111515 Fed. #3	Page Number: Lea Coun	5 of 7 ty, NM
sample 2505	90 continued				
Parameter	Flag	RL Result	Units	Dilution	RL
		\mathbf{RL}			
Parameter	Flag	Result	<u>Units</u>	Dilution	RL
Chloride		326	mg/Kg	50	4.00
Sample: 25	0501 - SB-1 10'				
Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	75453	Date Analyzed:	2010-11-18	Analyzed By:	AR
Prep Batch:	64661	Sample Preparation	: 2010-11-16	Prepared By:	AR
Domosiu of an	Flor	RL Bogult	Tinita	Dibution	рт
Thister	Flag	Result		Dilution	KL
Sample: 25 Laboratory:	0502 - SB-1 15' Midland Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	NT / A
Analysis: QC Batch:	75453	Date Analyzed:	2010-11-18	Analyzed By:	AR
Analysis: QC Batch: Prep Batch:	75453 64661	Date Analyzed: Sample Preparation	2010-11-18 : 2010-11-16	Analyzed By: Prepared By:	AR AR AR
Analysis: QC Batch: Prep Batch: Parameter	75453 64661 Flag	Date Analyzed: Sample Preparation RL Result	2010-11-18 : 2010-11-16 Units	Analyzed By: Prepared By: Dilution	AR AR AR RL
Analysis: QC Batch: Prep Batch: Parameter Chloride	Flag -	Date Analyzed: Sample Preparation RL Result 231	2010-11-18 : 2010-11-16 Units mg/Kg	Analyzed By: Prepared By: Dilution 50	AR AR AR RL 4.00
Analysis: QC Batch: Prep Batch: <u>Parameter</u> <u>Chloride</u> Sample: 25	0503 - SB-1 20'	Date Analyzed: Sample Preparation RL Result 231	2010-11-18 : 2010-11-16 Units mg/Kg	Analyzed By: Prepared By: Dilution 50	AR AR AR RL 4.00
Analysis: QC Batch: Prep Batch: Parameter Chloride Sample: 25 Laboratory:	75453 64661 Flag - 0503 - SB-1 20' Midland Chlorida (Titantian)	Date Analyzed: Sample Preparation RL Result 231	2010-11-18 : 2010-11-16 Units mg/Kg	Analyzed By: Prepared By: Dilution 50	RYA AR AR RL 4.00
Analysis: QC Batch: Prep Batch: Parameter Chloride Sample: 25 Laboratory: Analysis:	75453 64661 Flag 0503 - SB-1 20' Midland Chloride (Titration)	Date Analyzed: Sample Preparation RL Result 231	2010-11-18 2010-11-16 Units mg/Kg SM 4500-Cl B 2010-11-18	Analyzed By: Prepared By: Dilution 50 Prep Method:	N/A AR AR <u>RL</u> 4.00
Analysis: QC Batch: Prep Batch: Parameter Chloride Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch:	75453 64661 Flag - 0503 - SB-1 20' Midland Chloride (Titration) 75453 64661	Date Analyzed: Sample Preparation RL Result 231 Analytical Method: Date Analyzed: Sample Preparation:	2010-11-18 : 2010-11-16 Units mg/Kg SM 4500-Cl B 2010-11-18 2010-11-16	Analyzed By: Prepared By: Dilution 50 Prep Method: Analyzed By: Prepared By:	N/A AR AR AR 4.00 N/A AR AR
Analysis: QC Batch: Prep Batch: Parameter Chloride Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch:	75453 64661 Flag - 0503 - SB-1 20' Midland Chloride (Titration) 75453 64661	Date Analyzed: Sample Preparation RL Result 231 Analytical Method: Date Analyzed: Sample Preparation: RL	2010-11-18 2010-11-16 Units mg/Kg SM 4500-Cl B 2010-11-18 2010-11-16	Analyzed By: Prepared By: Dilution 50 Prep Method: Analyzed By: Prepared By:	N/A AR AR 4.00 N/A AR AR
Analysis: QC Batch: Prep Batch: Parameter Chloride Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch: Parameter	75453 64661 Flag · 0503 - SB-1 20' Midland Chloride (Titration) 75453 64661 Flag	Date Analyzed: Sample Preparation RL Result 231 Analytical Method: Date Analyzed: Sample Preparation: RL Result	2010-11-18 2010-11-16 Units mg/Kg SM 4500-Cl B 2010-11-18 2010-11-16 Units	Analyzed By: Prepared By: Dilution 50 Prep Method: Analyzed By: Prepared By: Dilution	N/A AR AR AR 4.00 N/A AR AR AR AR

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Report Date 114-6400526	: November 1	19, 2010			Work C COG)rder: 1 /BC Fe	0111 d. #	515 3			Page	e Number Lea Cour	: 6 of 7 ty, NM
Sample: 25	0504 - SB-1	25'											
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (T 75453 64661	itration)		Analy Date Samp	tical Me Analyzec le Prepa	thod: l: ration:	SM 201 201	4500-Cl B 0-11-18 0-11-16			Prep Anal Prep	Method: yzed By: ared By:	N/A AR AR
Parameter		Flag	R	RL lesult			Unit	ts	Γ	Dilutio	n		RL
Chloride				231		n	ng/K	g		5	0		4.00
Method Bla QC Batch: Prep Batch:	ank (1) 75453 64661	QC Batch: 754	53 Da Q(te Ana C Prep	lyzed: aration:	2010-1 2010-1	1-18 1-16	5		•	Ana Preț	lyzed By: pared By:	AR AR
Parameter Chloride		Flag			MI Res <2	DL ult .18			Unit mg/k	s			RL 4
Laboratory	Control Sp	ike (LCS-1)							·				
QC Batch: Prep Batch:	75453 64661		Da QC	ite Ana C Prepa	alyzed: aration:	2010-1 2010-1	1-18 1-16				Ana Prep	lyzed By: bared By:	AR AR
Param			LCS Result	T	Inits	Dil		Spike Amount	Mat Res	trix ult	Be	۰ ۲	Rec. Limit
Chloride			97.0	n	ng/Kg	1		100	<2	.18		7 8	5 - 115
Percent recov	very is based	on the spike res	ult. RP	D is b	ased on t	the spik	e and	d spike dup	licate re	esult.		······ • • • • • • • • • • • •	
		LCS	ח			Spik	ρ	Matrix		Re	c		RPD
Param		Resu	lt (Inits	Dil.	Amou	nt	Result	Rec.	Lin	nit	RPD	Limit
Chloride	<u></u>	101	m	g/Kg	1	100		<2.18	101	85 -	115	4	20
Percent recov	very is based	on the spike res	ult. RP	D is ba	ased on t	the spik	e and	d spike dup	licate re	esult.			
Matrix Spil	ke (MS-1)	Spiked Sample	e: 25050)4									
QC Batch:	75453		Da	te Ana	lvzed:	2010-1	1-18				Ana	lvzed Bv:	AR
Prep Batch:	64661		QC	C Prepa	aration:	2010-1	1-16				Prep	ared By:	AR

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Report Da 114-640052	te: November 19 26	, 2010		Work C COG)rder: 1011 /BC Fed	1515 #3		Paş	ge Numbo Lea Cou	er: 7 of 7 inty, NM
n		М	S	TT -,	D'1	Spike	Ma	trix		Rec.
Param Chlorida			uit	Units		Amount			Lec.	Limit 85 115
		100		ug/ng	100			<u>.</u>	90	00 - 110
Percent rec	overy is based on	the spike result.	RPD is b	ased on 1	the spike a	nd spike duj	plicate r	esuit.		
		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride		10300	mg/Kg	100	10000	231	101	85 - 115	3	20
Percent rec	overy is based on	the spike result.	RPD is b	ased on	the spike a	nd spike duj	olicate r	esult.		
Standard	(ICV-1)									
QC Batch:	75453		Date An	alyzed:	2010-11-18			An	alyzed B	y: AR
			ICVs	IC	Vs	ICVs		Percent		_
-		T T 7.	True	For	ind	Percent]	Recovery		Date
Param	Flag	Units	<u>Conc.</u>		nc.			$\frac{\text{Limits}}{95 + 115}$	A	$\frac{\text{nalyzed}}{10,11,19}$
Chioride		mg/Kg	100	90				00 - 110	20	10-11-10
Standard	(CCV-1)									
QC Batch:	75453		Date Ana	alyzed:	2010-11-18			An	alyzed B	y: AR
			CCVs	CC	Vs	CCVs		Percent		
			True	Fot	ind	Percent]	Recovery		Date
Param	Flag	Units	Conc.	Co	nc.	Recovery		Limits	A	nalyzed
Chloride		mg/Kg	100	10	01	101		85 - 115	201	10-11-18

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