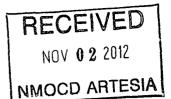
SITE INFORMATION

. --~

			t Type: Clos				ļ
General Site Info	ormation;		a the second and the second	1. 1. 1. 1. S. 1. 1.	N. 6 . 8 . 8 . 8		
Site:			Unit #632 Well				
Company:		COG Operat	ting LLC				
Section, Townsh	hip and Range	Unit M	Sec 24	T17S	R29E		
Lease Number:		API-30-015-4	40327				
County:		Eddy Count	у				
GPS:			32.81425° N			104.03443° W	
Surface Owner:		Federal					
Mineral Owner:							
Directions:						d 82, travel west on 82 for 3. avel 0.3 miles to location.	1 miles,
	· · · · · · · · · · · · · · · · · · ·						
······						·····	
				<u></u>			
Release Data:			e ve se en en	en e			gar yr
Date Released:		8/14/2012					ೆ ಇಂತ್ರಾಂಗಿ ಬಿಂಗಿ ಬಿಂ
Type Release:		Produced W	ater				
Source of Contan	mination:	BKU #112 In		<u></u>			
Fluid Released:		134 bbls			<u> </u>		
Fluids Recovered	130 bbls						
Official Communication:							A 6
Name:	Pat Ellis	e sel la serie de la constante de la desta de la constante de la serie de la constante de la constante de la co	i - JE AD OF BRIDDER AT ANY ON CAR		Ike Tavarez	• JP your Solid Sample Section and Control Section 27 (2010) Spatial Research Rese Research Research Researc	2412 11 1.02
Company:	COG Operating, LL	<u> </u>		<u> </u>	Tetra Tech		
Address:						Caving	
	550 W. Texas Ave.	Ste. 1300			1910 N. Big	Spring	
P.O. Box							
City:	Midland Texas, 79	701		Midland, Texas			
Phone number:	(432) 686-3023			(432) 682-4559			
Fax:	(432) 684-7137						
Email:	pellis@conchoresc	urces.com			ike.tavarez	@tetratech.com	
Ranking Criteria							
Depth to Groundw	vater:	· · · · · · · · · · · · · · · · · · ·	Ranking Score	T		Site Data	
<50 ft			20	<u> </u>			
50-99 ft	<u> </u>		10	1			
>100 ft.			0			0	
WellHead Protecti	ion:		Ranking Score	T		Site Data	
	000 ft., Private <200 I	ft.	20	1		Sile Dala	
and the second se	000 ft., Private >200 l		0		······	0	
					·		
Surface Body of V	Vater:		Ranking Score			Site Data	
<200 ft.			20				
200 ft - 1,000 ft. >1,000 ft.			10	<u></u>	0		
-1,000 11.			U			U	
To	al Ranking Score		1	-			
1						RECEIVED	
		Accepta	able Soil RRAL (mg/kg)	*	1	
		Benzene	Total BTEX	ТРН]	NOV 02 2012	
		10	50	5,000		NMOCD ARTES	





October 29, 2012

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

Re: Closure Report for the COG Operating LLC., Burch Keely Unit #632 Well Pad, Unit M, Section 24, 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 Burch Keely Unit #632 Well Pad, Unit M, Section 24, Township 17 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.81425°, W 104.03443. 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 August 14, 2012, and released approximately one hundred and thirty four (134) barrels of produced water from an injection line, with one hundred and thirty (130) barrels of standing fluids recovered. During the construction of a new well pad, an injection line was hit releasing fluids into the pasture. The spill area measured approximately 30' x 40'. The spill area is shown on Figure 3. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 24. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 175' below surface. The average depth to groundwater data is shown in Appendix B.

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-



based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Remediation and Conclusion

After the release, COG immediately excavated the spill area to complete the new well pad location. The excavation measured approximately 30' x 40' at a depth of 10.0' below surface. Approximately 550 cubic yards of soil were excavated and transported to the R360 facility for proper disposal.

On August 16, 2012, Tetra Tech personnel collected confirmation samples from the excavation bottom and side walls. In addition, a backhoe trench was installed in the bottom to define extents. The excavated area and confirmation samples are shown on Figure 4. The sampling results are summarized in Table 1.

Referring to Table 1, all of the samples were below the RRAL for TPH and BTEX. The sidewall samples did not show a significant impact to the soils. The bottom sample showed a chloride of 2,650 mg/kg, but declined with depth to 546 mg/kg at T-1 (12'). Based on the results, the BLM approved the backfilling of the excavation with clean material to grade.

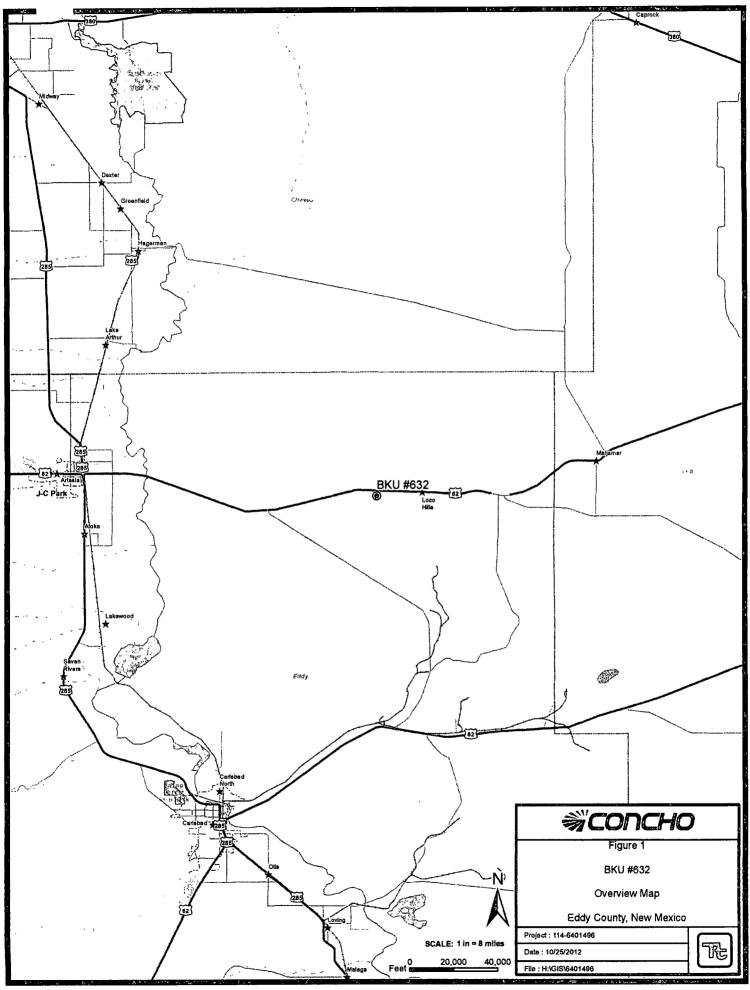
Based on the remediation activities performed at this location, COG requests closure for this site. The C-141 (Final) is included in Appendix A. If you have any questions or comments concerning the remediation activities performed at the site, please call me at (432) 682-4559.

Respectfully submitted, TETRA/TECH

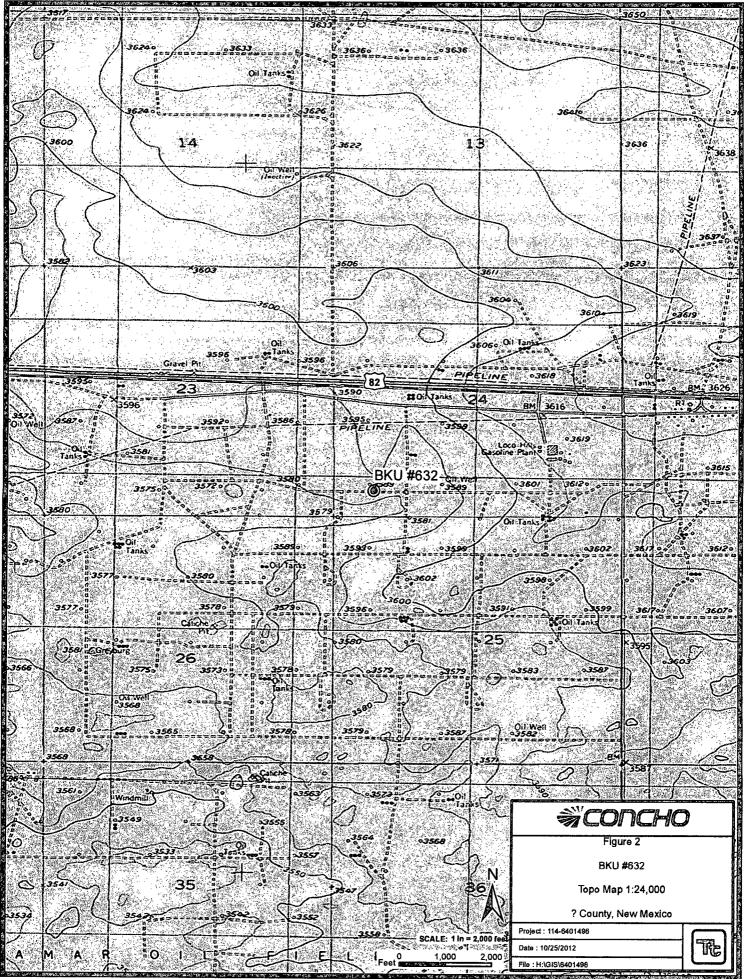
Ike Tavarez, PG Senior Project Manager

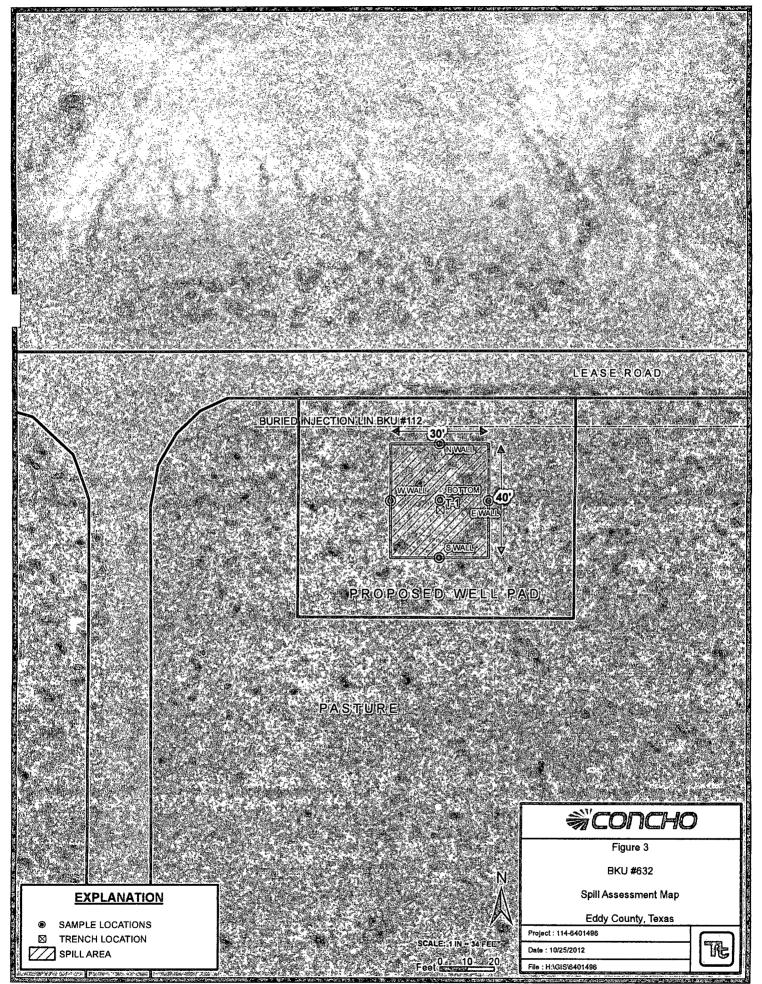
cc: Pat Ellis – COG cc: Terry Gregston - BLM

Figures

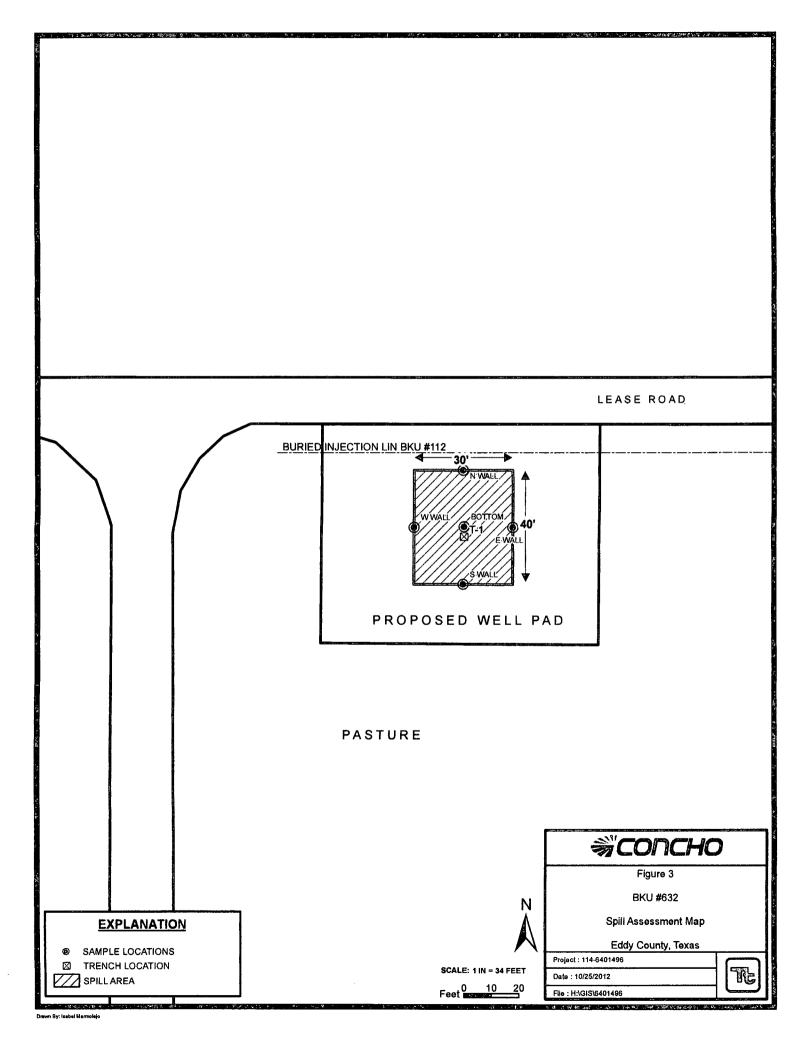


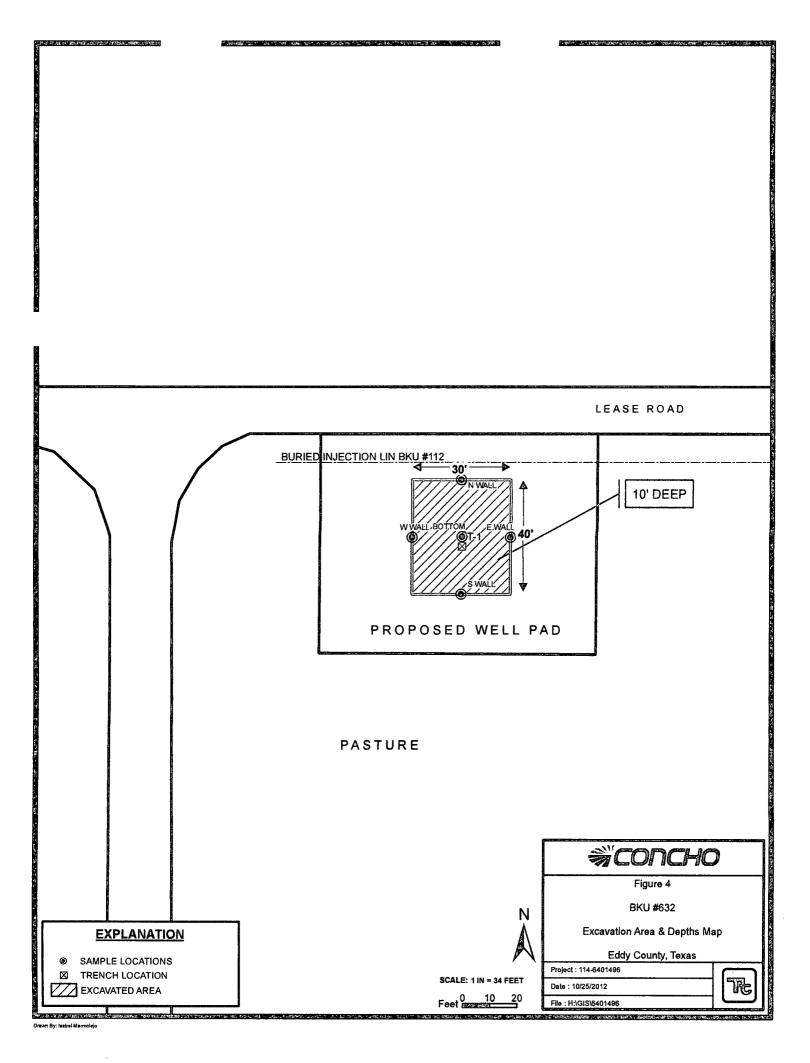
Drawn By: Isabel Mannolojo





Orawn By: Isabel Marmolai





Tables

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Table 1COG Operating LLC.Birch Kelly Unit #632Eddy County, New Mexico

Ocean la ID	Sample ID Sample		Soil Status		ד	TPH (mg/kg)		Benzene Toluene	Ethlybenzene	Xylene	Total	Chloride	
Sample ID	Date	Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	BTEX (mg/kg)	(mg/kg)
North Wall	8/16/2012	-	Х		23.4	<50.0	23.4	<0.100	<0.100	<0.100	<0.100	<0.100	146
East Wall	u	-	Х		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	151
South Wall	11	-	Х		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	161
West Wall	"	_	Х		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	184
Bottom	11	10	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,650
	8/16/2012	12	Х		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	548
T-1	11	14	Х		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	968
	11	16	Х		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	699

(-) Not Analyzed

Appendix A

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

······································			Rele	ase Notific	ation	and Co	orrective A	ction				
						OPERAT	FOR .		🔲 Initia	al Report	\boxtimes	Final Report
Name of Co				ting LLC		Contact		t Ellis				
				land, Texas 79'		Felephone N		230-007				
Facility Nan	ne	Bur	ch Keely	Unit #632		Facility Typ	e Tank	Batter	<u>y</u>			
Surface Ow	ner: Feder	al		Mineral C)wner			- <u></u>	Lease N	lo. (API#)	30-01	5-40327
				LOCA	TION	N OF REI	LEASE					
Unit Letter	Section	Township	Range	Feet from the		South Line	Feet from the	East/W	/est Line	County		
М	24	175	29Ē								Edd	y
	L	L]	Latitude N 32.8	31425°	Longitud	e W 104.0344:	3°		L		
				NAT	URE	OF REL	EASE	_				
Type of Rele							Release 134 bbl			Recovered		
Source of Release: BKU #112 Injection Line							lour of Occurrenc	e		Hour of Dis		i i
Was Immedia	ate Notice (Tiven?				08/14/2012 If YES, To		l	08/14/20	12_12:30 p.	<u>m.</u>	
was minicula			Yes 🗌	No 🗌 Not Re	eauired	II 123, 10	whom:	Mike B	ratcher-O	CD		
			· · <u>-</u>					Jim A	mos-BLM	1		
				· · · · · · · · · · · · · · · · · · ·					regston-B		En	11700
By Whom? J							lour 08/15/2012			1 1 1		EIVED
Was a Watercourse Reached?						N/A	olume Impacting t	the wate	rcourse.		NOV	0 2 2012
If a Watercou	irse was Im	pacted, Descr	ibe Fully. ⁴	<pre></pre>						N.M.	OCD	ARTESIA
Describe Cau	se of Probl	em and Reme	dial Action	1 Taken.*								
been repaired	and return	ed to service.		tly hit a buried inj	jection li	ne from the I	3KU #112 causin	g the rele	ease of flui	id onto the s	ite. Th	e line has
Describe Are	a Affected	and Cleanup A	Action Tak	en.*								
excavated, Te	etra Tech co	ollected confir	mation sa	ill. Soil exceeding the operation of the	oen excav	vation. Base	d on the results, t	the excav				
regulations al public health should their o or the environ	Il operators or the envi operations h ument. In a	are required to ronment. The have failed to a	o report ar acceptanc adequately CD accep	is true and comp ad/or file certain r e of a C-141 repo investigate and r tance of a C-141	elease no ort by the emediate	otifications and NMOCD mate contaminati	nd perform correct arked as "Final R on that pose a thr	ctive acti eport" de eat to gre	ons for rel oes not rel ound wate	eases which ieve the ope r, surface w	may er rator of ater, hu	ndanger f liability man health
		1,-	K				OIL CON	SERV	ATION	DIVISIO	<u>DN</u>	
Signature: /												
Printed Name	<u> </u>	ez Ac	at o	In CBG)	Approved by	District Supervis	or:				
Title: Project	Manager	× (-		Approval Dat	e:	E	Expiration	Date:		
Ti						<u> </u>						
		arez@TetraTe			(Conditions of	Approval:			Attached		
Date: /6 -				(432) 682-4559								
Attach Addi	tional She	ets If Necess	ary									

State of New Mexico Energy Minerals and Natural Resources

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

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

Attached

Release Notification and Corrective Action

		OPERATOR	\boxtimes	Initial Report	Final Report
Name of Company	y COG OPERATING LLC	Contact	Pat Ellis		
Address 550	W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077		
Facility Name	Burch Keely Unit #632	Facility Type	Well pad		

Surface Owner Federal	Mineral Owner	Lease No. (API#) 30-015-40327	

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	24	175	29E					Eddy

Latitude 32 48.855 Longitude 104 02.066

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 134bbls	Volume Re	ecovered 130bbls						
Source of Release BKU #112 injection line	Date and Hour of Occurrence	1	lour of Discovery						
	08/14/2012	08/14/2012	2 12:30 p.m.						
Was Immediate Notice Given?	If YES, To Whom?		D						
🛛 Yes 🔲 No 🛄 Not Required		Bratcher-OC Amos-BLM	U						
	Terry Gregston-BLM								
By Whom? Josh Russo	Date and Hour 08/15/2012 8:50 a		BECEWED						
Was a Watercourse Reached?	If YES, Volume Impacting the Wat								
🗋 Yes 🖾 No		NOV 02 2012							
If a Watercourse was Impacted, Describe Fully.*		1							
			NMOCD ARTESIA						
Describe Cause of Problem and Remedial Action Taken.*		ļ							
While preparing a new well pad a dozer accidently hit a buried injection line from the BKU #112 causing the release of fluid onto the site. The line has									
been repaired and returned to service.									
Describe Area Affected and Cleanup Action Taken.*									
Initially 134bbls were released from the injection line and we were able to									
x 30' area adjacent to the release point. All free fluids were removed and		y excavated	and hauled to a disposal. Tetra						
Tech sampled the spill area and we have backfilled the site in preparation	of the drilling rig.								
I hereby certify that the information given above is true and complete to t	he best of my knowledge and understa	nd that nursu	ant to NMOCD rules and						
regulations all operators are required to report and/or file certain release n									
public health or the environment. The acceptance of a C-141 report by th									
should their operations have failed to adequately investigate and remediat	e contamination that pose a threat to g	round water,	surface water, human health						
or the environment. In addition, NMOCD acceptance of a C-141 report d	oes not relieve the operator of respons	ibility for co	mpliance with any other						
federal, state, or local laws and/or regulations.									
10	OIL CONSERV	<u>ATION I</u>	DIVISION						
Signature:			· · · · ·						
	A								
Printed Name: Josh Russo	Approved by District Supervisor:								
Title: HSE Coordinator	Approval Date:	Expiration D	ate:						

Conditions of Approval:

 Date:
 08/21/2012
 Phone:

 * Attach Additional Sheets If Necessary

jrusso@conchoresources.com

432-212-2399

E-mail Address:

Appendix B

Water Well Data Average Depth to Groundwater (ft) COG - Burch Keely Unit #632 Eddy County, New Mexico

	16	South	2	28 East	
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21 61	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

	17 So	outh	28	East	
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 79	23	24
30	29	28	27	26	25
31	32 SITE	33	34	35 258	36

	18	South	:		
6	5	4 108	3	2	1
7 49	8 69	9	10	11	12
18	17	16	15	14	13
19	20	21 226	22	23	24
49	29	28	27	26	25
31	32	33	34	35 65	36

	16	South	2		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14 220 dry	13
19 110	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

	16 Sc	outh	30	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	35	36

30 East

17 South

	17 \$	South		29 East	
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	80 23	24 SITE
30	29 210	28	27	26	25
31	32	33	34	35 153	36

	18 Sc	outh	2	9 East	
6	5	4	3	2	1
7	8	9	10 9 5	5 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	36

18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
1	18 S	outh	;	30 East	
6	18 S	outh	3	30 East	1
6		_			1

New Mexico State Engineers Well Reports

USGS Well Reports

Geology and Groundwater Conditions in Southern Eddy, County, NM

NMOCD - Groundwater Data

Field water level

35.11

New Mexico Water and Infrastructure Data System

Appendix C

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Summary Report

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

Report Date: August 28, 2012

Work Order: 12081901

Project Name: COG/BKU #632 Project Number: 114-6401496

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
307091	North Wall	soil	2012-08-16	00:00	2012-08-17
307092	East Wall	soil	2012-08-16	00:00	2012-08-17
307093	South Wall	soil	2012-08-16	00:00	2012-08-17
307094	West Wall	soil	2012-08-16	00:00	2012-08-17
307095	10' Bottom	soil	2012-08-16	00:00	2012-08-17
307096	T-1 (12')	soil	2012-08-16	00:00	2012-08-17
307097	T-1 (14')	soil	2012-08-16	00:00	2012-08-17
307098	T-1 (16')	soil	2012-08-16	00:00	2012-08-17

		I	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)
307091 - North Wall	<0.100 1	<0.100	<0.100	<0.100	<50.0 Qr	23.4
307092 - East Wall	< 0.0200	< 0.0200	< 0.0200	<0.0200	<50.0 gr	<4.00
307093 - South Wall	< 0.0200	< 0.0200	< 0.0200	<0.0200	<50.0 Qr	<4.00
307094 - West Wall	< 0.0200	< 0.0200	< 0.0200	<0.0200	<50.0	<4.00
307095 - 10' Bottom	< 0.0200	< 0.0200	< 0.0200	<0.0200	<50.0	<4.00
307096 - T-1 (12')	< 0.0200	< 0.0200	< 0.0200	< 0.0200	<50.0	<4.00
307097 - T-1 (14')	< 0.0200	<0.0200	< 0.0200	<0.0200	<50.0	<4.00
307098 - T-1 (16')	< 0.0200	< 0.0200	< 0.0200	<0.0200	<50.0	<4.00

Sample: 307091 - North Wall

Param	Flag	Result	Units	\mathbf{RL}
Chloride		146	mg/Kg	4

Sample: 307092 - East Wall

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.

¹Sample dilution due to hydrocarbons.

Report Date: Augu	ust 28, 2012	Work Order: 12081901	Page N	Jumber: 2 of 2
Param	Flag	Result	Units	RL
Chloride	······	151	mg/Kg	4
Sample: 307093	- South Wall			
Param	Flag	Result	Units	RL
Chloride		161	mg/Kg	4
Sample: 307094	- West Wall			
Param	Flag	Result	Units	RL
Chloride	· · · · · · · · · · · · · · · · · · ·	184	mg/Kg	4
Param Chloride	Flag	Result 2650	Units mg/Kg	RL 4
Sample: 307096	- T-1 (12')			
Param	- T-1 (12') Flag	Result	Units	RL
		Result 548	Units mg/Kg	RL 4
Param	Flag			
Param Chloride	Flag		mg/Kg Units	4 RL
Param Chloride Sample: 307097	Flag - T-1 (14')	548	mg/Kg	4
Param Chloride Sample: 307097 Param	Flag - T-1 (14') Flag	548 Result	mg/Kg Units	4 RL
Param Chloride Sample: 307097 Param Chloride	Flag - T-1 (14') Flag	548 Result	mg/Kg Units	4 RL

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.



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

El Paso, Texas 79922 300-570-1230 900-El Paso, Texas 79922 915-Midland, Texas 79703 432-Sulte 100 Carrollion, Texas 75006 972-E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

915-585-3443 FAX 915-585-4944 432-689-6301 FAX 432-689-6313 972-242-7750

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: August 28, 2012

Work Order: 12081901

Project Name: COG/BKU #632 Project Number: 114-6401496

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
307091	North Wall	soil	2012-08-16	00:00	2012-08-17
307092	East Wall	soil	2012-08-16	00:00	2012-08-17
307093	South Wall	soil	2012-08-16	00:00	2012-08-17
307094	West Wall	soil	2012-08-16	00:00	2012-08-17
307095	10' Bottom	soil	2012-08-16	00:00	2012-08-17
307096	T-1 (12')	soil	2012-08-16	00:00	2012-08-17
307097	T-1 (14')	soil	2012-08-16	00:00	2012-08-17
307098	T-1 (16')	soil	2012-08-16	00:00	2012-08-17

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

Michael abal

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

Page 2 of 31

Report Contents

Case Narrative	5
Analytical Report	6
Sample 307091 (North Wall)	6
Sample 307092 (East Wall)	7
Sample 307093 (South Wall)	8
Sample 307094 (West Wall)	10
Sample 307095 (10' Bottom)	11
Sample 307096 (T-1 (12'))	13
Sample 307097 (T-1 (14'))	14
Sample 307098 (T-1 (16'))	16
	- 0
Method Blanks	18
QC Batch 94082 - Method Blank (1)	18
QC Batch 94083 - Method Blank (1)	18
QC Batch 94203 - Method Blank (1)	18
QC Batch 94204 - Method Blank (1)	19
QC Batch 94232 - Method Blank (1)	19
Laboratory Control Spikes	20
QC Batch 94082 - LCS (1)	20
QC Batch 94083 - LCS (1)	20
QC Batch 94203 - LCS (1)	20
QC Batch 94204 - LCS (1)	21
QC Batch 94232 - LCS (1)	22
QC Batch 94082 - MS (1)	22
QC Batch 94083 - MS (1)	23
QC Batch 94203 - MS (1)	23
QC Batch 94204 - MS (1)	24
\hat{QC} Batch 94232 - MS (1)	24
Calibration Standards	26
QC Batch 94082 - CCV (1)	26
QC Batch 94082 - CCV (2)	26
QC Batch 94082 - CCV (3)	26
QC Batch 94083 - CCV (1)	26
QC Batch 94083 - CCV (2)	26
QC Batch 94083 - CCV (3)	27
QC Batch 94203 - CCV (1)	27
QC Batch 94203 - CCV (2)	27
QC Batch 94203 - CCV (3)	28
QC Batch 94204 - CCV (1)	28
QC Batch 94204 - CCV (2)	28
QC Batch 94204 - CCV (3)	28
QC Batch 94232 - CCV (1)	28
QC Batch 94232 - CCV (2)	29

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Result Comments	30
Attachments	30

Case Narrative

Samples for project COG/BKU #632 were received by TraceAnalysis, Inc. on 2012-08-17 and assigned to work order 12081901. Samples for work order 12081901 were received intact at a temperature of 8.8 C. Samples were received on ice.

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	79847	2012-08-23 at 16:25	94203	2012-08-23 at 16:25
Chloride (Titration)	SM 4500-Cl B	79857	2012-08-23 at 13:15	94232	2012-08-24 at 13:25
TPH DRO - NEW	S 8015 D	79748	2012-08-20 at 08:00	94082	2012-08-21 at 08:20
TPH DRO - NEW	S 8015 D	79749	2012-08-20 at 08:00	94083	2012-08-21 at 08:25
TPH GRO	S 8015 D	79847	2012-08-23 at 16:25	94204	2012-08-23 at 16:25

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 12081901 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Report Date: August 28, 2012 114-6401496

Work Order: 12081901 COG/BKU #632

Analytical Report

Sample: 307091 - North Wall

ParameterFlagCertResultUnitsDilutionRLBenzene1 υ 1<0.100mg/Kg50.0200Toluene υ 1<0.100mg/Kg50.0200Ethylbenzene1<0.100mg/Kg50.0200Xylene υ 1<0.100mg/Kg50.0200Surrogate υ 1<0.100mg/Kg50.0200SurrogateFlagCertResultUnitsDilutionAmountRecoverySurrogateFlagCertResultUnitsDilutionAmountRecoveryLimitsTrifluorotoluene (TFT)1.71mg/Kg52.008670 - 1304-Bromofluorobenzene (4-BFB)1.97mg/Kg52.009870 - 130Sample: 307091 - North WallLaboratory:MidlandAnalysical Method:SM 4500-Cl BPrep Method:N/AQC Batch:94232Date Analyzed:2012-08-24Analyzed By:ARPrep Batch:79857Sample Preparation:2012-08-24Prepared By:ARParameterFlagCertResultUnitsDilutionRLParameterFlagCertResultUnitsDilutionRLChloride146mg/Kg54.00	Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock BTEX 94203 79847		Analytica Date Ana Sample P	lyzed:	2012	21B -08-23 2-08-23		Prep Method Analyzed By Prepared By	MT
Benzene 1 0 1 <0.100 mg/Kg 5 0.0200 Toluene 0 1 <0.100						RL				
$\begin{tabular}{c c c c c c c c c c c c c c c c c c c $	Parameter		Flag	Cert		Result		-	Dilution	RL_
Ethylbenzene i <0.100 mg/Kg 5 0.0200 Xylene u i <0.100 mg/Kg 5 0.0200 Surrogate Flag Cert Result Units Dilution Amount Recovery Limits Trifluorotoluene (TFT) 1.71 mg/Kg 5 2.00 86 70 - 130 4-Bromofluorobenzene (4-BFB) 1.97 mg/Kg 5 2.00 98 70 - 130 Sample: 307091 - North Wali Laboratory: Midland Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 94232 Date Analyzed: 2012-08-24 Analyzed By: AR Prep Batch: 79857 Sample Preparation: 2012-08-24 Prepared By: AR Parameter Flag Cert Result Units Dilution RL	Benzene	1	υ	1		< 0.100	mg/K	5	5	0.0200
Xylenev1<0.100mg/Kg50.0200SurrogateFlagCertResultUnitsDilutionAmountRecoveryLimitsTrifluorotoluene (TFT)1.71mg/Kg52.008670 - 1304-Bromofluorobenzene (4-BFB)1.97mg/Kg52.009870 - 130Sample: 307091 - North WallLaboratory:MidlandAnalysis:Chloride (Titration)Analytical Method:SM 4500-Cl BPrep Method:N/AQC Batch:94232Date Analyzed:2012-08-24Analyzed By:ARPrep Batch:79857Sample Preparation:2012-08-24Prepared By:ARParameterFlagCertResultUnitsDilutionRL	Toluene		υ	1		< 0.100	mg/K	g	5	0.0200
Surrogate Flag Cert Result Units Dilution Amount Recovery Limits Trifluorotoluene (TFT) 1.71 mg/Kg 5 2.00 86 70 - 130 4-Bromofluorobenzene (4-BFB) 1.97 mg/Kg 5 2.00 98 70 - 130 Sample: 307091 - North Wall Laboratory: Midland Analysis: Choride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 94232 Date Analyzed: 2012-08-24 Analyzed By: AR Prep Batch: 79857 Sample Preparation: 2012-08-24 Prepared By: AR Parameter Flag Cert Result Units Dilution RL	Ethylbenzene			1		< 0.100	mg/K	S	5	0.0200
SurrogateFlagCertResultUnitsDilutionAmountRecoveryLimitsTrifluorotoluene (TFT)1.71mg/Kg52.008670 - 1304-Bromofluorobenzene (4-BFB)1.97mg/Kg52.009870 - 130Sample: 307091 - North WallLaboratory:MidlandAnalysis:Chloride (Titration)Analytical Method:SM 4500-Cl BPrep Method:N/AQC Batch:94232Date Analyzed:2012-08-24Analyzed By:ARPrep Batch:79857Sample Preparation:2012-08-24Prepared By:ARRLRLRLRLRLRL	Xylene		U	1		< 0.100	mg/K	5	5	0.0200
Laboratory:Midland Analysis:Analytical Method:SM 4500-Cl BPrep Method:N/AQC Batch:94232Date Analyzed:2012-08-24Analyzed By:ARPrep Batch:79857Sample Preparation:2012-08-24Prepared By:ARRLParameterFlagCertResultUnitsDilutionRL	Trifluorotolue			Flag Cert	1.71	mg/K	g 5	Amount 2.00	Recovery 86	Limits 70 - 130
Analysis:Chloride (Titration)Analytical Method:SM 4500-Cl BPrep Method:N/AQC Batch:94232Date Analyzed:2012-08-24Analyzed By:ARPrep Batch:79857Sample Preparation:2012-08-24Prepared By:ARRLParameterFlagCertResultUnitsDilutionRL	Sample: 307	7091 - Nort	h Wall							
Parameter Flag Cert Result Units Dilution RL	Analysis: QC Batch:	Chloride (Ti 94232	tration)	Date	Analyze	d:	2012-08-24		Analyzed E	By: AR
						\mathbf{RL}				
Chloride 146 mg/Kg 5 400	Parameter		Flag	Cert		Result	Unit	S	Dilution	RL
	Chloride					146	mg/K	g	5	4.00

Sample: 307091 - North Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Analysis: TPH DRO - NEW		Date A	cal Method: nalyzed: Preparation:	S 8015 D 2012-08-21 2012-08-20	Prep Method: Analyzed By: Prepared By:	N/A CW CW
			_	\mathbf{RL}			
Parameter		Flag	Cert	\mathbf{Result}	Units	Dilution	\mathbf{RL}
DRO		Qr,U	2	<50.0	mg/Kg	1	50.0

Report Date: August 28, 2012 114-6401496				<u></u>	Page Number: 7 of 31					
Surrogate	Flag	Cer	t i	Result	Units	Dilu	tion A	Spike mount	Percent Recovery	Recovery Limits
n-Tricosane			,	114	mg/Kg	1	· · · · · · · · · · · · · · · · · · ·	100	114	70 - 130
Sample: 307	7091 - North Wa	all								
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH GRO 94204 79847			Date An	al Method: alyzed: Preparation	2012-0	8-23		Prep Meth Analyzed F Prepared F	By: MT
Parameter		Flag		Cert	R	RL esult	IJī	uits	Dilution	\mathbf{RL}
GRO		1 100		1		23.4	mg/		5	4.00
Surrogate			Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolue 4-Bromofluoro	ne (TFT) obenzene (4-BFB)				$\begin{array}{c} 1.60 \\ 2.47 \end{array}$	mg/Kg mg/Kg	5 5	2.00 2.00	80 124	70 - 130 70 - 130

Sample: 307092 - East Wall

Laboratory: Lubbock Analysis: BTEX QC Batch: 94203 Prep Batch: 79847		Date Ana	l Method: lyzed: reparation	S 80211 2012-08 : 2012-08	-23		Prep Method Analyzed By: Prepared By:	MT
				\mathbf{RL}				
Parameter	Flag	Cert		Result	Unit	S	Dilution	\mathbf{RL}
Benzene	υ	1	<	0.0200	mg/K	g	1	0.0200
Toluene	υ	1	<	0.0200	mg/K	g	1	0.0200
Ethylbenzene	υ	1	<	0.0200	mg/K		1	0.0200
Xylene	ЈЪ	1	<	0.0200	mg/K	g	1	0.0200
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	1.02		1.67	mg/Kg	1	2.00	84	70 - 130
4-Bromofluorobenzene (4-BFB)			1.89	mg/Kg	1	2.00	94	70 - 130

Report Date: 114-6401496	August 28, 2012			Work Order COG/BK)1		Page Numb	oer: 8 of 31
Sample: 3070)92 - East Wall								
	Midland								
	Chloride (Titratic	n)		ytical Meth		[4500-Cl B		Prep Meth	
•	94232			Analyzed:		2-08-24		Analyzed 1	
Prep Batch: 7	79857		Samp	ole Preparat	tion: 201	2-08-24		Prepared I	By: AR
					RL				
Parameter		Flag	Cert	Re	esult	Unit	S	Dilution	\mathbf{RL}
Chloride					151	mg/K	g	5	4.00
aboratory: N	0 92 - East Wall Midland TPH DRO - NEV	V	Ana	lytical Metl	hod: S	8015 D		Prep Meth	od: N/A
	94082			e Analyzed:		12-08-21		Analyzed 1	
Prep Batch: 7	79748			ple Prepara		12-08-20		Prepared I	-
					RL				
Parameter		Flag	Cert	Re	esult	Unit	s	Dilution	\mathbf{RL}
DRO		Qr,U	2	<	50.0	mg/K	g	1	50.0
						S	pike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilut		nount	Recovery	Limits
-Tricosane			116	mg/Kg	1		100	116	70 - 130
Laboratory: L Analysis: 7 QC Batch: 9	0 92 - East Wall Lubbock IPH GRO 94204 79847		Date Ana	al Method: alyzed: Preparation:	S 8015 2012-08 2012-08	8-23		Prep Methoo Analyzed By Prepared By	r: MT
Parameter		Flag	Cert	Re	RL sult	Unit	s	Dilution	\mathbf{RL}
GRO		υ	1		4.00	mg/K		1	4.00
		Fla	g Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Surrogate				1 50	177	1	0.00	88	70 190
rifluorotoluene	e (TFT) penzene (4-BFB)				mg/Kg mg/Kg	1 1	$\begin{array}{c} 2.00 \\ 2.00 \end{array}$	00 96	70 - 130 70 - 130

Report Date: August 28, 2012 114-6401496					ler: 120819 3KU #632		Page Numb	er: 9 of 31	
Sample: 307093 - South Wal	1								
Laboratory: Lubbock									
Analysis: BTEX		A	nalytica	l Method:	S 8021H	3		Prep Method	: S 5035
QC Batch: 94203		Da	ate Ana	lyzed:	2012-08	-23		Analyzed By	: MT
Prep Batch: 79847		$\mathbf{S}s$	mple P	reparation	n: 2012-08	-23		Prepared By:	MT
					\mathbf{RL}				
Parameter	Flag		Cert		Result	Units		Dilution	\mathbf{RL}
Benzene	υ		1	<	(0.0200	mg/Kg		1	0.0200
Toluene	υ		1	<	(0.0200	mg/Kg		1	0.0200
Ethylbenzene	υ		1	<	(0.0200	mg/Kg		1	0.0200
Xylene	U		1	<	(0.0200	mg/Kg		1	0.0200
							Spike	Percent	Recovery
Surrogate	F	lag	Cert	Result	Units	Dilution	Amount		Limits
Trifluorotoluene (TFT)				1.64	mg/Kg	1	2.00	82	70 - 130
4-Bromofluorobenzene (4-BFB)				1.88	mg/Kg	1	2.00	94	70 - 130

Sample: 307093 - South Wall

~

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 94232 79857	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2012-08-24 2012-08-24	Prep Method: Analyzed By: Prepared By:	AR
Parameter	Flag	Cert	RL Result	Units	Dilution	\mathbf{RL}
Chloride			161	mg/Kg	5	4.00

Sample: 307093 - South Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - NE 94082 79748	W	Dat	lytical Methe e Analyzed: ple Preparat	2012-0	8-21	Prep Me Analyzed	By: CW
-	19146	Flag	Cert		RL		Prepared	
Parameter DRO		Flag		Res	60.0	Units	Dilution	RL
		Qr,U	2	<	0.0	mg/Kg	1	50.0
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			117	mg/Kg	1	100	117	70 - 130

Report Date: August 28, 2012 114-6401496	Work Order: 12081901 COG/BKU #632						Page Numb	er: 10 of 31	
Sample: 307093 - South Wal	1								
Laboratory: Lubbock Analysis: TPH GRO QC Batch: 94204 Prep Batch: 79847			Date An	al Methoc alyzed: Preparatic	2012-0	8-23		Prep Metho Analyzed B Prepared B	y: MT
					\mathbf{RL}				
Parameter	Flag		Cert		Result	Uni	ts	Dilution	\mathbf{RL}
GRO			1		<4.00	mg/K	g	1	4.00
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)				1.72	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)				1.92	mg/Kg	1	2.00	96	70 - 130

Sample: 307094 - West Wall

•								
Laboratory: Lubbock								
Analysis: BTEX		Analytica	l Method:	S 8021H	3		Prep Method	: S 5035
QC Batch: 94203		Date Ana	lyzed:	2012-08	-23		Analyzed By:	MT
Prep Batch: 79847		Sample P	reparation:	2012-08	-23		Prepared By:	MT
				RL				
Parameter	Flag	Cert]	Result	Unita	S	Dilution	\mathbf{RL}
Benzene	υ	1	<	0.0200	mg/Ka	5	1	0.0200
Toluene	U	1	<	0.0200	mg/Kg		1	0.0200
Ethylbenzene	υ	1	<	0.0200	mg/Kg	ş	1	0.0200
Xylene	U	1	<	0.0200	mg/Kg	ς	1	0.0200
						Spike	Percent	Recovery
Surrogate	Flag	g Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.80	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			1.98	mg/Kg	1	2.00	99	70 - 130

Sample: 307094 - West Wall

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	94232	Date Analyzed:	2012-08-24	Analyzed By: AR
Prep Batch:	79857	Sample Preparation:	2012-08-24	Prepared By: AR

continued ...

Report Date: Au 114-6401496	ıgust 28, 2012	Work Order: 12081901 COG/BKU #632						_	Page Numb	er: 11 of 31	
sample 307094 co	ontinued										
Parameter		Flag		Cert]	RL Result		Uni	ts	Dilution	RL
Parameter		Flag		Cert]	RL Result		Uni	ts	Dilution	\mathbf{RL}
Chloride						184		mg/K	g	5	4.00
•	dland										
v	PH DRO - NEV	V			alytical Mo		S 8015			Prep Met	
- v	083 740				te Analyze		2012-0			Analyzed	
Prep Batch: 79'	749			San	nple Prepa	tration:	2012-0	8-20		Prepared	By: CW
						RL					
Parameter		Flag		Cert]	Result		Uni	ts	Dilution	\mathbf{RL}
DRO		U		2		<50.0		mg/K	(g	1	50.0
Surrogate	Flag	Cert		Result	Units	D	ilution		Spike nount	Percent Recovery	Recovery Limits
n-Tricosane	8			120	mg/Kg		1		100	120	70 - 130
Analysis: TF QC Batch: 942	4 - West Wal bbock PH GRO 204 847	1		Date An	al Method alyzed: Preparatio	201	015 D 2-08-23 2-08-23			Prep Metha Analyzed E Prepared B	By: MT
				~		RL					
Parameter GRO		Flag		Cert		Result <4.00		Uni		Dilution 1	RL 4.00
				1		<u><u>4.00</u></u>		mg/K	ь.	<u>1</u>	4.00
Surrogate Trifluorotoluene	/ጥድጥነ	_	Flag	Cert	Result	Units mg/K		ution	Spike Amount 2.00	Percent Recovery 95	Recovery Limits 70 - 130
4-Bromofluorobe					$1.90 \\ 2.03$	mg/K mg/K		1 1	2.00	95 102	70 - 130 70 - 130
					2.00	ng/ r	5	1	2.00	102	10 - 100

Report Date: August 28, 2012 114-6401496				er: 120819(KU #632		Page Numb	er: 12 of 31	
Sample: 307095 - 10' Botton	n							
Laboratory: Lubbock Analysis: BTEX QC Batch: 94203 Prep Batch: 79847		Analytica Date Ana Sample P		S 8021E 2012-08 : 2012-08	-23		Prep Metho Analyzed By Prepared By	y: MT
				\mathbf{RL}				
Parameter	Flag	Cert		Result	Units		Dilution	\mathbf{RL}
Benzene	U	1	<	0.0200	mg/Kg		1	0.0200
Toluene	υ	1	<	0.0200	mg/Kg		1	0.0200
Ethylbenzene	U	1	<	0.0200	mg/Kg		1	0.0200
Xylene	υ	1	<	0.0200	mg/Kg		1	0.0200
						Spike	Percent	Recovery
Surrogate	Fla	g Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.90	mg/Kg	1	2.00	95	70 - 130
4-Bromofluorobenzene (4-BFB)			1.91	mg/Kg	1	2.00	96	70 - 130

Sample: 307095 - 10' Bottom

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 94232 79857	Date An	al Method: alyzed: ² reparation:	SM 4500-Cl B 2012-08-24 2012-08-24	Prep Method: Analyzed By: Prepared By:	AR
			\mathbf{RL}			
Parameter	Flag	Cert	Result	Units	Dilution	\mathbf{RL}
Chloride			2650	mg/Kg	10	4.00

Sample: 307095 - 10' Bottom

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - NEW 94083 79749		Date	lytical Metho e Analyzed: ple Preparat	2012-0	8-21	Prep Me Analyzec Preparec	i By: CW
Demonster		Die e	Claut		RL	TT-: '4 -	Dilation	DI
Parameter		Flag	Cert	Res	suit	Units	Dilution	RL
DRO		U	2	<5	0.0	mg/Kg	1	50.0
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
	1 1005							
n-Tricosane			123	mg/Kg	1	100	123	70 - 130

Report Date: August 28, 2012 114-6401496		Work Order: 12081901 COG/BKU #632						Page Numb	er: 13 of 31
Sample: 307095 - 10' Botto	m								
Laboratory: Lubbock Analysis: TPH GRO QC Batch: 94204 Prep Batch: 79847			Date An	al Metho alyzed: Preparati	2012-0	8-23		Prep Metho Analyzed B Prepared B	y: MT
					\mathbf{RL}				
Parameter	Flag		Cert		Result	Uni	ts	Dilution	\mathbf{RL}
GRO			1		<4.00	mg/K	g	1	4.00
							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)				1.97	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)				1.98	mg/Kg	1	2.00	99	70 - 130

Sample: 307096 - T-1 (12')

Laboratory: Lubbock Analysis: BTEX QC Batch: 94203 Prep Batch: 79847		Date Ana	l Method: lyzed: reparation:	S 80211 2012-08 2012-08	-23		Prep Method Analyzed By: Prepared By:	MT
				RL				
Parameter	Flag	Cert		Result	Units	;	Dilution	\mathbf{RL}
Benzene	U	1	<	0.0200	mg/Kg		1	0.0200
Toluene	U	1	<	0.0200	mg/Kg	-	1	0.0200
Ethylbenzene	U	1	<	0.0200	mg/Kg		1	0.0200
Xylene	υ	1	<	0.0200	mg/Kg		1	0.0200
Surrogate	Fla	g Cert	Result	Units	Dilution	Spike Amount		Recovery Limits
Trifluorotoluene (TFT)			1.85	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.81	mg/Kg	1	2.00	91	70 - 130

Sample: 307096 - T-1 (12')

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	94232	Date Analyzed:	2012-08-24	Analyzed By:	AR
Prep Batch:	79857	Sample Preparation:	2012-08-24	Prepared By:	AR

-	Report Date: August 28, 2012 114-6401496			Vork Order: 1 COG/BKU			Page Num	ber: 14 of 31
Parameter		Flag	Cert	R Resu	L lt	Units	Dilution	RL
Chloride				54		mg/Kg	5	4.00
Sample: 30	7096 - T-1 (12')							
Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - NE ⁷ 94083 79749	W	Date	lytical Metho e Analyzed: ple Preparatio	2012-0	8-21	Prep Me Analyzec Preparec	By: CW
				R	L			
Parameter	·	Flag	Cert	Resu	-	Units	Dilution	RL
DRO		U	2	<50	.0	mg/Kg	1	50.0
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	1105		110	mg/Kg	1	100	110	70 - 130

Sample: 307096 - T-1 (12')

Laboratory: Lubbock									
Analysis: TPH GRO			Analytic	al Method	: S 8015	5 D		Prep Metho	d: S 5035
QC Batch: 94204			Date An	alyzed:	2012-0	8-23		Analyzed B	y: MT
Prep Batch: 79847			Sample 1	Preparation	n: 2012-0	8-23		Prepared B	•
					\mathbf{RL}				
Parameter	Flag		Cert	F	Result	Uni	ts	Dilution	RL
GRO			1		<4.00	mg/K	g	1	4.00
							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)				1.97	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)				1.88	mg/Kg	1	2.00	94	70 - 130

Sample: 307097 - T-1 (14')

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	94203	Date Analyzed:	2012-08-23	Analyzed By:	MT
Prep Batch:	79847	Sample Preparation:	2012-08-23	Prepared By:	MT

Report Date 114-6401496	e: August 28, 20			Vork Ord COG/E	ler: 1208 3KU #6				Page Numl	ber: 1	5 of 31	
						\mathbf{RL}						
Parameter		Flag	Ce	ert		Result		Unit	5	Dilution		RL
Benzene	······································	υ			<	< 0.0200		mg/Kg		1		0.0200
Toluene		U	1	L	<	<0.0200		mg/Kg		1		0.0200
Ethylbenzen	e	U	1	L	<	< 0.0200		mg/K		1		0.0200
Xylene		υ	1		<	<0.0200		mg/K		1		0.0200
									Spike	Percent	Re	covery
Surrogate			Flag Ce	rt	Result	Units	s Di	ilution	Amount	Recovery		imits
Trifluorotolu	ene (TFT)				1.79	mg/K		1	2.00	90		- 130
	robenzene (4-BF	B)			1.84	mg/K		1	2.00	92		- 130
Sample: 30	97097 - T-1 (14	·')										
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titra 94232 79857	ation)	Γ)ate	vtical Me Analyzec le Prepar	1:	SM 450 2012-0 2012-0			Prep Me Analyzed Prepared	ł By:	N/A AR AR
						\mathbf{RL}						
Parameter		Flag	Ce	rt		Result		Unit	5	Dilution		\mathbf{RL}
Chloride		~ Ŭ				968		mg/K		5		4.00
Sample: 30 Laboratory: Analysis: QC Batch: Prep Batch:	7097 - T-1 (14 Midland TPH DRO - N 94083 79749]	Date	ytical Mo Analyze ple Prepa	ed:	S 8013 2012-0 2012-0	08-21		Prep Me Analyzec Prepared	l By:	N/A CW CW
						\mathbf{RL}						
Parameter		Flag	Ce	rt]	Result		Unit	5	Dilution		RL
ORO	······	υ	2		••••••••••••••••••••••••••••••••••••••	<50.0		mg/K	5	1		50.0
								S	oike	Percent	Re	covery
Surrogate n-Tricosane	Flag	Cert	Result		Units mg/Kg	-	ilution	-	ount	Recovery		imits

.

Sample: 307097 - T-1 (14')

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	94204	Date Analyzed:	2012-08-23	Analyzed By:	MT
Prep Batch:	79847	Sample Preparation:	2012-08-23	Prepared By:	MT

114-6401496				Page Numb	Page Number: 16 of 31				
_					RL				
Parameter	Flag		Cert		Result	Units		Dilution	RL
GRO			1		<4.00	mg/Kg	S	1	4.00
							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)				1.88	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)				1.89	mg/Kg	1	2.00	94	70 - 130
Sample: 307098 - T-1 (16')									
Laboratory: Lubbock Analysis: BTEX QC Batch: 94203 Prep Batch: 79847			Date Ana	l Method: lyzed: reparatior	2012-08	-23		Prep Metho Analyzed B Prepared B	y: MT
Laboratory: Lubbock Analysis: BTEX QC Batch: 94203 Prep Batch: 79847	Flore		Date Ana Sample P	lyzed:	2012-08 a: 2012-08 RL	-23 -23		Analyzed B Prepared B	y: MT y: MT
Laboratory: Lubbock Analysis: BTEX QC Batch: 94203 Prep Batch: 79847 Parameter	Flag		Date Ana Sample P Cert	lyzed: reparatior	2012-08 a: 2012-08 RL Result	-23 -23 Units		Analyzed B Prepared B Dilution	y: MT y: MT
Laboratory: Lubbock Analysis: BTEX QC Batch: 94203 Prep Batch: 79847 Parameter Benzene	U		Date Ana Sample P Cert	lyzed: reparatior	2012-08 a: 2012-08 RL Result (0.0200	-23 -23 		Analyzed B Prepared B Dilution	y: MT y: MT
Laboratory: Lubbock Analysis: BTEX QC Batch: 94203 Prep Batch: 79847 Parameter Benzene Toluene	U V		Date Ana Sample P Cert	lyzed: reparatior < <	2012-08 a: 2012-08 RL Result (0.0200 (0.0200	-23 -23 Units mg/Kg mg/Kg		Analyzed B Prepared B Dilution 1 1	y: MT y: MT
Laboratory: Lubbock Analysis: BTEX QC Batch: 94203 Prep Batch: 79847 Parameter Benzene Toluene Ethylbenzene	U		Date Ana Sample P Cert	lyzed: reparatior < < <	2012-08 a: 2012-08 RL Result (0.0200	-23 -23 		Analyzed B Prepared B Dilution	y: MT y: MT
Laboratory: Lubbock Analysis: BTEX QC Batch: 94203 Prep Batch: 79847 Parameter Benzene Toluene Ethylbenzene Xylene	บ บ บ		Date Ana Sample P Cert 1 1 1	lyzed: reparatior < < < <	2012-08 RL Result 0.0200 0.0200 0.0200 0.0200	-23 -23 	Spike	Analyzed B Prepared B Dilution 1 1 1 1 2 Percent	y: MT y: MT 0.0200 0.0200 0.0200 0.0200 Recovery
Laboratory: Lubbock Analysis: BTEX QC Batch: 94203	บ บ บ		Date Ana Sample P Cert	lyzed: reparatior < < <	2012-08 RL Result 0.0200 0.0200 0.0200	-23 -23 		Analyzed B Prepared B Dilution 1 1 1 1 1	y: MT y: MT 0.0200 0.0200 0.0200 0.0200

Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	94232	Date An	alyzed:	2012-08-24	Analyzed By:	AR
Prep Batch:	79857	Sample 1	Preparation:	2012-08-24	Prepared By:	AR
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	\mathbf{RL}
Chloride			699	mg/Kg	5	4.00

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Sample: 30	7098 - T-1 (16'))							
Laboratory:	Midland								
Analysis:	TPH DRO - NE	W		alytical Met		8015 D		Prep Metl	
QC Batch:	94083			te Analyzed		012-08-21		Analyzed	
Prep Batch:	79749		Sar	nple Prepara	ation: 20	012-08-20		Prepared	By: C
					\mathbf{RL}				
Parameter		Flag	Cert		esult	Uni		Dilution]
DRO		U	2	<	<50.0	mg/ł	ζg	1	5
						ç	Spike	Percent	Recove
Surrogate	Flag	Cert	\mathbf{Result}	Units	Dilut	tion A	mount	Recovery	Limi
			110	17.0	4		100	110	70 1
n-Tricosane			116	mg/Kg	1		100	116	70 - 1
	7098 - T-1 (16') Lubbock TPH GRO 94204 79847)	Analytic Date An	al Method:	S 8015 2012-0	D 8-23	100	Prep Metho Analyzed By Prepared By	d: S 50 y: MT
Sample: 30 Laboratory: Analysis: QC Batch:	Lubbock TPH GRO 94204		Analytic Date An Sample	al Method: alyzed: Preparation	S 8015 2012-0 : 2012-0 RL	D 8-23 8-23		Prep Metho Analyzed B Prepared By	d: S 50 y: MT
Sample: 30 Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH GRO 94204	Flag	Analytic Date An	al Method: alyzed: Preparation R	S 8015 2012-0 : 2012-0	D 8-23	ts	Prep Metho Analyzed B	d: S 5(y: MT 7: MT
Sample: 30 Laboratory: Analysis: QC Batch: Prep Batch: Parameter	Lubbock TPH GRO 94204		Analytic Date An Sample : Cert	al Method: alyzed: Preparation R	S 8015 2012-0 : 2012-0 RL esult	5 D 8-23 8-23 Uni	ts (g	Prep Metho Analyzed By Prepared By Dilution 1	d: S 5(y: MT 7: MT
Sample: 30 Laboratory: Analysis: QC Batch: Prep Batch: Parameter	Lubbock TPH GRO 94204	Flag	Analytic Date An Sample Cert	al Method: alyzed: Preparation R	S 8015 2012-0 : 2012-0 RL esult	5 D 8-23 8-23 Uni	ts	Prep Metho Analyzed By Prepared By Dilution 1 Percent	d: S 5(y: MT r: MT 4 Recove
Sample: 30 Laboratory: Analysis: QC Batch: Prep Batch: Parameter GRO	Lubbock TPH GRO 94204 79847		Analytic Date An Sample Cert	al Method: alyzed: Preparation Result	S 8015 2012-0 : 2012-0 RL esult :4.00	0 D 8-23 8-23 Uni mg/F	ts Spike	Prep Metho Analyzed By Prepared By Dilution 1	d: S 5(y: MT 7: MT

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Method Blanks

Method Blank (1)	QC E	Batch: 9408	2					
QC Batch: 94082			Date A	nalyzed:	2012-08-21		Analyze	d By: CW
Prep Batch: 79748			QC Pre	eparation:	2012-08-20		Prepare	d By: CW
					М	DL		
Parameter		Fla	e	Cert		sult	Units	\mathbf{RL}
DRO				2		14.5	mg/Kg	50
						~	4 F G	_
G	D 1	(Cont	D	TT:4-	Diletter	Spike	Percent	Recovery
Surrogate n-Tricosane	Flag	Cert	Result 105	Units mg/Kg	Dilution	Amount 100	Recovery 105	Limits 70 - 130
			105	IIIg/ IXg	I	100	105	10 - 130
Method Blank (1) QC Batch: 94083 Prep Batch: 79749	QC F	Batch: 9408	Date A	nalyzed: paration:	2012-08-21 2012-08-20		Analyze Prepared	•
					Μ	DL		
Parameter		Fla	5	Cert		sult	Units	RL
Parameter DRO		Fla	g	Cert 2		sult 4.5	Units mg/Kg	RL 50
		Fla	g					50
DRO	Flag	Fla _t Cert	Result	2 Units	<1 Dilution	.4.5 Spike Amount	mg/Kg	
DRO	Flag	<u></u>		2	<1 Dilution	4.5 Spike	mg/Kg Percent	50 Recovery
DRO		<u></u>	Result 113 3 Date Ar	2 Units	<1 Dilution 1 2012-08-23 2012-08-23	4.5 Spike Amount 100	mg/Kg Percent Recovery	50 Recovery Limits 70 - 130 d By: MT
DRO Surrogate n-Tricosane Method Blank (1) QC Batch: 94203 Prep Batch: 79847		Cert Batch: 9420	Result 113 3 Date A QC Pre	2 Units mg/Kg nalyzed: eparation:	<1 Dilution 1 2012-08-23 2012-08-23 M	4.5 Spike Amount 100	mg/Kg Percent Recovery 113 Analyze Prepared	50 Recovery Limits 70 - 130 d By: MT d By: MT
DRO Surrogate n-Tricosane Method Blank (1) QC Batch: 94203 Prep Batch: 79847 Parameter		Cert Batch: 9420	Result 113 3 Date Ar	2 Units mg/Kg nalyzed: paration: Cert	<1 Dilution 1 2012-08-23 2012-08-23 M Re	4.5 Spike Amount 100 IDL sult	mg/Kg Percent Recovery 113 Analyze Prepared Units	50 Recovery Limits 70 - 130 d By: MT d By: MT RL
DRO Surrogate n-Tricosane Method Blank (1) QC Batch: 94203 Prep Batch: 79847 Parameter Benzene		Cert Batch: 9420	Result 113 3 Date A QC Pre	2 Units mg/Kg nalyzed: paration: Cert	<1 Dilution 1 2012-08-23 2012-08-23 M Re <0.00	4.5 Spike Amount 100 IDL sult 1365	mg/Kg Percent Recovery 113 Analyzee Prepared Units mg/Kg	50 Recovery Limits 70 - 130 d By: MT d By: MT d By: MT RL 0.02
DRO Surrogate n-Tricosane Method Blank (1) QC Batch: 94203 Prep Batch: 79847 Parameter		Cert Batch: 9420	Result 113 3 Date A QC Pre	2 Units mg/Kg nalyzed: paration: Cert	<1 Dilution 1 2012-08-23 2012-08-23 M Re	4.5 Spike Amount 100 IDL sult J365 J816	mg/Kg Percent Recovery 113 Analyze Prepared Units	50 Recovery Limits 70 - 130 d By: MT d By: MT RL
DRO Surrogate n-Tricosane Method Blank (1) QC Batch: 94203 Prep Batch: 79847 Parameter Benzene Toluene		Cert Batch: 9420	Result 113 3 Date A QC Pre	2 Units mg/Kg nalyzed: paration: Cert	<1 Dilution 1 2012-08-23 2012-08-23 M Re <0.00 <0.00	4.5 Spike Amount 100 IDL sult J365 J816	mg/Kg Percent Recovery 113 Analyze Prepared Units mg/Kg mg/Kg	50 Recovery Limits 70 - 130 d By: MT d By: MT RL 0.02 0.02

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recove Limit
Trifluorotoluene (TFT)	riag	Cert	2.10	mg/Kg	1	2.00	105	70 - 13
4-Bromofluorobenzene (4-BFB)			1.99	mg/Kg	1	2.00	100	70 - 13
Method Blank (1) QC Batch	: 94204 -							
QC Batch: 94204		Date A	nalyzed:	2012-08-23	3		Analyzed	By: M
Prep Batch: 79847			paration:	2012-08-2			Prepared	•
Parameter	Flag		Cert		MDL Result		Units]
GRO	Flag		1		<0.359		mg/Kg	•
			_					
a		~				Spike	Percent	Recov
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limi
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)			$\begin{array}{c} 2.14 \\ 2.02 \end{array}$	mg/Kg mg/Kg	1 1	2.00 2.00	107 101	70 - 1 70 - 1
	<u></u>							
Method Blank (1) QC Batch	: 94232							
QC Batch: 94232		Date A	nalyzed:	2012-08-2	4		Analyze	d By: A
Prep Batch: 79857			eparation:	2012-08-2			Prepareo	
					MDL			
Parameter	Flag		Cert		Result		Units	
Chloride					<3.85		mg/Kg	

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 94082 Prep Batch: 79748			Analyzed: reparation:		-08-21 -08-20				zed By red By	
]	LCS			Spike	Mat	trix		Rec.
Param	<u> </u>			Units	Dil.	Amount	Res			Limit
DRO		2	220 п	ng/Kg	1	250	<14	4.5 8	8	70 - 130
Percent recovery is based on the	spike resu	lt. RPD i	s based on	the sp	ike and sp	oike duplica	ate resul	t.		
		LCSD			Spike	Matrix		Rec.		RPD
Param	F C	\mathbf{Result}	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO q	r Qr 2	280	mg/Kg	1	250	<14.5	112	70 - 130	24	20
Percent recovery is based on the	spike resu	lt. RPD i	s based on	the sp	ike and sp	oike duplica	ate resul	t.		
	LCS	LCSE)			Spike	LCS	LCSI	C	Rec.
Surrogate	Result	Resul			Dil.	Amount	Rec.	Rec		Limit
n-Tricosane	118	136	mg/l	Kg	1	100	118	136		70 - 130
Laboratory Control Spike (L	CS-1)	Data	l	0010	00.01				10	QUU
QC Batch: 94083			Analyzed:		-08-21			Analy	-	•
Prep Batch: 79749		·	reparation:	2012-	-08-20	0.1	N (Prepa:	red By	
Deve	F		LCS esult l	Units	Dil.	Spike Amount	Mat			Rec.
Param DRO	<u> </u>			ig/Kg	1	250	Res			Limit 70 - 130
· · · · · ·									<u> </u>	10 - 130
Percent recovery is based on the	spike resul	t. RPD i	s based on	the spi	ike and sp	ike duplica	te result	t.		
		LCSD			Spike	Matrix		Rec.		RPD
Param	F C	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO	2	239	mg/Kg	1	250	<14.5	96	70 - 130	8	20
Percent recovery is based on the	spike resul	t. RPD i	s based on	the spi	ike and sp	ike duplica	te resul	t.		

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	118	126	mg/Kg	1	100	118	126	70 - 130

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Laboratory Control Spike (L	CS-	1)		,								
QC Batch: 94203			Dat	e Analyz	ed: 20	012-08-23			L	Analyz	zed By:	MT
Prep Batch: 79847				Preparat)12-08-23					ed By:	МТ
				I CO			а. ч				,	Dee
Param		F		LCS Result	Units	Dil.	Spike Amount		trix sult	Rec.		Rec. Jimit
Benzene		<u> </u>	1	1.84	mg/Kg		2.00		0365	92		$\frac{1}{4} - 120$
Toluene				1.80	mg/Kg		2.00		0816	92 90		9 - 120
Ethylbenzene				1.79	mg/Kg		2.00		0560	90		1 - 120
Xylene			1	5.40	mg/Kg		2.00 6.00		077	90 90		3 - 120
Percent recovery is based on the	spike	res	ult. RPI									5 - 120
~~ v	•		LCSD			Spike	Matrix	-	Re	C.		RPD
Param	\mathbf{F}	С	Result	Units	Dil.	Amount	Result		Lin		RPD	Limit
Benzene			1.96	mg/Kg		2.00	<0.0036		75.4 -		6	20
Toluene		1	1.94	mg/Kg		2.00	< 0.0081		74.9 -		8	20
Ethylbenzene		1	1.94	mg/Kg		2.00	< 0.0056		78.1 -		8	20
Xylene		1	5.85	mg/Kg		6.00	0.0077		77.3 -		8	20
Percent recovery is based on the	spike	e res	ult. RPI			spike and	spike du	plicate re	sult.			
					CSD			Spike	LCS	LCS		Rec.
Surrogate					lesult	Units	Dil. A	mount	Rec.	Re		Limit
Trifluorotoluene (TFT)					1.81	mg/Kg	1	2.00	88	90		0 - 130
4-Bromofluorobenzene (4-BFB)			1	.73	1.81	mg/Kg	1	2.00	86	90) 7	0 - 130
Laboratory Control Spike (L QC Batch: 94204 Prep Batch: 79847	CS-:	l)		e Analyz Preparat)12-08-23)12-08-23					zed By: red By:	MT MT
Param		F	С	LCS Result	Units	Dil.	Spike Amou	_	atrix sult	Rec.		Rec. Jimit
GRO			1	17.0	mg/K		20.0		.359	85		9 - 120
Percent recovery is based on the	spike	res	ult. RPI				spike du					
			LCSD			Spike	Matrix	c	Rec	с.		RPD
Param	F	С	Result	Units		Amount	Result	Rec.	Lim	it	RPD	Limit
GRO		1	16.4	mg/K	g 1	20.0	< 0.359		68.9 -		4	20
Percent recovery is based on the	spike	res	ult. RPI			spike and	spike du	olicate re continue				

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control spikes continued			_										_
Surrogate			L(Res		CSD esult	Units	Dil.	Spik Amou		LCS Rec.	LC Re		Rec. Limit
					COD					1.00			
Gunna gata			L(Dec		CSD esult	TT-:+-	Dil.	Spik		LCS	LC		Rec.
Surrogate Trifluorotoluene (TFT)			1.		1.84	Units mg/Kg	$\frac{Dn}{1}$	Amot 2.00		Rec. 97	<u>Re</u> 9		Limit 70 - 13(
4-Bromofluorobenzene (4-BFB)					1.77	mg/Kg	1	2.00		95	8		70 - 130
Daboratory Control Spike (I QC Batch: 94232 Prep Batch: 79857	CS-1	L)		e Analyz Preparat		012-08-24 012-08-23						vzed B ared B	
Param		F	С	LCS Result	Uni	ts Dil		Spike .mount		latrix esult	Re	20	Rec. Limit
Chloride				2630	mg/l			2500		3.85			85 - 11
Percent recovery is based on the	-					-	-	-					
'aram	F	С	LCSD Result	Unit	s Dil	Spike . Amou		atrix esult	Rec.		ec. mit	RPD	RPD Limit
Param Dhloride Percent recovery is based on the			Result 2680	mg/K	(g 1	. Amou 2500	nt R	esult 3.85	107	Liı 85 -		RPD 2	
Chloride Percent recovery is based on the	spike	resu	Result 2680 lt. RPD : 306914 Date	mg/K	tg 1 l on the ed: 26	. Amou 2500	nt R	esult 3.85	107	Lin 85 - wult.	mit 115 Analy		Limi 20 r: CW
Chloride Percent recovery is based on the Matrix Spike (MS-1) Spike QC Batch: 94082 Prep Batch: 79748	spike	mple	Result 2680 It. RPD : 306914 Date QC I	mg/K is based Analyze Preparat MS	g 1 l on the ed: 20 ion: 20	<u>Amou</u> 2500 spike and 012-08-21 012-08-20	nt <u>R</u> A spike	esult 3.85 duplica Spike	107 te res	Lin 85 - rult.	Analy Prepa	2 zed By red By	Limit 20 r: CW r: CW Rec.
Thloride Percent recovery is based on the Matrix Spike (MS-1) Spike OC Batch: 94082 Prep Batch: 79748	spike	resu	Result 2680 It. RPD : 306914 Date QC I C	mg/K is based Analyze Preparat MS Result	g 1 l on the ed: 20 ion: 20 Unit	<u>Amou</u> 2500 spike and 012-08-21 012-08-20 ss Dil	nt <u>R</u> A spike	esult 3.85 duplica Spike mount	107 te res M R	Lin 85 - rult. atrix esult	mit 115 Analy Prepa Re	2 zed By red By	Limit 20 7: CW 2: CW Rec. Limit
Chloride Percent recovery is based on the Aatrix Spike (MS-1) Spike QC Batch: 94082 Prep Batch: 79748 Param DRO	spike	resu mple	Result 2680 It. RPD : 306914 Date QC I	mg/K is based Analyze Preparat MS Result 231	g 1 l on the ed: 20 ion: 20 Unit mg/F	<u>Amou</u> 2500 spike and 012-08-21 012-08-20 s Dil (g 1	nt R A spike	esult 3.85 duplica Spike mount 250	107 te res M R	Lin 85 - rult. atrix esult 14.5	Analy Prepa	2 zed By red By	Limit 20 7: CW 2: CW Rec. Limit
Chloride Percent recovery is based on the Matrix Spike (MS-1) Spike QC Batch: 94082 Prep Batch: 79748 Param DRO	spike	resu mple	Result 2680 It. RPD : 306914 Date QC I C 2 It. RPD	mg/K is based Analyze Preparat MS Result 231	g 1 l on the ed: 20 ion: 20 Unit mg/F	<u>Amou</u> 2500 spike and 012-08-21 012-08-20 s Dil (g 1	nt R A spike	esult 3.85 duplica Spike mount 250	107 te res M R	Lin 85 - rult. atrix esult 14.5	mit 115 Analy Prepa Re	2 zed By red By	Limit 20 7: CW 2: CW Rec. Limit
Chloride Percent recovery is based on the Matrix Spike (MS-1) Spike QC Batch: 94082 Prep Batch: 79748 Param DRO Percent recovery is based on the	spike	resu mple F resu	Result 2680 It. RPD : 306914 Date QC I QC I 1t. RPD MSD	mg/K is based Analyze Preparat MS Result 231 is based	g 1 l on the ed: 20 ion: 20 Unit mg/F l on the	<u>Amou</u> 2500 spike and 012-08-21 012-08-20 ss Dil (g 1 spike and Spike and	nt R <pre></pre>	esult 3.85 duplica duplica <u>250</u> duplica atrix	M R te res	Lin 85 - ult. atrix esult 14.5 ult. Ra	mit 115 Analy Prepa Re 9	2 zed By red By ec. 2	Limit 20 7: CW 2: CW Rec. Limit 70 - 130 RPD
Chloride Percent recovery is based on the Matrix Spike (MS-1) Spike QC Batch: 94082 Prep Batch: 79748 Param DRO	spike	resu mple	Result 2680 It. RPD : 306914 Date QC I C 2 It. RPD	mg/K is based Analyze Preparat MS Result 231	g 1 l on the ed: 20 ion: 20 Unit mg/Y l on the s Dil	<u>Amou</u> 2500 spike and 012-08-21 012-08-20 ss Dil (g 1 spike and Spike and	nt R A spike A spike M nt R	esult 3.85 duplica duplica <u>250</u> duplica atrix	107 te res M R	Lin 85 - rult. esult (14.5 rult. Ra Lin	mit 115 Analy Prepa Re 9	2 zed By red By	Limi 20 7: CW 2: CW Rec. Limit 70 - 13(

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matrix spikes continued								
	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	112	113	mg/Kg	1	100	112	113	70 - 130
Matrix Spike (MS-1) Spik	ed Sample	307094						
QC Batch: 94083		Date Anal	vzed: 2015	2-08-21			Analyzed	By: CW
Prep Batch: 79749		QC Prepa	•	2-08-21			Prepared	5
-							-	•
_		MS			Spike	Matrix		Rec.
Param	F	C Resul		Dil.	Amount	Result	Rec.	Limit
DRO		2 244	mg/Kg	1	250	<14.5	98	70 - 13
Percent recovery is based on the Param	F C	MSD	nits Dil.	Spike Amount	Matrix Result	R	lec. mit RI	RPE PD Limi
DRO	2	239 mg	/Kg 1	250	<14.5	96 70	- 130 5	2 20
Percent recovery is based on the	e spike resu	lt. RPD is ba	sed on the sp	oike and s	pike duplica	te result.		
	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	115	117	mg/Kg	1	100	115	117	70 - 130
			····					
Matrix Spike (MS-1) Spik	ed Sample:	307092						
, -	ed Sample:		vzed: 2012	2-08-23			Analyzed	By: MT
QC Batch: 94203	ed Sample:	Date Anal	-				Analyzed Prepared	•
QC Batch: 94203	ed Sample:		-	2-08-23 2-08-23			Analyzed Prepared	
QC Batch: 94203 Prep Batch: 79847	-	Date Anal QC Prepar MS	ration: 2012	2-08-23	Spike	Matrix	Prepared	By: MT Rec.
QC Batch: 94203 Prep Batch: 79847 Param	-	Date Anal QC Prepar MS C Result	ration: 2012 Units	2-08-23 Dil.	Amount	Result	Prepared Rec.	By: MT Rec. Limit
QC Batch: 94203 Prep Batch: 79847 Param Benzene	-	Date Anal QC Prepar MS C Result 1 1.74	ration: 2012 Units mg/Kg	2-08-23 Dil.	Amount 2.00	Result <0.00365	Prepared Rec. 87	By: MT Rec. Limit 37.6 - 142
QC Batch: 94203 Prep Batch: 79847 Param Benzene Toluene	-	Date Anal QC Prepar MS C Result 1 1.74 1 1.94	units mg/Kg mg/Kg	2-08-23 Dil. 1 1	Amount 2.00 2.00	Result <0.00365 <0.00816	Prepared Rec. 87 97	By: MT Rec. Limit 37.6 - 14 38.6 - 15
QC Batch: 94203 Prep Batch: 79847 Param Benzene	-	Date Anal QC Prepar MS C Result 1 1.74	ration: 2012 Units mg/Kg	2-08-23 Dil.	Amount 2.00	Result <0.00365	Prepared Rec. 87	By: MT Rec. Limit

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

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			MSD			Spike	Matrix	C	Rec	с.	RPD
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Lim	it RP	D Limit
Benzene		1	1.92	mg/Kg	g 1	2.00	< 0.0036	65 96	37.6 -	142 10	20
Toluene		1	2.19	mg/Kg		2.00	< 0.0081	6 110	38.6 -	153 12	20
Ethylbenzene		1	2.27	mg/Kg		2.00	<0.0056	60 114	36.7 -	172 13	20
Xylene		1	6.93	mg/Kg		6.00	< 0.0046	60 116	36.7 -	173 13	20
Percent recovery is based on the	spike	e res	ult. RPI) is base	ed on the	spike and	spike du	plicate re	sult.		
			1	MS	MSD			Spike	MS	MSD	Rec.
Surrogate			Re	esult [\mathbf{Result}	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)			1	54	1.88	mg/Kg	1	2	77	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1	62	1.97	mg/Kg	1	2	81	98	70 - 130
QC Batch: 94204 Prep Batch: 79847		-	QC	e Analyz Prepara MS	tion: 2	012-08-23 012-08-23	Spik		ł	Analyzed I Prepared I	By: MT Rec.
Param		F	C	Result	Units		Amou		sult	Rec.	Limit
GRO			1	18.0	mg/K		20.0	······································	.359	90	68.9 - 120
Percent recovery is based on the	spike	e res	ult. RPI) is base	ed on the	spike and	spike du	plicate re	sult.		
			MSD			Spike	Matri	x	Rec		RPD
Param	F	С	Result	Unit	s Dil.	Amount	Result	t Rec.	Lim	it RP	D Limit
GRO		1	16.1	mg/K	ζg 1	20.0	< 0.35	9 80	68.9 -	120 11	20
Percent recovery is based on the	spik	e res	ult. RPI) is base	ed on the	spike and	spike du	plicate re	sult.		
			1	MS	MSD			Spike	MS	MSD	Rec.
Surrogate			-		MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)			Re			Units mg/Kg	Dil.				
			Re 2	esult .	Result			Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spike QC Batch: 94232	d Sa	mple	Ra 2 2 2 e: 307099 Dat	esult 2.00 2.17	Result 1.43 1.99 zed: 2	mg/Kg	1	Amount 2	Rec. 100 108	Rec. 72	Limit 70 - 130 70 - 130 By: AR
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spike QC Batch: 94232 Prep Batch: 79857	d Sa	-	Ra 2 2 e: 307099 Dat QC	esult 2.00 2.17 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Result 1.43 1.99 zed: 2 ation: 2	mg/Kg mg/Kg 012-08-24 012-08-23	1 1 Spik	Amount 2 2	Rec. 100 108	Rec. 72 100 Analyzed 2 Prepared 1	Limit 70 - 130 70 - 130 By: AR By: AR By: AR Rec.
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spike QC Batch: 94232	 :d Sa	.mpl	Ra 2 2 e: 307099 Dat QC	esult 2.00 2.17 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Result 1.43 1.99 zed: 2	mg/Kg mg/Kg 012-08-24 012-08-23 s Dil.	1 1	Amount 2 2 e Ma int Re	Rec. 100 108	Rec. 72 100 Analyzed Prepared 1 Rec.	Limit 70 - 130 70 - 130 By: AR By: AR

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

			MSD			Spike	Matrix		Rec.		RPD
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2940	mg/Kg	5	2500	274	107	78.9 - 121	3	20

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

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Calibration Standards

Standard (CCV-1)

QC Batch: 94082			Date	Analyzed:	2012-08-21		Analy	zed By: CW	
					CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Fl	lag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO			2	mg/Kg	250	230	92	80 - 120	2012-08-21

Standard (CCV-2)

QC Batch:	ch: 94082				Analyzed:	2012-08-21		Analyzed By: C			
					CCVs	CCVs	CCVs	Percent			
					True	Found	Percent	Recovery	Date		
Param	\mathbf{F}	lag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
DRO			2	mg/Kg	250	224	90	80 - 120	2012-08-21		

Standard (CCV-3)

QC Batch:	94082		Date	Analyzed:	2012-08-21		Analyz	zed By: CW
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		2	mg/Kg	250	240	96	80 - 120	2012-08-21

Standard (CCV-1)

QC Batch:	94083			Date .	Analyzed:	2012-08-21		Analy	zed By: CW
					CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO			2	mg/Kg	250	244	98	80 - 120	2012-08-21

Report Date: 114-6401496	August 28, 20)12			ler: 12081901 3KU #632		Page Nu	mber: 27 of 31
Standard (C	C V-2)							
QC Batch: 94	1083		Date A	Analyzed:	2012-08-21		Analyz	zed By: CW
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		2	mg/Kg	250	240	96	80 - 120	2012-08-21

Standard (CCV-3)

QC Batch:	94083			Date A	Analyzed:	2012-08-21		Analy	zed By: CW
					CCVs	CCVs	CCVs	Percent	D (
					True	Found	Percent	Recovery	Date
Param	\mathbf{F}	lag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO			2	mg/Kg	250	233	93	80 - 120	2012-08-21

Standard (CCV-1)

QC Batch: 94203			Date Ana	alyzed: 201	Analyzed By: MT					
				CCVs	CCVs	CCVs	Percent			
				True	Found	Percent	Recovery	Date		
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
Benzene		1	mg/kg	0.100	0.0854	85	80 - 120	2012-08-23		
Toluene		1	mg/kg	0.100	0.0918	92	80 - 120	2012-08-23		
Ethylbenzene		1	mg/kg	0.100	0.0886	89	80 - 120	2012-08-23		
Xylene		1	mg/kg	0.300	0.269	90	80 - 120	2012-08-23		

Standard (CCV-2)

QC Batch: 94203			Date Ana	alyzed: 201	2-08-23		Analyz	zed By: MT
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	\mathbf{Flag}	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/kg	0.100	0.100	100	80 - 120	2012-08-23
Toluene		1	mg/kg	0.100	0.0989	99	80 - 120	2012-08-23
Ethylbenzene		1	mg/kg	0.100	0.0965	96	80 - 120	2012-08-23
Xylene		1	mg/kg	0.300	0.291	97	80 - 120	2012-08-23

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Standard	(CCV-3)							
QC Batch:	94203		Date A	nalyzed: 2	2012-08-23		Analy	zed By: MI
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param		Flag Cert		Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/kg	0.100	0.0994	99	80 - 120	2012-08-2
Toluene		1	mg/kg	0.100	0.0977	98	80 - 120	2012-08-2
Ethylbenze	ne	1	mg/kg	0.100	0.0985	98	80 - 120	2012-08-2
Xylene		1	mg/kg	0.300	0.300	100	80 - 120	2012-08-2
Standard QC Batch:			Date A	nalyzed: 2	2012-08-23		Analy	zed By: M
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
	Flag	Cert	Units mg/Kg			Recovery 86	•	Analyzec 2012-08-2
GRO Standard QC Batch: Param GRO	(CCV-2) 94204 Flag		mg/Kg	Conc.	Conc. 0.864		Limits 80 - 120	
Param GRO Standard QC Batch: Param GRO Standard QC Batch:	(CCV-2) 94204 Flag (CCV-3)	ı Cert	mg/Kg Date An Units	Conc. 1.00 nalyzed: 2 CCVs True Conc. 1.00	Conc. 0.864 2012-08-23 CCVs Found Conc.	86 CCVs Percent Recovery	Limits 80 - 120 Analy: Percent Recovery Limits 80 - 120	2012-08-2 zed By: MT Date Analyzed 2012-08-2
GRO Standard QC Batch: Param GRO Standard	(CCV-2) 94204 Flag (CCV-3)	ı Cert	mg/Kg Date An Units mg/Kg	Conc. 1.00 nalyzed: 2 CCVs True Conc. 1.00 nalyzed: 2 CCVs	Conc. 0.864 2012-08-23 CCVs Found Conc. 0.840 2012-08-23 CCVs	86 CCVs Percent Recovery	Limits 80 - 120 Analy: Percent Recovery Limits 80 - 120	2012-08-2 zed By: MT Date Analyzed 2012-08-2 zed By: MT
GRO Standard QC Batch: Param GRO Standard QC Batch:	(CCV-2) 94204 Flag (CCV-3) 94204	L Cert 1	mg/Kg Date An Units mg/Kg Date An	Conc. 1.00 nalyzed: 2 CCVs True Conc. 1.00 nalyzed: 2 CCVs True Conc. 1.00	Conc. 0.864 2012-08-23 CCVs Found Conc. 0.840 2012-08-23 CCVs Found	86 CCVs Percent Recovery 84 CCVs Percent	Limits 80 - 120 Analy: Percent Recovery Limits 80 - 120 Analy: Percent Recovery	2012-08-2 zed By: MT Date Analyzed 2012-08-2 zed By: MT Date
GRO Standard QC Batch: Param GRO Standard	(CCV-2) 94204 Flag (CCV-3)	L Cert L	mg/Kg Date An Units mg/Kg	Conc. 1.00 nalyzed: 2 CCVs True Conc. 1.00 nalyzed: 2 CCVs	Conc. 0.864 2012-08-23 CCVs Found Conc. 0.840 2012-08-23 CCVs	86 CCVs Percent Recovery 84 CCVs	Limits 80 - 120 Analys Percent Recovery Limits 80 - 120 Analys Percent	2012-08-2 zed By: MT Date <u>Analyzec</u> 2012-08-2 zed By: MT

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Standard (CC	CV-1)										
QC Batch: 94	232		Date A	nalyzed: 2	012-08-24		Analy	zed By: AR			
				CCVs	CCVs	CCVs	Percent				
				True	Found	Percent	Recovery	Date			
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed			
Chloride			mg/Kg	100	98.9	99	85 - 115	2012-08-24			

Standard (CCV-2)

QC Batch:	94232			Date A	nalyzed:	2012-08-24		Analy	zed By: AR
					CCVs	CCVs	CCVs	Percent	
					True	Found	Percent	Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride				mg/Kg	100	101	101	85 - 115	2012-08-24

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Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

	Certifying	Certification	Laboratory
С	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-12-8	Lubbock
2	NELAP	T104704392-12-4	Midland

Standard Flags

- F Description
- B Analyte detected in the corresponding method blank above the method detection limit
- H Analyzed out of hold time
- J Estimated concentration
- Jb The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
- Je Estimated concentration exceeding calibration range.
- Qc Calibration check outside of laboratory limits.
- Qr RPD outside of laboratory limits
- Qs Spike recovery outside of laboratory limits.
- Qsr Surrogate recovery outside of laboratory limits.
- U The analyte is not detected above the SDL

Result Comments

1 Sample dilution due to hydrocarbons.

Attachments

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The scanned attachments will follow this page. Please note, each attachment may consist of more than one page.

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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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