

Highlander Environmental Corp.

Midland, Texas

August 7, 2007

Mr. Larry Johnson Environmental Engineer Specialist Oil Conservation Division, District 1 1625 North French Drive Hobbs, New Mexico 88240 R 124

Re: Assessment and Closure Report for the Cimarex of Colorado, J.W. Cooper #7 Tank Battery Release Located in Unit J, Section 14, Township 24 South, Range 36 East, Lea County, New Mexico.

Dear Mr. Johnson:

Highlander Environmental Corp. (Highlander) was contacted by Cimarex of Colorado (Cimarex) to assess a spill from the J.W. Cooper #7 Tank Battery, located in Unit J, Section 14, Township 24 South, Range 36 East, Lea County, New Mexico (Site). The spill site coordinates are N 32° 12.879', W 103° 14.088'. The Site is shown on Figure 1.

Background

According to the State of New Mexico C-141 Initial Report, approximately 78 barrels (bbls) of produced water were released from a water tank overflow. The overflow occurred when there was a power failure from a storm which occurred on March 11, 2007. A total of 78 bbls were recovered. The State of New Mexico C-141 (Initial and Final) are included in Appendix C.

Groundwater and Regulatory

The New Mexico State Engineer's Office database showed water wells located in adjacent sections 23, and 15, Township 24 South, Range 36 East, with reported average depths to water ranging from 160 feet to 312 feet below ground surface (bgs). The New Mexico State Engineer water well report is shown in Appendix A.

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.

Assessment and Results

The pumper, responding to an alarm, built up the dike to keep as much of the produced water inside the facility dike as possible. After a vacuum truck had picked up all of the fluids, Cimarex had a local dirt contractor clean up around the facility. The spill ran off site down the pumper road during the heavy rainfall.

On April 11, 2007, Highlander personnel inspected and sampled the spill area. A total of five (8) auger holes (AH-1 through AH-8) were installed using a stainless steel hand auger to assess the impacted soils. Five (5) auger holes were placed inside the facility dike and three (3) auger holes were placed in the spill area off the pad. Samples were analyzed for TPH analysis by EPA method 8015 modified, and chloride by EPA method 300.0. Selected samples were analyzed for BTEX by EPA Method 8021B. The auger hole locations are shown on Figure 2. The results of the sampling are summarized in Table 1.

Referring to Table 1, TPH concentrations inside the dike exceeded the RRAL at AH-1, AH-2 and AH-4. Outside the dike, AH-7 had a TPH slightly above the RRAL at 5025 mg/L. All BTEX concentrations were below the RRAL, and all chloride concentrations were below 250 mg/kg. The areas around auger holes AH-1, AH-2 and AH-4 were excavated an additional 1'-3' and stockpiled onsite. The remainder of the inside of the dike was tilled.

Referring to Table 2, confirmation samples SP-1 through SP-4 and stockpile samples were collected on June 19, 2007. Sample SP-1 was collected in the same area as AH-7 to evaluate the level slightly above the RRAL. All samples, including the stockpile samples were well below the RRAL for TPH. Additionally, BTEX samples taken from the stockpiles were below reporting limits and chloride concentrations from the stockpiles were below 50 mg/kg. The sample point locations are shown on Figure 3. The results of the sampling are summarized in Table 2. Copies of the laboratory analysis and chain-of-custody documentation are included in Appendix B.

Conclusions

The impacted soils have been excavated and stockpiled on the well pad. No remaining TPH or BTEX concentrations currently exceed the RRAL and the chloride concentrations are all below 250 mg/kg. Since the stockpiles do not exceed the RRAL and chloride concentrations are below 50 mg/kg, this material will be blended with clean soil and used to backfill the excavation. Based upon the results of the assessment work performed at this site, Cimarex requests closure of this Site.

If you require any additional information or have any questions or comments concerning the assessment/closure report, please call at (432) 682-4559.

Respectfully submitted, Highlander Environmental Corp.

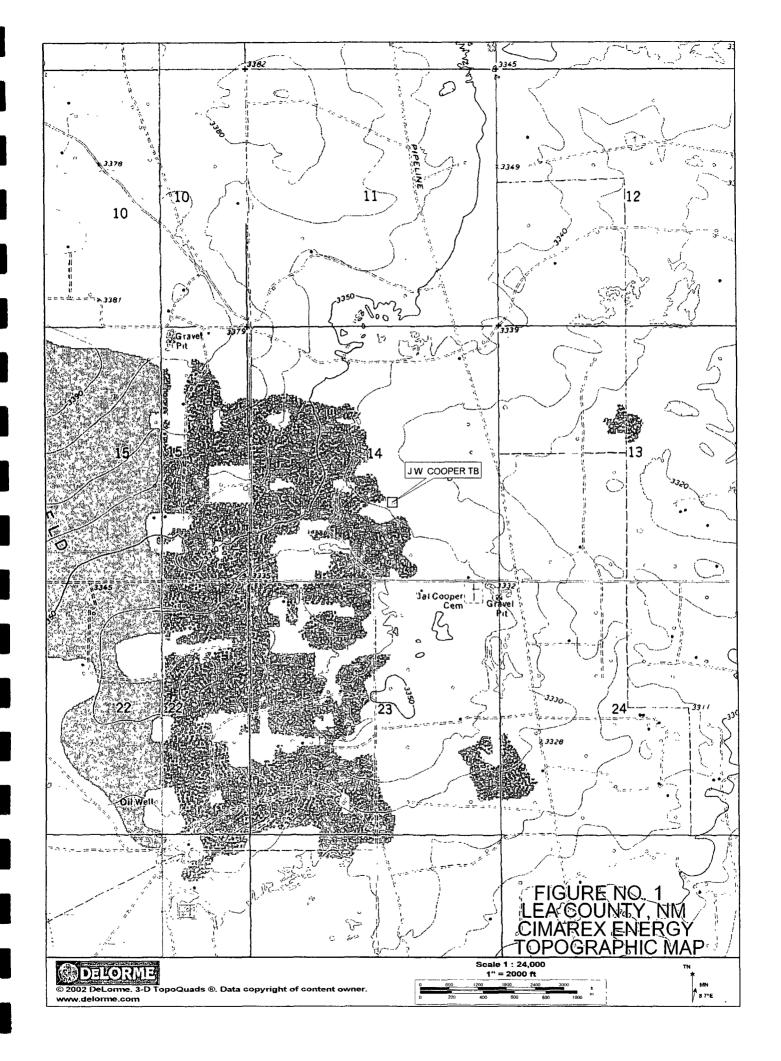
Timothy M. Reed, P.G.

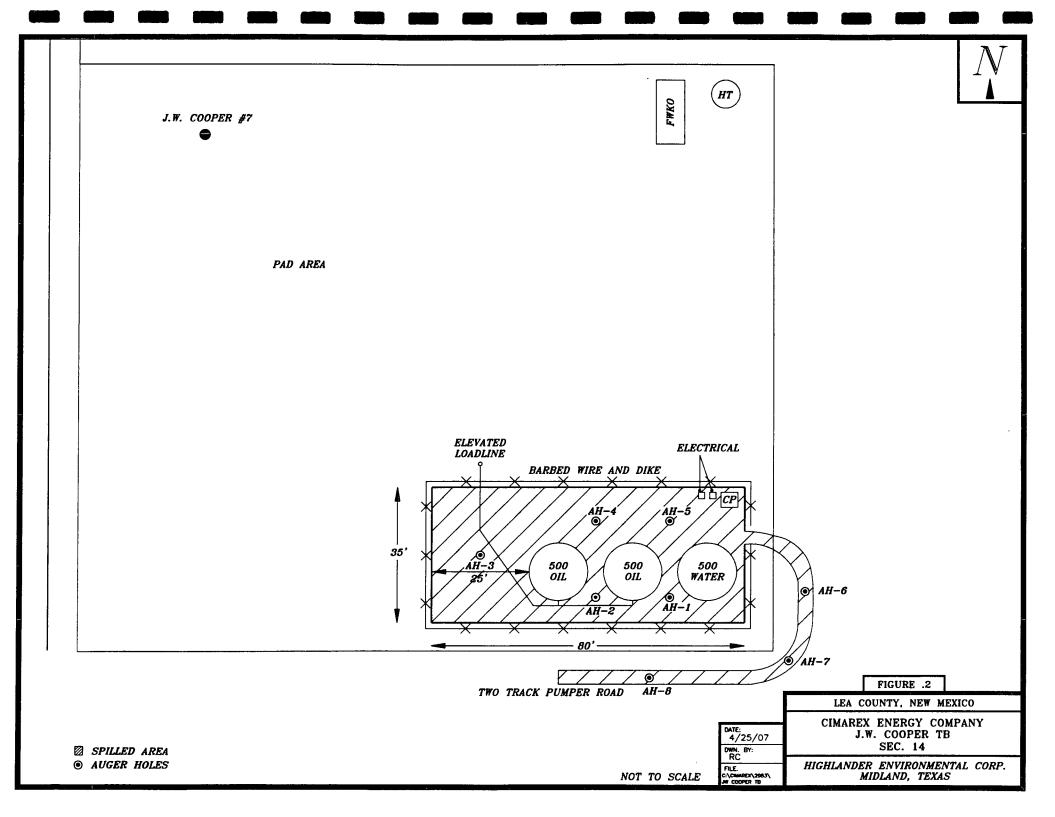
Vice President

cc: Evan Wauhob – Cimarex Energy Co. Bob Jennings – Cimarex Energy Co.

		SITE	INFORMATION						
	Repor	t Type: ASSI	ESSMENT & CLOSUR	E REPORT					
General Site Info	rmation.		A CONTRACTOR						
Site:		J.W. Cooper#	7 Tank Battery						
Company:		Cimarex of Co							
Well Location:		Section 14, T2							
Spill Location: Section 14, T24S R36E									
Unit Letter: Unit J									
Lease Number:									
County:		Lea	20 14 0001						
Spill GPS:		32° 12.879', 10							
Surface Owner: Randy Crawford Mineral Owner:									
Directions:									
Cooper Cemetary Road and go west 2.4 miles. Turn right on dirt road and go north 0.3									
to tank battery.									
<u>.</u>		to tank battory.		· · · · · · · · · · · · · · · · · · ·					
Release Data:									
Date Released:		3/11/2007	3/11/2007						
Type Release:		Produced wate	roduced water						
Source of Contam	nination:		from power failure during sto	orm.					
Fluid Released:		78 barrels							
Fluids Recovered.		78 barrels							
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Official Commun	7								
Name:	Hugo Naegle,	Jr.	Evan Wauhob	lke Tavarez					
Company:	Cimarex;of Col	orado <u>.</u>	Cimarex of Colorado	Highlander Environmental Corp.					
Address:	300 W. Texas	`	508 W. Wall, Suite 600	1910 N. Big Spring					
P.O. Box P.O.Box 1237									
City:	Eunice, New M	lexico	Midland, Texas 79701	Midland, Texas					
Phone number:	(505) 390-9394	1	(432) 571-7800 : : :	(432) 682- 4559					
Email:	hnaegle@cim	<u>iarex</u>	ewauhob@cimarex.com	itavarez@hec-enviro.com					

Depth to Groundwater:		Ranking Score		Site Data			
<50 ft		20					
50-99 ft		10					
>100 ft.		0	Average Depth >100 BS				
WellHead Protection:	<u></u>	Ranking Score		Site Data			
Water Source <1,000 ft., Private <2	00 ft.	20		None			
Water Source >1,000 ft., Private >2	00 ft.	0					
Surface Body of Water:		Ranking Score		Site Data			
<200 ft.		20		None			
200 ft - 1,000 ft.		10		None			
>1,000 ft.		0					
Total Ranking Sco	re·	1 0		SEP 2007 22			
rotar rtarming ood		ible Soil RRAL (m	g/kg)	12/13			
	Benzene	Total BTEX	TPH				
	10	50	5,000	16 PG 2007			
•				Hobbs Och As			





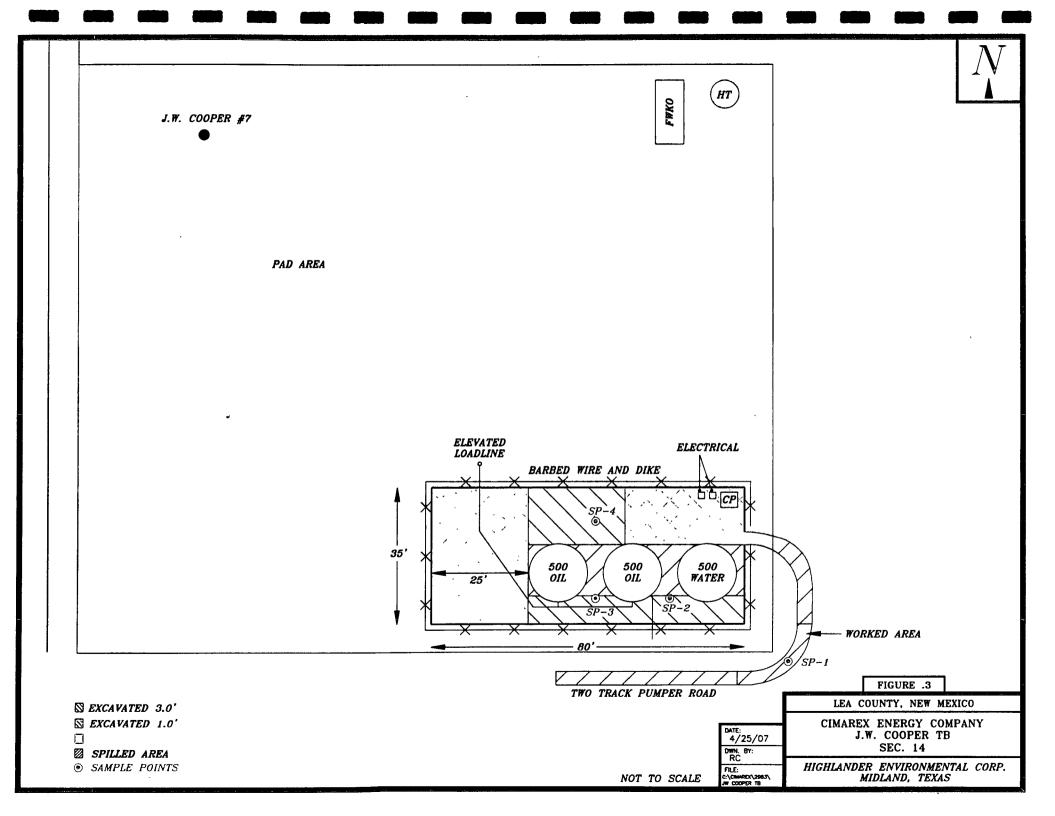


Table 1
Cimarex Energy
J.W. Cooper Tank Battery
Lea County, NM

Sample	Date	Sample	ELFARED.	TPH (mg/kg)军(清海)	Benzene	Toluëne 🖟			Chloride
ID.	Sampled	Dépth (ft)	∌DRO ≋	GRO	Total :	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-1	4/11/2007	0-1.0'	10,100	71.4	10,171.4	<0.0100	0.0154	0.0117	0.190	135
AH-1	4/11/2007	1'-1.5'	3,270	1,510	4,780	<0.100	0.291	0.816	2.46	54.2
AH-2	4/11/2007	0-1.0'	2,900	29.1	2,929.1					48.1
AH-2	4/11/2007	1'-1.5'	4,580	827	5,407	< 0.100	< 0.100	<0.100	1.45	29.9
AH-3	4/11/2007	0-1.0'	1,640	17.5	1,657.5	-	-	-	-	47.0
AH-4	4/11/2007	0-1.0'	6,970	53.1	7,023.1	-	_	-	-	125
AH-4	4/11/2007	1'-1.5'	199	7.05	206.05	-	-		-	60.8
AH-5	4/11/2007	0-1.0'	4,680	39.5	4,719.5	-	-	-	-	222
AH-5	4/11/2007	1'-1.5'	764	5.03	769.03	-	-	-	-	207
AH-6	4/11/2007	0-1.0'	524	2.94	526.94	-	-	-	-	69.1
AH-6	4/11/2007	1'-1.5'	267	1.40	268.4	-	-	_	-	82.5
AH-7	4/11/2007	0-1.0'	5,020	5.51	5,025.51	-	-	-	-	101
АН-8	4/11/2007	0-0.5'	579	1.30	580.3	-	-	-	-	12.9
				***					<u> </u>	

⁽⁻⁾ Not Analyzed

Table 2
Cimarex Energy
J.W. Cooper Tank Battery
Lea County, NM

Date	Excavation	DPO	TPH (mg/kg) THE STATE OF THE	Benzene	Toluene (Ethlybenzene	Xylene (mg/kg)	-Chloride
Legionithicus. A	*Debru (10)	SAIDKO KT.	# SHOW OF THE	\$2944 Orail od	*(-#(iif8\#\$)\#	 }%∮(IIIB\ KB)@\$	ing wg/mis/		a (ing kg)
6/18/2007	0-1.0'	55.9	2,681	2,740	-	-	-	-	-
6/19/2007	1.0'	1,820	72.6	1,892.6	-	<u>-</u>	<u>-</u>	-	-
6/19/2007	3.0'	1340	28.2	1,368.2		_	_	-	-
6/19/2007	1.0'	92.9	6.22	99.12	-	-		-	-
6/19/2007	Composite	1,800	42.9	1,842.9	<0.100	<0.100	<0.100	<0.100	<50.0
6/19/2007	Composite	1,130	88.9	1,218.9	<0.100	<0.100	<0.100	<0.100	<50.0
	6/18/2007 6/19/2007 6/19/2007 6/19/2007	6/18/2007 0-1.0' 6/19/2007 1.0' 6/19/2007 3.0' 6/19/2007 1.0' 6/19/2007 Composite	6/18/2007 0-1.0' 55.9 6/19/2007 1.0' 1,820 6/19/2007 3.0' 1340 6/19/2007 1.0' 92.9 6/19/2007 Composite 1,800	6/18/2007 0-1.0' 55.9 2,681 6/19/2007 1.0' 1,820 72.6 6/19/2007 3.0' 1340 28.2 6/19/2007 1.0' 92.9 6.22 6/19/2007 Composite 1,800 42.9	6/18/2007 0-1.0' 55.9 2,681 2,740 6/19/2007 1.0' 1,820 72.6 1,892.6 6/19/2007 3.0' 1340 28.2 1,368.2 6/19/2007 1.0' 92.9 6.22 99.12 6/19/2007 Composite 1,800 42.9 1,842.9	6/18/2007 0-1.0' 55.9 2,681 2,740 - 6/19/2007 1.0' 1,820 72.6 1,892.6 - 6/19/2007 3.0' 1340 28.2 1,368.2 - 6/19/2007 1.0' 92.9 6.22 99.12 - 6/19/2007 Composite 1,800 42.9 1,842.9 <0.100	6/18/2007 0-1.0' 55.9 2,681 2,740 6/19/2007 1.0' 1,820 72.6 1,892.6 6/19/2007 3.0' 1340 28.2 1,368.2 6/19/2007 1.0' 92.9 6.22 99.12 6/19/2007 Composite 1,800 42.9 1,842.9 <0.100 <0.100	6/18/2007 0-1.0' 55.9 2,681 2,740	6/19/2007 1.0' 1,820 72.6 1,892.6

⁽⁻⁾ Not Analyzed, * The Area of SP #1 was not Excavated, (BEB) Below Excavation Bottom

Water Well Data Average Depth to Groundwater (ft) Cimarex - J.W. Cooper #7 Tank Battery, Lea County, New Mexico

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- 88 New Mexico State Engineers Well Reports
- 105 USGS Well Reports
- 90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6) Geology and Groundwater Resources of Eddy County, NM (Report 3)
- 34 NMOCD Groundwater Data

Township: 29	5S Ra	ange: 36E	Sections:		
NAD27 X:	: ,	Y:	Zone:		Search Radius:
County:	E E	Basin:			Number: Suffix:
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AVERAGE DEPTH OF WATER REPORT 08/17/2007

							(Depth	Water in	Feet)
Bsn	Tws	Rng Se	ec Zor	e X	Y	Wells	Min	Max	Avg
СP	25S	36E 33	3			1	80	80	80

Township:	25S	Range: 3	7E	Sections:			
NAD27 X:		Y:		Zone:		Search Radius:	
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Owner Name: (First)			(Las	t) ② All		O Non-Domestic	O Domestic
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AVERAGE DEPTH OF WATER REPORT 08/17/2007

							(Depth	Water in	Feet)
Bsn	Tws	Rng Sec	Zone	X	Y	Wells	Min	Max	Avg
CP	25S	37E 19				11	27	69	49
CP	25S	37E 20				7	23	70	39
CP	25S	37E 29				5	187	250	219
CP	25S	37E 35				1	185	185	185

Township: 23	S Range: 36E	Sections:		
NAD27 X:	Y:	Zone:	Search Radius:	
County:	Basin:		Number: Suff	īx:
Owner Name: (First)	(Las	st)	 ○Non-Domestic ○Dom	estic
POD/	Surface Data Report Wate	Avo	Depth to Water Report	
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AVERAGE DEPTH OF WATER REPORT 08/17/2007

							(Depth	Water in	Feet)
Bsn	Tws	Rng Sec	Zone	X	Y	Wells	Min	Max	Avg
CP	23\$	36E 15				1	149	149	149
CP	238	36E 16				1	220	220	220
CP	23\$	36E 22				1	400	400	400
CP	23S	36E 31				2	178	200	189
CP	238	36E 36				5	123	133	127

Township: 24	4 S	Range: 36	E Sections:		
NAD27 X:		Y:	Zone:	Search Radius:	
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AVERAGE DEPTH OF WATER REPORT 08/17/2007

							(Deptn	water in	reet)
Bsn	Tws	Rng Sec	Zone	X	Y	Wells	Min	Max	Avg
CP	24S	36E 04				3	155	178	165
CP	24S	36E 15				2	173	450	312
CP	24S	36E 20				1	97	97	97
CP	24S	36E 23				1	160	160	160
CP	24S	36E 33				1	53	53	53

Township: 24S	Range: 37E	Sections:				
NAD27 X:	Y:	Zone:	Search Radius:			
County:	Basin:		Number:	Suffix:		
Owner Name: (First)	(La	st) All	O Non-Domestic	O Domestic		
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AVERAGE DEPTH OF WATER REPORT 08/17/2007

							(Depth	Water in	Feet)
Bsn	Tws	Rng Sec	Zone	X	Y	Wells	Min	Max	Avg
CP	24S	37E 05				1	106	106	106
CP	24S	37E 08				1	90	90	90
CP	24S	37E 12				1	18	18	18
CP	24S	37E 23				1	94	94	94
CP	24S	37E 24				1	100	100	100
CP	24S	37E 25				1	90	90	90
CP	24S	37E 28				1	70	70	70

Township: 24	IS Ran	ge: 35E	Sections:			
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AVERAGE DEPTH OF WATER REPORT 08/17/2007

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Township: 2	3S	Range: 37E	Sections:			
NAD27 X:		Y:	Zone:		Search Radius:	
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AVERAGE DEPTH OF WATER REPORT 08/17/2007

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Bsn	Tws	Rng Sec	Zone	X	Y	Wells	Min	Max	Avg
CP	238	37E 09				1	100	100	100
CP	23S	37E 16				1	115	115	115
CP	23S	37E 32				1	106	106	106

Page Number: 1 of 3 Lea County, NM

Summary Report

Ike Tavarez Highlander Environmental Services 1910 N. Big Spring Street Midland, TX, 79705

Report Date: April 24, 2007

Work Order: 7041706

Project Location: Lea County, NM

Project Name: Cimarex/J.W.Cooper TB

Project Number: 2983

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
121856	AH-1 (0-1.0')	soil	2007-04-11	00:00	2007-04-17
121857	AH-1 (1.0-1.5')	soil	2007-04-11	00:00	2007-04-17
121858	AH-2 (0-1.0')	soil	2007-04-11	00:00	2007-04-17
121859	AH-2 (1.0-1.5')	soil	2007-04-11	00:00	2007-04-17
121860	AH-3 (0-1.0')	soil	2007-04-11	00:00	2007-04-17
121861	AH-4 (0-1.0')	soil	2007-04-11	00:00	2007-04-17
121862	AH-4 (1.0-1.5')	soil	2007-04-11	00:00	2007-04-17
121863	AH-5 (0-1.0')	soil	2007-04-11	00:00	2007-04-17
121864	AH-5 (1.0-1.5')	soil	2007-04-11	00:00	2007-04-17
121865	AH-6 (0-1.0')	soil	2007-04-11	00:00	2007-04-17
121866	AH-6 (1.0-1.5')	soil	2007-04-11	00:00	2007-04-17
121867	AH-7 (0-1.0')	soil	2007-04-11	00:00	2007-04-17
121868	AH-8 (0-0.5')	soil	2007-04-11	00:00	2007-04-17

	, , , , , , , , , , , , , , , , , , , ,		BTEX		MTBE	TPH DRO	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	MTBE	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
121856 - AH-1 (0-1.0')	< 0.0100	0.0154	0.0117	0.190		10100	71.4
121857 - AH-1 (1.0-1.5')	< 0.100	0.291	0.816	2.46		3270	1510
121858 - AH-2 (0-1.0')						2900	29.1
121859 - AH-2 (1.0-1.5')	< 0.100	< 0.100	< 0.100	1.45		4580	827
121860 - AH-3 (0-1.0')						1640	17.5
121861 - AH-4 (0-1.0')						6970	53.1
121862 - AH-4 (1.0-1.5')					1	199	7.05
121863 - AH-5 (0-1.0')						4680	39.5
121864 - AH-5 (1.0-1.5')						764	5.03
121865 - AH-6 (0-1.0')						524	2.94
121866 - AH-6 (1.0-1.5')						267	1.40
121867 - AH-7 (0-1.0')						5020	5.51
121868 - AH-8 (0-0.5')						579	1.30

Sample: 121856 - AH-1 (0-1.0')

Param	Flag	Result	${ m Units}$	RL
Chloride		135	mg/Kg	1.00

Report Date ⁻ April 24, 2007 2983		Work Order. 7041706 Cimarex/J.W.Cooper TB		Page Number: 2 of 3 Lea County, NM
Sample: 121857 - AH-1	(1.0-1.5')			
Param	Flag	Result	Units	RL
Chloride		54.2	mg/Kg	1.00
Sample: 121858 - AH-2	2 (0-1.0')			•
Param	Flag	Result	Units	RL
Chloride		48.1	mg/Kg	1.00
Sample: 121859 - AH-2	2 (1.0-1.5')			
Param	Flag	Result	Units	RL
Chloride		29.9	mg/Kg	1.00
Sample: 121860 - AH-3	3 (0-1.0')			
Param	Flag	Result	Units	RL
Chloride		47.0	mg/Kg	1.00
Sample: 121861 - AH-4 Param Chloride	f (0-1.0') Flag	Result 125	Units mg/Kg	RL 1.00
Sample: 121862 - AH-4	i (1.0-1.5')			
Param	Flag	Result	Units	RL
Chloride		60.8	mg/Kg	1.00
Sample: 121863 - AH-5	5 (0-1.0')			
Param	5 (0-1.0') Flag	Result	Units	RL
_	, ,	Result 222	Units mg/Kg	RL 1.00
Param	Flag			
Param Chloride	Flag			

continued ...

Report Date: April 24, 2007 2983		Work Order 7041706 Cimarex/J.W.Cooper TB		Page Number: 3 of 3 Lea County, NM	
sample 121865 con					
Param	Flag	Result	Units	RL	
Param	Flag	Result	Units	RL	
Chloride		69.1	mg/Kg	1.00	
Sample: 121866	- AH-6 (1.0-1.5')				
Param	Flag	Result	Units	RL	
Chloride		82.5	mg/Kg	1.00	
Sample: 121867	- AH-7 (0-1.0')				
Param	Flag	Result	Units	RL	
Chloride		101	mg/Kg	1.00	
Sample: 121868	- AH-8 (0-0.5')				
Param	Flag	Result	Units	RL	
Chloride		12.9	m mg/Kg	1.00	



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

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817 • 201 • 5260

E-Mail lab@traceanalysis com

Analytical and Quality Control Report

Ike Tavarez Highlander Environmental Services 1910 N Big Spring Street Midland, TX, 79705

Report Date: April 24, 2007

Work Order: 7041706

Project Location: Lea County, NM

Project Name.

Cimarex/J.W.Cooper TB

Project Number: 298

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
121856	AH-1 (0-1.0')	soil	2007-04-11	00:00	2007-04-17
121857	AH-1 (1.0-1.5')	soil	2007-04-11	00:00	2007-04-17
121858	AH-2 (0-1.0')	soil	2007-04-11	00:00	2007-04-17
121859	AH-2 (1.0-1.5')	soil	2007-04-11	00:00	2007-04-17
121860	AH-3 (0-1.0')	soil	2007-04-11	00:00	2007-04-17
121861	AH-4 (0-1.0')	soil	2007-04-11	00:00	2007-04-17
121862	AH-4 (1.0-1.5')	soil	2007-04-11	00:00	2007-04-17
121863	AH-5 (0-1.0')	soil	2007-04-11	00:00	2007-04-17
121864	AH-5 (1.0-1.5')	soil	2007-04-11	00:00	2007-04-17
121865	AH-6 (0-1.0')	soil	2007-04-11	00:00	2007-04-17
121866	AH-6 (1.0-1.5')	soil	2007-04-11	00:00	2007-04-17
121867	AH-7 (0-1.0')	soil	2007-04-11	00:00	2007-04-17
121868	AH-8 (0-0.5')	soil	2007-04-11	00:00	2007-04-17

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

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank

Case Narrative

Samples for project 'Cimarex/J.W.Cooper TB' were received by TraceAnalysis, Inc. on 2007-04-17 and assigned to work order 7041706. Samples for work order 7041706 were received intact without headspace and at a temperature of 4 deg C.

Samples were analyzed for the following tests using their respective methods

Test	Method
BTEX	S 8021B
Chloride (IC)	E 300.0
TPH DRO	Mod. 8015B
TPH GRO	S 8015B

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 7041706 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 preformed 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: April 24, 2007 Work Order: 7041706 Page Number: 3 of 24 Cimarex/J.W.Cooper TB Lea County, NM

Analytical Report

Sample: 121856 - AH-1 (0-1.0')

Analysis: BTEX QC Batch: 36707 Prep Batch: 31842 Analytical Method: S 8021B Date Analyzed: 2007-04-23 Sample Preparation: 2007-04-23

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

		RL			
Parameter	Flag	Result	\mathbf{Units}	Dilution	RL
Benzene		< 0.0100	mg/Kg	1	0.0100
Toluene		0.0154	${ m mg/Kg}$	1	0.0100
Ethylbenzene		0.0117	m mg/Kg	1	0.0100
Xylene		0.190	mg/Kg	1	0 0100

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.858	mg/Kg	1	1.00	86	26 - 117 8
4-Bromofluorobenzene (4-BFB)		1.01	mg/Kg	1	1.00	101	51.1 - 119.1

Sample: 121856 - AH-1 (0-1.0')

Analysis: Chloride (IC) QC Batch: 36598 Prep Batch: 31741 Analytical Method: Date Analyzed: Sample Preparation:

E 300.0 2007-04-18 Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Sample: 121856 - AH-1 (0-1.0')

Analysis: TPH DRO QC Batch: 36556 Prep Batch: 31708 Analytical Method: Date Analyzed: Sample Preparation:

Mod. 8015B 2007-04-17 2007-04-17 Prep Method: N/A Analyzed By: AG Prepared By: AG

		RL			
Parameter	Flag	Result	Units	Dilution	RL
DRO		10100	mg/Kg	5	50.0

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane	1	2720	mg/Kg	5	150	1813	32.9 - 167

Sample: 121856 - AH-1 (0-1.0')

Analysis: TPH GRO QC Batch: 36525 Prep Batch: 31685 Analytical Method: S 8015B
Date Analyzed: 2007-04-17
Sample Preparation: 2007-04-17

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

¹High surrogate recovery due to peak interference.

continued ...

Work Order: 7041706 Cimarex/J.W.Cooper TB

rechore	Date.	$T_{\rm min}$	47,	2
2983				

ъ.	TO!		RL		TI		TO 1 .		73.7
Parameter GRO	Flag		Result 71.4		Units mg/Kg		Dilution 5		$\frac{\mathrm{RL}}{1.00}$
GRO			(1.4		mg/Kg		J		1.00
						Spike	Percent	Rec	overy
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery		mits
Trifluorotoluene			4.36	mg/Kg	5	5.00	87 .		- 123.7
4-Bromofluorobe	enzene (4-BFB)		, 6.06	mg/Kg	5	5.00	121	67.5	- 140.3
Sample: 12188	57 - AH-1 (1.0-1.	5')							
Analysis B	TEX		Analytical I	Method	S 8021B		Prep Me	ethod:	S 5035
	6707		Date Analy:		2007-04-23		Analyze		AG
•	1842		Sample Pre		2007-04-23		Prepared		AG
			RL						
Parameter	Flag		Result		Units		Dilution		RL
Benzene			< 0.100		mg/Kg		10		0.0100
Toluene			0.291		mg/Kg		10		0.0100
Ethylbenzene			0.816		mg/Kg		10		0.0100
Xylene			2.46		mg/Kg		10		0.0100
						Spike	Percent	Rec	overy.
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery		mits
Trifluorotoluene			10.1	mg/Kg	10	10.0	101		117.8
4-Bromofluorobe	enzene (4-BFB)		7.21	mg/Kg	10	10.0	72	51.1	- 119 1
Sample: 1218	57 - AH-1 (1.0-1.	5')							
-	57 - AH-1 (1.0-1.	5')			d. F 300 0			Mathad:	Nī / A
Analysis C	Chloride (IC)	5')	Analyti	ical Metho			Prep l	Method	N/A
Analysis C QC Batch: 36	Chloride (IC) 6598	5')	Analyti Date A	ical Metho nalyzed	2007-04-18		Prep l Analy	zed By:	AR
Analysis C QC Batch: 36	Chloride (IC)	5')	Analyti Date A Sample	ical Metho	2007-04-18		Prep l Analy		•
Analysis C QC Batch: 36 Prep Batch 31	Chloride (IC) 6598 1741	5')	Analyti Date A Sample RL	ical Metho nalyzed	2007-04-18 on		Prep l Analy Prepa	zed By:	AR AR
Analysis C QC Batch: 36 Prep Batch: 31 Parameter	Chloride (IC) 6598	5')	Analyti Date A Sample RL Result	ical Metho nalyzed	2007-04-18 on Units		Prep l Analy Prepa Dilution	zed By:	AR AR RL
Analysis C QC Batch: 36 Prep Batch 31	Chloride (IC) 6598 1741	5')	Analyti Date A Sample RL	ical Metho nalyzed	2007-04-18 on		Prep l Analy Prepa	zed By:	AR AR
Analysis C QC Batch: 36 Prep Batch 31 Parameter Chloride	Chloride (IC) 6598 1741		Analyti Date A Sample RL Result	ical Metho nalyzed	2007-04-18 on Units		Prep l Analy Prepa Dilution	zed By:	AR AR RL
Analysis C QC Batch: 36 Prep Batch: 31 Parameter Chloride Sample: 12185	Chloride (IC) 6598 1741 Flag		Analyti Date A Sample RL Result 54.2	ical Metho nalyzed	2007-04-18 on Units		Prep I Analy Prepa Dilution 5	zed By:	AR AR RL 1.00
Analysis C QC Batch: 36 Prep Batch: 31 Parameter Chloride Sample: 12185 Analysis: T	Flag 57 - AH-1 (1.0-1.		Analyti Date A Sample RL Result 54.2	ical Metho nalyzed Preparati	2007-04-18 on Units mg/Kg		Prep I Analy Prepa Dilution 5	zed By:	AR AR RL
Analysis: C QC Batch: 36 Prep Batch: 31 Parameter Chloride Sample: 12185 Analysis: T QC Batch: 36	Flag 57 - AH-1 (1.0-1.5		Analytica Date A Sample RL Result 54.2 Analytica Date Ana	ical Metho nalyzed Preparati	2007-04-18 On Units mg/Kg Mod 8015B 2007-04-17		Prep I Analy Prepa Dilution 5	zed By: red By: Method:	AR AR RL 1.00
Analysis: C QC Batch: 36 Prep Batch: 31 Parameter Chloride Sample: 12185 Analysis: T QC Batch: 36	Flag 57 - AH-1 (1.0-1.57)		Analytica Date Analytica Date Analytica Sample P	ical Metho nalyzed Preparati l Method: llyzed:	2007-04-18 On Units mg/Kg Mod 8015B 2007-04-17		Prep I Analy Prepa Dilution 5	zed By: red By: Method: zed By:	AR AR RL 1.00
Analysis: C QC Batch: 36 Prep Batch: 31 Parameter Chloride Sample: 1218 Analysis: T QC Batch: 36	Flag 57 - AH-1 (1.0-1.57)		Analytica Date A Sample RL Result 54.2 Analytica Date Ana	ical Metho nalyzed Preparati l Method: llyzed:	2007-04-18 On Units mg/Kg Mod 8015B 2007-04-17		Prep I Analy Prepa Dilution 5	zed By: red By: Method: zed By:	AR AR RL 1.00

Report Date April 24, 2007 2983

Work Order: 7041706 Cimarex/J.W.Cooper TB Page Number: 5 of 24 Lea County, NM

sample	continued	

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane	2	558	mg/Kg	1	150	372	32.9 - 167

Sample: 121857 - AH-1 (1.0-1.5')

Analysis: TPH GRO QC Batch: 36562 Prep Batch: 31714

GRO

Analytical Method S 8015B
Date Analyzed 2007-04-18
Sample Preparation 2007-04-18

B Prep Method S 5035 4-18 Analyzed By ss 4-18 Prepared By: ss

Parameter Flag Re

 $\begin{array}{cc} RL \\ Result & Units \\ \hline 1510 & mg/Kg \end{array}$

 Dilution
 RL

 50
 1.00

				•	Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		40.6	m mg/Kg	50	50.0	81	52.4 - 123.7
4-Bromofluorobenzene (4-BFB)	3	88.3	${ m mg/Kg}$	50	50.0	177	67.5 - 140.3

Sample: 121858 - AH-2 (0-1.0')

Analysis: Chloride (IC) QC Batch 36598 Prep Batch 31741 Analytical Method: Date Analyzed

Sample Preparation

E 300.0 2007-04-18 Prep Method: N/A Analyzed By: AR Prepared By: AR

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		48.1	m mg/Kg	ā	1.00

Sample: 121858 - AH-2 (0-1.0')

Analysis: TPH DRO QC Batch: 36556 Prep Batch: 31708 Analytical Method: Mate Analyzed Sample Preparation: 2

Mod. 8015B 2007-04-17 2007-04-17 Prep Method: N/A Analyzed By: AG Prepared By: AG

		RL			
Parameter	Flag	Result	Units	Dilution	RL
DRO		2900	mg/Kg	5	50.0
					

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane	4	1610	m mg/Kg	5	150	1073	32.9 - 167

²High surrogate recovery due to peak interference

³High surrogate recovery due to peak interference.

⁴High surrogate recovery due to peak interference

Report Date: April 24, 2007 2983

Work Order: 7041706 Cimarex/J W.Cooper TB Page Number: 6 of 24 Lea County, NM

Sample: 121858 - AH-2 (0-1.0')

Analysis TPH GRO
QC Batch 36525
Prep Batch 31685

Analytical Method S 8015B
Date Analyzed 2007-04-17
Sample Preparation: 2007-04-17

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

		m RL			
Parameter	Flag	Result	Units	Dilution	RL
GRO		29.1	mg/Kg	1	1.00

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.810	${ m mg/Kg}$	1	1 00	81	52.4 - 123.7
4-Bromofluorobenzene (4-BFB)		1.34	${ m mg/Kg}$	1	1.00	134	67.5 - 140.3

Sample: 121859 - AH-2 (1.0-1.5')

Analysis BTEX Analytical Method S 8021B Prep Method S 5035 QC Batch 36707 Date Analyzed: 2007-04-23 Analyzed By: AG Prep Batch: 31842 Sample Preparation: 2007-04-23 Prepared By: AG

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Benzene		< 0.100	mg/Kg	10	0.0100
Toluene		< 0.100	m mg/Kg	10	0.0100
Ethylbenzene		< 0.100	mg/Kg	10	0.0100
Xylene		1.45	${ m mg/Kg}$	10	0.0100

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		8.78	mg/Kg	10	10.0	88	26 - 117.8
4-Bromofluorobenzene (4-BFB)		9.53	${ m mg/Kg}$	10	10 0	95	51.1 - 119.1

Sample: 121859 - AH-2 (1.0-1.5')

Analytical Method: Prep Method: Analysis: Chloride (IC) E 300.0 N/A QC Batch: 36598 Date Analyzed 2007-04-18 Analyzed By-ARPrep Batch: 31741 Sample Preparation Prepared By AR

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		29.9	mg/Kg	5	1.00

Sample: 121859 - AH-2 (1.0-1.5')

Analysis: TPH DRO Analytical Method: Mod 8015B Prep Method N/A QC Batch. 36556 Date Analyzed. 2007-04-17 Analyzed By-AG Prep Batch: 31708 Sample Preparation: 2007-04-17 Prepared By:

Page Number: 7 of 24 Lea County, NM

			Dr						
			m RL						
Parameter	Flag	g 5	Result		Units		Dilution		RI
DRO			4580		mg/Kg		5		50.0
						0-0-	D	р.	
Currogata	Flag	Result	Units	Dil	ntion	Spike Amount	Percent Recovery		covery imits
Surrogate n-Triacontane		742	mg/Kg		5 5	150	495		9 - 167
II- IIIacomani	· · · · · · · · · · · · · · · · · · ·	142	mg/ Ng		<u> </u>	100	450	34.1	9 - 107
Sample: 12	1859 - AH-2 (1	.0-1.5')							
Analysis:	TPH GRO	•	Analytical	l Mathad:	S 8015B		Prep Me	othod:	S 5033
QC Batch:	36562		Date Anal		2007-04-18	2	Analyze		
Prep Batch:	31714			reparation.	2007-04-18		Prepare		SS
riep batch.	31/14		bample 11	reparation	2007-04-10)	Frepare	a Dî.	SS
Parameter	Flag	or.	$rac{ ext{RL}}{ ext{Result}}$		Units		Dilution		RI
GRO	1.10	<u> </u>	827		mg/Kg		50		1.00
<u> </u>					1116/116				1.00
						Spike	Percent	Rec	overy
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery		mits.
					F.0		~	50.4	- 123.
	ene (TFT)		44.4	mg/Kg	50	50.0	89	324	- 140.1
Trifluorotolue 4-Bromofluor	ene (TFT) robenzene (4-BFB 1860 - AH-3 (0-		44.4 52.6	mg/Kg mg/Kg	50 50	50.0 50.0	89 105		
Trifluorotolue 4-Bromofluor Sample: 12 Analysis: QC Batch	1860 - AH-3 (0- Chloride (IC) 36598		52.6 Analyti Date Ai	mg/Kg cal Method	: E 300.0 2007-04	50.0	105 Prep Analy	67.5 Method: zed By:	N/A AR
Trifluorotolue 4-Bromofluor Sample: 12 Analysis:	1860 - AH-3 (O Chloride (IC)		52.6 Analyti Date Ar Sample	mg/Kg	: E 300.0 2007-04	50.0	105 Prep Analy	67.5 · Method:	- 140.3 N/A
Trifluorotolue 4-Bromofluor Sample: 12 Analysis: QC Batch Prep Batch	1860 - AH-3 (0- Chloride (IC) 36598 31741	-1.0')	52.6 Analyti Date Ai Sample RL	mg/Kg cal Method	: E 300.0 2007-04 n:	50.0	105 Prep Analy Prepa	67.5 Method: zed By:	N/A AR AR
Trifluorotolue 4-Bromofluor Sample: 12 Analysis: QC Batch Prep Batch	1860 - AH-3 (0- Chloride (IC) 36598	-1.0')	52.6 Analyti Date Ar Sample RL Result	mg/Kg cal Method	50 : E 300.0 2007-04 n: Units	50.0	Prep Analy Prepa	67.5 Method: zed By:	N/A AR AR AR
Trifluorotolue 4-Bromofluor Sample: 12 Analysis: QC Batch Prep Batch	1860 - AH-3 (0- Chloride (IC) 36598 31741	-1.0')	52.6 Analyti Date Ai Sample RL	mg/Kg cal Method	: E 300.0 2007-04 n:	50.0	105 Prep Analy Prepa	67.5 Method: zed By:	N/A AR AR
Trifluorotolue 4-Bromofluor Sample: 12 Analysis: QC Batch Prep Batch Parameter Chloride	1860 - AH-3 (0- Chloride (IC) 36598 31741	-1.0') 5	52.6 Analyti Date Ar Sample RL Result	mg/Kg cal Method	50 : E 300.0 2007-04 n: Units	50.0	Prep Analy Prepa	67.5 Method: zed By:	N/A AR AR
Trifluorotolue 4-Bromofluor Sample: 12 Analysis: QC Batch Prep Batch Parameter Chloride Sample: 12 Analysis:	1860 - AH-3 (0- Chloride (IC) 36598 31741 Flag 1860 - AH-3 (0- TPH DRO	-1.0') 5	Analytica	mg/Kg cal Method nalyzed: Preparatio	50 : E 300.0 2007-04 n: Units mg/Kg Mod. 801	50.0 -18	Prep Analy Prepa Dilution 5	Method: rzed By: red By:	N/A AR AR RI 1.00
Trifluorotolue 4-Bromofluor Sample: 12 Analysis: QC Batch Prep Batch Parameter Chloride Sample: 12 Analysis: QC Batch	1860 - AH-3 (0- Chloride (IC) 36598 31741 Flag 1860 - AH-3 (0- TPH DRO 36556	-1.0') 5	Analytical Date Analytical Date Analytical	mg/Kg cal Method nalyzed: Preparation	50 : E 300.0 2007-04 n: Units mg/Kg Mod. 801: 2007-04-1	50.0 -18	Prep Analy Prepa Dilution 5	Method: rzed By: red By: Method rzed By:	N/A AR AR RI 1.00
Trifluorotolue 4-Bromofluor Sample: 12 Analysis: QC Batch Prep Batch Parameter Chloride Sample: 12 Analysis:	1860 - AH-3 (0- Chloride (IC) 36598 31741 Flag 1860 - AH-3 (0- TPH DRO	-1.0') 5	Analytical Date Analytical Date Analytical	mg/Kg cal Method nalyzed: Preparatio	50 : E 300.0 2007-04 n: Units mg/Kg Mod. 801	50.0 -18	Prep Analy Prepa Dilution 5	Method: rzed By: red By:	N/A AR AR AR N/A
Trifluorotolue 4-Bromofluor Sample: 12 Analysis: QC Batch Prep Batch Parameter Chloride Sample: 12 Analysis: QC Batch Prep Batch	1860 - AH-3 (0- Chloride (IC) 36598 31741 Flag 1860 - AH-3 (0- TPH DRO 36556 31708	-1.0') 5 -1.0')	Analytica Date Analytica Sample Programme RL	mg/Kg cal Method nalyzed: Preparation	50 E 300.0 2007-04 n: Units mg/Kg Mod. 801: 2007-04-1	50.0 -18	Prepared Pre	Method: rzed By: red By: Method rzed By:	N/A AR AR 1.00 N/A AG AG
Trifluorotolue 4-Bromofluor Sample: 12 Analysis: QC Batch Prep Batch Parameter Chloride Sample: 12 Analysis: QC Batch Prep Batch:	1860 - AH-3 (0- Chloride (IC) 36598 31741 Flag 1860 - AH-3 (0- TPH DRO 36556	-1.0') 5 -1.0')	Analytica Date Analytica Date Analytica Sample Property RL Result	mg/Kg cal Method nalyzed: Preparation	50 E 300.0 2007-04 n: Units mg/Kg Mod. 801: 2007-04-1' 2007-04-1'	50.0 -18	Prep Analy Prepa Dilution 5	Method: rzed By: red By: Method rzed By:	N/A AR AR 1.00 N/A AG AG
Trifluorotolue 4-Bromofluor Sample: 12 Analysis: QC Batch Prep Batch Parameter Chloride Sample: 12 Analysis: QC Batch Prep Batch	1860 - AH-3 (0- Chloride (IC) 36598 31741 Flag 1860 - AH-3 (0- TPH DRO 36556 31708	-1.0') 5 -1.0')	Analytica Date Analytica Sample Programme RL	mg/Kg cal Method nalyzed: Preparation	50 E 300.0 2007-04 n: Units mg/Kg Mod. 801: 2007-04-1	50.0 -18	Prepared Pre	Method: rzed By: red By: Method rzed By:	N/A AR AR 1.00 N/A AG AG
Trifluorotolue 4-Bromofluor Sample: 12 Analysis: QC Batch Prep Batch Parameter Chloride Sample: 12 Analysis: QC Batch Prep Batch:	1860 - AH-3 (0- Chloride (IC) 36598 31741 Flag 1860 - AH-3 (0- TPH DRO 36556 31708	-1.0') 5 -1.0')	Analytica Date Analytica Date Analytica Sample Property RL Result	mg/Kg cal Method nalyzed: Preparation	50 E 300.0 2007-04 n: Units mg/Kg Mod. 801: 2007-04-1' 2007-04-1'	50.0 -18	Prep Analy Prepa Dilution Prep Analy Prepa Dilution Dilution Dilution 1	Method: rzed By: red By: Method rzed By: red By:	N/A AR AR 1.00 N/A AG AG
Trifluorotolue 4-Bromofluor Sample: 12 Analysis: QC Batch Prep Batch Parameter Chloride Sample: 12 Analysis: QC Batch Prep Batch:	1860 - AH-3 (0- Chloride (IC) 36598 31741 Flag 1860 - AH-3 (0- TPH DRO 36556 31708	-1.0') 5 -1.0')	Analytica Date Analytica Date Analytica Sample Property RL Result	mg/Kg cal Method nalyzed: Preparation I Method: lyzed. reparation:	50 E 300.0 2007-04 n: Units mg/Kg Mod. 801: 2007-04-1' 2007-04-1'	50.0 -18	Prep Analy Prepa Dilution Prep Analy Prepa Dilution	Method: rzed By: red By: Method rzed By: red By: Ree	N/A AR AR 1.00 N/A AG AG

 $^{^5{\}rm High}$ surrogate recovery due to peak interference $^6{\rm High}$ surrogate recovery due to peak interference.

Work Order: 7041706 Cımarex/J W.Cooper TB Page Number: 8 of 24 Lea County, NM

> RL 1.00

Sample: 121860 - AH-3 (0-1.0')

Analysis:	TPH GRO
QC Batch	36525
Prep Batch:	31685

Analytical Method. S 8015B
Date Analyzed. 2007-04-17
Sample Preparation: 2007-04-17

Prep Method: S 5035 Analyzed By: ss Prepared By. ss

		RL		
Parameter	Flag	Result	Units	Dilution
GRO		17.5	mg/Kg	1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.806	mg/Kg	1	1.00	81	52 4 - 123.7
4-Bromofluorobenzene (4-BFB)		1.19	mg/Kg	1	1.00	119	67.5 - 140.3

Sample: 121861 - AH-4 (0-1.0')

(IC)

Analysis:	Chloride
QC Batch	36598
Prep Batch:	31741

Analytical Method: E 300.0 Date Analyzed 2007-04-18 Sample Preparation

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

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		125	mg/Kg	50	1.00

Sample: 121861 - AH-4 (0-1.0')

Analysis:	TPH DRO
QC Batch	36556
Prep Batch:	31708

Analytical Method: Mod 8015B Date Analyzed: 2007-04-17 Sample Preparation. 2007-04-17

Prep Method N/A Analyzed By AG Prepared By AG

		RL			
Parameter	Flag	Result	Units	Dilution	RL
DRO		6970	mg/Kg	ā	50.0
DIO			0, 0	<u> </u>	

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane	7	1290	m mg/Kg	ŏ	150	860	32.9 - 167

Sample: 121861 - AH-4 (0-1.0')

Analysis:	TPH GRO
QC Batch:	36525
Prep Batch:	31685

Analytical Method: S 8015B
Date Analyzed: 2007-04-17
Sample Preparation: 2007-04-17

Prep Method: S 5035 Analyzed By ss Prepared By. ss

		m RL			
Parameter	Flag	Result	Units	Dilution	RL
GRO		53.1	mg/Kg	1	1.00

⁷High surrogate recovery due to peak interference

Work Order: 7041706 Cimarex/J.W.Cooper TB Page Number: 9 of 24, Lea County, NM

C	Tall a m	Dagult	Units	Dilution	Spike	Percent		overy.
Surrogate Trifluorotoluene (TFT)	Flag	Result 0.805	mg/Kg	1	Amount 1.00	Recovery 80		nits 123.7
4-Bromofluorobenzene (4-BFB)	8	2.78	mg/Kg mg/Kg	1	1.00	278		140.3
4-Diomondorobenzene (4-Di-D)		2.16	mg/Kg		1.00	210	07.0 -	140.5
Sample: 121862 - AH-4 (1.0-1	1.5')							
Analysis Chloride (IC)		Analyti	ical Method	E 300.0		Prep M	Method.	N/A
QC Batch: 36598			nalyzed·	2007-04-	18		zed By.	AR
Prep Batch 31741		Sample	Preparation	u.		Prepar	red By:	AR
		RL						
Parameter Flag		Result		Units		Dilution		RL
Chloride		60.8		mg/Kg		5		1.00
Sample: 121862 - AH-4 (1.0-1	1.5')							
Analysis TPH DRO		Analytica	l Method	Mod. 8015	В	Prep l	Method:	N/A
QC Batch: 36556		Date Ana	dyzed·	2007-04-17		Analy	zed By:	ÁĞ
Prep Batch: 31708		Sample P	reparation:	2007-04-17		Prepa	red By:	AG
		RL						
Parameter Flag		Result		Units		Dilution		RL
DRO		199		mg/Kg		1		50.0
					Spike	Percent	Rec	overy
Surrogate Flag	Result	Units	Dilı	ition	Amount	Recovery		mits
n-Triacontane 9	303	mg/Kg		1	150	202	32.9	9 - 167
Sample: 121862 - AH-4 (1.0-1) Analysis	1.5')	Date Ana Sample P	ll Method lyzed: reparation:	S 8015B 2007-04-17 2007-04-17		Prep Me Analyze Prepare	d By: s	S 5035 ss ss
Parameter Flag		RL Result		Units		Dilution		RL
GRO		7.05		mg/Kg		1		1.00
					Spike	Percent	Reco	overy
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery		nits
Trifluorotoluene (TFT)		0.798	mg/Kg	1	1.00	80	52.4 -	123.7
4-Bromofluorobenzene (4-BFB)		1.19	${ m mg/Kg}$	1	1.00	119		140.3

Sample: 121863 - AH-5 (0-1.0')

Analysis [.]	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	36598	Date Analyzed:	2007-04-18	Analyzed By:	AR
Prep Batch	31741	Sample Preparation:		Prepared By	AR

 $^{^8{\}rm High}$ surrogate recovery due to peak interference. $^9{\rm High}$ surrogate recovery due to peak interference

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Work Order 7041706 Cimarex/J W.Cooper TB

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		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		222	mg/Kg	10	1.00

Sample: 121863 - AH-5 (0-1.0')

Analysis. TPH DRO QC Batch 36556 Prep Batch 31708

Analytical Method: Mod 8015B Date Analyzed 2007-04-17 Sample Preparation: 2007-04-17

Prep Method. N/A Analyzed By-AG Prepared By: AG

Parameter	Fla	ıg	Result	Uni	its	Dilution	RL
DRO			4680	mg/I	\g	5	50.0
					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane	10	1620	mg/Kg	5	150	1080	32.9 - 167

RL

Sample: 121863 - AH-5 (0-1.0')

TPH GRO Analysis¹ QC Batch: 36525Prep Batch 31685

Analytical Method: S 8015BDate Analyzed: 2007-04-17 Sample Preparation: 2007-04-17 Prep Method: S 5035 Analyzed By: ss Prepared By:

Parameter	Flag		$rac{ ext{RL}}{ ext{Result}}$		Units		Dilution	RL
GRO			39.5		mg/Kg		1	1 00
				T		Spike	Percent	Recovery
Surrogate		Flag	Result	$_{ m Units}$	Dilution	\mathbf{Amount}	$\operatorname{Recover}_{V}$	Limits
Trifluorotoluene (TFT)			0.818	mg/Kg	. 1	1.00	82	52.4 - 123.7

mg/Kg

0.872

Sample: 121864 - AH-5 (1.0-1.5')

4-Bromofluorobenzene (4-BFB)

Analysis: Chloride (IC) QC Batch 36598 Prep Batch 31741

Analytical Method: E 300.0 Date Analyzed: 2007-04-18 Sample Preparation:

1

1.00

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

67.5 - 140.3

AG

AG

87

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		207	mg/Kg	10	1.00

Sample: 121864 - AH-5 (1.0-1.5')

Analytical Method: Analysis: TPH DRO Mod. 8015B Prep Method: N/A QC Batch 36556 Date Analyzed 2007-04-17 Analyzed By. Prep Batch. 31708 Sample Preparation 2007-04-17 Prepared By:

¹⁰High surrogate recovery due to peak interference

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Parameter	Flag	r	RL Result		Units		Dilution	RL
DRO		·	764		mg/Kg		1	50.0
Surrogate	Flag	Result	Units	Dila	ıtion	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		543	mg/Kg		1	150	362	32.9 - 167
II- IIIacongane	<u> </u>	010	1118/118			100	002	02.0 101
Sample: 121	1864 - AH-5 (1.	0-1.5')						
Analysis.	TPH GRO		Analytical	Method:	S 8015B		Prep Me	ethod: S 5035
QC Batch	36525		Date Analy		2007-04-17		Analyze	
Prep Batch	31685		Sample Pr		2007-04-17		Prepare	
			RL					
Parameter	Flag	r o	Result		Units		Dilution	RL
GRO			5.03		mg/Kg		1	1.00
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)		0.794	mg/Kg	1	1.00	79	52.4 - 123.7
	obenzene (4-BFB)	1.10	mg/Kg	1	1.00	110	67.5 - 140.3
Sample: 12	1865 - AH-6 (0-	-1.0')						
Sample: 12: Analysis: QC Batch Prep Batch.	1865 - AH-6 (0- Chloride (IC) 36598 31741	-1.0')	Date An	al Method alyzed Preparatio	2007-04-	18	Analy	Method: N/A zed By AR red By: AR
Analysis: QC Batch	Chloride (IC) 36598	-1.0')	Date An	alyzed·	2007-04-	18	Analy	zed By AR
Analysis: QC Batch Prep Batch.	Chloride (IC) 36598	·	Date An Sample : RL Result	alyzed·	2007-04- n· Units	18	Analy	zed By AR
Analysis: QC Batch Prep Batch.	Chloride (IC) 36598 31741	·	Date An Sample I	alyzed·	2007-04- n·	18	Analy Prepa	zed By AR red By: AR
Analysis: QC Batch Prep Batch. Parameter Chloride	Chloride (IC) 36598 31741	5	Date An Sample : RL Result	alyzed·	2007-04- n· Units	18	Analy Prepa Dilution	zed By AR red By: AR RL
Analysis: QC Batch Prep Batch. Parameter Chloride Sample: 121	Chloride (IC) 36598 31741 Flag	5	Date An Sample : RL Result	alyzed Preparatio	2007-04- n· Units		Analy Prepa Dilution	zed By AR red By: AR RL 1.00
Analysis: QC Batch Prep Batch. Parameter Chloride Sample: 121 Analysis QC Batch:	Chloride (IC) 36598 31741 Flag 1865 - AH-6 (0- TPH DRO 36556	5	Date An Sample RL Result 69.1	alyzed Preparation , , Method: yzed:	2007-04- n· Units mg/Kg Mod. 8015 2007-04-17	ъВ	Analy Prepa Dilution 5	zed By AR red By: AR RL 1.00
Analysis: QC Batch Prep Batch. Parameter Chloride	Chloride (IC) 36598 31741 Flag 1865 - AH-6 (0- TPH DRO 36556	5	Date An Sample RL Result 69.1	alyzed Preparation , , Method: yzed:	2007-04- n· Units mg/Kg Mod. 8015 2007-04-17	jB	Analy Prepa Dilution 5 Prep 1 Analy	zed By AR red By: AR RL 1.00
Analysis: QC Batch: Prep Batch. Parameter Chloride Sample: 121 Analysis: QC Batch: Prep Batch:	Chloride (IC) 36598 31741 Flag 1865 - AH-6 (0- TPH DRO 36556 31708	1.0')	Date An Sample RL Result 69.1 Analytical Date Analysical Sample Property RL	alyzed Preparation , , Method: yzed:	2007-04- n· Units mg/Kg Mod. 8015 2007-04-17 2007-04-17	jB	Analy Prepa Dilution 5 Prep 1 Analy Prepa	zed By: AR red By: AR RL 1.00 Method. N/A zed By: AG red By: AG
Analysis: QC Batch. Prep Batch. Parameter Chloride Sample: 121 Analysis: QC Batch: Prep Batch:	Chloride (IC) 36598 31741 Flag 1865 - AH-6 (0- TPH DRO 36556	1.0')	Date An Sample RL Result 69.1 Analytical Date Analy Sample Property RL Result	alyzed Preparation , , Method: yzed:	2007-04- n. Units mg/Kg Mod. 8015 2007-04-17 2007-04-17	jB	Analy Prepa Dilution 5 Prep 1 Analy Prepa Dilution	zed By AR red By: AR RL 1.00 Method. N/A zed By: AG red By: AG
Analysis: QC Batch. Prep Batch. Parameter Chloride Sample: 121 Analysis: QC Batch: Prep Batch:	Chloride (IC) 36598 31741 Flag 1865 - AH-6 (0- TPH DRO 36556 31708	1.0')	Date An Sample RL Result 69.1 Analytical Date Analysical Sample Property RL	alyzed Preparation , , Method: yzed:	2007-04- n· Units mg/Kg Mod. 8015 2007-04-17 2007-04-17	jB	Analy Prepa Dilution 5 Prep 1 Analy Prepa	zed By: AR red By: AR RL 1.00 Method. N/A zed By: AG red By: AG
Analysis: QC Batch Prep Batch. Parameter Chloride Sample: 121 Analysis: QC Batch: Prep Batch: Prep Batch:	Chloride (IC) 36598 31741 Flag 1865 - AH-6 (0- TPH DRO 36556 31708 Flag	-1.0')	Date An Sample RL Result 69.1 Analytical Date Analy Sample Property RL Result 524	alyzed Preparation Method: yzed: eparation	2007-04- n. Units mg/Kg Mod. 8015 2007-04-17 2007-04-17 Units mg/Kg	Spike	Analy Prepa Dilution 5 Prep I Analy Prepa Dilution I Percent	zed By AR red By: AR RL 1.00 Method. N/A zed By: AG red By: AG RL 50.0
Analysis: QC Batch: Prep Batch. Parameter Chloride Sample: 121 Analysis: QC Batch: Prep Batch:	Chloride (IC) 36598 31741 Flag 1865 - AH-6 (0- TPH DRO 36556 31708 Flag Flag	1.0')	Date An Sample RL Result 69.1 Analytical Date Analy Sample Property RL Result	alyzed Preparation Method: yzed: eparation	2007-04- n. Units mg/Kg Mod. 8015 2007-04-17 2007-04-17	jB	Analy Prepa Dilution 5 Prep 1 Analy Prepa Dilution 1	zed By AR red By: AR RL 1.00 Method. N/A zed By: AG red By: AG RL 50.0

¹¹High surrogate recovery due to peak interference.
¹²High surrogate recovery due to peak interference

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Sample:	121865 -	- AH-6	(0-1.0)	}
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Analysis.	TPH GRO
QC Batch:	36525
Prep Batch:	31685

Analytical Method: S 8015BDate Analyzed. 2007-04-17 Sample Preparation 2007-04-17

Prep Method· S 5035 Analyzed By: Prepared By SS

 Tille	ъ.,

Parameter	Flag	Result	Units		Dilution	RL
GRO		2.94	mg/Kg		1	1.00
				Spike	Percent	Recovery

RL

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifiuorotoluene (TFT)		0.794	mg/Kg	1	1.00	79	52 4 - 123.7
4-Bromofluorobenzene (4-BFB)		1.06	${ m mg/Kg}$	1	1.00	106	67 5 - 140.3

Sample: 121866 - AH-6 (1.0-1.5')

Analysis:	Chloride (IC)
QC Batch:	36632
Prep Batch:	31771

Analytical Method: E 300.0 Date Analyzed 2007-04-19 Sample Preparation:

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

		RL
Parameter	Flag	Result
Chloride		82.5

Units	Dilution	RL
mg/Kg	5	1.00

Sample: 121866 - AH-6 (1.0-1.5')

Analysis:	TPH DRC
QC Batch	36556
Prep Batch:	31708

Analytical Method: Mod. 8015B Date Analyzed: 2007-04-17 Sample Preparation. 2007-04-17

Prep Method N/A Analyzed By-AG Prepared By: AG

		m RL			
Parameter	Flag	Result	Units	Dilution	RL
DRO		267	mg/Kg	1	50 0

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane	13	294	mg/Kg	1	150	196	32.9 - 167

Sample: 121866 - AH-6 (1.0-1.5')

Analysis:	TPH GRO
QC Batch:	36525
Prep Batch	31685

Analytical Method: S 8015B Date Analyzed: 2007-04-17 Sample Preparation: 2007-04-17

Prep Method: S 5035 Analyzed By SS Prepared By:

		RL			
Parameter	Flag	Result	Units	Dilution	RL
GRO		1.40	mg/Kg	1	1.00

¹³High surrogate recovery due to peak interference

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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.798	mg/Kg	1	1.00	80	52.4 - 123
4-Bromofluorobenzene (4-BFB)	- 	1.06	mg/Kg	1	1.00	106	67.5 - 140
Sample: 121867 - AH-7 (0-1.	0')						
Analysis. Chloride (IC)			ical Method	E 300.0		Prep l	Method: N/
QC Batch· 36600			nalyzed.	2007-04-	18		zed By: AF
Prep Batch 31744		Sample	Preparatio	n:		Prepa	red By: AF
		RL					
Parameter Flag		Result	_	Units		Dilution	R
Chloride		101		mg/Kg		50	1.0
Sample: 121867 - AH-7 (0-1. Analysis: TPH DRO	0')	Amalastica	l Mathad.	Mod. 8015	ח	D	Marking J. NI
Analysis: TPH DRO QC Batch: 36556		Date Ana	d Method:	2007-04-17			Method: N/
Prep Batch: 31708			reparation.	2007-04-17			zed By: AG red By: AG
r rep Daton 31700		Sample 1	reparation.	2007-04-17		Тера	red by AC
T)		RL		Tī '		D'I (TO.
Parameter Flag DRO		Result 5020		Units		Dilution	R
DRO		3020		mg/Kg		1	50
Company Elling	Result	Units	D:I	ution	Spike	Percent	Recover
Surrogate Flag n-Triacontane 14	1410	mg/Kg		i i	Amount 150	Recovery 940	32.9 - 16
T. A. Reconnection			>		100	010	02.3
Sample: 121867 - AH-7 (0-1.	0')						
Analysis TPH GRO		Analytica	d Method:	S 8015B		Prep Me	ethod: S 503
QC Batch 36525		Date Ana		2007-04-17		Analyze	
Prep Batch: 31685		Sample P	reparation:	2007-04-17		Prepare	d By: ss
		RL					
Parameter Flag		Result		Units		Dilution	R
GRO		5.51	,	mg/Kg		1	1.0
					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.799	mg/Kg	1	1.00	80	52.4 - 123
4-Bromofluorobenzene (4-BFB)		0.985	mg/Kg	1	1.00	98	67.5 - 140
Sample: 121868 - AH-8 (0-0.	5')						•
Analysis Chloride (IC)		Analyt	ical Method	E 300.0		Prep :	Method N/

Date Analyzed.

Sample Preparation:

2007-04-18

Analyzed By:

Prepared By:

AR

AR

36600

31744

QC Batch

Prep Batch:

¹⁴High surrogate recovery due to peak interference.

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Work Order: 7041706

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		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		12.9	mg/Kg	5	1.00

Sample: 121868 - AH-8 (0-0.5')

Analysis [,]	TPH DRO
QC Batch:	36556
Prep Batch:	31708

Analytical Method· Mod 8015B Date Analyzed 2007-04-17 Sample Preparation: 2007-04-17

Prep Method: N/A Analyzed By AGPrepared By: AG

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		RL			
Parameter	Flag	Result	Units	Dilution	RL
DRO		579	m mg/Kg	1	50.0
			C=:1-	D	D

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane	15	420	m mg/Kg	1	150	280	32.9 - 167

Sample: 121868 - AH-8 (0-0.5')

Analysis.	TPH GRO
QC Batch	36525
Prep Batch	31685

Analytical Method: S 8015B Date Analyzed: 2007-04-17 Sample Preparation 2007-04-17 Prep Method: S 5035 Analyzed By: SS Prepared By.

Parameter	Flag		RL Result		Units		Dilution	RL
GRO			1.30		m mg/Kg		1	1.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.801	mg/Kg	1	1.00	80	52.4 - 123.7

mg/Kg

1

1.00

101

1.01

Method Blank (1) QC Batch: 36525

4-Bromofluorobenzene (4-BFB)

QC Batch:	36525
Prep Batch:	31685

Date Analyzed. 2007-04-17 QC Preparation 2007-04-17 Analyzed By: ss Prepared By: ss

67.5 - 140.3

		MDL		
Parameter	Flag	Result	Units	RL
GRO		< 0.739	mg/Kg	1

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.880	mg/Kg	1	1.00	88	52.4 - 123.7
4-Bromofluorobenzene (4-BFB)		0.969	${ m mg/Kg}$	1	1.00	97	67.5 - 140.3

¹⁵High surrogate recovery due to peak interference

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Method Blank (1)

QC Batch: 36556

QC Batch 36556 Prep Batch 31708 Date Analyzed: 2007-04-17 QC Preparation: 2007-04-17 Analyzed By: AG Prepared By: AG

MDL

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane		136	mg/Kg	1	150	91	44.7 - 133.6

Method Blank (1)

QC Batch: 36562

QC Batch 36562 Prep Batch 31714 Date Analyzed: 2007-04-18 QC Preparation. 2007-04-18 Analyzed By: ss Prepared By ss

MDL

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.901	mg/Kg	1	1.00	90	52.4 - 123.7
4-Bromofluorobenzene (4-BFB)		0.910	mg/Kg	1	1 00	91	67.5 - 140.3

Matrix Blank (1) Q

QC Batch 36598

QC Batch 36598 Prep Batch 31741 Date Analyzed: 2007-04-18 QC Preparation: 2007-04-18

Analyzed By AR Prepared By AR

Matrix Blank (1)

QC Batch: 36600

QC Batch: 36600 Prep Batch: 31744 Date Analyzed 2007-04-18 QC Preparation: 2007-04-18 Analyzed By AR Prepared By AR

Matrix Blank (1)

QC Batch. 36632

QC Batch: 36632 Prep Batch: 31771 Date Analyzed: 2007-04-19 QC Preparation: 2007-04-19

Analyzed By: AR Prepared By: AR Report Date: April 24, 2007

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	MDL		
Flag	Result	Units	RL
	3.05	m mg/Kg	1
	Flag	Flag Result 3.05	$\begin{array}{ccc} \text{Flag} & \text{Result} & \text{Units} \\ & 3.05 & \text{mg/Kg} \end{array}$

Method Blank (1)

QC Batch: 36707

36707 QC Batch Prep Batch. 31842 Date Analyzed: 2007-04-23 QC Preparation: 2007-04-23 Analyzed By: AG Prepared By AG

		MDL		
Parameter	Flag	Result	Units	RL
Benzene	V	< 0.00110	mg/Kg	0.01
Toluene		< 0.00150	mg/Kg	0.01
Ethylbenzene		< 0.00160	m mg/Kg	0.01
Xylene		< 0.00410	${ m mg/Kg}$	0.01

					Spike	$\operatorname{Percent}$	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.862	mg/Kg	1	1.00	86	62.6 - 117.6
4-Bromofluorobenzene (4-BFB)		0.770	${ m mg/Kg}$	1	1.00	77	53.9 - 125.1

Laboratory Control Spike (LCS-1)

QC Batch

36525Prep Batch: 31685 Date Analyzed: QC Preparation

2007-04-17 2007-04-17 Analyzed By· ss Prepared By

LCS Spike Matrix Rec. Param Result Units Dil. Amount Result Rec. Limit GRO 7.12 mg/Kg 1 10.0 < 0.739 71 57.7 - 102.5

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	7.63	mg/Kg	1	10.0	< 0.739	76	57.7 - 102 5	7	20

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

Surrogate	$rac{ ext{LCS}}{ ext{Result}}$	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	$\begin{array}{c} { m LCSD} \\ { m Rec} \end{array}$	Rec. Limit
Trifluorotoluene (TFT)	0.816	1.02	mg/Kg	1	1.00	82	102	36.8 - 152.5
4-Bromofiuorobenzene (4-BFB)	1.03	1.01	mg/Kg	1	1.00	103	101	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 36556 Prep Batch: 31708 Date Analyzed: QC Preparation:

2007-04-17 2007-04-17 Analyzed By: AG Prepared By. AG

continued .

Report Date: April 24, 2007

Work Order: 7041706

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Param

Chloride

Cımarex/J.W.Cooper TB

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control spikes continued	•										
n.		LCS		· · · · · · · · · · · · · · · · · · ·	··1	Spike		trix	n		Rec.
Param		Resul	t Ur	nits I	Oil	Amount	Re	sult	Rec		imit
		LCS				Spike	Ma	trix]	Rec
Param		Resul				Amount		sult	Rec.		amit_
DRO		243		10	1	250		4.6	97	47 5	- 144.
Percent recovery is base	ed on the spi	ike result. l	RPD is ba	sed on the	spike a	nd spike d	luplicat	e resul	t.		
		LCSD		S	pike	Matrix		F	Rec.		RPD
Param		Result	Units	Dil An	nount	Result	Rec.	L	ımıt	RPD	Lımi
DRO		256	mg/Kg	1	250	<14.6	102	47.5	- 144.1	5	20
Percent recovery is base	ed on the sp	ike result. I	RPD is ba	ased on the	spike a	nd spike d	luplicat	e resul	t.		
	LCS	LCSD				Spike	LC	S	LCSD]	Rec.
Surrogate	Result	Result	Uni		il .	Amount	Rec	:	Rec.	I	imit
n-Triacontane	164	140	mg/l	Kg 1		150	109)	93	57.3	- 131.6
										epared E	
		LCS				Spike	Ma	trix		,	Rec
		Resul	t Ur	nits I	oil.	Spike Amount		trix sult	Rec.	I.	Rec Limit
					Dil.		Re			I.	Rec Limit
GRO	ed on the sp.	Resul 7.58	mg	/Kg	1	Amount 10.0	Res	sult .739	Rec. 76	I.	Rec Limit
GRO	ed on the sp.	Resul 7.58	mg	/Kg ased on the	1	Amount 10.0	Res	sult .739 e resul	Rec. 76	I.	Rec Jimit - 102.3
GRO Percent recovery is base Param	ed on the sp	Resul 7.58 ike result. l LCSD Result	mg RPD is ba Units	/Kg ased on the S Dil. An	1 spike a pike nount	Amount 10.0 nd spike o Matrix Result	Resident Rec.	sult .739 e resul E	Rec. 76 t Rec imit	I.	Rec Limit - 102.
GRO Percent recovery is base Param GRO		Resul 7.58 ike result. I LCSD Result 7.93	mg RPD is ba Units mg/Kg	/Kg used on the S Dil. An	1 spike a pike nount 0.0	Amount 10.0 Ind spike of Matrix Result <0.739	Rec.	sult .739 e resul F L 57.7	Rec. 76 t Rec imit - 102.5	57.7	Rec Limit - 102.
GRO Percent recovery is base Param GRO		Resul 7.58 ike result. I LCSD Result 7.93	mg RPD is ba Units mg/Kg	/Kg used on the S Dil. An	1 spike a pike nount 0.0	Amount 10.0 Ind spike of Matrix Result <0.739	Rec.	sult .739 e resul F L 57.7	Rec. 76 t Rec imit - 102.5	57.7 RPD	Rec Jimit - 102.3 RPD Limit
Param GRO Percent recovery is base Param GRO Percent recovery is base		Resul 7.58 ike result. I LCSD Result 7.93	mg RPD is ba Units mg/Kg	/Kg used on the S Dil. An 1 1 used on the	1 spike a pike nount 0.0	Amount 10.0 Ind spike of Matrix Result <0.739	Rec. 79 Iuplicat	sult .739 e resul F L 57.7	Rec. 76 t Rec imit - 102.5	1 57.7 RPD 4	Rec Jimit - 102. RPI Limi
GRO Percent recovery is base Param GRO Percent recovery is base Surrogate		Result 7.58 ike result. I LCSD Result 7.93 ike result. I	mg RPD is ba Units mg/Kg RPD is ba LCSI Resul	/Kg sed on the S Dil. An 1 1 ased on the t Unit	spike a pike a nount 0.0 spike a	Amount 10.0 Ind spike of Matrix Result <0.739 Ind spike of Spike of Spike of Amount Amount Matrix Result <0.739	Rec. 79 luplicat	sult 739 e resul F L 57.7 e resul LCS Rec	Rec. 76 t Rec imit - 102.5 t.	1 57.7 RPD 4	Rec Junit - 102. RPD Limit 20
GRO Percent recovery is base Param GRO Percent recovery is base Surrogate Trifluorotoluene (TFT)	d on the sp	Result 7.58 ike result. I LCSD Result 7.93 ike result. I LCS Result 1.15	mg RPD is ba Units mg/Kg RPD is ba LCSI Resul	/Kg sed on the S Dil. An 1 1 sed on the t Unit mg/K	spike a pike a pount 0.0 spike a spike	Amount 10.0 Ind spike of Matrix Result <0.739 Ind spike of Spike of Amount 1.0	Rec. 79 luplicat luplicat luplicat luplicat like luplicat	sult 739 e resul F L 57.7 e resul LCS Rec 115	Rec. 76 t Rec imit - 102.5 t. LCSD Rec 117	RPD 4	Rec Limit 20 Rec. Limit 15-152.
GRO Percent recovery is base Param GRO Percent recovery is base Surrogate	d on the sp	Result 7.58 ike result. I LCSD Result 7.93 ike result. I LCS Result	mg RPD is ba Units mg/Kg RPD is ba LCSI Resul	/Kg	spike a pike a pount 0.0 spike a spike	Amount 10.0 Ind spike of Matrix Result (0.739) Ind spike of Spike of Amount 1.0	Rec. 79 luplicat luplicat luplicat luplicat like luplicat	sult 739 e resul F L 57.7 e resul LCS Rec	Rec. 76 t Rec imit - 102.5 t. LCSD Rec	RPD 4	Recularit - 102 RPI Limi 20 Recularit - 20
GRO Percent recovery is base Param GRO Percent recovery is base Surrogate Trifluorotoluene (TFT)	ed on the spi 4-BFB)	Result 7.58 ike result. LCSD Result 7.93 ike result. LCS Result 1.15 0.998	mg RPD is ba Units mg/Kg RPD is ba LCSI Resul	/Kg sed on the S Dil. An 1 1 sed on the t Unit mg/K	spike a pike a pount 0.0 spike a spike	Amount 10.0 Ind spike of Matrix Result <0.739 Ind spike of Spike of Amount 1.0	Rec. 79 luplicat luplicat luplicat luplicat like luplicat	sult 739 e resul F L 57.7 e resul LCS Rec 115	Rec. 76 t Rec imit - 102.5 t. LCSD Rec 117	RPD 4	Recommit - 102. RPI Limi 20 Recommit - 152.
GRO Percent recovery is base Param GRO Percent recovery is base Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (ed on the spi 4-BFB)	Result 7.58 ike result. I LCSD Result 7.93 ike result. I LCS Result 1.15 0.998	mg RPD is ba Units mg/Kg RPD is ba LCSI Resul	/Kg /Kg S Dil. An 1 1 ased on the t Unit mg/k mg/k	spike a pike a pount 0.0 spike a spike	Amount 10.0 Ind spike of Matrix Result <0.739 Ind spike of Spike of Amount 1.1 1.1	Rec. 79 luplicat luplicat luplicat luplicat like luplicat	sult 739 e resul F L 57.7 e resul LCS Rec 115	Rec. 76 t Rec imit - 102.5 t. LCSD Rec 117 100	RPD 4	Recommit - 102.

Spike

Amount

12.5

Matrix

 ${\bf Result}$

1.8

Rec

103

 ${\rm Rec.}$

Limit

90 - 110

LCS

Result

14.7

 $\frac{\text{Percent recovery is based on the spike result } \text{ RPD is based on the spike and spike duplicate result.}}{continued \dots}$

Units

mg/Kg

Dil.

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	7	47 1		
control	spikes	continued		

Param	LCSD Result	Units	Dil	Spike Amount	Matrix Result	Rec	Rec. Limit	RPD	RPD Limit
Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	14.7	mg/Kg	1	12 5	1.8	103	90 - 110	0	

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

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch: 31744

36600

Date Analyzed: QC Preparation:

2007-04-18 2007-04-18

Analyzed By: AR Prepared By: AR

LCS Spike Matrix Rec Param Result Units Dil. Amount Result Rec. Limit Chloride 14.8 mg/Kg 12.51.77 104 90 - 110 1

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

	LCSD			Spike	Matrix		Rec		RPD
Param	Result	Units	Dil	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	14.7	mg/Kg	1	12.5	1.77	104	90 - 110	0	

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

Laboratory Control Spike (LCS-1)

QC Batch:

36632 Prep Batch: 31771

Date Analyzed: QC Preparation:

2007-04-19 2007-04-19 Analyzed By AR Prepared By-AR

LCS Spike Matrix Rec. Result Param Units Dil Amount Result Rec. Limit Chloride 14.9 mg/Kg 12.5 1.8 105 90 - 110

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	15.0	m mg/Kg	1	12.5	1.8	106	90 - 110	1	

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

Laboratory Control Spike (LCS-1)

QC Batch Prep Batch

36707 31842 Date Analyzed QC Preparation

2007-04-23 2007-04-23

Analyzed By: AG Prepared By: AG

	LCS			Spike	Matrix		Rec
Param	Result	Units	Dil	Amount	Result	Rec.	Limit
Benzene	0.888	mg/Kg	1	1.00	< 0.00110	89	68.6 - 123.4
Toluene	0.908	${ m mg/Kg}$	1	1.00	< 0.00150	91	74.6 - 119.3
Ethylbenzene	0.915	mg/Kg	1	1.00	< 0.00160	92	72.3 - 126.2

continued ...

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control spikes continued ...

	LCS			$_{ m Spike}$	Matrix		Rec
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Xylene	2.77	mg/Kg	1	3.00	< 0.00410	92	76.5 - 121.6

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil	Amount	Result	Rec	Limit	RPD	Limit
Benzene	0.864	mg/Kg	1	1.00	< 0.00110	86	68.6 - 123.4	3	20
Toluene	0.896	${ m mg/Kg}$	1	1.00	< 0.00150	90	74.6 - 119.3	1	20
Ethylbenzene	0.910	mg/Kg	1	1.00	< 0.00160	91	72.3 - 126.2	0	20
Xylene	2.76	mg/Kg	1	3.00	< 0.00410	92	76.5 - 121.6	0	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil	Amount	Rec.	Rec	Limit
Trifluorotoluene (TFT)	0.800	0.797	mg/Kg	1	1.00	80	80	64.1 - 118.2
4-Bromofluorobenzene (4-BFB)	0.830	0.827	${ m mg/Kg}$	1	1.00	83	83	68.7 - 125.8

Matrix Spike (MS-1) Spiked Sample: 121858

QC Batch: 36525 Prep Batch: 31685 Date Analyzed 2007-04-17 QC Preparation: 2007-04-17 Analyzed By: ss Prepared By ss

		MS			Spike	Matrix		Rec.
Param		Result	Units	Dil.	Amount	Result	Rec	Limit
GRO	16	24.3	mg/Kg	1	10.0	24.3	0	10 - 141.5

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

		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil	Amount	Result	Rec	Limit	RPD	Limit
GRO	17	21.1	mg/Kg	1	10.0	24.3	0	10 - 141.5	14	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil	Amount	Rec.	Rec	Limit
Trifluorotoluene (TFT)	0.618	0.659	mg/Kg	1	1	62	66	40 - 125.3
4-Bromofluorobenzene (4-BFB)	1.26	1.24	$_{ m mg/Kg}$	1	1	126	124	86.7 - 144.5

Matrix Spike (MS-1) Spiked Sample: 121864

QC Batch: 36556 Prep Batch: 31708 Date Analyzed 2007-04-17 QC Preparation 2007-04-17

Analyzed By AG Prepared By AG

		MS			Spike	Matrix		Rec
Param		Result	Units	$_{\mathrm{Dil}}$	Amount	Result	Rec	Limit
DRO	18	721	mg/Kg	1	250	721	0	11.7 - 152.3

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

¹⁶Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control

¹⁷Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control

¹⁸Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

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Param		MSD Result	Units	Dil	Spike Amount	Matrix Result	Rec	Re Lin		RPD	RPD Limit
DRO	19		mg/Kg		250	721	230	11.7 -		60	20
Percent recovery is based of	on the snik										
recent recovery is based of		ie resuit. I		based of	t tite aprice	and spike di	трисан	resuit			
	MS	MSI	D C			$_{ m Spike}$		MS	MSD		Rec.
Surrogate	Result			Units	Dil	Amount		Rec.	Rec		Limit
n-Triacontane 20 21	290	486)	mg/Kg	1	150		193	324	1'	7 - 163 1
Matrix Spike (MS-1)	Spiked S	ample: 121	898								
QC Batch 36562			Date A	nalvzed	. 2007-04	4-18			Δn	alvzed	By: ss
Prep Batch: 31714				eparatio:						pared :	
rich bacch. Divir			Q	opuratio	1. 2001 0	1 10			110	parca .	D, DD
		MS				Spike	M	atrıx			Rec
Param		Resu	lt	Units	Dil.	Amount	\mathbf{R}	esult	Rec.		Limit
GRO	22	8.64	:	mg/Kg	1	10.0		3 64	0	10	3 - 141 5
Percent recovery is based of	on the spik	e result. F	RPD is	based or	the spike	and spike du	plicate	result			
		MCD			C- n -	N (. 4 .		n			חחח
		MSD			Spike	Matrix	_	Re			RPD
D		Dagult	Timita	T : 1	A ==== 1	. To					
Param	23	Result	Units	Dil.	Amount		Rec		nit	RPD	Limit
GRO	23	6.81	mg/Kg	g 1	10.0	8.64	0	10 -	nit 141.5	RPD 24	Limit 20
GRO		6.81	mg/Kg	g 1	10.0	8.64	0	10 -			
Param GRO Percent recovery is based of		6.81 te result. F MS	mg/Kg RPD 1s M	g <u>l</u> based or SD	10.0 the spike	8.64	0 iplicate	10 -		24	20 Rec.
GRO Percent recovery is based of Surrogate		6.81 te result. F MS Result	mg/Kg RPD is M Res	g <u>l</u> based or SD sult	10.0 the spike Units	8.64 and spike di	0 iplicate ke	10 - e result MS Rec.	MSD Rec.	24	20 Rec. Limit
GRO Percent recovery is based of Surrogate Trifluorotoluene (TFT)	on the spik	6.81 te result. F MS	mg/Kg RPD is M Res	g l based or SD sult 755 r	10.0 the spike Units ng/Kg	8.64 and spike du Spi	0 iplicate ke unt	10 - e result MS	141.5 MSD	24	20 Rec. Limit - 125.3
GRO	on the spik	6.81 te result. F MS Result	mg/Kg RPD is M Res	g l based or SD sult 755 r	10.0 the spike Units	8.64 and spike du Spi Dil Amo	0 uplicate ke unt	10 - e result MS Rec.	MSD Rec.	24	20 Rec. Limit
GRO Percent recovery is based of Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-E	on the spik	6.81 te result. F MS Result 0.732	mg/Kg RPD is M Res 0.7	g l based or SD sult 755 r	10.0 the spike Units ng/Kg	8.64 and spike du Spi Dil Amo	0 uplicate ke unt	MS Rec.	MSD Rec. 76	24	20 Rec. Limit - 125.3
GRO Percent recovery is based of Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-Bromofluorobenzene (on the spik	6.81 te result. F MS Result 0.732 1.17 ample 121	mg/Ks RPD is M Rei 0.7	g 1 based or SD sult 755 1 19 1	10.0 the spike Units ng/Kg ng/Kg	8.64 and spike du Spi Dil Amo 1 1 1 1	0 uplicate ke unt	MS Rec.	MSD Rec. 76 119	24 40 86	20 Rec. Limit - 125.3 7 - 144.5
GRO Percent recovery is based of Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-E Matrix Spike (MS-1) QC Batch 36598	on the spik	6.81 te result. F MS Result 0.732 1.17 ample 121	mg/Ks RPD is M Rec 0.1	g l based or SD sult 755 r 19 r	10.0 In the spike Units Ing/Kg Ing/Kg Ing/Kg	8.64 and spike du Spi Dil Amo 1 1 1 1	0 uplicate ke unt	MS Rec.	MSD Rec. 76 119	24 40 86 vzed B	20 Rec. Limit - 125.3 7 - 144.5
GRO Percent recovery is based of Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-E Matrix Spike (MS-1) QC Batch 36598	on the spik	6.81 te result. F MS Result 0.732 1.17 ample 121	mg/Ks RPD is M Rec 0.1	g 1 based or SD sult 755 1 19 1	10.0 In the spike Units Ing/Kg Ing/Kg Ing/Kg	8.64 and spike du Spi Dil Amo 1 1 1 1	0 uplicate ke unt	MS Rec.	MSD Rec. 76 119	24 40 86	20 Rec. Limit - 125.3 7 - 144.5
GRO Percent recovery is based of Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-E Matrix Spike (MS-1) QC Batch 36598	on the spik	6.81 te result. F MS Result 0.732 1.17 ample 121	mg/Ks RPD is M Rec 0.1	g l based or SD sult 755 r 19 r	10.0 In the spike Units Ing/Kg Ing/Kg Ing/Kg	8.64 and spike du Spi Dil Amo 1 1 1 1	0 uplicate ke unt	10 - e result MS Rec. 73 117	MSD Rec. 76 119	24 40 86 vzed B	20 Rec. Limit - 125.3 7 - 144.5
GRO Percent recovery is based of Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-E Matrix Spike (MS-1) QC Batch 36598 Prep Batch 31741	on the spik	6.81 te result. F MS Result 0.732 1.17 temple 121 MS Result MS Result	mg/Kg RPD is M Rei 0.7 1 861 Date Ai	based or SD sult 755 r 19 r 19 r 19 r 20 paration	10.0 In the spike Units Ing/Kg Ing/Kg Ing/Kg	8.64 and spike du Spi Dil Amo 1 1 1 1 1 -18 -18 Spike Amount	0 uplicate ke unt	10 - e result MS Rec. 73 117	MSD Rec. 76 119	24 40 86 vzed B ared B	Rec. Limit - 125.3 7 - 144.5 y AR y AR Rec Limit
GRO Percent recovery is based of Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-E Matrix Spike (MS-1) QC Batch 36598 Prep Batch 31741 Param	on the spik	6.81 te result. F MS Result 0.732 1.17 tample 121	mg/Kg RPD is M Rei 0.7 1 861 Date Ai	based or SD sult 755 1 19 1	10.0 In the spike Units Ing/Kg	8.64 and spike du Spi Dil Amo 1 1 1 1 1 -18 -18 Spike	0 uplicate ke unt	10 - e result MS Rec. 73 117	MSD Rec. 76 119 Anal Prep	24 40 86 vzed B ared B	20 Rec. Limit - 125.3 7 - 144.5 y AR y AR Rec Limit
GRO Percent recovery is based of Surrogate Triffuorotoluene (TFT) 4-Bromofluorobenzene (4-EM) Matrix Spike (MS-1) QC Batch 36598 Prep Batch 31741 Param Chloride	ou the spik	6.81 te result. F MS Result 0.732 1.17 ample 121 I MS Result 718	mg/Kg RPD is M Rec 0.7 1 861 Date Ai QC Prec	based or SD sult 755 r 19 r nalyzed: paration Units mg/Kg	10.0 In the spike Units Ing/Kg	8.64 and spike du Spi Dil Amo 1 1 1 1 -18 -18 Spike Amount 625	0 uplicate ke unt	MS Rec. 73 117	MSD Rec. 76 119 Anal Prep	24 40 86 vzed B ared B	Rec. Limit - 125.3 7 - 144.5 y AR y AR Rec Limit
GRO Percent recovery is based of Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-E Matrix Spike (MS-1) QC Batch 36598	ou the spik	6.81 te result. F MS Result 0.732 1.17 ample 121 I MS Result 718	mg/Kg RPD is M Rec 0.7 1 861 Date Ai QC Prec	based or SD sult 755 r 19 r nalyzed: paration Units mg/Kg	10.0 In the spike Units Ing/Kg	8.64 and spike du Spi Dil Amo 1 1 1 1 -18 -18 -18 Spike Amount 625 and spike du	0 uplicate ke unt	MS Rec. 73 117 Matrix Result 25.379 e result	MSD Rec. 76 119 Anal Prep	24 40 86 vzed B ared B	20 Rec. Limit - 125.3 7 - 144.5 y AR y AR Rec Limit 90 - 110
GRO Percent recovery is based of Surrogate Triffuorotoluene (TFT) 4-Bromofluorobenzene (4-EM) Matrix Spike (MS-1) QC Batch 36598 Prep Batch 31741 Param Chloride	ou the spik	6.81 The result. For the result of the result. For the result.	mg/Kg RPD is M Rec 0.7 1 861 Date Ai QC Prec	based or SD sult 755 r 19 r nalyzed: paration Units mg/Kg	10.0 In the spike Units Ing/Kg	8.64 and spike du Spi Dil Amo 1 1 1 1 -18 -18 -18 Spike Amount 625 and spike du Matrix	0 uplicate ke unt	MS Rec. 73 117 Matrix Result 25.379 e result R	MSD Rec. 76 119 Anal Prep	24 40 86 vzed B ared B	20 Rec. Limit - 125.3 7 - 144.5 y AR y AR

¹⁹ Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control ²⁰High surrogate recovery due to peak interference

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

²¹High surrogate recovery due to peak interference.

²²Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control ²³Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control

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Matrix Spike (MS-1)

Spiked Sample. 121867

QC Batch 36600 Prep Batch 31744 Date Analyzed: 2007-04-18 QC Preparation: 2007-04-18 Analyzed By. AR Prepared By. AR

		MS			Spike	Matrix		Rec
Param		Result	Units	Dil	Amount	Result	Rec.	Limit
Chloride	24	830	mg/Kg	50	625	100.879	117	90 - 110

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec	Limit	RPD	Limit
Chloride	695	mg/Kg	50	625	100.879	95	90 - 110	18	

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

Matrix Spike (MS-1)

Spiked Sample: 121908

QC Batch 36632 Date Analyzed:

2007-04-19

Analyzed By-AR

Prep Batch: 31771

QC Preparation: 2007-04-19

Prepared By AR

	MS			Spike	Matrix		R.ec.
Param	Result	Units	Dil.	Amount	Result	Rec	Limit
Chloride	3910	mg/Kg	100	1250	2692.32	97	90 - 110

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

	MSD			Spike	Matrix		Rec		RPD
Param	Result	Units	Dil	Amount	Result	Rec	Limit	RPD	Limit
Chloride	3900	mg/Kg	100	1250	2692.32	97	90 - 110	0	

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

Matrix Spike (MS-1) Spiked Sample 121856

QC Batch: 36707 Prep Batch: 31842 Date Analyzed 2007-04-23 QC Preparation 2007-04-23 Analyzed By: AG Prepared By

	MS			$_{ m Spike}$	Matrix		Rec
Param	Result	\mathbf{Units}	Dil.	Amount	Result	Rec	Limit
Benzene	0.858	mg/Kg	1	1.00	< 0.00110	86	64.4 - 115.7
Toluene	0.978	${ m mg/Kg}$	1	1.00	0.0224	96	57.8 - 124 4
Ethylbenzene	0.997	mg/Kg	1	1.00	0.0115	98	64.8 - 125.8
Xylene	3.31	mg/Kg	1	3.00	0.1903	104	65 2 - 121.8

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

Param	MSD $ Result$	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	0.882	mg/Kg	1	1.00	< 0.00110	88	64.4 - 115.7	3	20
Toluene	1.01	mg/Kg	1	1.00	0.0224	99	57.8 - 124.4	3	20
Ethylbenzene	1.04	${ m mg/Kg}$	1	1.00	0.0115	103	64.8 - 125.8	4	20

continued ...

²⁴Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control

Report Date April 24, 2007 2983

Work Order. 7041706 Cımarex/J.W.Cooper TB Page Number: 22 of 24 Lea County. NM

	an continued										
танчх ѕрік	es continued .	MS	D		Spike	Mat	riv	R	.ec		RPI
Param		Resu		ts Dil	Amount	Res			mit	RPD	Limi
Xylene		3.5			3 00	0.19			- 121.8	6	20
	overy is based	on the spike re									
ercent rec	Overv is based	on the spike re	DOLL ICE I	o is based	on one spik	e and sp	nke dupiicai	e resuit			
			MS	MSD			Spike	MS	MSD		Rec .
Surrogate			Result	Result	Units	Dil	Amount	Rec.	Rec		imit
	uene (TFT)		0.800	0.796	mg/Kg	1	1	80	80		- 121.
4-Bromoflu	orobenzene (4-	-BFB)	0.900	1.05	mg/Kg	1	1	90	105	66 7	- 131.
Standard	(ICV-1)										
QC Batch:	36525		Da	ite Analyz	ed· 2007-0	4-17			An	alyzed E	sa v
			ICV	S	ICVs	IC	CVs	Perc	ent		
			True		Found		cent	Recov]	Date
Param	Flag	Units	Cond	3.	Conc	Rec	overy	Lim	•	An	alyzed
GRO		${ m mg/Kg}$	1.00)	0.868		37	85 - 1	115	200	7-04-1
Standard	(CCV-1)										
QC Batch	36525		Da	ite Analyz	ed· 2007-0	4-17			An	alyzed E	gy. ss
			CCV	, e	CCVs	C	CVs	Perc	ent		
			True		Found		cent	Reco]	Date
Param	Flag	Units	Cond		Conc		overy	Lim	•		alyzed
GRO		mg/Kg	1.00)	1.01		01	85 -	115		7-()4-1
Standard	(ICV-1)										
QC Batch	36556		Dat	e Analyze	ed· 2007-04	1-17			Anal	yzed By	· AC
			ICV	s	ICVs	IC	CVs	Perc	ent		
			True	е	Found	Per	cent	Reco	very.		Date
Param	Flag	Units	Cond		Conc.	${ m Rec}$	overy	Lim	its	Ar	alyzeo
DRO		mg/Kg	250		252	1	01	85 -	115	200	7-04-1
Standard	(CCV-1)										
QC Batch:			Dat	e Analyze	d. 2007-04	l -17			Anal	yzed By	· AC
- v =				•						, - -',	
			CCV		CCVs		CVs	Perc			_
Dawam	Floor	Limita	True		Found	Per	rcent	Reco			Date

Standard (CCV-2)

Flag

Units

mg/Kg

Conc

250

QC Batch. 36556

Param

DRO

Date Analyzed: 2007-04-17

Conc.

228

Recovery

91

Analyzed By: AG

Analyzed

2007-04-17

Limits

85 - 115

Report Date. April 24, 2007 2983

Work Order 7041706 Cmarex/J.W.Cooper TB

Page Number: 23 of 24 Lea County. NM

				· · · · · · · · · · · · · · · · · · ·			
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc	Recovery	Limits	Analyzed
DRO	1.192	mg/Kg	250	252	101	85 - 115	2007-04-17
<u> </u>		1116/116	200	202	101	00 110	2001 0111
Standard	(ICV-1)						
QC Batch	36562		Date An	alyzed 2007-0	04-18	An	alyzed By. ss
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	1.09	109	85 - 115	2007-04-18
Standard	(CCV-1)						
QC Batch	36562		Date An	alyzed: 2007-0)4-18	An	alyzed By· ss
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	0 874	87	85 - 115	2007-04-18
QC Batch:	36598		Date Ana	alyzed: 2007-0	4-18	Anal	yzed By: AR
			ICVs	ICVs	ICV's	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		m mg/Kg	12.5	12.2	98	90 - 110	2007-04-18
Standard	(CCV-1)						
QC Batch	36598		Date Ana	alyzed: 2007-0	4-18	Ana	tyzed By AR
			CCVs	CCVs	CCVs	Percent	
			${f True}$	Found	Percent	Recovery	Date
Param	Flag	Units	Conc	Conc	Recovery	Limits	Analyzed
Chloride		mg/Kg	12.5	12.3	98	90 - 110	2007-04-18
Standard	(ICV-1)						
QC Batch:	36600		Date Ana	dyzed: 2007-0	4-18	Ana	lvzed By· AR
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride	_	mg/Kg	12.5	12.3	98	90 - 110	2007-04-18

Report Date.	April	24,	2007
2983			

Work Order 7041706 Cimarex/J.W.Cooper TB

Page	Number:	24	of	24
	Lea Cor	nez	. 1	IM

Standard (CCV-	1)
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OC	Batch:	36600

Date Analyzed: 200) 7	-0	4-	1	8
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			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	12 5	12.3	98	90 - 110	2007-04-18

Standard (ICV-1)

latch.	36632
	Batch.

Date Analyzed	2007-04-19
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Analyzed By AR

			ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc	Conc	Recovery	Limits	Analyzec
Chloride		mg/Kg	12.5	12 4	99	90 - 110	2007-04-19

Standard (CCV-1)

QC Batch: 36632

Date Analyzed 2007-04-19

Analyzed By. AR

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	12.5	12.4	100	90 - 110	2007-04-19

Standard (ICV-1)

QC Batch. 36707

Date Analyzed: 2007-04-23

Analyzed By AG

			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0 0895	90	85 - 115	2007-04-23
Toluene		mg/Kg	0.100	0.0934	93	85 - 115	2007-04-23
Ethylbenzene		$_{ m ing/Kg}$	0.100	0.0947	95	85 - 115	2007-04-23
Xylene		${ m mg/Kg}$	0.300	0.287	96	85 - 115	2007-04-23

Standard (CCV-1)

QC Batch: 36707

Date Analyzed: 2007-04-23

Analyzed By AG

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	R.ecovery	Date
Param	Flag	Units	Conc	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0904	90	85 - 115	2007-04-23
Toluene		${ m mg/Kg}$	0.100	0.0913	91	85 - 115	2007-04-23
Ethylbenzene		mg/Kg	0.100	0.0912	91	85 - 115	2007-04-23
Xylene		mg/Kg	0.300	0.276	92	85 - 115	2007-04-23

Analysis Request an	PAGE: <u>)</u> OF: <u>2</u> ANALYSIS REQUEST							
HIGHLANDER ENVIRONMENTAL CORP. (Circle or Specify Metho								
	Big Spring St.	com.	8 8 8					
	, Texas 79705		720 005					
(432) 682-4559		(432) 682-3946						
	SITE MANAGER:	PRESERVATIVE METHOD	As Ba Cd (Belles As Ba Cd (Belles L B270/825					
PROJECT NO.: PROJECT NAME:	Ike Tavarez	PRESERVATIVE METHOD	As B					
2983 Cimarex/2		(Y/N)	9020/802 418.1 (270 270 270 270 270 270 270 270 270 270					
LAB I.D. DATE TIME XX A PORT OF THE LAB I.D. Lea	CO, NM SAMPLE IDENTIFICATION	PLITERED (Y, HCL, HNO.3 ICE	######################################					
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Analysis Request and Ch	nain of Custody	7 Re	cord						PAGI		2		0	F:	2	
						(Ci	A rcle				QUES Meth		Vo.)		•	
HIGHLANDER ENVIR 1910 N. Big S Midland, Texa (432) 682-4559	pring St. as 79705		2-3946		20002	Pb Hg Se	Pd Hg Se									
CLIENT NAME: SITE MANA	AGER: 2	g PI	RESERVATIVE		GOIS MOD	3	8		769/	8270/625		Chloride				
Cimarex Ike	Tavarez §		METHOD		93	Be	B	80	200	827C						
PROJECT NO.: PROJECT NAME: 2983 Cimarex/J.W.Co	Tavarez	(%)		8 8	9	V By	8 8	olatil	100	Vol.	80	, 7DS,		हें ह		
Lea Co, NA		S E	HNO3 ICE NONE	QUEX 8020/808	TEID 418.1 (RCRA Metals Ag As Ba Cd Cr	TCLP Wetals Ag As B	TCLP Semi V	RCI	GC.MS Semi.	PCB's 8080/606	BOD, TSS, pH,	Gamma Spec.	Alpha Beta (Air) PLM (Asbestos)		
12186641V07 S XAH-6 (1.0'-			X	•	X							X				
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A Xenco Laboratories Company

Analytical Report

Prepared for:

Ike Tavarez
Highlander Environmental Corp.
1910 N. Big Spring St.
Midland, TX 79705

Project: Cimarex/ J.W. Cooper TB

Project Number: 2983 Location: Lea Co., NM

Lab Order Number: 7F18001

Report Date: 06/19/07

Highlander Environmental Corp

1910 N Big Spring St Midland TX, 79705 Project Cimarex/ J W Cooper TB

Project Number 2983 Project Manager Ike Tavarez Fax (432) 682-3946

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SP# 1 (0-1 0') Area Of AH-7	7F18001-01	Soil	06/18/07 00 00	06-18-2007 16 57

Highlander Environmental Corp

1910 N Big Spring St Midland TX, 79705 Project Cimarex/ J W Cooper TB

Project Number 2983 Project Manager Ike Tavarez Fax (432) 682-3946

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SP# 1 (0-1.0') Area Of AH-7 (7F18001-	-01) Soil								
Carbon Ranges C6-C12	55.9	100	mg/kg dry	I	EF71507	06/18/07	06/19/07	EPA 8015M	
Carbon Ranges C12-C28	1900	100	11		"	"	*	**	
Carbon Ranges C28-C35	781	100	**	**	•		н	n	
Total Hydrocarbons	2740	100	**	"	**		11	п	
Surrogate: 1-Chlorooctane		110 %	70-1	30	"	"	"	"	
Surrogate, 1-Chlorooctadecane		110 %	70-1	30	n	"	u	"	

Highlander Environmental Corp 1910 N Big Spring St Midland TX, 79705 Project Cimarex/ J W Cooper TB

Project Number 2983 Project Manager Ike Tavarez Fax: (432) 682-3946

General Chemistry Parameters by EPA / Standard Methods Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SP# 1 (0-1.0') Area Of AH-7 (7F18001-01) So	il								
% Moisture	8.7	0 1	%	I	EF71901	06/18/07	06/18/07	% calculation	

Highlander Environmental Corp

Project Cimarex/ J W Cooper TB

Fax (432) 682-3946

1910 N Big Spring St Midland TX, 79705 Project Number 2983 Project Manager Ike Tavarez

Organics by GC - Quality Control Environmental Lab of Texas

	_	Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EF71507 - Solvent Extraction (GC)			, <u>.</u> ,					.,.		
Blank (EF71507-BLK1)				Prepared (06/15/07 Aı	nalyzed 06	5/18/07			
Carbon Ranges C6-C12	ND	10 0	mg/kg wet							
Carbon Ranges C12-C28	ND	10 0	"							
Carbon Ranges C28-C35	ND	10 0	11							
Total Hydrocarbons	ND	10 0	n .							
Surrogate. 1-Chlorooctane	43 4		mg/kg	50 0		868	70-130			
Surrogate 1-Chlorooctadecane	39 8		"	50 0		79 6	70-130			
LCS (EF71507-BS1)				Prepared (06/15/07 A	nalyzed 06	5/18/07			
Carbon Ranges C6-C12	613	100	mg/kg wet	500		123	75-125			
Carbon Ranges C12-C28	544	10 0	**	500		109	75-125			
Carbon Ranges C28-C35	, ND	10 0	**	0 00			75-125			
Total Hydrocarbons	1160	10 0	"	1000		116	75-125			
Surrogate 1-Chlorooctane	54 7		mg/kg	50 0		109	70-130			
Surrogate 1-Chlorooctadecane	50 0		"	50 0		100	70-130			
Calibration Check (EF71507-CCV1)				Prepared (06/15/07 A	nalyzed 06	5/19/07			
Carbon Ranges C6-C12	255		mg/kg	250	***************************************	102	80-120			
Carbon Ranges C12-C28	284		"	250		114	80-120			
Total Hydrocarbons	539		11	500		108	80-120			
Surrogate 1-Chlorooctane	546		"	50 0		109	70-130			
Surrogate 1-Chlorooctadecane	547		"	50 0		109	70-130			
Matrix Spike (EF71507-MS1)	Sot	ırce: 7F14018	3-02	Prepared	06/15/07 A	nalyzed 0	5/19/07			
Carbon Ranges C6-C12	700	10 0	mg/kg dry	602	ND	116	75-125			
Carbon Ranges C12-C28	659	10 0	n	602	ND	109	75-125			
Carbon Ranges C28-C35	ND	10 0	n	0 00	ND		75-125			
Total Hydrocarbons	1360	10 0	**	1200	ND	113	75-125			
Surrogate 1-Chlorooctane	46 7		mg kg	50 0		93 4	70-130			
Surrogate 1-Chlorooctadecane	40 5		"	50 0		810	70-130			

Highlander Environmental Corp

Project Cimarex/ J W Cooper TB

Fax (432) 682-3946

1910 N Big Spring St Midland TX, 79705 Project Number 2983 Project Manager: Ike Tavarez

Organics by GC - Quality Control Environmental Lab of Texas

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Lunits	RPD	Limit	Notes
Batch EF71507 - Solvent Extraction (GC)										
Matrix Spike Dup (EF71507-MSD1)	Source	e: 7F14018	-02	Prepared (06/15/07 A	nalyzed. 06	5/19/07			
Carbon Ranges C6-C12	655	10 0	mg/kg dry	602	ND	109	75-125	6 22	20	
Carbon Ranges C12-C28	574	10 0	n	602	ND	95 3	75-125	13 4	20	
Carbon Ranges C28-C35	ND	10 0	**	0 00	ND		75-125		20	
Total Hydrocarbons	1230	10 0	**	1200	ND	102	75-125	10 2	20	
Surrogate 1-C'hlorooctane	47.8		mg′kg	50 0		95 6	70-130		···· ·· -	
Surrogate 1-Chlorooctadecane	40 7		"	50.0		814	70-130			

Highlander Environmental Corp
Project
1910 N Big Spring St
Midland TX, 79705
Project Manager
Project Manager
Rike Tavarez
Fax (432) 682-3946
Ike Tavarez

General Chemistry Parameters by EPA / Standard Methods - Quality Control Environmental Lab of Texas

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EF71901 - General Preparation (Prep)	_									
Blank (EF71901-BLK1)				Prepared &	Analyzed	06/18/07				
% Solids	100		%				*			
Duplicate (EF71901-DUP1)	Sour	ce: 7F15011-0)1	Prepared &	Analyzed	06/18/07				
% Solids	88 9		%		89 4			0 561	20	
Duplicate (EF71901-DUP2)	Sour	ce: 7F18001-0	01	Prepared &	Analyzed	06/18/07				
% Solids	90 3		%		91 3			1 10	20	

Highlander Environmental Corp Project Omarex/J W Cooper TB Fax (432) 682-3946

1910 N. Big Spring St Project Number 2983

Midland TX, 79705 Project Manager Ike Tavarez

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dum	Dunlicate

	Bun Barrom		
Report Approved By:		_ Date:	6/19/2007

Brent Barron, Laboratory Director/Corp. Technical Director Celey D. Keene, Org. Tech Director Raland K. Tuttle, Laboratory Consultant

James Mathis, QA/QC Officer Jeanne Mc Murrey, Inorg. Tech Director

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

If you have received this material in error, please notify us immediately at 432-563-1800.

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Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client:	Highlander				
Date/ Time:	61807 4:57				
Lab ID#	7F18001 /284472				
Initials:	aL				
	Sample Receipt	Checklist		c	lient Initials
#1 Tempera	ature of container/ cooler?	Yes	No	20 °c	TOTAL CONTRACTOR
	container in good condition?	Yes	No		
	Seals intact on shipping container/ cooler?	Yes	No	Mot Present	
	Seals intact on sample bottles/ container?	Yes	No	Net-Present	
	f Custody present?	Yes	No	1 442.00011	
	instructions complete of Chain of Custody?	Yes	No		
	f Custody signed when relinquished/ received?	Yes	No		
	f Custody agrees with sample label(s)?	Yes	No	ID written on Cont / Lid	
	er label(s) legible and intact?	(es)	No	Not Applicable	
#10 Sample	e matrix/ properties agree with Chain of Custody?	Yes	No		
	ners supplied by ELOT?	Yes	No		
	es in proper container/ bottle?	Yes	No	See Below	
	es properly preserved?	Yes	No	See Below	
	e bottles intact?	Yes	No		
	vations documented on Chain of Custody?	Yes	No		
	ners documented on Chain of Custody?	Xes	No		
	ent sample amount for indicated test(s)?	Yes	No	See Below	
	ples received within sufficient hold time?	Ve3	No	See Below	
#19 Subcor	ntract of sample(s)?	Yes	No	Not Applicable	
#20 VOC s	amples have zero headspace?	Yes	No	Not Applicable	
	Variance Docu	mentation			
Contact:	Contacted by:			Date/ Time:	
Regarding:					
Corrective A	action Taken:				
Check all th	at Apply:				
Ortoon an si	Client understands and wou Cooling process had begun	•		• • • • • • • • • • • • • • • • • • •	

Work Order: 7062101 Cimarex/J.W.Cooper TB Page Number: 1 of 1 Lea County, NM

Summary Report

Ike Tavarez

Highlander Environmental Services

1910 N. Big Spring Street Midland, TX, 79705

Report Date: July 2, 2007

Work Order: 7062101

Project Location: Lea County, NM

Project Name: Cimarex/J.W.Cooper TB

Project Number: 2983

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
127990	SP#2 (0-0.5') BEB 1.0'	soil	2007-06-19	00:00	2007-06-20
127991	SP#3 (0-0.5') BEB 3.0'	soil	2007-06-19	00:00	2007-06-20
127992	SP#4 (0-0.5') BEB 1.0'	soil	2007-06-19	00:00	2007-06-20
127993	Stockpile North	soil	2007-06-19	00:00	2007-06-20
127994	Stockpile South	soil	2007-06-19	00:00	2007-06-20

	BTEX				MTBE	TPH DRO	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	MTBE	DRO	$_{ m GRO}$
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
127990 - SP#2 (0-0.5') BEB 1.0'						1820	72.6
127991 - SP#3 (0-0.5') BEB 3.0'						1340	28.2
127992 - SP#4 (0-0.5') BEB 1.0'						92.9	6.22
127993 - Stockpile North	< 0.100	< 0.100	< 0.100	< 0.100		1800	42.9
127994 - Stockpile South	< 0.100	< 0.100	< 0.100	< 0.100		1130	88.9

Sample: 127993 - Stockpile North

Param	Flag	Result	Units	RL
Chloride		< 50.0	mg/Kg	2.00

Sample: 127994 - Stockpile South

Param	Flag	Result	Units	RL
Chloride		< 50.0	mg/Kg	2.00



6701 Aberdeen Avenue Suite 9 200 East Sunset Road, Suite E 5002 Basin Street, Stiffe AT 6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132

Fl Paso, Texas 79922 Midland, Texas 79703 888 • 588 • 3443

915 • 585 • 3443

FAX 915 • 585 • 4944

432 • 689 • 6301 817 • 201 • 5260 FAX 432 • 689 • 6313

E-Mail Tab@traceanalysis.com

Analytical and Quality Control Report

Ike Tavarez Highlander Environmental Services 1910 N. Big Spring Street Midland, TX, 79705

Report Date: July 2, 2007

Work Order: 7062101

Project Location: Lea County, NM

Project Name: Cimarex/J.W.Cooper TB

2983 Project Number:

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

			Date	$_{ m Time}$	Date
Sample	Description	Matrix	Taken	Taken	Received
127990	SP#2 (0-0.5') BEB 1.0'	soil	2007-06-19	00:00	2007-06-20
127991	SP#3 (0-0.5') BEB 3.0'	soil	2007-06-19	00:00	2007-06-20
127992	SP#4 (0-0.5') BEB 1.0'	soil	2007-06-19	00:00	2007-06-20
127993	Stockpile North	soil	2007-06-19	00:00	2007-06-20
127994	Stockpile South	soil	2007-06-19	00:00	2007-06-20

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 13 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

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

Report Date: July 2, 2007 2983

Work Order: 7062101 Cimarex/J.W.Cooper TB

per TB Lea County, NM

Analytical Report

Sample: 127990 - SP#2 (0-0.5') BEB 1.0'

Analysis: TPH DRO QC Batch: 38462 Prep Batch: 33285 Analytical Method: Mod. 8015B Date Analyzed: 2007-06-21 Sample Preparation: 2007-06-21 Prep Method: N/A Analyzed By: AG Prepared By: AG

Page Number: 2 of 13

Spike Percent Recovery Flag Result Units Dilution Amount Recovery Surrogate Limits n-Triacontane 293 mg/Kg 150 195 32.9 - 167

Sample: 127990 - SP#2 (0-0.5') BEB 1.0'

Analysis: TPH GRO QC Batch: 38650 Prep Batch: 33455 Analytical Method: Date Analyzed:

Sample Preparation:

S 8015B 2007-06-28 Prep Method: S 5035 Analyzed By: JW Prepared By: JW

Surrogate	Flag	Result	Units	Dilution	$egin{array}{c} ext{Spike} \ ext{Amount} \end{array}$	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	0	3.89	mg/Kg	50	5.00	78	52.4 - 123.7
4-Bromofluorobenzene (4-BFB)		5.97	mg/Kg	50	5.00	119	67.5 - 140.3

Sample: 127991 - SP#3 (0-0.5') BEB 3.0'

Analysis: TPH DRO QC Batch: 38462 Prep Batch: 33285 Analytical Method: Mod. 8015B Date Analyzed: 2007-06-21 Sample Preparation: 2007-06-21

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

a .	Til	D 1/	TT	TO 11	Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane	2	340	mg/Kg	1	150	227	32.9 - 167

Sample: 127991 - SP#3 (0-0.5') BEB 3.0'

Analysis: TPH GRO QC Batch: 38523 Prep Batch: 33316 Analytical Method: S 8015B Date Analyzed: 2007-06-25 Sample Preparation:

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

¹ High surrogate recovery due to peak interference.

²High surrogate recovery due to peak interference.

2983

Work Order: 7062101 Cimarex/J.W.Cooper TB

The state of	TN		RL Dec. 14		TT */.		Dil ii	DI
Parameter	Flag		Result		Units		Dilution	RL
GRO			28.2		mg/Kg		1	1.00
~						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits

mg/Kg

mg/Kg

1

0.720

1.05

Sample: 127992 - SP#4 (0-0.5') BEB 1.0'

Analysis: TPH DRO QC Batch: 38462 Prep Batch: 33285

Trifluorotoluene (TFT)

4-Bromofluorobenzene (4-BFB)

Analytical Method: Mod. 8015B 2007-06-21 Date Analyzed: Sample Preparation: 2007-06-21

Prep Method: N/A Analyzed By: AGPrepared By: AG

72

105

Page Number: 3 of 13

Lea County, NM

52.4 - 123.7

67.5 - 140.3

		RL			
Parameter	Flag	Result	$\mathbf{U}\mathbf{nits}$	Dilution	RL
DRO		92.9	mg/Kg	1	50.0

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane		145	mg/Kg	1	150	97	32.9 - 167

Sample: 127992 - SP#4 (0-0.5') BEB 1.0'

Analysis: TPH GRO QC Batch: 38523 Prep Batch: 33316

Analytical Method: S 8015B Date Analyzed: 2007-06-25 Sample Preparation:

Prep Method: S 5035 Analyzed By:

1.00

1.00

JW Prepared By: JW

		RL			
Parameter	Flag	Result	\mathbf{Units}	Dilution	RL
GRO	В	6.22	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.713	mg/Kg	1	1.00	71	52.4 - 123.7
4-Bromofluorobenzene (4-BFB)		0.964	mg/Kg	1	1.00	96	67.5 - 140.3

Sample: 127993 - Stockpile North

Analysis: BTEX QC Batch: 38524 Prep Batch: 33317

Analytical Method: S 8021B Date Analyzed: 2007-06-25 Sample Preparation:

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

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Benzene		< 0.100	mg/Kg	10	0.0100
Toluene		< 0.100	mg/Kg	10	0.0100
Ethylbenzene		< 0.100	mg/Kg	10	0.0100
Xylene		< 0.100	mg/Kg	10	0.0100

Work Order: 7062101 Cimarex/J.W.Cooper TB Page Number: 4 of 13 Lea County, NM

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		7.80	mg/Kg	10	10.0	78	26 - 117.8
4-Bromofluorobenzene (4-BFB)		8.64	mg/Kg	10	10.0	86	51.1 - 119.1

Sample:	127993 -	Stockpile	North
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Analysis:	Chloride	(Titration)

QC Batch: 38502 Prep Batch: 33319

Chloride

Analytical Method: SM 4500-Cl B Date Analyzed: 2007-06-25 Sample Preparation:

Prep Method: N/A Analyzed By: AR

Parameter Flag Result

RLUnits Prepared By: AR

RL

2.00

Dilution

25

Sample: 127993 - Stockpile North

TPH DRO Analysis: QC Batch: 38462 Prep Batch: 33285

Analytical Method: Date Analyzed: Sample Preparation:

< 50.0

Mod. 8015B 2007-06-21 2007-06-21

mg/Kg

Prep Method: N/A Analyzed By: AGPrepared By: AG

RLParameter Flag Result Units Dilution RL $\overline{\mathrm{DRO}}$ 1800 mg/Kg 1 50.0

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane	3	452	mg/Kg	1	150	301	32.9 - 167

Sample: 127993 - Stockpile North

Analysis: TPH GRO QC Batch: 38523 Prep Batch: 33316

Analytical Method: Date Analyzed:

S 8015B 2007-06-25 Sample Preparation:

Prep Method: S 5035 JWAnalyzed By: Prepared By: JW

RLParameter Flag Result Units Dilution RLGRO 42.9 mg/Kg 10 1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		7.16	mg/Kg	10	10.0	72	52.4 - 123.7
4-Bromofluorobenzene (4-BFB)		10.2	mg/Kg	10	10.0	102	67.5 - 140.3

Sample: 127994 - Stockpile South

BTEX Analysis: QC Batch: 38524 Prep Batch: 33317

Analytical Method: S 8021B Date Analyzed:

2007-06-25 Sample Preparation:

Prep Method: S 5035 Analyzed By: JW

JW

Prepared By:

 $^{^3\}mathrm{High}$ surrogate recovery due to peak interference.

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Work Order: 7062101 Cimarex/J.W.Cooper TB Page Number: 5 of 13 Lea County, NM

- <u>-</u> J		VIII-11	8/8	Spike	Percent	Recovery
Xylene		< 0.100	mg/Kg		10	0.0100
Ethylbenzene		< 0.100	mg/Kg		10	0.0100
Toluene		< 0.100	mg/Kg		10	0.0100
Benzene		< 0.100	mg/Kg		10	0.0100
Parameter	Flag	Result	Units	Γ	Dilution	RL
		RL				

					Бріке	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		7.65	mg/Kg	10	10.0	76	26 - 117.8
4-Bromofluorobenzene (4-BFB)		7.99	$_{ m mg/Kg}$	10	10.0	80	51.1 - 119.1

Sample: 127994 - Stockpile South

Analysis: QC Batch: 38502

Chloride (Titration)

33319 Prep Batch:

Analytical Method: Date Analyzed:

2007-06-25

SM 4500-Cl B Prep Method: N/A Analyzed By: AR

Sample Preparation:

Prepared By: AR

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		< 50.0	mg/Kg	25	2.00

Sample: 127994 - Stockpile South

Analysis: QC Batch: TPH DRO 38462

Prep Batch: 33285

Analytical Method: Date Analyzed:

Mod. 8015B 2007-06-21 Sample Preparation: 2007-06-21

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

		m RL			
Parameter	Flag	Result	Units	Dilution	RL
DRO		1130	mg/Kg	1	50.0

					\mathbf{Spike}	Percent	Recovery
Surrogate	Flag	\mathbf{Result}	\mathbf{Units}	Dilution	Amount	Recovery	Limits
n-Triacontane	4	306	mg/Kg	1	150	204	32.9 - 167

Sample: 127994 - Stockpile South

Analysis: QC Batch:

Prep Batch:

TPH GRO 38523 33316

Analytical Method: Date Analyzed:

S 8015B2007-06-25 Sample Preparation:

Prep Method: S 5035 Analyzed By: JWPrepared By: JW

		RL			
Parameter	Flag	Result	Units	Dilution	RL
GRO .		88.9	mg/Kg	10	1.00

⁴High surrogate recovery due to peak interference.

Work Order: 7062101 Cimarex/J.W.Cooper TB

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		7.41	mg/Kg	10	10.0	74	52.4 - 123.7
4-Bromofluorobenzene (4-BFB)		9.55	mg/Kg	10	10.0	96	67.5 - 140.3

Method Blank (1)

QC Batch: 38462

QC Batch: 38462 Date Analyzed:

2007-06-21

Analyzed By: AG

Page Number: 6 of 13

Lea County, NM

Prep Batch: 33285

QC Preparation: 2007-06-21

Prepared By:

MDL Result Flag

Units RLParameter <14.6 mg/Kg 50 $\overline{\mathrm{DRO}}$

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane		200	mg/Kg	1	150	133	44.7 - 133.6

Method Blank (1)

QC Batch: 38502

QC Batch: 38502 33319 Prep Batch:

Date Analyzed: 2007-06-25 QC Preparation: 2007-06-25 Analyzed By: AR

Prepared By:

MDL Parameter Flag Result Units RL Chloride < 0.500 mg/Kg

Method Blank (1)

QC Batch: 38523

QC Batch: 38523 Prep Batch: 33316 Date Analyzed: 2007-06-25 QC Preparation: 2007-06-25 Analyzed By: JW Prepared By: JW

MDL

Flag Parameter Result Units RLGRO 0.781 mg/Kg

					Spike	Percent	Recovery
Surrogate	Flag	Result	\mathbf{Units}	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.801	mg/Kg	1	1.00	80	52.4 - 123.7
4-Bromofluorobenzene (4-BFB)		0.771	mg/Kg	1	1.00	77	67.5 - 140.3

Method Blank (1)

QC Batch: 38524

QC Batch: 38524 Prep Batch: 33317 Date Analyzed: 2007-06-25 QC Preparation: 2007-06-25

Analyzed By: JW Prepared By: JW

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Work Order: 7062101 Cimarex/J.W.Cooper TB Page Number: 7 of 13 Lea County, NM

		MDL		
Parameter	Flag	Result	Units	RL
Benzene		< 0.00110	mg/Kg	0.01
Toluene		< 0.00150	mg/Kg	0.01
Ethylbenzene		< 0.00160	mg/Kg	0.01
Xylene		< 0.00410	mg/Kg	0.01

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.766	mg/Kg	1	1.00	77	62.6 - 117.6
4-Bromofluorobenzene (4-BFB)		0.781	mg/Kg	1	1.00	78	53.9 - 125.1

Method Blank (1)

QC Batch: 38650

38650 QC Batch: Prep Batch: 33455 Date Analyzed: 2007-06-28 QC Preparation: 2007-06-28

Analyzed By: JW Prepared By: JW

MDL

Parameter	Flag	Result	Units	RL
GRO		0.829	mg/Kg	1

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.770	mg/Kg	1	1.00	77	52.4 - 123.7
4-Bromofluorobenzene (4-BFB)		0.732	mg/Kg	1	1.00	73	67.5 - 140.3

Laboratory Control Spike (LCS-1)

38462 QC Batch: 33285 Prep Batch:

Date Analyzed: 2007-06-21 QC Preparation: 2007-06-21

Analyzed By: AG Prepared By:

LCS Spike Matrix Rec. Units Dil. Param Result Amount Result Rec. Limit $\overline{\text{DRO}}$ 300 mg/Kg 250 <14.6 120 47.5 - 144.1

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	\mathbf{Limit}	RPD	Limit
DRO	286	mg/Kg	1	250	<14.6	114	47.5 - 144.1	5	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Triacontane	159	164	mg/Kg	1	150	106	109	57.3 - 131.6

Laboratory Control Spike (LCS-1)

38502 QC Batch: Prep Batch: 33319 Date Analyzed: 2007-06-25 QC Preparation: 2007-06-25

Analyzed By: AR Prepared By: AR

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Work Order: 7062101 Cimarex/J.W.Cooper TB

Cimarex/J.W.Cooper TB Lea County, NM

Spike Matrix Rec.

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride	99.2	mg/Kg	1	100	< 0.500	99	85 - 115

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	100	mg/Kg	1	100	< 0.500	100	85 - 115	1	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 38523 Prep Batch: 33316 Date Analyzed: 2007-06-25 QC Preparation: 2007-06-25 Analyzed By: JW Prepared By: JW

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	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO	7.08	mg/Kg	1	10.0	< 0.739	71	57.7 - 102.5

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	7.25	mg/Kg	1	10.0	< 0.739	72	57.7 - 102.5	2	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	0.717	0.708	mg/Kg	1	1.00	72	71	36.8 - 152.5
4-Bromofluorobenzene (4-BFB)	0.824	0.821	mg/Kg	1	1.00	82	82	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 38524 Prep Batch: 33317 Date Analyzed: 2007-06-25 QC Preparation: 2007-06-25 Analyzed By: JW Prepared By: JW

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	0.894	mg/Kg	1	1.00	< 0.00110	89	68.6 - 123.4
Toluene	0.915	mg/Kg	1	1.00	< 0.00150	92	74.6 - 119.3
Ethylbenzene	0.891	mg/Kg	1	1.00	< 0.00160	89	72.3 - 126.2
Xylene	2.69	mg/Kg	1	3.00	< 0.00410	90	76.5 - 121.6

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	0.928	mg/Kg	1	1.00	< 0.00110	93	68.6 - 123.4	4	20
Toluene	0.957	mg/Kg	1	1.00	< 0.00150	96	74.6 - 119.3	4	20
Ethylbenzene	0.929	mg/Kg	1	1.00	< 0.00160	93	72.3 - 126.2	4	20
Xylene	2.81	mg/Kg	1	3.00	< 0.00410	94	76.5 - 121.6	4	20

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

Work Order: 7062101 Cimarex/J.W.Cooper TB

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	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	$\mathbf{U}\mathbf{nits}$	Dil.	Amount	Rec .	$\mathrm{Rec}.$	Limit
Trifluorotoluene (TFT)	0.653	0.661	mg/Kg	1	1.00	65	66	64.1 - 118.2
4-Bromofluorobenzene (4-BFB)	0.792	0.781	mg/Kg	1	1.00	79	78	68.7 - 125.8

Laboratory Control Spike (LCS-1)

QC Batch: 38650 Prep Batch: 33455

Date Analyzed: 2007-06-28 QC Preparation: 2007-06-28 Analyzed By: JW Prepared By: JW

	LCS			$_{ m Spike}$	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO	6.64	mg/Kg	1	10.0	< 0.739	66	57.7 - 102.5

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	5.81	mg/Kg	1	10.0	< 0.739	58	57.7 - 102.5	13	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)	0.994	0.933	mg/Kg	1	1.00	99	93	36.8 - 152.5
4-Bromofluorobenzene (4-BFB)	0.785	0.765	mg/Kg	1	1.00	78	76	70 - 130

Matrix Spike (MS-1) Spiked Sample: 127992

QC Batch: 38462 Prep Batch: 33285

2007-06-21 Date Analyzed: QC Preparation: 2007-06-21

Analyzed By: AG Prepared By:

MS Spike Matrix Rec. Param Result Units Dil. Amount Result Rec. Limit 284 250 92.9 76 11.7 - 152.3 DRO mg/Kg

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO	291	mg/Kg	1	250	92.9	79	11.7 - 152.3	2	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Triacontane	146	151	mg/Kg	1	150	97	101	17 - 163.1

Matrix Spike (MS-1) Spiked Sample: 128044

QC Batch: 38502 Prep Batch: 33319 Date Analyzed: 2007-06-25 QC Preparation: 2007-06-25 Analyzed By: AR Prepared By: AR

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Work Order: 7062101 Cimarex/J.W.Cooper TB Page Number: 10 of 13 Lea County, NM

		MS			Spike	Matrix		Rec.
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride	5	5980	mg/Kg	25	2500	3474.7	100	85 - 115

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	6010	mg/Kg	25	2500	3474.7	101	85 - 115	0	20

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

Matrix Spike (MS-1) Spiked Sample: 128067

QC Batch: 38523 Prep Batch: 33316 Date Analyzed: 2007-06-25 QC Preparation: 2007-06-25 Analyzed By: JW Prepared By: JW

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO	7.96	mg/Kg	1	10.0	6.01	20	10 - 141.5

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	7.41	mg/Kg	1	10.0	6.01	14	10 - 141.5	7	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Triffuorotoluene (TFT)	0.633	0.614	mg/Kg	1	1	63	61	40 - 125.3
4-Bromofluorobenzene (4-BFB)	0.947	0.962	mg/Kg	1	1	95	96	86.7 - 144.5

Matrix Spike (MS-1) Spiked Sample: 128067

QC Batch: 38524 Prep Batch: 33317 Date Analyzed: 2007-06-25 QC Preparation: 2007-06-25 Analyzed By: JW Prepared By: JW

		MS			Spike	Matrix		Rec.
Param		Result	$_{ m Units}$	Dil.	Amount	Result	Rec.	Limit
Benzene	6	0.186	mg/Kg	1	1.00	< 0.00110	19	64.4 - 115.7
Tolu <i>e</i> ne		1.02	mg/Kg	1	1.00	< 0.00150	102	57.8 - 124.4
Ethylbenzene	7	0.267	mg/Kg	1	1.00	< 0.00160	27	64.8 - 125.8
Xylene	8	1.30	mg/Kg	1	3.00	0.0265	42	65.2 - 121.8

 $\frac{\text{Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.}{continued \dots}$

⁵Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

⁶Matrix spike recoveries out of control limits due to matrix spike being diluted out. Use LCS/LCSD to demonstrate analysis is under control.

⁷Matrix spike recoveries out of control limits due to matrix spike being diluted out. Use LCS/LCSD to demonstrate analysis is under control.
⁸Matrix spike recoveries out of control limits due to matrix spike being diluted out. Use LCS/LCSD to demonstrate analysis is under control.

Work Order: 7062101 Cimarex/J.W.Cooper TB Page Number: 11 of 13 Lea County, NM

matrix	enakae	continued			
mairix	spikes	сопитиеа		٠	

-		MSD			$_{ m Spike}$	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene	9	0.115	mg/Kg	1	1.00	< 0.00110	12	64.4 - 115.7	47	20
Toluene		0.911	mg/Kg	1	1.00	< 0.00150	91	57.8 - 124.4	11	20
Ethylbenzene	10	0.203	mg/Kg	1	1.00	< 0.00160	20	64.8 - 125.8	27	20
Xylene	11	1.10	mg/Kg	1	3.00	0.0265	36	65.2 - 121.8	17	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	${f Amount}$	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	0.701	0.720	mg/Kg	1	1	70	72	52.8 - 121.7
4-Bromofluorobenzene (4-BFB)	0.806	0.829	mg/Kg	1	1	81	83	66.7 - 131.9

Matrix Spike (MS-1) Spiked Sample: 128071

QC Batch: 38650 Prep Batch: 33455

Date Analyzed: 2007-06-28 QC Preparation: 2007-06-28

Analyzed By: JW Prepared By: JW

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO	1890	mg/Kg	50	50.0	1870	40	10 - 141.5

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

		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	12	2020	mg/Kg	50	50.0	1870	300	10 - 141.5	7	20

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

		MS	MSD			Spike	MS	MSD	Rec.
Surrogate		Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)		29.0	28.8	mg/Kg	50	50	58	58	40 - 125.3
4-Bromofluorobenzene (4-BFB)	13 14	77.1	79.9	mg/Kg	50	50	154	160	86.7 - 144.5

Standard (ICV-1)

QC Batch: 38462

Date Analyzed: 2007-06-21

Analyzed By: AG

			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		mg/Kg	250	282	$11\overline{3}$	85 - 115	2007-06-21

⁹Matrix spike recoveries out of control limits due to matrix spike being diluted out. Use LCS/LCSD to demonstrate analysis is under control. ¹⁰Matrix spike recoveries out of control limits due to matrix spike being diluted out. Use LCS/LCSD to demonstrate analysis is under control.

¹¹ Matrix spike recoveries out of control limits due to matrix spike being diluted out. Use LCS/LCSD to demonstrate analysis is under control.

¹²Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

¹³ High surrogate recovery due to peak interference.

¹⁴High surrogate recovery due to peak interference.

Report Date: July 2, 2007 2983

Work Order: 7062101 Cimarex/J.W.Cooper TB

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Standard ((CCV-1)

QC Batch: 38462

Date Analyzed: 2007-06-21

Analyzed By: AG

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		mg/Kg	250	287	115	85 - 115	2007-06-21

Standard (CCV-2)

QC Batch: 38462

Date Analyzed: 2007-06-21

Analyzed By: AG

			CCVs	CCVs	CCVs	Percent	
Param	Flag	Units	True Conc.	${f Found} \ {f Conc.}$	Percent Recovery	Recovery Limits	Date Analyzed
DRO		mg/Kg	250	264	106	85 - 115	2007-06-21

Standard (ICV-1)

QC Batch: 38502

Date Analyzed: 2007-06-25

Analyzed By: AR

			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride	-	mg/Kg	100	100	100	85 - 115	2007-06-25

Standard (CCV-1)

QC Batch: 38502

Date Analyzed: 2007-06-25

Analyzed By: AR

			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	99.6	100	85 - 115	2007-06-25

Standard (ICV-1)

QC Batch: 38523

Date Analyzed: 2007-06-25

Analyzed By: JW

			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	1.10	110	85 - 115	2007-06-25

Standard (CCV-1)

QC Batch: 38523

Date Analyzed: 2007-06-25

Analyzed By: JW

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Work Order: 7062101 Cimarex/J.W.Cooper TB Page Number: 13 of 13 Lea County, NM

			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	1.03	103	85 - 115	2007-06-25

Standard (ICV-1)

QC Batch: 38524

Date Analyzed: 2007-06-25

Analyzed By: JW

			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0923	92	85 - 115	2007-06-25
Toluene		mg/Kg	0.100	0.0943	94	85 - 115	2007-06-25
Ethylbenzene		mg/Kg	0.100	0.0914	91	85 - 115	2007-06-25
Xylene		mg/Kg	0.300	0.276	92	85 - 115	2007-06-25

Standard (CCV-1)

QC Batch: 38524

Date Analyzed: 2007-06-25

Analyzed By: JW

			CCVs True	CCVs Found	$\begin{array}{c} \text{CCVs} \\ \text{Percent} \end{array}$	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0849	85	85 - 115	2007-06-25
Toluene		mg/Kg	0.100	0.0914	91	85 - 115	2007-06-25
Ethylbenzene	15	mg/Kg	0.100	0.0837	84	85 - 115	2007-06-25
Xylene		mg/Kg	0.300	0.254	85	85 - 115	2007-06-25

Standard (ICV-1)

QC Batch: 38650

Date Analyzed: 2007-06-28

Analyzed By: JW

			ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	0.867	87	85 - 115	2007-06-28

Standard (CCV-1)

QC Batch: 38650

Date Analyzed: 2007-06-28

Analyzed By: JW

			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	1.13	113	85 - 115	2007-06-28

¹⁵ETHYLBENZENE outside of control limits on CCV(ICV). CCV(ICV) component average is 0.085 which is within acceptable range. This is acceptable by Method 8000.

Analysis Request and Chain of Custody Record PAGE: OF: ANALYSIS REQUEST (Circle or Specify Method No.)																																										
									-																			(Circ								No.))				
	HIGHLANDER ENVIRONMENTAL 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 Fax CLIENT NAME: SITE MANAGER:																		394	ł6				720005	in the	Gr Pd Hg Se					0		4									
CLIENT N.															ERS.		F	PRESERVATIVE METHOD						NOTE NOT	An Ru Co	E C				7854	d270/625		Chlorida	/								
PROJECT NO.: PROJECT NAME: 2983 Cimarex/J.W. Cooper TB Lea County, NM													CONTAINERS	(X/X)						209/	- 1		a ho An F	B Ag As B	1	Semi Volatiles		8240/828	ר. יסנ. מבו	7808	рн. 1708. ((BG.	(ALF.)	rtos)								
LAB I.D. NUMBER	DA	ATE	TIME	MATRIX	COMP.	GRAB	Ĺ					M NTF:	TCAT	TION				NUMBER OF	FILTERED (HCL	HN03	ICE	NONE		BIEX 3020/602	MTBE 8020/602	TPID 418.1	REA Metels &g	TCLP Metal	TCLP Volatiles	TCLP Semi	RCI	GC.MS Vol. 8240/8250/624	GC.AS Semi. You.	PCB a guad	BOD, TSS, pH, TDS,	Gamma Spec.	Alpha Beta (Air)	PLW (Asher			
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RELINQUISHE	D BY	: (Sig	nature)				Date: Time:				_	RECE	TVED	BY:	(Sig	netur	e)			Da Tin						S	AMP.	CE'S	ΗΙΡΙ	PÉD	BY:	(Ci	rcle) BUS)		ATR	BILL	. # .				
RELINQUISHED BY: (Signature) Date: RECEIVED BY: (Signature) Time:												De. Tix	te: _					Œ	IAND	DE	IVE	RED	2_		UPS				IER:			_										
RECEIVING LABORATORY: Trace RECEIVED BY: (Statistical ADDRESS;																_	J.5	UGHI	AND	ER	CON	TAC	r Pe	RSO.	N:			Results by: RUSH Charges Authorized:			-											
CONTACT: PHONE: DATE: 121 7 TIME: 113 IKe Tavarez															Yes	180°C.	N																									
SAMPLE COM	Corrio	N MHI	3.5	NED:	_			МАТІ	RIX:		-Vati			Air —Slud	ige		-Solid Other			Л	EMA	RKS:	-																			

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

<u>District I</u> 1625 N. French Dr., Hobbs, NM 88240 District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources

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

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

Form C-141

Revised June 10, 2003

Release No	uncation	n and Co	rrective A	ction						
		OPERA	ΓOR	☐ Ir	nitial Report (🔀 Final Report					
Name of Company: Cimarex Energy Co. of Colorad	Contact: Hugo Naegele, Jr.									
Address: 300 Texas Ave. Box 1237, Eunice, NM	Telephone No.: (505) 394-9394									
Facility Name: J.W. Cooper #7	Facility Type: Oil and Gas facility									
Surface Owner: Randy Crawford Min	Lease No.									
		70 070 000								
		N OF REI			30 025 25927					
Unit Letter Section Township Range Feet from J 44 245 36E	n/South Line Feet from the East/West Lin 1845' SE			ne County Lea						
] J 14 24S 36E	NW		1843	SE	Lea					
				· · · · · · · · · · · · · · · · · · ·						
	NATURE	OF REL		1 171	D					
Type of Release: Produced Water		Volume of Release: 78 barrels Volume Recovered: 78 barrels								
Source of Release: Water tank ran over		Date and Hour of Occurrence Date and Hour of Discovery								
		3/11/07		3/11/0	7 4:00 AM					
Was Immediate Notice Given?	NI_4 D!	If YES, To	· Whom? - Gary Wink, voic							
Yes No										
By Whom?: Hugo Naegele, Jr. Was a Watercourse Reached?			Iour: 3/16/07 9:5:							
Was a watercourse Reached? ☐ Yes 🄀 No		IT YES, VO	olume Impacting t	ne watercourse	? .					
•										
If a Watercourse was Impacted, Describe Fully.*										
Describe Cause of Problem and Remedial Action Taken.*	(Saa Attacha	d Initial C 14								
Describe Cause of Problem and Remedian Action Taken.	(See Attache	u minai C-14.	1)							
	Water tank overflow caused by power failure due to storm. The fluids from the release were immediately pickup and the impacted soil was excavated and									
placed on plastic onsite.										
	CHO	ordes	<i>27</i>							
			• •							
Describe Area Affected and Cleanup Action Taken.* The release impacted the area inside tank battery dike. In a	ddition on ar	eo ot the well	location and lease	road was offer	stad by the release. Snill did not					
migrate into pasture. The impacted areas were assessed by	y collected so	il samples. B	ased on the results	the impacted	areas exceeding the NMOCD					
RRAL were excavated to below regulatory levels. A Closs	ure Report wa	s submitted th	e NMOCD for re	view.	S					
Thereby could that the information gives the six two and	1 000001040 40	the best of	111		WAR NIMOCD11					
I hereby certify that the information given above is true and regulations all operators are required to report and/or file of										
public health or the environment. The acceptance of a C-14										
should their operations have failed to adequately investigate										
or the environment. In addition, NMOCD acceptance of a federal, state, or local laws and/or regulations.	C-141 report	does not reliev	e the operator of	responsibility f	or compliance with any other					
redetal, state, or local laws allu/or regulations.			OIL CON	SERVATIO	ON DIVISION					
			OIL CON	DER VAIIC	3 I					
Signature: Svan / Want					I phuson					
Printed Name: Evan L Wachob.		Approved by	District Supervis	or: FNVIRO	NMENTAL ENGINEER					
Timourant LVan L Wachols.				_ 1	THE LIVER LIVER IN CONTRACTOR					
Title: Prod. SuPeriatendeni	<u> </u>	Approval Da	te: 9.25.0	27 Expirat	ion Date:					
		G "''								
E-mail Address: e way hop @ cimare	x, Com	Conditions o			Attached					
Date: 9/6 /07 Phone: 432 5	71 7800	(1 mc	ed as Kis	K-KARED	,					
* Attach Additional Sheets If Necessary	1. 1078		בורי בוי ת-							

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* Attach Additional Sheets If Necessary

State of New Mexico Energy Minerals and Natural Resources

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

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

Release Notification and Corrective Action

			Rei	ease Nothi	cation	i and Co	orrective A	CHOH		
						OPERA'	ГOR	🔽 Initi	al Report Final Repo	
Name of Co	ompany	CIMARES	x e.f C	classada		Contact		AEGEE JR.	Timur Repo	
	300 Tz			1237, Eynic				90-9394		
Facility Na		S Coops	12 #7			Facility Typ		s facility		
							- <u> </u>	3 7HC11174		
Surface Ow	ner Rai	udy Craw	s for <u>d</u>	Mineral (Owner			Lease 1	Vo	
	RR	R RANCH		LOC	י ארד א	OF REI	TEACE			
Unit Letter	Section	Township	Dongo	Feet from the	,	South Line	Feet from the	East/West Line	Countri	
Om Lener		· ·	Range	reet nom me	ļ.		reet nom me		County	
	14	245	36 E		h	<i>1W</i>		SE	LEA	
			т	(*43		Y		· · · · · · · · · · · · · · · · · · ·		
-			La	titude		Longitud	e			
NATURE OF RELEASE										
Type of Rele	ase Pr	oduce 4	Unter	<u> </u>		Volume of		bbis Volume I	Recovered 78 6615	
Source of Re	lease U	NATER T	ANK	RAN OVER		Date and H	our of Occurrence	al In Date and	Hour of Discovery 4 mm 3/11/	
Was Immedia	ate Notice G					If YES, To	Whom?	1891	01112737	
		X	Yes 📙	No 🗌 Not Re	equired	GAry W	ink Nmocd	CUIN VEILEM	4·1) **Z	
By Whom?	Hugo	NAEGELE	JR			Date and H	our 3/16/07	9:53 Am	6	
Was a Watercourse Reached? If YES, Volume Impacting the Watercourse.							2			
☐ Yes 💢 No										
If a Watercou	rse was Imp	acted, Descri	be Fully.*					1 8	10 10 10 10 10 10 10 10 10 10 10 10 10 1	
	•	•	,					53	* 60 AN	
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								_65\z	929242526	
Describe Caus	e of Proble	m and Damed	ial Action	Token * Porus	v La	lupe due	to the star	that wat m	by Called Oumose to	
wheek out	Alarm. i	Pumper for	and wat	en tank Run	שושק ס	IER. Power	- ON TRANSFO	in pump was a	nt but power to the PC	
Pump was	stell on	, Called to	rucking	company for	UNCH	cum truc	k to pick imp	spill + haul	by. Called pumper to the power to the Power to the Power to the Power. The pumper built	
up the dik	e to ke	ep the w	ater in	the dike,						
						,,_		,		
Describe Area	Affected ar	nd Cleanup A	ction Take	n.* The Arei	1 Atte	cted was	on the leas	e road twel	location. Didn't potic	
clear war	ge 10 pr	talke it b	mild un	Crewall	m tru	ick to pic	Kup spill +	naul water.	HAD GANG & BACKHUE WELL BOOKHUE	
due the +	o the h	EAUY RAIN	s that	JAN.	_, w,	> 11-11-6 70	TIDE HALL ON	make to the	WEIT TOCKTION TYCAL	
			-							
I hereby certify	y that the in	formation giv	en above i	s true and comple	ete to the	best of my k	nowledge and un	derstand that pursi	ant to NMOCD rules and	
									ases which may endanger	
									eve the operator of liability	
or the environ	perations hav	ve lalled to ad	equatery in	nvestigate and rei	mediate	contamination	n that pose a threa	t to ground water,	surface water, human health mpliance with any other	
federal, state, of				nice of a C-141 IC	port doc	s not reneve	the operator of re	sponsionity for co	imphrance with any other	
							OIL CONS	ERVATION	DIVISION	
A	1	0 0					OIL COINS.	DICVITION)	DIVIDION	
Signature: 4	There	ele J								
Printed Name: Hugo NAEGELE JR					A	Approved by District Supervisor:				
Printed Name:	mage	, MACGE	ال قاء	<u> </u>						
Title: Prod	netion	Foremi	ه ۵		Δτ	proval Date:		Expiration D	ate.	
		•			1	provat Date.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	LAPITATION D	aic.	
E-mail Address	: KNAE	92/20	CIMAR	ZEX.COM	Co	Conditions of Approval:				
			5	D5	Attached					
Date: 3-11	- 6T		Phone:	290-9294	1					