New Mexico Energy, Minerals and Natural Resources Department

Bill Richardson Governor

Joanna Prukop Cabinet Secretary Reese Fullerton Deputy Cabinet Secretary Mark Fesmire Division Director Oil Conservation Division



October 14, 2008

David H Arrington Oil & Gas Inc PO Box 2071 Midland, TX 79702

Reference: Federal 34 001 30 015 22738 N-34-20S-26E Eddy County, New Mexico 2RP-162

Operator,

The New Mexico Oil Conservation Division District 2 Office (OCD) is in receipt of a remediation work plan (plan) dated August 20, 2008 and an amendment letter dated September 29, 2008 for the remediation of a release of produced fluids that occurred at the above referenced facility. The plan and the letter were submitted on behalf of operator by ^eTECH Environmental & Safety Solutions, Inc.

The plan to blend soils to attain established remediation levels of 5,000 mg/kg for TPH, 50 mg/kg for BTEX, and 250 mg/kg for chlorides and the amendment letter proposing excavation and proper disposal of impacted soils exhibiting higher levels of chlorides are approved with the following stipulations:

- Notify OCD 48 hours prior to commencement of activities.
- Confirmation soil analyses of blended soils will be required.
- Please notify OCD 48 hours prior to obtaining samples where analyses of samples obtained are to be submitted to OCD.
- Remediation requirements may be subject to change as site conditions warrant.
- Remediation actions are to be completed on or before December 15, 2008.
- Submit a Final Report Form C-141 upon satisfactory completion of activities.

Remediation requirements may be subject to other federal, state, local laws and/or regulations. Additionally, please be advised that OCD approval does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment.

Thank you for your attention to these matters. If I can be of assistance, you may reach me at the contact information listed below.

Respectfully,

Sherry Bonham NMOCD District 2 1301 West Grand Avenue Artesia, NM 88210 (505) 748-1283 Ext.109 sherry.bonham@state.nm.us

cc: Shane Estep [©]TECH Environmental & Safety Solutions, Inc

> Oil Conservation Division 1220 South St. Francis Drive • Santa Fe, New Mexico 87505 Phone (505) 476-3440 • Fax (505) 476-3462 • www.emnrd.state.nm.us/OCD

Environmental & Safety Solutions, Inc.

September 29, 2008

Ms. Sherry Bonham New Mexico, Oil Conservation Division, District II 1301 Grand Ave. Artesia, New Mexico 88210

Re: Amendment to Remediation Scope of Work David Arrington Oil & Gas, Inc., Federal 34 #1 Tank Battery & Wellhead Eddy County, New Mexico

Dear Ms. Bonham,

As per our conversation, Etech Environmental & Safety Solutions, Inc. (Etech) has prepared this change in the scope of work for remediation of the impacted soil at the Federal 34 #1 tank battery site located in Eddy County, New Mexico.

To ensure remediation of the chloride impacted soil within the firewall of the tank battery, areas of impacted soil exhibiting higher levels of chlorides will be excavated and shipped off-site for disposal in a state permitted landfill. The areas for excavation are in the east end inside the north section of the firewall and behind the eastern storage tanks in the central area of the tank battery.

The north side of the eastern end of the firewall will be excavated to an estimated depth of 6 inches and the area behind the eastern storage tanks will be excavated to an estimated depth of 2 feet. The estimated amount of soil to be shipped off-site for disposal is 100 cubic yards and the areas are indicated on the attached site map.

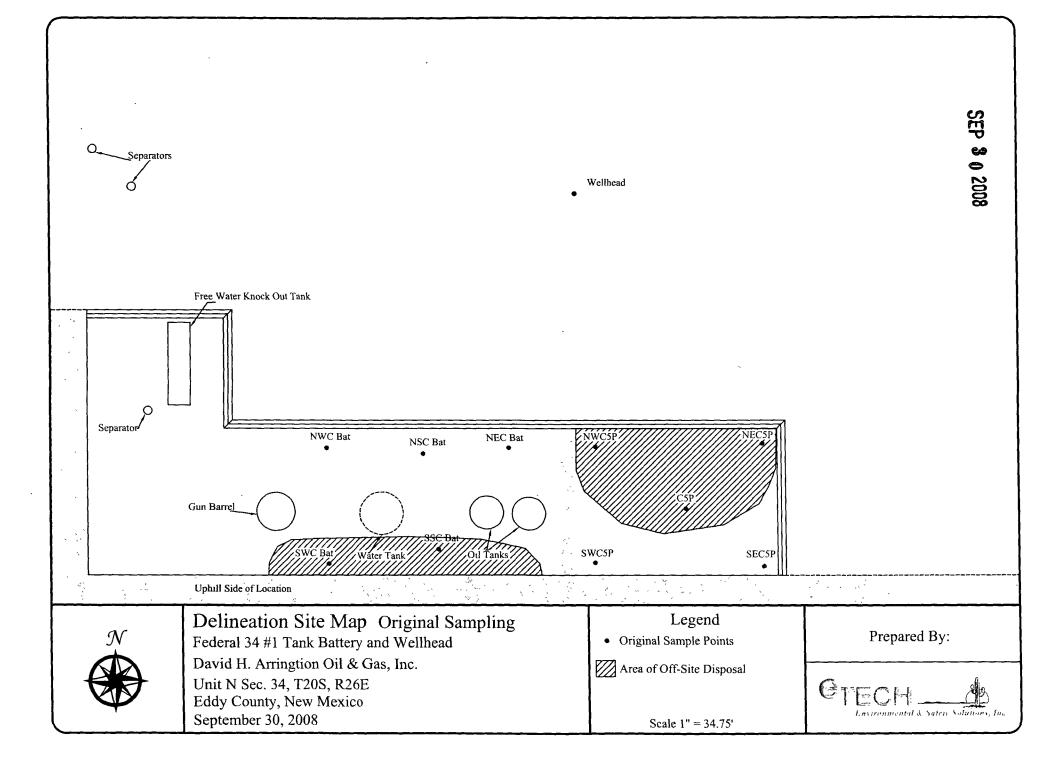
The remainder of the impacted soil will be remediated as outlined in the original scope of work. If you have any questions or need additional information, please call me at 432-563-2200. Thank you for your attention in this matter.

Sincerely,

Shane Estep, P.G.

ALLEN S. ESTEP GEOLOGY 4574

P.O. Box 8469 Midland ~ TX ~ 79708-8469 ~ Tel: 432-563-2200 ~ Fax: 432-563-2213





AUG 26 2008 OCD-ARTESIA

Federal 34 #1 Delineation Report & Remediation Scope of Work

DAVID H. ARRINGTON OIL & GAS, INC. EDDY COUNTY, NEW MEXICO



Federal 34 #1 **Delineation Report & Remediation Scope of Work**

DAVID H. ARRINGTON OIL & GAS, INC. EDDY COUNTY, NEW MEXICO

DATE PREPARED: August 20, 2008

ETECH PROJECT NO. 163-1724-000

PREPARED FOR: State of New Mexico Oil Conservation Division

> **PREPARED ON BEHALF OF:** David H. Arrington Oil & Gas, Inc.

PREPARED BY: Etech Environmental & Safety Solutions, Inc.

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SHANE ESTEP, P.G







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1.0 Executive Summary

On August 8, 2008, Etech Environmental & Safety Solutions, Inc. (Etech) completed the soil delineation of hydrocarbon and chloride impacted soil at the Federal 34 #1 tank battery site owned by David H. Arrington Oil & Gas, Inc. (DHA). The remediation activities were associated with historic small releases occurring over the approximate twenty-six (26) year life of the tank battery.

Initial assessment activities were conducted by New Mexico Environmental in April 2008. This initial assessment included trenching the shallow surface soils with a backhoe and collection of soil samples from the trench. Samples were collected from the surface soils and the loose soils immediately above a layer of hard cemented alluvial rock.

The samples were analyzed for total petroleum hydrocarbons (TPH), chlorides and benzene, toluene, ethylbenzene & toluene (BTEX). Sample results for TPH indicated values from 568 mg/Kg to 32,300 mg/Kg. Results from the BTEX analyses indicated benzene levels from non-detect to 1.43 mg/kg. Chloride values ranged from 93.7 mg/kg to 1,750 mg/kg.

Based on the analytical results from the initial sampling, DHA tried a chemical amendment designed to enhance biological activity of naturally occurring microbes and to open the soil to allow for a greater influx of water and air. After allowing time for this amendment to work, additional soil samples were collected from the surface and analyzed for TPH and chlorides. A review of the analytical data indicated the TPH or chloride levels have varied both up and down. It was determined this approach would not complete the remediation of the site and that additional sampling would be required to complete the vertical delineation of the impacted soil.

As part of on-going maintenance at the site, DHA personnel scheduled the removal and replacement of the 750 barrel produced water tank. At the request of the State of New Mexico Oil Conservation Division (NMOCD), the impacted soil underlying the old tank was removed to the depth of the rock and samples were collected from the bottom of the excavation.

During this same time frame, research into the depth to groundwater and other site classification criteria was conducted. A review of records on the New Mexico Office of the State Engineer revealed one (1) water well within the same section as the tank battery. The depth to groundwater within this water well was determined to be 135 feet below the surface. Also, there were no identified other water sources within 1,000 feet of the tank battery and the distance to surface water was measured at approximately 3,000 feet to the Pecos River. With all of these factors considered it was determine the site ranking score was 0 points allowing for a remediation level of 5,000 mg/Kg for TPH.

The sample collected from the bottom of the produced water tank excavation indicated a TPH level of 2,900 mg/kg and a total chloride level of 194 mg/kg. The benzene level found in the sample was 0.261 mgKg.

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To complete the vertical delineation of the impacted soil at the tank battery site a air rotary drilling rig was scheduled for August 7, 2008. With the drill rig a total of ten (10) soil borings were completed, nine (9) within the firewall of the tank battery and one (1) outside the firewall. Samples from the borings were analyzed for TPH, BTEX and chlorides.

Samples collected from the soil borings were based on depths with the highest photo ionization detector (PID) readings and the bottom hole sample. Analytical results from the samples indicated all sample results for TPH were below the established remediation level of 5,000 mg/Kg. Sample results for total chlorides ranged from less than <100 mg/kg to a high of 282 mg/kg.

Based on the information obtained from the soil borings, the vertical delineation of the tank battery site has been completed. This delineation indicated impacted soil above the established remediation level is confined to the top two (2) feet of the surface soil. A scope of work for remediation of this impacted soil will be included in this report.

2.0 Introduction

The Federal 34 Well #1 and tank battery site is located in Eddy County, New Mexico. The well and tank battery site are located approximately 12.5 miles northwest of Carlsbad, New Mexico on the south side of Lake Brantley Dam. The site is located in Unit N Section 34, T20S, R26E, Eddy County, New Mexico and has an API #30-015-22738. The New Mexico Lease number is NM-96833.

The immediate area consists of strong slopping to the east and southeast in the direction of the Pecos River. To the north and northeast of the site are the dam of Lake Brantley and Brantley Lake State Park. The area immediately surrounding the site is pasture and undeveloped range lands. A topographic map showing the location of the site is provided as Figure 1.

On July 28, 2008, DHA personnel contacted Etech assist in the delineation and remediation of the Federal 34 #1 tank battery site. A pervious assessment had been conducted at the site by another environmental company with the collection of near surface samples within the firewalls of the tank battery. This initial assessment revealed hydrocarbon and chloride impacted soil within the top 2 feet of the site.

Etech conducted an initial site inspection on July 29, 2008. On August 1, 2008 during the removal of a produced water tank, impacted soil was excavated from under the old tank. A soil sample was collected from the bottom of the excavation to determine the levels of contamination in the rock layer immediately underlying the surface soil.

Etech then scheduled and completed a another sampling event with the collection of samples from soil borings conducted at the site August 7, 2008. This sampling completed the vertical delineation of the impacted soil within the firewalls of the tank battery.





3.0 Site Description

3.1 General Location Setting

The site is located in Eddy County approximately 12.5 miles northwest of Carlsbad, New Mexico east of State Highway 285.

The spill site lies within the United States Geological Survey (USGS) 7.5-minute Topographic Quadrangle Map Lake McMillan South dated 1995 at the following coordinate:

N 32° 31' 29.6" W 104° 22' 20.1"

According to the topographic map the surface slope in the area of the spill site is to the southeast. The surrounding land is unimproved range land with oil & gas operations.

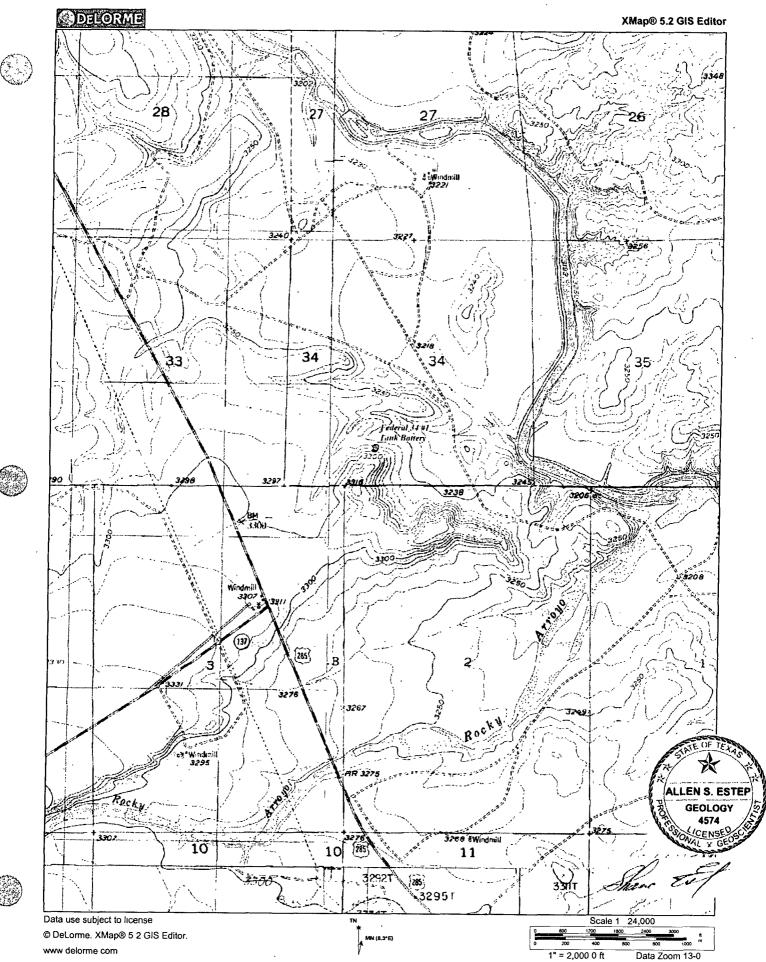
3.2 Geologic and Hydrogeologic Setting

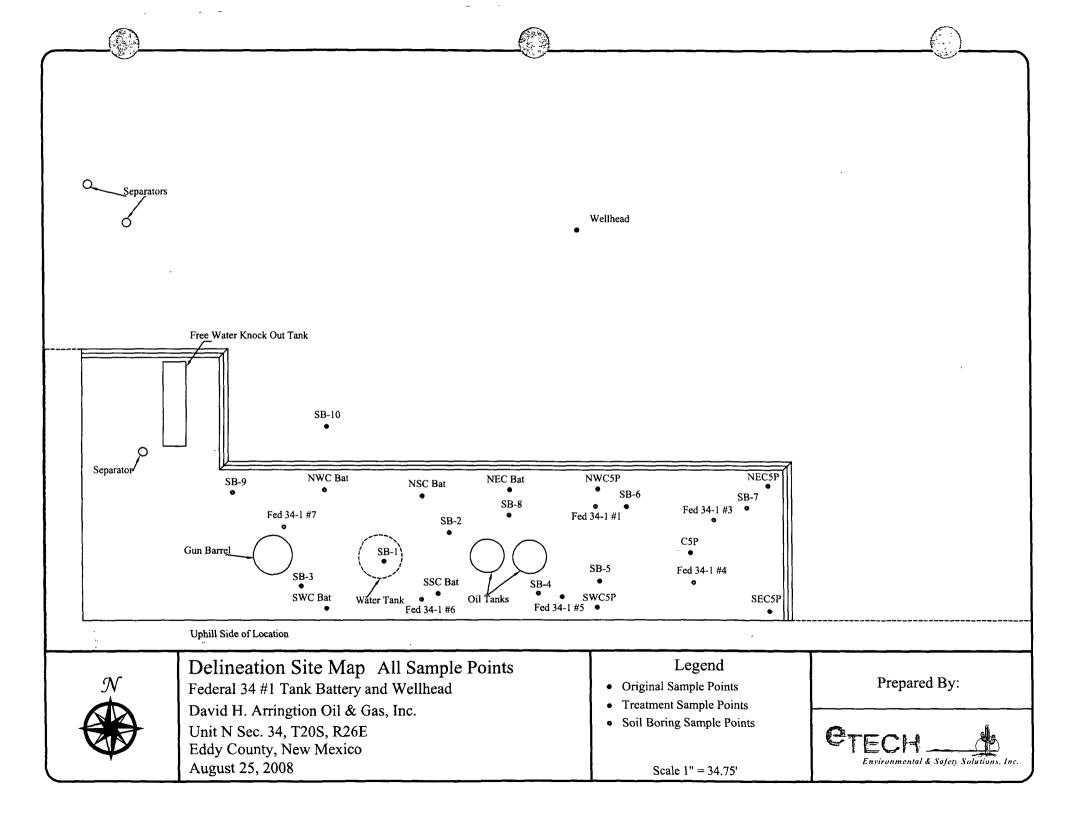
The soil at this site appears to be part of the Upton gravelly loam. Typically, this type of soil is gently sloping to steep, deep and moderately deep, loamy soils over sandstone or strongly cemented limestone gravels.

Thickness of the soil above the Bkm horizon ranges from 7 to 20 inches. Texture of the fineearth fraction of the A and Bk horizons ranges from sandy loam to clay loam. The texture varies little between horixons within a given pedon, the fine-earth fraction having a clay content between about 15 and 30 percent, and sand content between 20 to 60 percent. Volume of coarse fragments, generally of limestone or hardened calcium carbonate gravel, ranges from 15 to 35 percent. More than 40 percent of the soil mass less than 20 mm consist of limestone fragments and secondary carbonates.

A review of records on the New Mexico Office of the State Engineer revealed one (1) water well within the same section as the tank battery. The depth to groundwater within this water well was determined to be 135 feet below the surface. Also, there were no identified other water sources within 1,000 feet of the tank battery and the distance to surface water was measured at approximately 3,000 feet to the Pecos River. With all of these factors considered it was determine the site ranking score was 0 points allowing for a remediation level of 5,000 mg/Kg for TPH.







4.0 Delineation Summary

The following contains details of each phase of the delineation and presents summaries of the analytical data collected from each phase.

4.1 Initial Delineation Activities

Initial delineation activities were conducted at the site in April 2008 by New Mexico Environmental. These activities included the completion of investigative trenches within the area of the tank battery firewall.

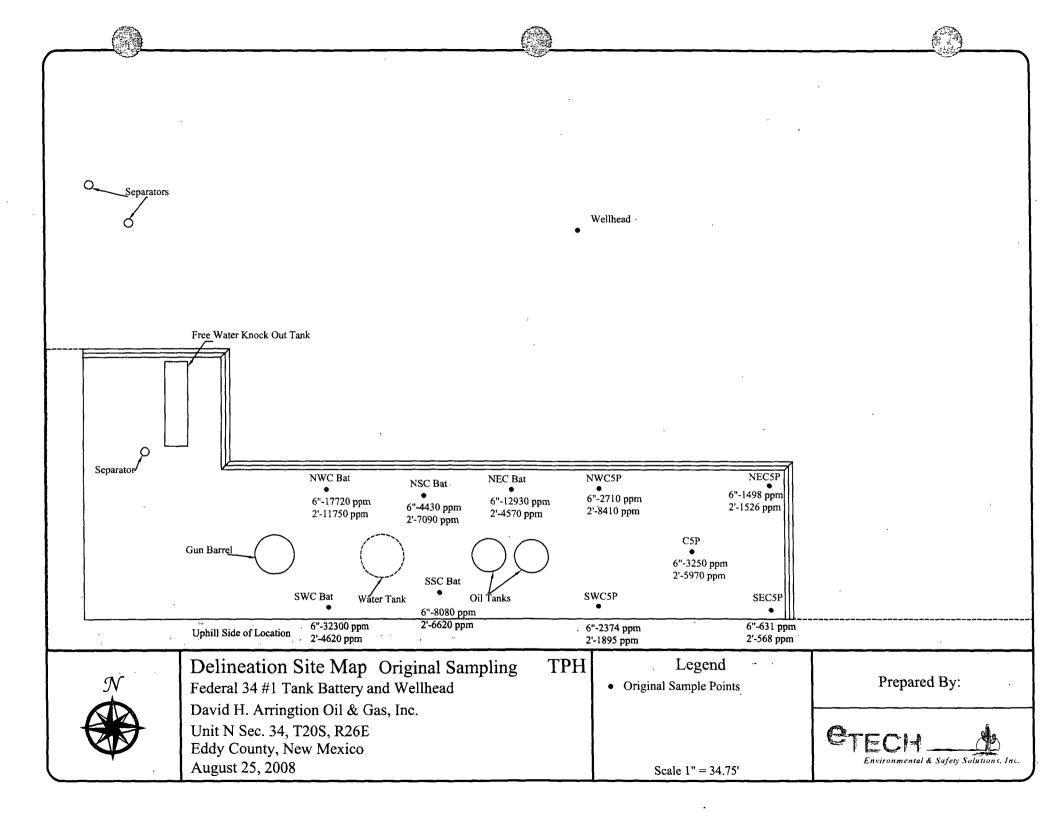
Samples were collected from each trench at various depths including the near surface soil and the bottom of the excavation near the top of the hard rock layer encountered at a depth between 2 feet and 3 feet. The samples were analyzed for TPH, chlorides and BTEX and the laboratory analytical results are presented in the following table:

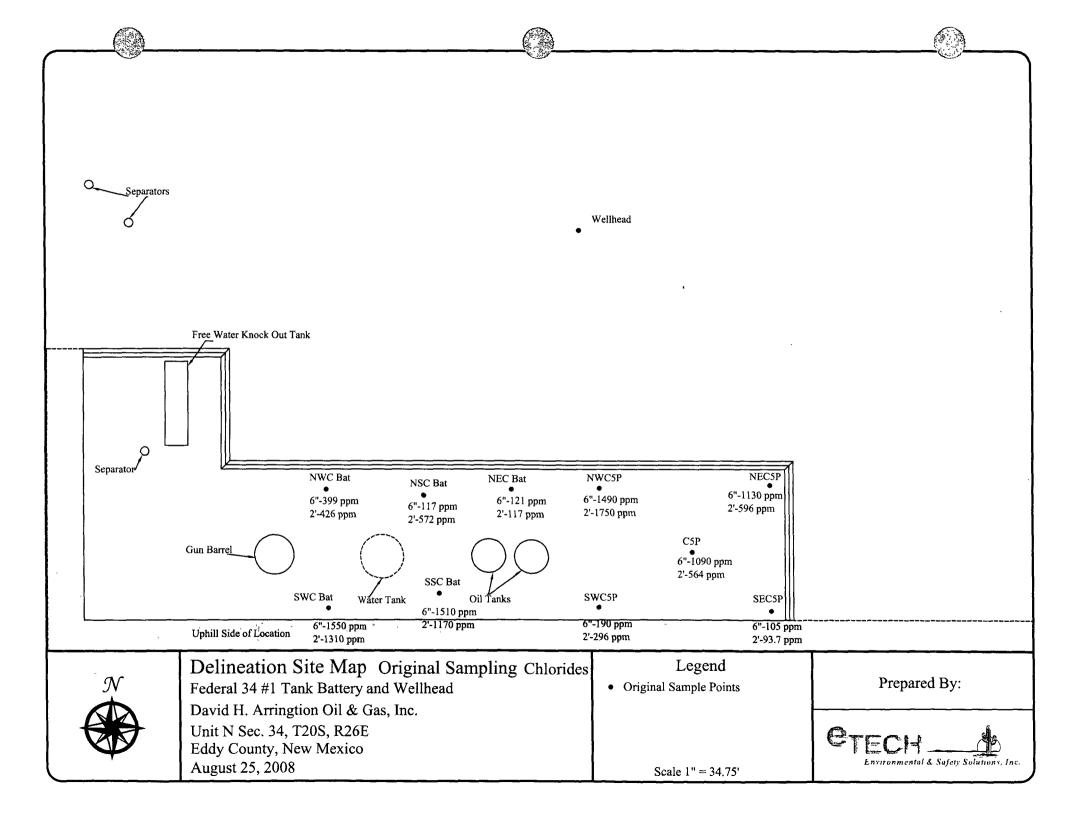
Analy	tical Results fro	m Initial Del	ineation Activit	ies – April 1	0, 2008 (mg/kg	1 States and
Sample #	Chlorides	TPH	Benzene	Toluene	Ethylbenzene	
001 NEC5P 6"	1,130	1,498	<0.100	< 0.100	< 0.100	2.15
002 NEC5P 2'	596	1,526	<0.200	<0.200	<0.200	° 1.40 🦈 j
003 NEC5P 3'	792	1,363	< 0.200	< 0.200	< 0.200	2.05
004 SEC5P 6"	105 A	法运631、学校	<0.200	<0.200	<0.200	0.702
005 SEC5P 2'	93.7	568	< 0.050	< 0.050	< 0.050	< 0.050
006 C5P 6"	1,090	3,250	<0.200	1.11	<0.200	29.3
007 C5P 2'	564	5,970	< 0.200	0.356	< 0.200	10.5
008 C5P 3'	916	3,709	<0.200	<0.200	<0.200	4.80
009 NWC5P 6"	1,490	2,710	< 0.200	0.894	<0.200	7.62
010 NWC5P 2'	1,750		<0.500	<0.500	<0.500	16.2
011 SWC5P 6"	190	2,374	< 0.200	< 0.200	< 0.200	3.65
012:SWC5P 2	296	1,895	<0.200	<0.200	<0.200	5.70
013 SWC5P 3'	125	756	<0.200	< 0.200	<0.200	1.42
014 NEC Bat 6"	121	12,930	<5.00	<5.00	<5:00	40.2
015 NEC Bat 2'	117	4,570	0.769	< 0.500	2.23	39.8
016 NSC Bat 6"	572	4,430	<0.500	2:85	2:79	46.8
017 NSC Bat 2'	466	7,090	0.891	4.04	<0.200	53.5
018 NWC Bat 6"	399	17,720	1.18	19.9	<5.00	217
019 NWC Bat 2'	426	11,750	1.43	12.4	<5.00	143
020 SWC Bat 6"	1,550	32,300	0.920	11.6	<5.00	140
021 SWC Bat 2'	1,310	4,620	0.647	3.25	<5.00	52.7
022 SSC Bat 6"	1,510	8,080	0.582	2.23	<5.00	4 4.7
023 SSC Bat 2'	1,170	6,620	0.842	2.98	<5.00	53.4
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Bolded values indicate levels above established remediation levels.

Site maps detailing the sample collections points are as follows:







4.2 Secondary Delineation/Remediation Activities

Based on the analytical results from the initial sampling, DHA tried a chemical amendment designed to enhance biological activity of naturally occurring microbes and to open the soil to allow for a greater influx of water and air. After allowing time for this amendment to work, additional soil samples were collected from the surface and analyzed for TPH and chlorides. A review of the analytical data indicated the TPH or chloride levels have varied both up and down. It was determined this type of remediation would not complete the remediation of the site and that additional sampling would be required to complete the vertical delineation of the impacted soil.

Analyt	ical Results from S	oil Boring D	elineation Acti	vities - Aug	ust 7; 2008 (mg	/kg) 🔬 🦂
Sample #	Chlorides		Benzene 🐭	Toluene	Ethylbenzene	Xylene
Fed 34-1 #1	149.94	650.00	NR	, NR	NR	NR
Fed 34-1 #3	99.96	2739.13	NR	NR	ŃŔ	NR 🆄
Fed 34-1 #4	2,297.93	84.78	NR	NR	NR	NR
Fed 34-1 #5	399.64	4,250.00	NR	NR	NR	NR
Fed 34-1 #6	200.02	4.934.78	NR	NR	NR	NR
Fed 34-1 #7	487.39	5,565.22	NR	NR	E TO NR OF	NR 🗄

NR - Indicates analysis not run on sample

4.3 Soil Boring Delineation Activities

As part of on-going maintenance at the site, DHA personnel scheduled the removal and replacement of the 750 barrel produced water tank. At the request of the State of New Mexico Oil Conservation Division (NMOCD), the impacted soil underlying the old tank was removed to the depth of the rock and a sample was collected from the bottom of the excavation. The sample collected from the bottom of the produced water tank excavation indicated a TPH level of 2,900 mg/kg and a total chloride level of 194 mg/kg. The benzene level found in the sample was 0.261 mgKg.

To complete the vertical delineation of the impacted soil at the tank battery site an air rotary drilling rig was scheduled for August 7, 2008. A total of ten (10) soil borings were completed, with nine (9) completed inside the firewall of the tank battery and one (1) outside the north side of the tank battery firewall.

Soil boring #1 – This boring was completed within the area of the former produced water tank and was completed to a total depth of 26 feet bgs. Condensate odors were noted in the cutting samples collected to an approximate depth of 20 feet. After 20 feet the odors began to dissipate to the point of having no detectable odors at the total depth of the boring (26 feet). PID readings dropped to below 100 ppm in the sample collected at 22 feet. Grab samples were collected from the soil boring at depths of 5, 20 and 26 feet and analytical results for TPH, BTEX and chlorides were below the established remediation level.

Soil Boring #2 – This soil boring was completed off the northeast side of the east oil tank approximately 8 feet. A strong condensate odor was noted to the depth of 12 feet then the odor began to dissipate to the point of no odor at the total depth of the boring. PID readings dropped to below 100 ppm in the sample collected at 24 feet. This boring was completed to 30 feet bgs.





Grab samples were collected from the soil boring at depths of 5, 10 and 30 feet and analytical results for TPH, BTEX and chlorides were below the established remediation level.

Soil Boring #3 – This soil boring was completed off the southwest side of the gun barrel tank which is located in the western side of the tank battery. A strong condensate odor was noted to the depth of 16 feet then the odor began to dissipate to the point of no odor at the total depth of the boring. This boring was completed to 20 feet bgs. Grab samples were collected from the soil boring at depths of 5, 10 and 20 feet and analytical results for TPH, BTEX and chlorides were below the established remediation level.

Soil Boring #4 – This soil boring was completed off the southeast side of the east oil tank which is located in the eastern side of the tank battery. A strong condensate odor was noted to the depth of 14 feet with the PID readings dropping to below 100 ppm in the sample collected at 20 feet. This boring was completed to 25 feet bgs. Grab samples were collected from the soil boring at depths of 5, 10 and 25 feet and analytical results for TPH, BTEX and chlorides were below the established remediation level.

Soil Boring #5 – This soil boring was completed in the eastern area of the tank battery to the southeast of the east oil tank. A strong condensate odor was noted to the depth of 14 feet then the odor began to dissipate to the point of no odor at the total depth of the boring. This boring was completed to 20 feet bgs. Grab samples were collected from the soil boring at depths of 7 and 20 feet and analytical results for TPH, BTEX and chlorides were below the established remediation level.

Soil Boring #6 – This soil boring was completed in the eastern area of the tank battery to the northeast of the east oil tank. A strong condensate odor was noted to the depth of 2 feet with the PID readings dropping to below 100 ppm in the sample collected at 6 feet. This boring was completed to 10 feet bgs. Grab samples were collected from the soil boring at depths of 6 and 10 feet and analytical results for TPH, BTEX and chlorides were below the established remediation level.

Soil Boring #7 – This soil boring was completed in the eastern area of the tank battery in the far northeast corner of the tank battery firewall. A strong condensate odor was noted to the depth of 7 feet with the PID readings dropping to below 100 ppm in the sample collected at 8 feet. This boring was completed to 20 feet bgs. Grab samples were collected from the soil boring at depths of 5 and 20 feet and analytical results for TPH, BTEX and chlorides were below the established remediation level.

Soil Boring #8 – This soil boring was completed between the oil tanks on the north site which is located in the eastern side of the tank battery. A strong condensate odor was noted to the depth of 15 feet with the PID readings dropping to below 100 ppm in the sample collected at 18 feet. This boring was completed to 20 feet bgs. Grab samples were collected from the soil boring at depths of 8 and 20 feet and analytical results for TPH, BTEX and chlorides were below the established remediation level.

Soil Boring #9 – This soil boring was completed off the northwest side of the gun barrel tank which is located in the western side of the tank battery. A strong condensate odor was noted to



the depth of 16 feet then the odor began to dissipate to the point of no odor at the total depth of the boring. PID readings from the bagged cuttings samples indicted high levels of volatiles near the surface and decreasing with depth. PID readings dropped to below 100 ppm in the sample collected at 18 feet. This boring was completed to 20 feet bgs. Grab samples were collected from the soil boring at depths of 11 and 20 feet and analytical results for TPH, BTEX and chlorides were below the established remediation level.

Soil Boring #10 – This soil boring was completed outside the firewall of the tank battery to the north between the gun barrel and the produced water tank. A strong condensate odor was noted to the depth of 26 feet with high PID readings noted to a depth of 25 feet. This boring was completed to 30 feet bgs. Grab samples were collected from the soil boring at depths of 5 and 30 feet and analytical results for TPH, BTEX and chlorides were below the established remediation level.

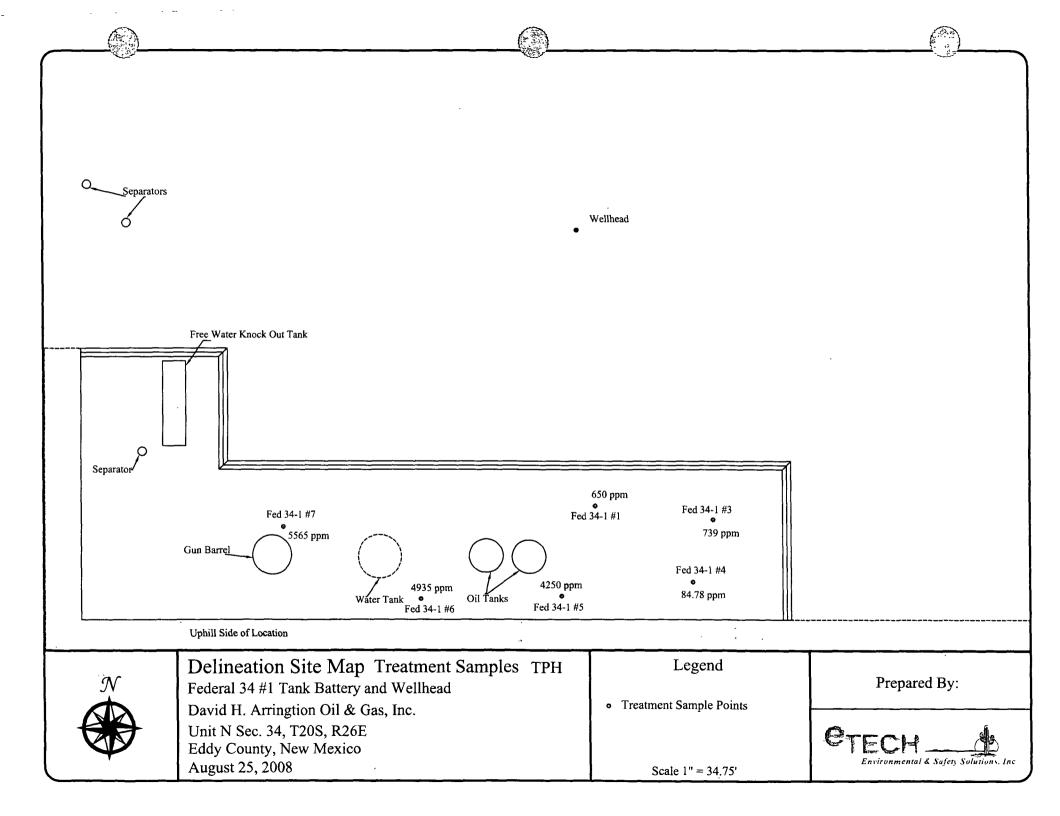
Boring logs from each soil boring are presented in Appendix A of this report. Analytical results from samples collected from the soil borings are presented in the following table:

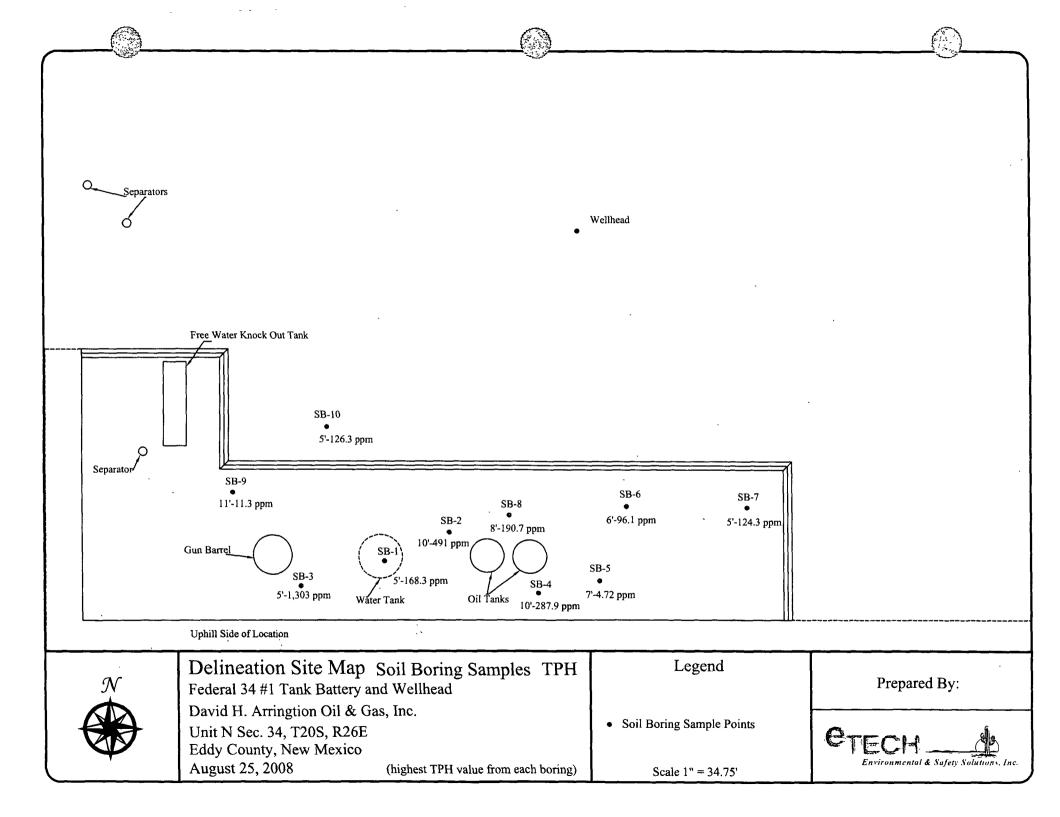
Analytica	al Results from S	oil Boring Del	ineation Ac	tivities - Augu	st 7, 2008 (mg	/kg)
Sample #	A. S. Chlorides	TPH	Benzene	Toluene	Ethylbenzene	Xylene
SB-1 (5')	152	168.3	< 0.010	< 0.010	0.0241	0.0899
[×] SB-1 (20')	<100	5.63	<0.010	<0.010	<0.010	<0.010
SB-1 (26')	114	2.02	< 0.010	< 0.010	< 0.010	<0.010
SB-2 (5')	200	81.54	<0.010	<0.010	<0.010	<0.010
SB-2 (10')	<100	491	< 0.010	< 0.010	0.630	2.62
SB-2 (30')	<100	216.7	<0.010	<0.010	2 0.0519	0.0946
SB-3 (5')	133	1303	0.0317	< 0.020	2.23	9.44
SB-3 (10')	142	264	<0.010	<0.010	0.143	0:484
SB-3 (20')	105	103	< 0.010	< 0.010	0.0289	0.0517
(SB-4 (5')	3. A. S. 282 - A. A. A.	154.3	<0.010	<0:010	0.0406	0.169
SB-4 (10')	162	287.9	< 0.010	< 0.010	0.106	0.293
SB-4 (25 ²)	<100	15.8	<0.010	<0.010	0.0128	0.0254
SB-5 (7')	<100	4.72	< 0.010	<0.010	< 0.010	< 0.010
SB-5 (20')	258	3.95	<0.010	<0.010	<0.010	<0.010
SB-6 (6')	282	96.1	< 0.010	< 0.010	< 0.010	0.0144
SB-6 (10')	167	7.28	<0.010	<0.010	<0.010	<0.010
SB-7 (5')	224 .	124.3	< 0.010	<0.010	< 0.010	<0.010
SB-7 (20')	167	1.92	<0.010	<0.010	<0.010	0.0331
SB-8 (8')	<100	190.7	< 0.010	<0.010	0.0186	0.0476
SB-8 (20')	<100	12.8	<0.010	<0.010	<0.010	<0.010
SB-9 (11')	<100	11.3	< 0.010	< 0.010	< 0.010	< 0.010
SB-9 (20')	<100 × 100	4.47	<0.010	<0.010	<0.010	<0.010
SB-10 (5')	247	126.3	0.0160	0.0255	0.0444	0.0910
SB-10 (30')	<u></u>	10.9	<0.010	<0.010	0.0144	0.0292

Based on the above referenced delineation phases completed at the Federal 34 #1 tank battery site, the delineation of the hydrocarbon and produced water impacted soil has been completed.

A site map detailing the sample collections points is presented in the following site map:







5.0 Soil Remediation Scope of Work

Using the data collected during the delineation phases completed at the tank battery site, a scope of work for remediation of the soil impacted above the established cleanup level has been prepared and is presented in the following Sections.

5.1 Area of Impacted Soil for Remediation

A review of analytical data collected from all delineation activities indicted the area of impacted soil requiring active remediation is contained within the firewalls of the tank battery. It also revealed this impacted soil was confined to the upper 2 feet of the surface soil within the firewall of the tank battery.

The area of impacted soil requiring remediation surrounds all the production storage tanks and extends into the eastern low area of the firewall. Within this eastern low area, the area requiring remediation is confined to the central and northwestern areas.

5.2 Proposed Soil Remediation

The established remediation levels for the site have been set at 5,000 mg/kg for TPH, 50 mg/kg for BTEX and 250 mg/kg for chlorides. A review of the analytical data collected during the delineation activities revealed all soil impacted above the established remediation levels is contained within the top 2 feet of the surface soil within the firewall of the tank battery.

The highest levels of contamination were determined to be TPH within the surface soil surrounding the gun barrel in the western area of the tank battery. Other areas requiring remediation for TPH have levels just above the established remediation level and are surrounded by soil that is below the remediation level.

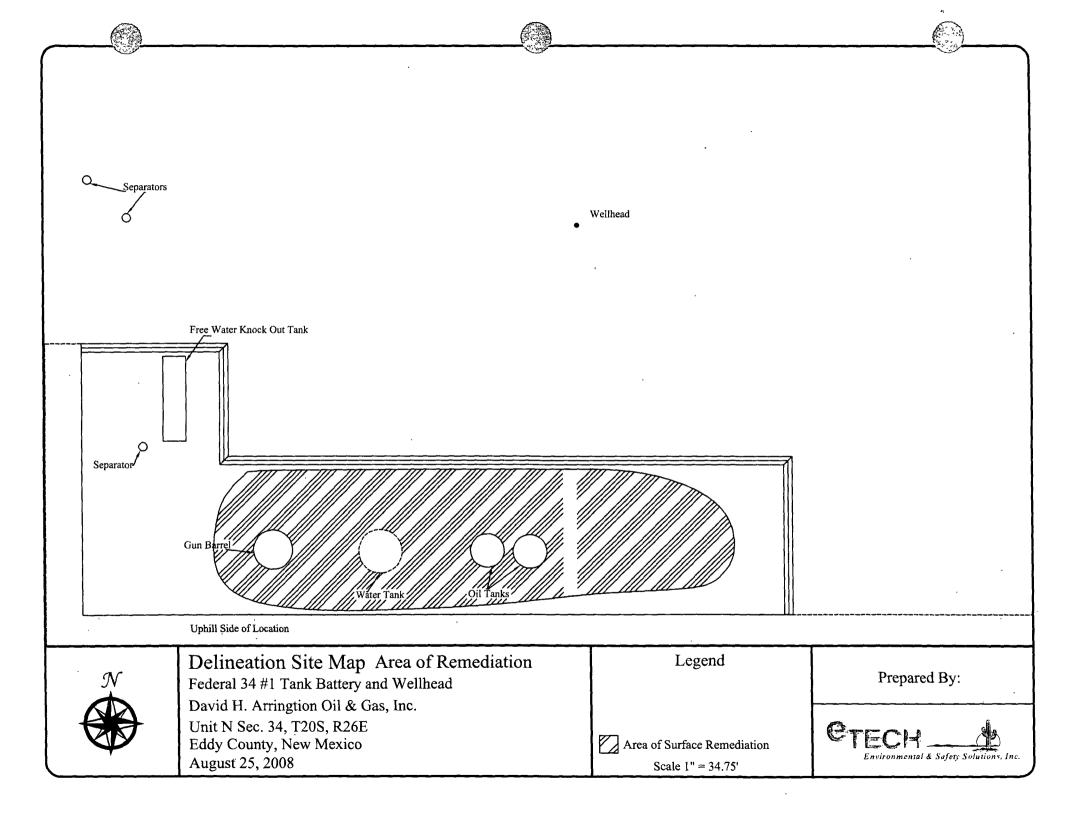
Chloride levels requiring remediation vary with each sample point within the tank battery firewall. A review of each area of elevated level of chlorides indicates the impacted area is surrounded by soil with low levels of chlorides but elevated levels of TPH.

Based on the findings of each type of contamination requiring remediation, a remedial method utilizing blending of the soil to reduce the levels of contamination to below the established level is proposed. This type of remediation will blend soil with elevated levels of TPH but low levels of chlorides with soil containing low levels of TPH but elevated levels of chlorides. This blending, along with the blending of additional clean soil from the firewalls of the tank battery, should reduce all contamination levels to below regulatory levels established for the site.

Areas of impacted soil remaining under the existing storage tanks will be left in place since the tank acts as a cap to stop rain water infiltration and to prevent the downward migration of the remaining contamination. As the tanks are removed for replacement or repair, remediation of the underlying soil could be completed.







6.0 References

- 1) Soil Survey of Eddy County, New Mexico United States Department of Agriculture Soil Conservation Service
- 2) United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

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3) National Research Council. 1995. Wetlands: Characteristics and boundaries.





Appendix A – Soil Boring Logs .



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Client	David Arrington Oil & Gas	Project		Fe	ederal 34 #	<i>¥</i> 1			
Project Num		Latitude			32.52489				
Geologist	Shane Estep	Longitude			104.37223				
Date Drilled		Total Depth of Borehole 26 Feet							
Borehole Dia	ameter 6 Inches	Depth to Wate			o Feet				
Graphic Log	Description	Depth	Sample	PID	Benzene	TPH	Chlorides		
SM	Backfill (silty sand with rock)								
	Cemented sand and gravel				<0.010	168.3	152		
GM		- 10- 		1130 580					
		- 15-		557 144					
	Sandstone with some interbedded gravel			181					
SW				44 26.7	<0.010	5.63	<100		
		- 25 -		49	<0.010	2.02	114	4	

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Clien	t ·	David Arrington Oil & Gas	Projec	t		Fe	deral 34 #	¥1		
Proje	ct Numbe		Latitud				32.52494			
Geolo		Shane Estep	Longit	ude		N	104.37216	56		
Date	Drilled	08/07/08	Total	Depth of	Boreł	nole 30	Feet			
Boreh	ole Diam	eter 6 Inches	Depth	to Water	,	N	o Feet			
Granhie Log		Description		Depth	Sample	PID	Benzene	TPH	Chlorides	
	SM	Silty sand with gravel (black)				>4000				-
	SC	Brown clay with sand and gravel				>4000		r		
	Limes	Dark gray chert		_ 5 _		1430	<0.010	81.54	200	₩
靑	tone	Cemented sand and gravel								
	GM	~				805				
	SW	Loose sand and gravel				1480	<0.010	491	<100	
		Cemented sand and gravel		10 -		1080				
	GM		ļ			i				•
			(• -	- 15-						₽ #
			-			230				
		Brown clay with little sand and gravel								8
111	CL		F			139				
		Sandstone with interbedded gravel					ŕ			•
			ŀ	+		144				•
			F			144	}			
	SW		ŀ	- 25-	ł					a
			F				ł			=
			ŀ				-0.010	, , , ,		=
				- 30-		42	<0.010	216.7	<100	-
			F							
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				- 35-						
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Client	David Arrington Oil & Gas	Project		F	ederal 34 #	±1		
Project Number		Latitude			32.52483			
Geologist	Shane Estep	Longitude			104.37235			
Date Drilled	08/07/08	Total Depth of	Borel) Feet			
Borehole Diar	neter 6 Inches	Depth to Wate	r	N	o Feet			
Graphic Log	Description	Depth	Sample	PID	Benzene	HdT	Chlorides	
SM	Silty sand with gravel (black)			2100		····	1	
SC	Brown clay with sand and gravel			>4000				
	Cemented sand and gravel	- 5		2340 2190	0.0317	1303	133	e
GM				1440	<0.010	264	142	
				1220				
		- 15-		1370 1240				4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
SW	Sandstone with interbedded gravel			377				8
		20		556	<0.010	103	105	ė
				i				
		- 25						
		- 30						
		- 40-						

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Clien		David Arrington Oil & Gas	Projec				ederal 34			
	ct Numb		Latitud	· · · · · · · · · · · · · · · · · · ·			32.52486			
Geolo		Shane Estep	Longit				104.3720	93		
	Drilled	08/07/08		Depth of			5 Feet			
Borel	ole Diar	neter 6 Inches	Depth	to Water		<u>N</u>	o Feet			Т
Cranhio I oa		Description		Depth	Sample	PID	Benzene	HdT	Chlorides	
0	SM	Silty sand with gravel (brown to black)				>4000				Π
20 1 1 20 1 1 20 1 1	SC	Brown clay with sand and gravel (black)				>4000				
•••		Cemented sand and gravel				1820	<0.010	154.3	282	
			ŀ			527				
			-		4	1370	<0.010	287.9	162	
	GM		ŀ	- 10		1080				
			ŀ			1710		,		ļļ
			- -	- 15-		320				
		Sandstone with interbedded gravel				320				
			F			140				
	sw		F	- 20		96		,		
			Ē		, ,	45	<0.010	15.8	<100	
				- 25-						
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			- -	- 30-						
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Clien	t	David Arrington Oil & Gas	Projec	t		Fe	ederal 34 #	<i>#</i> 1		
Proje	ct Numb	er 163-1724-000	Latitude W32.524868							
Geolo		Shane Estep	Longi	ude		N	104.37203	39		<u>.</u>
	Drilled	08/07/08		Depth of		nole 20) Feet			
Boreh	<u>iole Diar</u>	neter 6 Inches	Depth	to Wate	r	N	o Feet		1	—
Granhic Log	2017 Auduro	Description		Depth	Sample	DIA	Benzene	TPH	Chlorides	
	SM	Silty sand with gravel (brown to black)				>4000				=
	SC	Brown clay with sand and gravel				>4000				- -
	-	Cemented sand and gravel		5		1820				0 0 0
			ĺ		• .	527	<0.010	4.72	<100	
	GM			 - 10-		1370				• •
	UM		ſ	- 10		1080				- -
			-			1710				8
			f	- 15-		320				=
		Sandstone with interbedded gravel				320				8
	SW		-			140	<0.010	3.95	258	1. E
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			F							
			Ĺ	- 25 -						
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Client		David Arrington Oil & Gas	B-6 Projec	et		F	ederal 34 #	¥1		
	t Numbe		Latitu				/32.52495			
Geolo		Shane Estep	Longi				104.3720			
Date I		08/07/08		Depth of	Borel) Feet			
Boreh	ole Diam	eter 6 Inches		to Water			o Feet			
Graphic Log		Description		Depth	Sample	PID	Benzene	HdL	Chlorides	
	SM	Silty sand with gravel				930				Ī
						445			{	
• •		Cemented sand and gravel		- 5 -		465	<0.010	96.1	282	łł
•••	GM			 		110				
••••						36	<0.010	7.28	167	
on Oil & GastFederal 34 #(\Soil Borings w/2		·								

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Clien		David Arrington Oil & Gas Project Federal 34 #1									
	ct Numb		Latitude W32.524956								
Geolo		Shane Estep	Longitude			104.3718	53				
	Drilled	08/07/08	Total Depth) Feet o Feet					
Boreł	nole Dia	meter 6 Inches	Depth to W	ater							
Granhío I og		Description	Danth	mehm	Sampie PID	Benzene	HAT	Chlorides	Completion		
	SM	Silty sand with gravel	_	4	1390			l			
		Cemented sand and gravel			968						
			5	;;	766	<0.010	124.3	224			
				4	678						
	GM			0	44						
					38						
				<u></u>	36						
					44				** 		
	SW	Sandstone with interbedded gravel			38	<0.010	1.92	167			
			20)							
			_ 25	5							
			- -								
		· · · ·	- 30)							
			- 35	;							
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Client		· David Arrington Oil & Gas	Projec	t		F4	ederal 34 #	¥1			
	Numbe		Latitu				32.52495			<u>.</u>	
Geolog		Shane Estep	Longitude N104.372118								
Date D		08/07/08		Depth of	Boreh) Feet				
	ole Dian			to Water			o Feet				
Graphic Log		Description		Depth	Sample	PID	Benzene	HaT	Chlorides	Comulation	
200	SM	Silty sand with gravel (black)				1770					
4.		Cemented sand and gravel									
		-	Ì			965					
				- 5 -		653					
						864	<0.010	190.7	<100		
	GM		ŀ			735					
			ļ	— 10—							
						390					
			ļ			514					
	CL	Red clay with little sand		- 15-		625					
2023	SC	Red sandy clay with some gravel		{		138					
S	sw	Sandstone with interbedded gravel				54	<0.010	12.8	<100		
				- 20							
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				- 25				1	{		
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Client	David Arrington Oil & Gas	Projec	:t	·	F	ederal 34	#1	····	
Project Numb		LatitudeW32.524940LongitudeN104.372425Total Depth of Borehole20 Feet							
Geologist	Shane Estep								
Date Drilled	08/07/08								
Borehole Diar	neter 6 Inches	Depth	to Water		N	o Feet			1
Graphic Log	Description		Depth	Sample	PID	Benzene	TPH	Chlorides	
SM	Silty sand with gravel (black)				612				
SW SW	Sand and gravel (grey)				920				4 4 4 4 4
	Cemented sand and gravel				1270				
					843				
					1300				
GM					1920	<0.010	11.3	<100	-
Ulvi					286				
		-	— 15 —		459				0
					220				
			- 20-		88	<0.010	4.47	<100	
		-		ł					
			— 25 — —						
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			SB-10						
Client		David Arrington Oil & Gas	Projec				ederal 34		
Project N		163-1724-000	Latitu				/32.52501		
Geologist		Shane Estep	Longi				104.3723	06	
Date Dril		08/07/08	Total I	Depth of	Borel	nole 30) Feet		
Borehole	Diameter	6 Inches	Depth	to Water	r T	N	o Feet		-
Graphic Log		Description		Depth	Sample	PID	Benzene	HAT	Chlorides
SN	Silt	y sand with gravel			{	>4000	1		
;;• (⁰)					<u> </u>	>4000			
	Cen	nented sand and gravel				24000		}	
				- 5		>4000	0.0160	126.3	247
			ľ			>4000			
							l		
			ļ	— — — —	1				
GN	/1		ŀ				}		
			ŀ	- 15					
	Sand	dstone with some gravel							
			F	- 20-					
SW SW	7		F			2370			}
			F			1670			
	Cem	ented sand and gravel	+	- 25-		1170			
GM		-	Ļ	- 25					
						441			
SW	Sanc	Istone with some gravel			y .	168	<0.010	10.9	<100
<u>•·•••</u>				- 30					
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			F						
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Appendix B – Laboratory Analytical Data

63.0 ALFORT ALFORT ALE 2 200 East Sunser Road, Soite E 5002 Busin Stimer, Stinte AT 6010 Harris Parkatas (scate 116)

Lobbori, Tekas 74424 El Paso, Hexas 79922 885+385+3413 Midland, Texas 79703 It Worth Texas /6:37 Education had marked and the com

306+794+1296 FAX 800+794+3798 915+545+3443 ~47.915•585•4044 FAX 322+080+6313 432+689+6161 817+261+5180

NELAP Certifications

100+1/8+12%

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

T104704221-08-TX El Paso: LELAP-02002

Midland: T104704392-08-TX



Analytical and Quality Control Report

Shane Estep Etech Environmental Safety

P.O. Box 8469 Midland, TX, 79708

Project Location: Carlsbad, NM Project Name: Federal 34 #1 **Project Number:** 163-1724-000

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

		Date	Time	Date
Description	Matrix	Taken	Taken	Received
SB-1 (5')	soil	2008-08-07	09:20	2008-08-08
SB-1 (20')	soil	2008-08-07	12:00	2008-08-08
SB-1 (26')	soil	2008-08-07	12:09	2008-08-08
SB-2 (5')	soil	2008-08-07	10:11	2008-08-08
SB-2 (10')	soil	2008-08-07	10:24	2008-08-08
SB-2 (30')	soil	2008-08-07	11:00	2008-08-08
SB-3 (5')	soil	2008-08-07	13:15	2008-08-08
SB-3 (10')	soil	2008-08-07	13:21	2008-08-08
SB-3 (20')	soil	2008-08-07	13:30	2008-08-08
	SB-1 (5') SB-1 (20') SB-1 (26') SB-2 (5') SB-2 (10') SB-2 (30') SB-3 (5') SB-3 (10')	SB-1 (5') soil SB-1 (20') soil SB-1 (26') soil SB-2 (5') soil SB-2 (10') soil SB-2 (30') soil SB-3 (5') soil SB-3 (10') soil	DescriptionMatrixTakenSB-1 (5')soil2008-08-07SB-1 (20')soil2008-08-07SB-1 (26')soil2008-08-07SB-2 (5')soil2008-08-07SB-2 (10')soil2008-08-07SB-2 (30')soil2008-08-07SB-3 (5')soil2008-08-07SB-3 (10')soil2008-08-07	$\begin{tabular}{ c c c c c c c } \hline Description & Matrix & Taken & Taken \\ \hline SB-1 (5') & soil & 2008-08-07 & 09:20 \\ \hline SB-1 (20') & soil & 2008-08-07 & 12:00 \\ \hline SB-1 (26') & soil & 2008-08-07 & 12:09 \\ \hline SB-2 (5') & soil & 2008-08-07 & 10:11 \\ \hline SB-2 (10') & soil & 2008-08-07 & 10:24 \\ \hline SB-2 (30') & soil & 2008-08-07 & 11:00 \\ \hline SB-3 (5') & soil & 2008-08-07 & 13:15 \\ \hline SB-3 (10') & soil & 2008-08-07 & 13:21 \\ \hline \end{tabular}$



Report Date: August 14, 2008

Work Order: 8080838



			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
170102	SB-4 (5'-6')	soil	2008-08-07	14:05	2008-08-08
170103	SB-4 (10')	soil	2008-08-07	14:10	2008-08-08
170104	SB-4 (25')	soil	2008-08-07	14:25	2008-08-08
170105	SB-5 (7')	soil	2008-08-07	14:41	2008-08-08
170106	SB-5 (20')	soil	2008-08-07	14:54	2008-08-08
170107	SB-6 (6')	soil	2008-08-07	15:01	2008-08-08
170108	SB-6 (10')	soil	2008-08-07	15:10	2008-08-08
170109	SB-7 (5')	soil	2008-08-07	15:28	2008-08-08
170110	SB-7 (18'-20')	soil	2008-08-07	15:41	2008-08-08
170111	SB-8 (8')	soil	2008-08-07	16:00	2008-08-08
170112	SB-8 (18'-20')	soil	2008-08-07	16:21	2008-08-08
170113	SB-9 (11')	soil	2008-08-07	16:39	2008-08-08
170114	SB-9 (30')	soil	2008-08-07	16:50	2008-08-08

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



Michael Aber

Dr. Blair Leftwich, Director

Standard Flags

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

Case Narrative

Samples for project Federal 34 #1 were received by TraceAnalysis, Inc. on 2008-08-08 and assigned to work order 8080838. Samples for work order 8080838 were received intact at a temperature of 3.0 deg. C.

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

Test	Method
BTEX	S 8021B
Chloride (Titration)	SM 4500-Cl B
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 8080838 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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



Page 3 of 50

Analytical Report

Sample: 170093 - SB-1 (5')

Laboratory:	Midland	•				
Analysis:	BTEX		Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	51371		Date Analyzed:	2008-08-12	Analyzed By:	DC
Prep Batch:	44030		Sample Preparation:	2008-08-11	Prepared By:	DC

		I	RL				
Parameter	Flag	Res	ult	Units	D	vilution	\mathbf{RL}
Benzene		< 0.01	00	mg/Kg		1	0.0100
Toluene		< 0.01	00	mg/Kg		1	0.0100
Ethylbenzene		0.02	41	mg/Kg		1	0.0100
Xylene		0.08	99	mg/Kg		1	0.0100
					Spike	Percent	Recovery
Surrogate	Fla	g Result	\mathbf{Units}	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.760	mg/Kg	1	1.00	76	68 - 136.9
4-Bromofluorobenzene (4-BF	B)	0.817	mg/Kg	1	1.00	82	48.2 - 155

Sample: 170093 - SB-1 (5')

Chloride		152	mg/Kg	50	2.00
Parameter	Flag	RL Result	Units	Dilution	RL
Prep Batch:	44022	Sample Preparation:	2008-08-11	Prepared By:	AG
QC Batch:	51331	Date Analyzed:	2008-08-11	Analyzed By:	
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	,
Laboratory:	Midland				

Sample: 170093 - SB-1 (5')

QC Batch:	TPH DRO 51308	Analytical Method: Date Analyzed: Sample Preparation:	Mod. 8015B 2008-08-11 2008-08-11	Prep Method: Analyzed By: Prepared By:	ĹĎ
Parameter	Flag	RL Result	Units	Dilution	RL
DRO		134	mg/Kg	1	50.0



Report Date: August 14, 2008 163-1724-000				Work Order: 8080838 Federal 34 #1				Page Number: 5 of 50 Carlsbad, NM			
Surrogate	Flag	Result	Units		lution	Spike Amount	Percent Recovery	Recovery Limits			
n-Triacontan	<u>e</u>	114	mg/Kg	5	1	100	114	10 - 250.4			
Sample: 17	0093 - SB-1 (5')									
Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 51372 44030		Analytica Date Ana Sample P		S 8015B 2008-08-12 : 2008-08-11		Prep Me Analyze Preparec	d By: DC			
			RL								
Parameter	Flag	z	\mathbf{Result}		Units		Dilution	\mathbf{RL}			
GRO			34.3		mg/Kg		. 1	1.00			
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits			
Trifluorotolue	ene (TFT)		0.895	mg/Kg	1	1.00	90	67.5 - 135.2			
4-Bromofluor	obenzene (4-BFB)	0.926	mg/Kg	1	1.00	93	63.8 - 141			
Sample: 170	0 094 - SB-1 (20 Midland	')									
Analysis:	BTEX		Analytical 1	Method:	S 8021B		Prep Me	thod: S 5035			
QC Batch:	51371		Date Analy		2008-08-12		Analyzed				
Prep Batch:	44030		Sample Pre	paration:	2008-08-11		Prepared	By: DC			
			RL								
_	Fla	ag	Result		Units		Dilution	\mathbf{RL}			
Parameter	1 10				175		1	0.0100			
Parameter Benzene		<u> </u>	< 0.0100		mg/Kg		T	0.0100			
Benzene Toluene	1	<u> </u>	<0.0100 <0.0100		mg/Kg		1	0.0100			
Benzene Toluene Ethylbenzene	1	<u> </u>	$< 0.0100 \\ < 0.0100$		mg/Kg mg/Kg		1 1	$0.0100 \\ 0.0100$			
Benzene Toluene	1		< 0.0100		mg/Kg		1	0.0100			
Benzene Toluene Ethylbenzene Xylene	1		<0.0100 <0.0100 <0.0100		mg/Kg mg/Kg mg/Kg	Spike	1 1 1 Percent	0.0100 0.0100 0.0100 Recovery			
Benzene Toluene Ethylbenzene	1	Flag	$< 0.0100 \\ < 0.0100$		mg/Kg mg/Kg	Spike Amount 1.00	1 1 1 Percent	0.0100 0.0100 0.0100			

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Report Date: August 14, 2008	Work Order: 8080838	Page Number: 6 of 50
163-1724-000	Federal 34 #1	Carlsbad, NM

Sample: 170094 - SB-1 (20')

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Metho	od: SM 4500-Cl B	Prep Method:	N/A
QC Batch:	51331	Date Analyzed:	2008-08-11	Analyzed By:	AG
Prep Batch:	44022	Sample Preparati	ion: 2008-08-11	Prepared By:	AG
		\mathbf{RL}			
Parameter	Flag	\mathbf{Result}	Units	Dilution	\mathbf{RL}
Chloride		<100	mg/Kg	50	2.00

Sample: 170094 - SB-1 (20')

Surrogate n-Triacontane	Flag	Result 94.1	Units mg/Kg	Dilut	tion	Amount 100	Recovery 94	Limits 10 - 250.4
						Spike	Percent	Recovery
DRO			<50.0		mg/K	g	1	50.0
Parameter	Fla	g	RL Result		Unit	S	Dilution	RL
Prep Batch:	44003		Sample Prepa	aration:	2008-08	-11	Prepar	ed By: LD
QC Batch:	51308		Date Analyze		2008-08		-	zed By: LD
Laboratory: Analysis:	Midland TPH DRO		Analytical M	ethod	Mod. 8	015B	Pron N	lethod: N/A

Sample: 170094 - SB-1 (20')

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Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 51372 44030		Date Ana	l Method: lyzed: reparation:	S 8015B 2008-08-12 2008-08-11		Prep Me Analyze Preparec	d By: DC
			\mathbf{RL}					
Parameter	Flag		\mathbf{Result}		\mathbf{Units}		Dilution	\mathbf{RL}
GRO	<u> </u>		5.63		mg/Kg		1	1.00
						Spike	Percent	Recovery
Surrogate		Flag	\mathbf{Result}	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)		0.908	mg/Kg	1	1.00	91	67.5 - 135.2
4-Bromofluor	obenzene (4-BFB)		0.930	mg/Kg	1	1.00	93	63.8 - 141

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Sample: 170095 - SB-1 (26')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 51371 44030		Analytical I Date Analy Sample Pre	zed: paration:	S 8021B 2008-08-12 2008-08-11		Prep Metl Analyzed Prepared	By: DC
			RL					
Parameter	Flag		\mathbf{Result}		\mathbf{Units}	D	ilution	\mathbf{RL}
Benzene			< 0.0100		mg/Kg		1	0.0100
Toluene			< 0.0100		mg/Kg		. 1	0.0100
Ethylbenzene)		< 0.0100		mg/Kg		1	0.0100
Xylene			< 0.0100		mg/Kg		1	0.0100
Surrogate		Flag	\mathbf{Result}	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolue	ene (TFT)		0.771	mg/Kg	1	1.00	77	68 - 136.9
	obenzene (4-BFB)		0.760	mg/Kg	<u>1</u>	1.00	76	48.2 - 155
	· · · · · · · · · · · · · · · · · · ·							

Sample: 170095 - SB-1 (26')

Analysis: QC Batch:	Chloride (Titration) 51331	Analytical Metho Date Analyzed:	od: SM 4500-Cl B 2008-08-11	Prep Metho Analyzed B	,
Prep Batch:		Sample Preparat		Prepared B	
		\mathbf{RL}			
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		114	mg/Kg	50	2.00

Sample: 170095 - SB-1 (26')

Analysis: QC Batch:	Midland TPH DRO 51308 44003		Analytical M Date Analyze Sample Prepa	ed: 2008-0	8-11	Analyz	Method: N/A zed By: LD zed By: LD
, Parameter	Fla	z	RL Result	Un	its	Dilution	RL
DRO			<50.0	mg/l	Kg	1,	50.0
Surrogate n-Triacontane	Flag	Result 101	Units mg/Kg	Dilution	Spike Amount 100	Percent Recovery 101	Recovery Limits 10 - 250.4



Report Date: 163-1724-000	August 14, 2008			Work Orde Federal	er: 8080838 34 #1		Page N	umber: 8 of 50 Carlsbad, NM
Sample: 170	095 - SB-1 (26')							
Analysis: QC Batch:	Midland TPH GRO 51372 44030		Date Ana	l Method: lyzed: reparation:	S 8015B 2008-08-12 2008-08-11		Prep Me Analyze Preparec	d By: DC
			\mathbf{RL}					
Parameter	Flag		\mathbf{Result}		Units		Dilution	\mathbf{RL}
GRO	В		2.02		mg/Kg		1	1.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluer 4-Bromofluoro	ne (TFT) benzene (4-BFB)		0.904 0.875	mg/Kg mg/Kg	1 1	1.00 1.00	90 88	67.5 - 135.2 63.8 - 141
Sample: 170	096 - SB-2 (5')							
Analysis: QC Batch:	Midland BTEX 51371 44030 .		Analytical I Date Analy Sample Pre	zed:	S 8021B 2008-08-12 2008-08-11		Prep Mer Analyzed Prepared	By: DC
Parameter	Flag		${f RL}$		Units	n	Dilution	\mathbf{RL}
Benzene	I 100		<0.0100		mg/Kg		1	0.0100
Toluene			< 0.0100		mg/Kg		1	0.0100
Ethylbenzene			< 0.0100		mg/Kg		1	0.0100
Xylene			< 0.0100		mg/Kg	·	11	0.0100
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluen			0.780	mg/Kg	1	1.00	78	68 - 136.9
4-Bromofluorol	benzene (4-BFB)		0.766	mg/Kg	<u> </u>	1.00	77	48.2 - 155
Laboratory: 1 Analysis: (QC Batch: 5	996 - SB-2 (5') Midland Chloride (Titration) 51331 14022		Date A	ical Metho nalyzed: Preparati	2008-08-1	1	Prep M Analyzo Prepare	ed By: AG
	Flag		\mathbf{RL} Result		Units	г	Dilution	RL
Parameter	ны							

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2.00,

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Report Date 163-1724-00	e: August 14, 2008		<u> </u>		ler: 8080838 al 34 #1		Page I	Number: 9 of 56 Carlsbad, NM
Sample: 17	70096 - SB-2 (5')							
Laboratory: Analysis: QC Batch: Prep Batch:	TPH DRO 51308		Date An	al Method: alyzed: Preparation	2008-08-1	1	Analy	Method: N/A zed By: LD red By: LD
			RL					
Parameter	Flag		Result		Units		Dilution	RL
DRO			80.2		mg/Kg		1	50.0
Surrogate	Flag	Result	Units	D	ilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontan		105	mg/Kg		1	100	105	10 - 250.4
Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 51372 44030		Date Ana	al Method: alyzed: reparation	S 8015B 2008-08-12 : 2008-08-11		Prep Me Analyze Prepare	d By: DC
			RL	Ň				5.
Parameter GRO	Flag B		Result 1.34		Units		Dilution	<u>RL</u> 1.00
GRU			1.04		mg/Kg		1	1.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolue			0.914	mg/Kg	1	1.00	91	67.5 - 135.2
1-Bromofluor	robenzene (4-BFB)	. <u></u>	0.827	mg/Kg	1	1.00	83	63.8 - 141
Sample: 17 Laboratory: Analysis:	0097 - SB-2 (10') Midland BTEX		Analytical	Method	S 8021B		Prep Me	thod: S 5035
QC Batch:	51371		Date Analy		2008-08-12		Analyzed	
Prep Batch:	44030		Sample Pre		2008-08-11		Preparec	
Parameter	Flag		RL Result		Units		Dilution	\mathbf{RL}
Benzene	t lag		<0.0100		mg/Kg		1	0.0100
Toluene			< 0.0100		mg/Kg		1	0.0100
			0.630				1	
Ethylbenzene	•		0.090		mg/Kg		1	0.0100

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	eport Date 3-1724-00	e: August 14, 2008 0	, «	W	ork Order: 8 Federal 34			Page Nu	umber: 10 Carlsbad	
a					TT •/		Spike	Percent	Reco	
	rogate	(71)-71)	Flag	Result	Units	Dilution	Amount		Lin	
		ene (TFT) robenzene (4-BFB)) 1	0.775 1.61	mg/Kg	1 1	1.00 1.00	78 161	68 - 1 48.2	
<u>4-D</u>	STOMOLIUO	iobenzene (4-DFb)	/	1.01	mg/Kg	1	1.00	101	40.2	- 1
Sar	mple: 17	0097 - SB-2 (10 ⁹	')					`		
	boratory: alysis:	Midland Chlòride (Titrati	ion)	Analyt	ical Method:	SM 4500	-Cl B	Prep M	Method:	N/
	Batch:	51331			nalyzed:	2008-08-1				Á
-	p Batch:	44022			Preparation					AG
Por	ameter	Flag		\mathbf{RL} Result		Units		Dilution		R
	loride	1 1 1 1 2 3	•	<100		mg/Kg		50		$\frac{1}{2.0}$
Lab Ana	ooratory: alysis:	0097 - SB-2 (10' Midland TPH DRO	')	Analytical		10d. 8015 B				N/.
Lab Ana QC	oratory:	Midland	")	Date Analy Sample Pre	zed: 2	fod. 8015B 008-08-11 008-08-11			ed By:	N/. LD LD
Lab Ana QC Prep	poratory: alysis: Batch: p Batch:	Midland TPH DRO 51308 44003		Date Analy Sample Pre RL	zed: 2	008-08-11 008-08-11		Analyz Prepar	ed By:	LD LD
Lab Ana QC Prep	ooratory: alysis: Batch: p Batch: ameter	Midland TPH DRO 51308		Date Analy Sample Pre	vzed: 2 eparation: 2	008-08-11		Analyz	ed By: 1 ed By: 1	LD LD R
Lab Ana QC Prep Para DRC	ooratory: alysis: Batch: p Batch: ameter O	Midland TPH DRO 51308 44003 Flag		Date Analy Sample Pre RL Result 157	vzed: 2 eparation: 2	008-08-11 008-08-11 Units mg/Kg	Spike	Analyz Prepar Dilution 1 Percent	ed By: 1 ed By: 1 Reco	LD LD R 50. ver
Lab Ana QC Prep Para	ooratory: alysis: Batch: p Batch: ameter	Midland TPH DRO 51308 44003		Date Analy Sample Pre RL Result	vzed: 2 eparation: 2	008-08-11 008-08-11 Units		Analyz Prepar Dilution	ed By: 1 ed By: 1	I I
Lab Ana QC Prep Para DR(Surr n-Tr San Labo	poratory: alysis: Batch: p Batch: ameter O rogate riacontane nple: 170 oratory:	Midland TPH DRO 51308 44003 Flag Flag 9097 - SB-2 (10') Midland	Result 92.2	Date Analy Sample Pre RL Result 157 Units mg/Kg	zzed: 2 eparation: 2 Dilutic 1	008-08-11 008-08-11 <u>Units</u> mg/Kg on An	Spike mount 100	Analyz Prepar Dilution 1 Percent Recovery 92	Recor Lim 10 - 2	LL LL R 50 ver
Lab Ana QC Prep Para DR(Surr n-Tr San Labo	poratory: alysis: Batch: p Batch: ameter O rogate riacontane	Midland TPH DRO 51308 44003 Flag Flag 9 9 9097 - SB-2 (10')	Result 92.2	Date Analy Sample Pre RL Result 157 Units mg/Kg Analytical N	vzed: 2 eparation: 2 Dilutic 1 Method: S	008-08-11 008-08-11 <u>Units</u> mg/Kg on An	mount	Analyz Prepar Dilution 1 Percent Recovery 92 Prep Met	ed By: ed By: Reco Lim 10 - 2	LD LD R 50 ver iits 250
Lab Ana QC Prep Para DR(Surr n-Tr San Labo Ana QC	ooratory: alysis: Batch: p Batch: ameter O rogate riacontane nple: 170 oratory: llysis: Batch:	Midland TPH DRO 51308 44003 Flag Flag 9097 - SB-2 (10') Midland TPH GRO	Result 92.2	Date Analy Sample Pre RL Result 157 Units mg/Kg	vzed: 2 eparation: 2 Dilutio 1 Method: S zed: 20	008-08-11 008-08-11 <u>Units</u> mg/Kg <u>Son An</u> 8015B	mount	Analyz Prepar Dilution 1 Percent Recovery 92	ed By: ed By: Reco Lim 10 - 2	LD LD R 50 ver iits 250 503
Lab Ana QC Prep Para DR(Surr n-Tr San Labo Ana QC Prep	poratory: alysis: Batch: p Batch: ameter O rogate riacontane nple: 170 oratory: lysis: Batch:	Midland TPH DRO 51308 44003 Flag Flag 9097 - SB-2 (10') Midland TPH GRO 51372	Result 92.2	Date Analy Sample Pre RL Result 157 Units mg/Kg Analytical M Date Analys	vzed: 2 eparation: 2 Dilutio 1 Method: S zed: 20	008-08-11 008-08-11 Units mg/Kg 50n An 8015B 008-08-12	mount 100	Analyz Prepar Dilution 1 Percent Recovery 92 Prep Met Analyzed	ed By: ed By: Reco Lim 10 - 2	LD LD R 50. ver its 250.

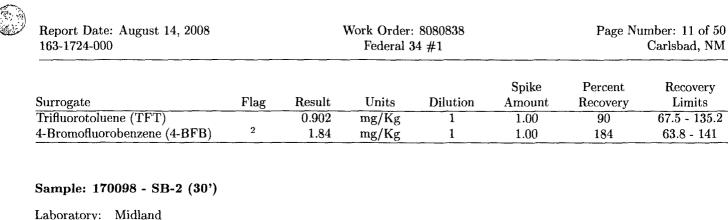
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¹High surrogate recovery due to peak interference.



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Anal QC E	ysis: BTEX Batch: 51371 Batch: 44030		Date Ana	l Method: lyzed: reparation:	S 8021B 2008-08-12 2008-08-11		Prep Met Analyzed Prepared	By: DC
-		-		.L				
	meter	Flag	Resu	lt	Units	II	Dilution	RL
Benz	ene		< 0.010	00	mg/Kg		1	0.0100
Tolue	ene		< 0.010)0	mg/Kg		1	0.0100
Ethyl	benzene		0.051	9	mg/Kg		1	0.0100
Xyler	1e		0.094	6	mg/Kg		1	0.0100
						Spike	Percent	Recovery
Surro	ogate	Fla	g Result	Units	Dilution	Amount	Recovery	Limits
Triflu	orotoluene (TFT))	0.743	mg/Kg	1.	1.00	74	68 - 136.9
2	mofluorobenzene		0.871	mg/Kg		1.00	87	48.2 - 155

Sample: 170098 - SB-2 (30')

Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (Titration) 51331	Analytical Method: Date Analyzed: Sample Preparation	2008-08-11	Prep Method: Analyzed By: Prepared By:	AG
Donomotor	Elec	RL Basult	T. : ta	Dilution	DI
Parameter	Flag	Result	Units	Dilution	RL
Chloride		<100	mg/Kg	50	2.00

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Sample: 170098 - SB-2 (30')

Laboratory:	Midland					
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B		Prep Method:	N/A
QC Batch:	51308	Date Analyzed:	2008-08-11		Analyzed By:	LD
Prep Batch:	44003	Sample Preparation:	2008-08-11	•	Prepared By:	LD

²High surrogate recovery due to peak interference.



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Parameter	Fla	g	RL Result	Uni	its	Dilution	RL
DRO		°	144	mg/ł		1	50.0
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	0	99.8	mg/Kg	1	100	100	10 - 250.4

Sample: 170098 - SB-2 (30')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 51372 44030		Date Ana	l Method: lyzed: reparation:	S 8015B 2008-08-12 2008-08-11		Prep Me Analyze Prepare	d By: DC
			\mathbf{RL}					
Parameter	Flag		Result		Units		Dilution	\mathbf{RL}
GRO			72.7		mg/Kg		1	1.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolue	ene (TFT)		0.875	mg/Kg	1	1.00	88	67.5 - 135.2
4-Bromofluor	obenzene (4-BFB)		0.956	mg/Kg	1	1.00	96	63.8 - 141

Sample: 170099 - SB-3 (5')

Laboratory:MidlandAnalysis:BTEXQC Batch:51371Prep Batch:44030		Analytical Date Analy Sample Pre	vzed:	S 8021B 2008-08-12 2008-08-11		Prep Meth Analyzed Prepared 1	By: DC
		RL					
Parameter Flag		Result	,	Units	Di	ilution	\mathbf{RL}
Benzene		0.0317		mg/Kg		2	0.0100
Toluene		< 0.0200)	mg/Kg		2	0.0100
Ethylbenzene		2.23	i	mg/Kg		2	0.0100
Xylene		9.44		mg/Kg	<u> </u>	2	0.0100
					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		1.56	mg/Kg	2	2.00	78	68 - 136.9
4-Bromofluorobenzene (4-BFB)	3	3.60	Mg/Kg	2	2.00	180	48.2 - 155

³High surrogate recovery due to peak interference.

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163 -1724-000	Federal 34 #1	Carlsbad, NM

Sample: 170099 - SB-3 (5')

Laboratory:	Midland	,			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	51331	Date Analyzed:	2008-08-11	Analyzed By:	AG
Prep Batch:	44022	Sample Preparation	: 2008-08-11	Prepared By:	AG
		\mathbf{RL}	\$		
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		133	mg/Kg	50	2.00

Sample: 170099 - SB-3 (5')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO 51308 44003		Analytical M Date Analyze Sample Prepa	ed: 2008-0	-	Analyz	Method: N/A zed By: LD red By: LD
Parameter	I	Flag	RL Result	· · · · · · · · · · · · · · · · · · ·	its	Dilution	RL
DRO			83.0	mg/	Kg	1	50.0
Surrogate n-Triacontane	Flag	Result	Units mg/Kg	Dilution 1	Spike Amount 100	Percent Recovery	Recovery Limits 10 - 250.4

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Sample: 170099 - SB-3 (5')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 51372 44030		Date Ana	l Method: lyzed: reparation:	S 8015B 2008-08-12 2008-08-11		Prep Me Analyze Preparec	d By: DC
			\mathbf{RL}					
Parameter	Flag		\mathbf{Result}		Units		Dilution	\mathbf{RL}
GRO			1220		mg/Kg		2	1.00
						Spike	Percent	Recovery
Surrogate		Flag	\mathbf{Result}	\mathbf{Units}	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)		1.81	mg/Kg	2	2.00	90	67.5 - 135.2
4-Bromofluor	obenzene (4-BFB)	4	4.24	mg/Kg	2	2.00	212	63.8 - 141

⁴High surrogate recovery due to peak interference.

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Report Date: August 14, 2008	Work Order: 8080838	Page Number: 14 of 50
163-1724-000	Federal 34 #1	Carlsbad, NM

Sample: 170100 - SB-3 (10')

	Midland							
Analysis: I	BTEX		Analytical	Method:	S 8021B		Prep Metl	hod: S 5035
QC Batch: 5	51371		Date Analy	zed:	2008-08-12		Analyzed	By: DC
Prep Batch: 4	4403 0		Sample Pre	paration:	2008-08-11		Prepared	By: DC
			RL					
Parameter	Flag		\mathbf{Result}	,	Units	D	ilution	\mathbf{RL}
Benzene			< 0.0100		mg/Kg		1	0.0100
Toluene			< 0.0100)	mg/Kg		1	0.0100
Ethylbenzene			0.143		mg/Kg	,	1	0.0100
Xylene			0.484		mg/Kg		1	0.0100
						Spike	Percent	Recovery
Surrogate		Flag	\mathbf{Result}	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluen	e (TFT)		0.788	mg/Kg	1	1.00	79	68 - 136.9
4-Bromofluorob	penzene (4-BFB)		1.04	mg/Kg	1	1.00	104	48.2 - 155

Sample: 170100 - SB-3 (10')

	Parameter	Flag	RL Bosult	Unite	Dilution	рт	
	Prep Batch:	44022	Sample Preparation:	2008-08-11	Prepared By:	AG	
	QC Batch:	51331	Date Analyzed:	2008-08-11	Analyzed By:	AG	
J	Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A	
3	Laboratory: Analysis:	Midland					

1 arameter	riag	nesuti	Units	DIIULIOII	nL
Chloride		142	mg/Kg	50	2.00

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Sample: 170100 - SB-3 (10')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO 51308 44003		Analytical M Date Analyze Sample Prepa	ed: 2008-	8015B 08-11 08-11	Analyz	Method: N/A zed By: LD zed By: LD
Parameter	Fla	r 	RL Result	U	nits	Dilution	RL
DRO			118	mg/	/Kg	1	50.0
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	e	87.8	mg/Kg	1	100	88	10 - 250.4

	Report Date 163-1724-000	: August 14, 2008			Work Orde Federal	er: 8080838 34 #1		Page Nu	mber: 15 of 5 Carlsbad, NI
	Sample: 17	0100 - SB-3 (10	')						
	Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 51372 44030		Date Ana	al Method: alyzed: Preparation	2008-08-12		Prep Me Analyzed Prepared	l By: DC
	r rep Baten.	11000		oumpie i	reparation	. 2000 00 11		rieparee	н <i>ы</i> ј. во
				RL					
	Parameter	Flag		Result		Units		Dilution	RI
	GRO			146		mg/Kg		1	1.0
	Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
	Trifluorotolue	ene (TFT)		0.930	mg/Kg	1	1.00	93	67.5 - 135.
		obenzene (4-BFB)		1.31	mg/Kg	1	1.00	131	63.8 - 141
	Semenles 17()101 - SB-3 (20	•						×
i	sample: 17	JIUI - 3D-3 (20)						
]	Laboratory:	Midland							
	Analysis:	BTEX		Analytical		S 8021B		Prep Met	
	QC Batch:	51371		Date Analy		2008-08-12		Analyzed	•
) I	Prep Batch:	44030		Sample Pre	eparation:	2008-08-11		Prepared	By: DC
ar'				RL	,				
I	Parameter	Fla	g	Result		Units	D	ilution	RL
Ī	Benzene		<u> </u>	< 0.0100)	mg/Kg	···	1	0.0100
r	Foluene			< 0.0100)	mg/Kg	,	1	0.0100
I	Ethylbenzene			0.0289)	mg/Kg		1	0.0100
2	Kylene			0.0517	, 	mg/Kg		11	0.0100
							Spike	Percent	Recovery
S	lurrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
	rifluorotolue	ne (TFT)		0.792	mg/Kg	1	1.00	79	68 - 136.9
		benzene (4-BFB)		0.863		1	1.00	86	48.2 - 155
4	-Bromofluoro)		mg/Kg				
	-	```	,						
	•	Midland	\	A 1 .					
		Chloride (Titratio) n)		tical Metho			Prep M	
	•	51338 44022			Analyzed: e Preparat	2008-08-1 ion: 2008-08-1		Analyze Prepare	
T	rep Daten.	44022		Sample	e i tepatat	1011, 2000-00-1	L	i iepaie	a by. Ao
				\mathbf{RL}					
				nL					
F	arameter	Flag		Result		Units	Ľ	Dilution	RL

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Report Da 163-1724-0	te: August 14, 2	2008	V	Vork Orde Federal	er: 8080838 34 #1		Page Nu	umber: 16 of 5 Carlsbad, Ni
Sample: 1	70101 - SB-3	(20')						
Laboratory	: Midland TPH DRO		A	1 3 4 - (1 1	M 1 001	~ D		
Analysis: QC Batch:	51308		Analytical Date Anal		Mod. 801 2008-08-1			Method: N/A zed By: LD
Prep Batch			Sample Pr					zed By: LD red By: LD
			RL					
Parameter	I	Flag	\mathbf{Result}		Units		Dilution	RI
DRO		· · · · · · · · · · · · · · · · · · ·	68.5		mg/Kg		1	50.
Sumorato	Flow	Dogult	Units	D:	1	Spike	Percent	Recovery
$\frac{Surrogate}{n-Triaconta}$	Flag	Result 109	mg/Kg		lution 1	Amount 100	Recovery 109	Limits 10 - 250.4
	70101 - SB-3 ((=0)						
Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 51372	(Analytical Date Analy Sample Pr	yzed:	S 8015B 2008-08-12 2008-08-11		Prep Me Analyzec Preparec	ł By: DC
Analysis: QC Batch: Prep Batch:	Midland TPH GRO 51372 : 44030		Date Anal Sample Pr RL	yzed:	2008-08-12 2008-08-11		Analyzed Prepared	H By: DC H By: DC
Analysis: QC Batch: Prep Batch: Parameter	Midland TPH GRO 51372 : 44030	lag	Date Analy Sample Pr RL Result	yzed:	2008-08-12 2008-08-11 Units		Analyzed Prepared Dilution	l By: DC l By: DC RI
Analysis: QC Batch: Prep Batch:	Midland TPH GRO 51372 : 44030		Date Anal Sample Pr RL	yzed:	2008-08-12 2008-08-11		Analyzed Prepared	H By: DC H By: DC
Analysis: QC Batch: Prep Batch: Parameter GRO Surrogate	Midland TPH GRO 51372 44030 F		Date Analy Sample Pro- RL Result 34.5 Result	yzed:	2008-08-12 2008-08-11 Units		Analyzed Prepared Dilution 1	i By: DC i By: DC RI 1.00 Recovery Limits
Analysis: QC Batch: Prep Batch: Parameter GRO Surrogate Trifluorotolu	: Midland TPH GRO 51372 : 44030 F uene (TFT)	Flag	Date Analy Sample Pro- RL Result 34.5 Result 0.932	yzed: eparation: Units mg/Kg	2008-08-12 2008-08-11 Units mg/Kg	Spike Amount 1.00	Analyzed Prepared Dilution 1 Percent Recovery 93	l By: DC l By: DC Rl 1.00 Recovery Limits 67.5 - 135.
Analysis: QC Batch: Prep Batch: Parameter GRO Surrogate Trifluorotolu	Midland TPH GRO 51372 44030 F	Flag	Date Analy Sample Pro- RL Result 34.5 Result	yzed: eparation: Units	2008-08-12 2008-08-11 Units mg/Kg Dilution	Spike Amount	Analyzed Prepared Dilution 1 Percent Recovery	H By: DC H By: DC RU 1.0 Recovery Limits 67.5 - 135.
Analysis: QC Batch: Prep Batch: Parameter GRO Surrogate Trifluorotolu 4-Bromofluc	: Midland TPH GRO 51372 : 44030 F uene (TFT)	Flag Flag FB)	Date Analy Sample Pro- RL Result 34.5 Result 0.932	yzed: eparation: Units mg/Kg	2008-08-12 2008-08-11 Units mg/Kg Dilution 1	Spike Amount 1.00	Analyzed Prepared Dilution 1 Percent Recovery 93	l By: DC l By: DC Rl 1.0 Recovery Limits 67.5 - 135.
Analysis: QC Batch: Prep Batch: Parameter GRO Surrogate Trifluorotolu 4-Bromofluc Sample: 17 Laboratory:	Midland TPH GRO 51372 44030 F Jene (TFT) probenzene (4-BI 70102 - SB-4 (Midland	Flag Flag FB)	Date Analy Sample Pro- RL Result 34.5 Result 0.932 0.947	yzed: eparation: Units mg/Kg mg/Kg	2008-08-12 2008-08-11 Units mg/Kg Dilution 1 1	Spike Amount 1.00	Analyzed Prepared Dilution 1 Percent Recovery 93 95	H By: DC H By: DC RI 1.00 Recovery Limits 67.5 - 135. 63.8 - 141
Analysis: QC Batch: Prep Batch: Parameter GRO Surrogate Trifluorotolu 4-Bromofluc Sample: 12 Laboratory: Analysis:	Midland TPH GRO 51372 44030 F uene (TFT) probenzene (4-BI 70102 - SB-4 (Midland BTEX	Flag Flag FB)	Date Analy Sample Pro- RL Result 34.5 Result 0.932 0.947 Analytical M	yzed: eparation: Units mg/Kg mg/Kg	2008-08-12 2008-08-11 Units mg/Kg Dilution 1 1 S 8021B	Spike Amount 1.00	Analyzed Prepared Dilution 1 Percent Recovery 93 95 Prep Met	H By: DC H By: DC RI 1.00 Recovery Limits 67.5 - 135. . 63.8 - 141
Analysis: QC Batch: Prep Batch: Parameter GRO Surrogate Trifluorotolu 4-Bromofluc Sample: 17 Laboratory: Analysis: QC Batch:	Midland TPH GRO 51372 44030 F uene (TFT) probenzene (4-BI 70102 - SB-4 (Midland BTEX 51371	Flag Flag FB)	Date Analy Sample Pro- RL Result 34.5 Result 0.932 0.947 Analytical M Date Analyz	yzed: eparation: <u>Units</u> mg/Kg mg/Kg Mg/Kg	2008-08-12 2008-08-11 Units mg/Kg Dilution 1 1 5 8021B 2008-08-12	Spike Amount 1.00	Analyzed Prepared Dilution 1 Percent Recovery 93 95 Prep Met Analyzed	H By: DC H By: DC RI 1.00 Recovery Limits 67.5 - 135.3 63.8 - 141 thod: S 5038 H By: DC
Analysis: QC Batch: Prep Batch: Parameter GRO Surrogate Trifluorotolu 4-Bromofluc Sample: 12 Laboratory: Analysis:	Midland TPH GRO 51372 44030 F uene (TFT) probenzene (4-BI 70102 - SB-4 (Midland BTEX 51371	Flag Flag FB)	Date Analy Sample Pro- RL Result 34.5 Result 0.932 0.947 Analytical M	yzed: eparation: <u>Units</u> mg/Kg mg/Kg Mg/Kg	2008-08-12 2008-08-11 Units mg/Kg Dilution 1 1 S 8021B	Spike Amount 1.00	Analyzed Prepared Dilution 1 Percent Recovery 93 95 Prep Met	H By: DC H By: DC RI 1.00 Recovery Limits 67.5 - 135.3 63.8 - 141 thod: S 5038 H By: DC

Parameter	Flag	\mathbf{Result}	Units	Dilution	\mathbf{RL}
Benzene		< 0.0100	mg/Kg	1	0.0100
Toluene		< 0.0100	mg/Kg	1	0.0100
Ethylbenzene		0.0406	mg/Kg	1	0.0100
Xylene		0.169	mg/Kg	1	0.0100

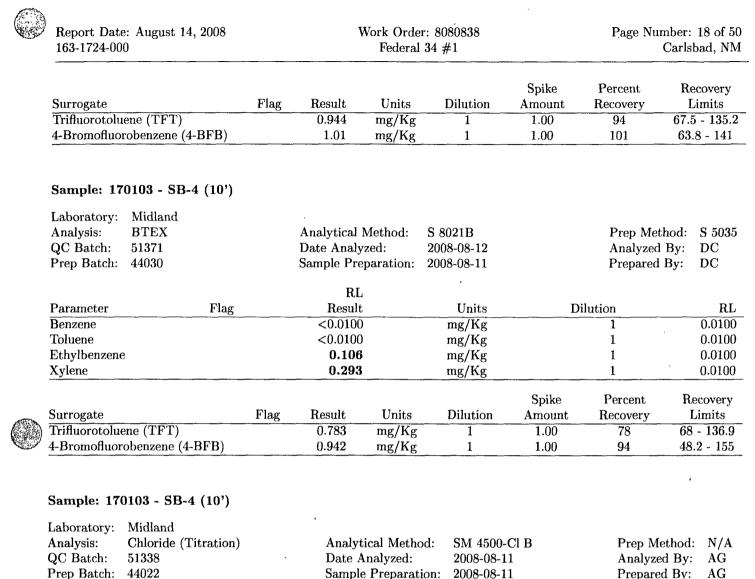
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Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery		cover mits
Trifluorotolu	iene (TFT) robenzene (4-BFB)		$\begin{array}{r} 0.804 \\ 0.882 \end{array}$	mg/Kg	1	1.00	80		· 136. 2 - 15
<u>4-Bromonuo</u>	Tobenzene (4-Dr D)		0.882	mg/Kg	11	1.00	88	40.2	s - 10
Sample: 17	70102 - SB-4 (5'-(3')							
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titratio 51 33 8 44022	on)	Date A	ical Method: nalyzed: Preparation:	SM 4500-0 2008-08-1 2008-08-1	1	Prep M Analyze Prepare	ed By:	N/ AG AG
L.			RL	1					
Parameter	Flag		Result		Units		Dilution		R
Chloride			282		mg/Kg		50		2.0
QC Batch: Prep Batch:	51308 44003		Date Analy Sample Pre)08-08-11)08-08-11°		Analyze Prepare		LD LD
			RL Result						
Parameter			Rogult				Dilution		
DRO	Flag			······································	Units mg/Kg	······································	······································		<u>R</u>
DRO	Flag		124		mg/Kg		1		50.
	· · · · · · · · · · · · · · · · · · ·	Posult	124		mg/Kg SI	oike	1 Percent	Rece	50. over
DRO Surrogate n-Triacontane	Flag	Result 104	124 Units	Dilutio 1	mg/Kg Si n Am	oike Iount	1 Percent Recovery	Lir	50 over nits
Surrogate	Flag		124	Dilutio	mg/Kg Si n Am	oike	1 Percent		50 over nits
Surrogate n-Triacontane	Flag	104	124 Units	Dilutio	mg/Kg Si n Am	oike Iount	1 Percent Recovery	Lir	50. over nits
Surrogate n-Triacontane Sample: 17(Laboratory: Analysis:	Flag 9 0102 - SB-4 (5'-6 Midland TPH GRO	104	124 Units mg/Kg Analytical	Dilutio 1 Method: S	mg/Kg Sp n Am 1 8015B	oike Iount	1 Percent Recovery 104 Prep Meth	Lir 10 -	50. over nits 250.
Surrogate n-Triacontane Sample: 17(Laboratory:	Flag e 0102 - SB-4 (5'-6 Midland	104	124 Units mg/Kg	Dilutio 1 Method: S a zed: 20	mg/Kg n Am 1	oike Iount	1 Percent Recovery 104	Lir 10 - aod: S By: D	50. over nits 250.
Surrogate n-Triacontand Sample: 17(Laboratory: Analysis: QC Batch:	Flag e 0102 - SB-4 (5'-6 Midland TPH GRO 51372	104	124 Units mg/Kg Analytical Date Analy	Dilutio 1 Method: S a zed: 20	mg/Kg n Am 1 8015B 08-08-12	pike iount 00	1 Percent Recovery 104 Prep Meth Analyzed 1	Lir 10 - aod: S By: D	50. over: nits 250. 503 oC

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		\mathbf{RL}			
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		162	mg/Kg	50	2.00

Sample: 170103 - SB-4 (10')

Laboratory: Midland

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	51308	Date Analyzed:	2008-08-11	Analyzed By:	LD
Prep Batch:	44003	Sample Preparation:	2008-08-11	Prepared By:	LD



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Parameter	Fla	σ	RL . Result	Uni	ts	Dilution	RL
DRO	r tag		212	mg/I		1	50.0
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		93.4	mg/Kg	1	100	93	10 - 250.4

Sample: 170103 - SB-4 (10')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 51372 44030		Date Ana	l Method: lyzed: reparation:	S 8015B 2008-08-12 2008-08-11		Prep Me Analyze Prepare	d By: DC
			\mathbf{RL}					
Parameter	Flag	Ś	\mathbf{Result}		Units		Dilution	\mathbf{RL}
GRO			75.9		mg/Kg		1	1.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolue 4-Bromofluor	ene (TFT) obenzene (4-BFB))	0.949 1.14	mg/Kg mg/Kg	.1 1	1.00	95 114	67.5 - 135.2 63.8 - 141

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Sample: 170104 - SB-4 (25')

Laboratory: Midland Analysis: BTEX QC Batch: 51371 Prep Batch: 44030			Analytical I Date Analy Sample Pre	zed:	S 8021B 2008-08-12 2008-08-11		Prep Metl Analyzed Prepared	By: DC
			\mathbf{RL}					
Parameter	Flag		Result		Units	Di	ilution	\mathbf{RL}
Benzene			< 0.0100		mg/Kg		1	0.0100
Toluene			< 0.0100		mg/Kg		1	0.0100
Ethylbenzene			0.0128		mg/Kg		1	0.0100
Xylene		·	0.0254		mg/Kg		1	0.0100
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			0.835	mg/Kg	1 ,	1.00	84	68 - 136.9
4-Bromofluorobenzene (4-1	BFB)		0.864	mg/Kg	11	1.00	86	48.2 - 155

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Ş,	Report Date: August 14, 2008 163-1724-000		Work Order Federal :	Page Number: 20 of 50 Carlsbad, NM		
	Sample: 17	0104 - SB-4 (25')				
	Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 51338 44022	Analytical Metho Date Analyzed: Sample Preparati	2008-08-11	Prep Method: Analyzed By: Prepared By:	N/A AG AG
	Denomator	Flor	RL Bogult	TT.:: 4 -		DI
	Parameter Chloride	Flag	Result <100	Units mg/Kg	Dilution 50	RL 2.00
	Sample: 17 Laboratory: Analysis: QC Batch: Prep Batch:	0104 - SB-4 (25') Midland TPH DRO 51308 44003	Analytical Method: Date Analyzed: Sample Preparation:	Mod. 8015B 2008-08-11 2008-08-11	Prep Method: Analyzed By: Prepared By:	N/A LD LD

			RL				
Parameter	Fla	g	\mathbf{Result}	Uni	ts	Dilution	\mathbf{RL}
DRO			<50.0	mg/ł	Кg	1	50.0
)					Spike	Percent	Recovery
Surrogate	Flag	\mathbf{Result}	Units	Dilution	Amount	Recovery	Limits
n-Triacontane		121	mg/Kg	1	100	121	10 - 250.4

Sample: 170104 - SB-4 (25')

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Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 51372 44030		Date Ana	l Method: lyzed: reparation:	S 8015B 2008-08-12 2008-08-11		Prep Me Analyze Prepare	d By: DC
			\mathbf{RL}					
Parameter	Flag		Result		Units		Dilution	\mathbf{RL}
GRO			15.8		mg/Kg		1	1.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolue	ene (TFT)		0.980	mg/Kg	1	1.00	98	67.5 - 135.2
4-Bromofluor	obenzene (4-BFB)		0.995	mg/Kg	1	1.00	100	63.8 - 141



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Sample: 170105 - SB-5 (7')

Laboratory:MidlandAnalysis:BTEXQC Batch:51371Prep Batch:44030			Analytical Date Analy Sample Pre	zed:	S 8021B 2008-08-12 2008-08-11		Prep Met Analyzed Prepared	By: DC
			RL	4				
Parameter	Flag		Result	;	Units	Di	ilution	\mathbf{RL}
Benzene			< 0.0100)	mg/Kg		1	0.0100
Toluene			< 0.0100	ł	mg/Kg		1	0.0100
Ethylbenzene			< 0.0100)	mg/Kg		1	0.0100
Xylene			< 0.0100		mg/Kg		1	0.0100
					Ţ	Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			0.806	mg/Kg	1	1.00	81	68 - 136.9
4-Bromofluorobenzene (4-	BFB)		0.808	mg/Kg	1	1.00	81	48.2 - 155

Sample: 170105 - SB-5 (7')

Chloride		<100	mg/Kg	50	2.00
Parameter	Flag	RL Result	Units	Dilution	RL
Prep Batch:	44022	Sample Preparation	n: 2008-08-11	Prepared By:	AG
QC Batch:	51338	Date Analyzed:	2008-08-11	Analyzed By:	
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland			•	

Sample: 170105 - SB-5 (7')

n-Triacontane	e	124	mg/Kg	1	100	124	10 - 250.4
Surrogate ,	Flag	Result	Units	Dilution	Amount	Recovery	Limits
					Spike	Percent	Recovery
DRO			<50.0	mg/	Kg	1	50.0
Parameter	Flag	5	RL Result	Ur	its	Dilution	\mathbf{RL}
,			DI				
Prep Batch:	44003		Sample Prepa	aration: 2008-0)8-11	Prepar	ed By: LD
QC Batch:	51308		Date Analyze	ed: 2008-0	08-11	Analyz	ed By: LD
Laboratory: Analysis:	Midland TPH DRO		Analytical M	ethod: Mod.	8015B	Prep' M	lethod: N/A

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Sample: 17	0105 - SB-5 (7')									
Laboratory:	Midland									
Analysis:	TPH GRO		Analytical		S 8015B		Prep Me			
QC Batch:	51372		Date Anal		2008-08-12		Analyzed			
Prep Batch:	44030		Sample Pr	reparation	2008-08-11		Prepared	By: DC		
			\mathbf{RL}							
Parameter	Flag		\mathbf{Result}		Units		Dilution	RL		
GRO	В		4.72		mg/Kg		1	. 1.00		
						Spike	Percent	Recovery		
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits		
Trifluorotolue	ene (TFT)		0.948	mg/Kg	1	1.00	95	67.5 - 135.2		
	obenzene (4-BFB)		0.907	mg/Kg	1	1.00	91	63.8 - 141		
Analysis: QC Batch: Prep Batch:	BTEX 51371 44030		Analytical M Date Analyz Sample Prep RL	zed:	S 8021B 2008-08-12 2008-08-11		Prep Met Analyzed Prepared	By: DC By: DC		
Parameter	Flag	<u> </u>	Result		Units	D	lution	RL		
Benzene			<0.0100		mg/Kg		1	0.0100		
Toluene Ethylbenzene			<0.0100 <0.0100		mg/Kg		1	0.0100 0.0100		
Xylene			< 0.0100		mg/Kg mg/Kg		1 1	0.0100		
							· · ·			
~ ,		DI		** •/	D11	Spike	Percent	Recovery		
Surrogate Trifluorotolue		Flag	Result 0.842	Units	Dilution	Amount	Recovery 84	Limits 68 - 136.9		
	benzene (4-BFB)		0.842	mg/Kg mg/Kg	1	1.00 1.00	84 82	48.2 - 150.9		
<u></u>	106 - SB-5 (20')					1.00	1	, ,		
Laboratory:	Midland									
v	Chloride (Titration))	Analyti	ical Metho	d: SM 4500-	Cl B	Prep M	ethod: N/A		
QC Batch:	51338		Date A	nalyzed:	2008-08-1		Analyze	ed By: AG		
Prep Batch:	44022		Sample	Preparati	on: 2008-08-1	1	Prepare	ed By: AG		
			\mathbf{RL}							
Parameter	Flag		Result		Units	Ι	Dilution	\mathbf{RL}		

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Sample: 17	70106 - SB-5	5 (20')							
Laboratory: Analysis: QC Batch: Prep Batch:	TPH DRO 51308			Date Ana	al Method: alyzed: Preparation	2008-08-11	1	Analy	Method: N/. yzed By: LD ared By: LD
Danamatan		Flow		. RL Result		T		Dilution	D
Parameter DRO		Flag		<50.0		Units mg/Kg		Dilution 1	$\frac{\mathbf{R}}{50}$
<u></u>						mg/ Kg		<u>, , , , , , , , , , , , , , , , , , , </u>	
Surrogate	Flag	R	esult	Units	D	ilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontan			81.6	mg/Kg		1	100	82	10 - 250.
Prep Batch:	44030			Sample P	reparation	: 2008-08-11		Prepare	d By: DC
Prep Batch: Parameter		Flag		RL	reparation			Prepare	-
Parameter		Flag B		-	reparation	: 2008-08-11 Units mg/Kg		Prepare Dilution	d By: DC <u> RI</u> . 1.00
Parameter GRO		В	Flag	${f RL}$	Units	Units	Spike Amount	Dilution 1 Percent	RI
Parameter GRO Surrogate Trifluorotolue	ene (TFT)	В	Flag	RL Result 3.95 Result 0.985	Units mg/Kg	Units mg/Kg	Spike Amount 1.00	Dilution 1	RI 1.00 Recovery Limits 67.5 - 135.2
Parameter GRO Surrogate Trifluorotolue		В	Flag	RL Result 3.95 Result	Units	Units mg/Kg Dilution	Spike Amount	Dilution 1 Percent Recovery	RI 1.00 Recovery Limits
Parameter GRO Surrogate Trifluorotoluo 4-Bromofluor	ene (TFT)	B BFB)	Flag	RL Result 3.95 Result 0.985	Units mg/Kg	Units mg/Kg Dilution 1	Spike Amount 1.00	Dilution 1 Percent Recovery 98	RI 1.00 Recovery Limits 67.5 - 135.2
Parameter GRO Surrogate Trifluorotoluo 4-Bromofluor Sample: 17 Laboratory:	ene (TFT) robenzene (4-I 0107 - SB-6 Midland	B BFB)	Flag	RL Result 3.95 Result 0.985 0.909	Units mg/Kg mg/Kg	Units mg/Kg Dilution 1 1	Spike Amount 1.00	Dilution 1 Percent Recovery 98 91	RI 1.00 Recovery Limits 67.5 - 135.2 63.8 - 141
Parameter GRO Surrogate Trifluorotoluo 4-Bromofluor Sample: 17 Laboratory: Analysis:	ene (TFT) robenzene (4-E 0107 - SB-6 Midland BTEX	B BFB)	Flag	RL Result 3.95 Result 0.985 0.909	Units mg/Kg mg/Kg Method:	Units mg/Kg Dilution 1 1 S 8021B	Spike Amount 1.00	Dilution 1 Percent Recovery 98 91 91	RI 1.00 Recovery Limits 67.5 - 135.2 63.8 - 141 ethod: S 5035
Parameter GRO Surrogate Trifluorotolue 4-Bromofluor Sample: 170 Laboratory: Analysis: QC Batch:	ene (TFT) robenzene (4-I 0107 - SB-6 Midland	B BFB)	Flag	RL Result 3.95 Result 0.985 0.909	Units mg/Kg mg/Kg Method: rzed:	Units mg/Kg Dilution 1 1	Spike Amount 1.00	Dilution 1 Percent Recovery 98 91	RI 1.00 Recovery Limits 67.5 - 135.2 63.8 - 141 ethod: S 5038 d By: DC
Parameter GRO Surrogate Trifluorotolue 4-Bromofluor Sample: 17 Laboratory: Analysis: QC Batch: Prep Batch:	ene (TFT) robenzene (4-E 0107 - SB-6 Midland BTEX 51371	B 3FB) (6')	Flag	RL Result 3.95 Result 0.985 0.909 Analytical Date Analy Sample Pre RL	Units mg/Kg mg/Kg Method: zed: paration:	Units mg/Kg Dilution 1 1 S 8021B 2008-08-12 2008-08-11	Spike Amount 1.00	Dilution 1 Percent Recovery 98 91 Prep Me Analyze Prepared	RI 1.00 Recovery Limits 67.5 - 135.2 63.8 - 141 63.8 - 141 ethod: S 5032 d By: DC d By: DC
Parameter GRO Surrogate Trifluorotolue 4-Bromofluor Sample: 170 Laboratory: Analysis: QC Batch: Prep Batch: Prep Batch: Parameter	ene (TFT) robenzene (4-E 0107 - SB-6 Midland BTEX 51371	B BFB)	Flag	RL Result 3.95 Result 0.985 0.909 Analytical Date Analy Sample Pre RL Result	Units mg/Kg mg/Kg Method: zed: paration:	Units mg/Kg Dilution 1 1 S 8021B 2008-08-12 2008-08-11 Units	Spike Amount 1.00	Dilution 1 Percent Recovery 98 91 Prep Me Analyzer Prepared Dilution	RI 1.00 Recovery Limits 67.5 - 135.2 63.8 - 141 ethod: S 5038 d By: DC d By: DC d By: DC
Parameter GRO Surrogate Trifluorotolue 4-Bromofluor Sample: 170 Laboratory: Analysis: QC Batch: Prep Batch: Prep Batch: Parameter Benzene	ene (TFT) robenzene (4-E 0107 - SB-6 Midland BTEX 51371	B 3FB) (6')	Flag	RL Result 3.95 Result 0.985 0.909 Analytical Date Analy Sample Pre RL Result <0.0100	Units mg/Kg mg/Kg Method: zed: paration:	Units mg/Kg Dilution 1 1 S 8021B 2008-08-12 2008-08-12 2008-08-11 Units mg/Kg	Spike Amount 1.00	Dilution 1 Percent Recovery 98 91 Prep Me Analyzer Prepared Dilution 1	RI 1.00 Recovery Limits 67.5 - 135.2 63.8 - 141 ethod: S 5038 d By: DC d By: DC d By: DC d By: DC RI 0.0100
Parameter GRO Surrogate Trifluorotoluo 4-Bromofluor	ene (TFT) robenzene (4-E 0107 - SB-6 Midland BTEX 51371 44030	B 3FB) (6')	Flag	RL Result 3.95 Result 0.985 0.909 Analytical Date Analy Sample Pre RL Result	Units mg/Kg mg/Kg Method: rzed: paration:	Units mg/Kg Dilution 1 1 S 8021B 2008-08-12 2008-08-11 Units	Spike Amount 1.00	Dilution 1 Percent Recovery 98 91 Prep Me Analyzer Prepared Dilution	RI 1.00 Recovery Limits 67.5 - 135.2 63.8 - 141 ethod: S 5038 d By: DC d By: DC d By: DC

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mg/Kg

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1.00

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48.2 - 155

0.888

Sample:	170107 -	SB-6	(6')
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4-Bromofluorobenzene (4-BFB)

Chloride		282	mg/Kg	50	2.00
Parameter	Flag	RL Result	Units	Dilution	\mathbf{RL}
Prep Batch:	44022	Sample Preparation	n: 2008-08-11	Prepared By:	AG
QC Batch:	51338	Date Analyzed:	2008-08-11	Analyzed By:	AG
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland				

Sample: 170107 - SB-6 (6')

n-Triacontane	9		107	mg/Kg	1		100	107	10 - 250.4
Surrogate	Flag	Re	esult	Units	Dilu	tion	Spike Amount	Percent Recovery	Recovery Limits
DRO				71.8		mg/K	g	1	50.0
Parameter		Flag		RL Result		Unit		Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO 51308 44003		æ	Analytical Me Date Analyze Sample Prepa	d:	Mod. 8 2008-08 2008-08	-11	Analyz	Method: N/A ed By: LD ed By: LD

Sample: 170107 - SB-6 (6')

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Laboratory: Analysis: QC Batch: Prep Batch:	TPH GRO 51372	Analytical Method: Date Analyzed: Sample Preparation:	S 8015B 2008-08-12 2008-08-11	Prep Method: Analyzed By: Prepared By:	DC
Parameter	Flag	RL Result	Units	Dilution	RL
GRO	r lag	24.3	mg/Kg	1	1.00



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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluene (TFT)	,	0.990	mg/Kg	1	1.00	99	67.5 - 135.2	
4-Bromofluorobenzene (4-BFB)		1.02	mg/Kg	1	1.00	102	63.8 - 141	

Sample: 170108 - SB-6 (10')

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Laboratory: Midland Analysis: BTEX QC Batch: 51371 Prep Batch: 44030			Analytical Date Analy Sample Pre	zed:	S 8021B 2008-08-12 2008-08-11	v	Prep Meth Analyzed Prepared 1	By: DC
			RL					
Parameter	Flag		Result		Units	D	ilution	\mathbf{RL}
Benzene			< 0.0100)	mg/Kg		1	0.0100
Toluene			<0.0100		mg/Kg		1	0.0100
Ethylbenzene			< 0.0100		mg/Kg		1	0.0100
Xylene			< 0.0100		mg/Kg		1	0.0100
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			0.808	mg/Kg	1	1.00	81	68 - 136.9
4-Bromofluorobenzene (4	-BFB)		0.853	mg/Kg	1	1.00	85	48.2 - 155

Sample: 170108 - SB-6 (10')

Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (Titration) 51338	Analytical Method Date Analyzed: Sample Preparation	2008-08-11	Prep Method: Analyzed By: Prepared By:	AG
	• •	\mathbf{RL}		-	
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		167	mg/Kg	50	2.00

Sample: 170108 - SB-6 (10')

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Laboratory:	Midland			,	
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	51308	Date Analyzed:	2008-08-11	Analyzed By:	LD
Prep Batch:	44003	Sample Preparation:	2008-08-11	Prepared By:	$\mathbf{L}\mathbf{D}$



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	Parameter	Flag		${f RL} {f Result}$		Units		Dilution	RL
	DRO	1 1105		<50.0		mg/Kg		1	50.0
	Surrogate	Flag	Result	Units	Di	lution	Spike Amount	Percent Recovery	Recovery Limits
	n-Triacontan	<u>e</u>	86.8	mg/Kg		1	100	87	10 - 250.4
	Sample: 17	0108 - SB-6 (10')						~	
	Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 51372 44030		Analytical Date Analy Sample Pre	yzed:	S 8015B 2008-08-12 2008-08-11		Prep Me Analyze Prepare	d By: DC
	Parameter	Flag		RL Result		Units		Dilution	RL
	GRO	В		7.28		mg/Kg		1	1.00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
	Trifluorotolue 4-Bromofluor	ene (TFT) obenzene (4-BFB)		0.941 0.981	mg/Kg mg/Kg	1	1.00 1.00	94 98	67.5 - 135.2 63.8 - 141
	Sample: 17(	)109 - SB-7 (5')							
	Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 51371 44030		Analytical M Date Analyz Sample Prep	ed:	S 8021B 2008-08-12 2008-08-11		Prep Me Analyzec Preparec	i By: DC
	Parameter	Flag		RL Result		Units		Dilution	RL
	Benzene	10g		<0.0100		mg/Kg		1	0.0100
	Toluene			< 0.0100		mg/Kg		1	0.0100
	Ethylbenzene			< 0.0100		mg/Kg		1	0.0100
	Xylene			< 0.0100		mg/Kg		1	0.0100

					Spike	Percent	Recovery
Surrogate	Flag	$\mathbf{Result}$	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.813	mg/Kg	1	1.00	81	68 - 136.9
4-Bromofluorobenzene (4-BFB)		0.852	mg/Kg	1	1.00	85	48.2 - 155





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# Sample: 170109 - SB-7 (5')

Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (Titration) 51338	Analytical Meth Date Analyzed: Sample Preparat	2008-08-11	Prep Method: Analyzed By: Prepared By:	AG
		RL			
Parameter	$\mathbf{Flag}$	Result	Units	Dilution	$\mathbf{RL}$
Chloride		224	mg/Kg	50	2.00

#### Sample: 170109 - SB-7 (5')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO 51308 44003		Analytical M Date Analyze Sample Prepa	d: 2008-0		Analyz	fethod: N/A ed By: LD ed By: LD
Parameter	Fla	g	RL Result	Ur	iits	Dilution	$\mathbf{RL}$
DRO			113	mg/	Kg	1	50.0
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	9	114	mg/Kg	1	100	114	10 - 250.4

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# Sample: 170109 - SB-7 (5')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 51372 44030		Date Ana	l Method: lyzed: reparation:	S 8015B 2008-08-12 2008-08-11		Prep Me Analyze Preparec	d By: DC
			RL.					
Parameter	Flag		Result		Units		Dilution	$\mathbf{RL}$
GRO		······································	11.3		mg/Kg		1	1.00
~						Spike	Percent	Recovery
Surrogate		Flag	$\mathbf{Result}$	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)		0.960	mg/Kg	1	1.00	96	67.5 - 135.2
4-Bromofluor	obenzene (4-BFB)		0.952	mg/Kg	1	1.00	95	63.8 - 141

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#### Sample: 170110 - SB-7 (18'-20')

Laboratory:MidlandAnalysis:BTEXQC Batch:51389Prep Batch:44052			Analytical Date Analy Sample Pre	vzed:	S 8021B 2008-08-12 2008-08-12		Prep Met Analyzed Prepared	By: DC
			RL	I.				
Parameter	Flag		Result	,	Units	D	ilution	$\mathbf{RL}$
Benzene			< 0.0100	)	mg/Kg		1	0.0100
Toluene			< 0.0100	)	mg/Kg	,	1	0.0100
Ethylbenzene			< 0.0100	)	mg/Kg		1	0.0100
Xylene	<u>.                                    </u>		0.0331		mg/Kg		1	0.0100
						Spike	Percent	Recovery
Surrogate		Flag	$\mathbf{Result}$	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			0.749	mg/Kg	1	1.00	75	68 - 136.9
4-Bromofluorobenzene (4-BF	FB)		0.781	mg/Kg	1	1.00	78	48.2 - 155

#### Sample: 170110 - SB-7 (18'-20')

Chloride		167	mg/Kg	50	2.00
Parameter	Flag	RL Result	Units	Dilution	RL
Prep Batch:	44022	Sample Preparat	ion: 2008-08-11	Prepared By:	AG
Analysis: QC Batch:	Chloride (Titration) 51338	Analytical Metho Date Analyzed:	od: SM 4500-Cl B 2008-08-11	Prep Method: Analyzed By:	,
Laboratory:	C				/ .

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#### Sample: 170110 - SB-7 (18'-20')

Laboratory: Analysis: QC Batch: Prep Batch:	TPH DRO 51308		Analytical M Date Analyze Sample Prepa	ed: 2008-0	8-11	Analyz	Method: N/A zed By: LD red By: LD
			$\mathbf{RL}$			<b>N</b>	
Parameter	Fla	g	$\mathbf{Result}$	Uni	its	Dilution	$\mathbf{RL}$
DRO			<50.0	mg/I	Кg	1	50.0
					Spike	Percent	Recovery
Surrogate	Flag	$\mathbf{Result}$	$\mathbf{Units}$	Dilution	Amount	Recovery	Limits
n-Triacontane	e	101	mg/Kg	1	100	101	10 - 250.4



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Sample: 17	0110 - SB-7	7 (18'-2	0')			· ·			
Laboratory:	Midland								
Analysis:	TPH GRO				d Method:	S 8015B		Prep Me	thod: S 503
QC Batch:	51390			Date Ana		2008-08-12		Analyzed	
Prep Batch:	44052			Sample P	reparation	: 2008-08-12		Prepared	By: DC
				$\mathbf{RL}$					
Parameter		Flag		Result		Units		Dilution	R
GRO		В		1.92		mg/Kg		1 .	1.0
							Spike	Percent	Recovery
d.,	-		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Surrogate			0	0.922	mg/Kg	1	1.00	92	67.5 - 135.
	ene (TFT)								
Trifluorotolue 4-Bromofluor	obenzene (4-			0.919	mg/Kg	<u> </u>	1.00	92	63.8 - 14:
Trifluorotolue 4-Bromofluor Sample: 17( Laboratory:	obenzene (4- 0111 - SB-8 Midland			0.919	mg/Kg	χ.		92	
Trifluorotolue 4-Bromofluor Sample: 176 Laboratory: Analysis:	obenzene (4- 0111 - SB-8 Midland BTEX			0.919 Analytical	mg/Kg Method:	S 8021B		92 Prep Me	thod: S 503
Trifluorotolue 4-Bromofluor Sample: 17 Laboratory: Analysis: QC Batch:	obenzene (4- 0111 - SB-8 Midland BTEX 51389			0.919 Analytical Date Analy	mg/Kg Method: vzed:	S 8021B 2008-08-12		92 Prep Mer Analyzed	thod: S 503 l By: DC
Trifluorotolue 4-Bromofluor Sample: 17 Laboratory: Analysis: QC Batch:	obenzene (4- 0111 - SB-8 Midland BTEX			0.919 Analytical	mg/Kg Method: vzed:	S 8021B		92 Prep Me	thod: S 503 l By: DC
Trifluorotolue 4-Bromofluor Sample: 17( Laboratory: Analysis: QC Batch: Prep Batch:	obenzene (4- 0111 - SB-8 Midland BTEX 51389	8 (8')		0.919 Analytical Date Analy Sample Pre	mg/Kg Method: vzed: eparation:	S 8021B 2008-08-12 2008-08-12	1.00	92 Prep Me Analyzed Prepared	thod: S 503 l By: DC l By: DC
Trifluorotolue 4-Bromofluor Sample: 17( Laboratory: Analysis: QC Batch: Prep Batch: Parameter	obenzene (4- 0111 - SB-8 Midland BTEX 51389			0.919 Analytical Date Analy Sample Pre RL Result	mg/Kg Method: vzed: eparation:	S 8021B 2008-08-12 2008-08-12 Units	1.00	92 Prep Me Analyzed Prepared	thod: S 503 l By: DC l By: DC RI
Trifluorotolue 4-Bromofluor Sample: 17( Laboratory: Analysis: QC Batch: Prep Batch: Parameter Benzene	obenzene (4- 0111 - SB-8 Midland BTEX 51389	8 (8')		0.919 Analytical Date Analy Sample Pre RL Result <0.0100	mg/Kg Method: vzed: eparation:	S 8021B 2008-08-12 2008-08-12 Units mg/Kg	1.00	92 Prep Me Analyzed Prepared Pilution 1	thod: S 503 l By: DC l By: DC R1 0.010
Surrogate Trifluorotolue 4-Bromofluor Sample: 170 Laboratory: Analysis: QC Batch: Prep Batch: Prep Batch: Parameter Benzene Toluene	obenzene (4- 0111 - SB-8 Midland BTEX 51389 44052	8 (8')		0.919 Analytical Date Analy Sample Pre RL Result <0.0100 <0.0100	mg/Kg Method: vzed: eparation:	S 8021B 2008-08-12 2008-08-12 Units mg/Kg mg/Kg	1.00	92 Prep Me Analyzed Prepared Pilution 1 1	thod: S 503 l By: DC l By: DC RI 0.010 0.010
Trifluorotolue 4-Bromofluor Sample: 17( Laboratory: Analysis: QC Batch: Prep Batch: Prep Batch: Parameter Benzene Toluene Ethylbenzene	obenzene (4- 0111 - SB-8 Midland BTEX 51389 44052	8 (8')		0.919 Analytical Date Analy Sample Pre RL Result <0.0100 <0.0100 0.0186	mg/Kg Method: vzed: eparation:	S 8021B 2008-08-12 2008-08-12 Units mg/Kg mg/Kg mg/Kg	1.00	92 Prep Me Analyzed Prepared Pilution 1 1 1	thod: S 503 l By: DC l By: DC RI 0.010 0.010 0.010
Trifluorotolue 4-Bromofluor Sample: 17( Laboratory: Analysis: QC Batch: Prep Batch: Prep Batch: Parameter Benzene Toluene Ethylbenzene	obenzene (4- 0111 - SB-8 Midland BTEX 51389 44052	8 (8')		0.919 Analytical Date Analy Sample Pre RL Result <0.0100 <0.0100	mg/Kg Method: vzed: eparation:	S 8021B 2008-08-12 2008-08-12 Units mg/Kg mg/Kg	1.00	92 Prep Me Analyzed Prepared Pilution 1 1	thod: S 503 l By: DC l By: DC RI 0.010 0.010 0.010
Trifluorotolue 4-Bromofluor Sample: 170 Laboratory: Analysis: QC Batch: Prep Batch: Prep Batch: Parameter Benzene Toluene Ethylbenzene Xylene	obenzene (4- 0111 - SB-8 Midland BTEX 51389 44052	8 (8')		0.919 Analytical Date Analy Sample Pre RL Result <0.0100 <0.0100 0.0186	mg/Kg Method: vzed: eparation:	S 8021B 2008-08-12 2008-08-12 Units mg/Kg mg/Kg mg/Kg	1.00	92 Prep Me Analyzed Prepared Pilution 1 1 1	thod: S 503 By: DC By: DC RI 0.0100 0.0100 0.0100 Recovery
Trifluorotolue 4-Bromofluor Sample: 170 Laboratory: Analysis: QC Batch: Prep Batch: Prep Batch: Parameter Benzene Toluene Ethylbenzene Xylene Surrogate	obenzene (4- 0111 - SB-8 Midland BTEX 51389 44052	8 (8')	Flag	0.919 Analytical Date Analy Sample Pro RL Result <0.0100 <0.0100 0.0186 0.0476 Result	mg/Kg Method: vzed: eparation:	S 8021B 2008-08-12 2008-08-12 Units mg/Kg mg/Kg mg/Kg	1.00 D Spike Amount	92 Prep Me Analyzed Prepared Vilution 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	l By: DC By: DC RI 0.0100 0.0100 0.0100 0.0100 Recovery Limits
Trifluorotolue 4-Bromofluor Sample: 170 Laboratory: Analysis: QC Batch: Prep Batch: Prep Batch: Parameter Benzene Toluene Ethylbenzene Xylene	obenzene (4- 0111 - SB-8 Midland BTEX 51389 44052	6 (8') Flag	Flag	0.919 Analytical Date Analy Sample Pro RL Result <0.0100 <0.0100 0.0186 0.0476	mg/Kg Method: vzed: eparation:	S 8021B 2008-08-12 2008-08-12 Units mg/Kg mg/Kg mg/Kg mg/Kg	1.00 D Spike	92 Prep Me Analyzed Prepared Vilution 1 1 1 1 1 1 Percent	thod: S 503 By: DC By: DC RI 0.0100 0.0100 0.0100 Recovery

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#### Sample: 170111 - SB-8 (8')

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Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 51340 44022	Analytical Method Date Analyzed: Sample Preparatio	2008-08-12	Prep Method: Analyzed By: Prepared By:	AG
		$\mathbf{RL}$			
Parameter	Flag	$\mathbf{Result}$	Units	Dilution	$\mathbf{RL}$
Chloride		<100	mg/Kg	50	2.00



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Sample: 1701	11 - SB-8 (8')								
Laboratory: M	fidland								
0	PH DRO		Analytic	al Method:	Mod. 8015	iB	Prep	Method:	N/A
	1327		Date Ana		2008-08-11			zed By:	$\mathbf{L}\mathbf{D}$
Prep Batch: 44	4003		Sample I	Preparation:	2008-08-11		Prepa	red By:	LD
			$\mathbf{RL}$						
Parameter	Flag		$\mathbf{Result}$		Units		Dilution		$\mathbf{RL}$
DRO			146		mg/Kg		1		50.0
						Spike	Percent		covery
Surrogate	Flag	Result	Units		ution	Amount	Recovery		mits
n-Triacontane		150	mg/K	<u>z</u>	1	100	150	10 -	250.4
Analysis: Tl	lidland								
v	PH GRO  390  052		Date Ana	al Method: alyzed: reparation:	S 8015B 2008-08-12 2008-08-12		Prep Me Analyze Preparec	d By: I	5 5035 DC DC
Prep Batch: 44	1390 1052		Date Ana Sample P RL	alyzed:	2008-08-12 2008-08-12		Analyze Preparec	d By: I	DC DC
Prep Batch: 44 Parameter	390		Date Ana Sample P RL Result	alyzed:	2008-08-12 2008-08-12 Units		Analyze Prepared Dilution	d By: I	DC DC RL
Prep Batch: 44	1390 1052		Date Ana Sample P RL	alyzed:	2008-08-12 2008-08-12		Analyze Preparec	d By: I	DC DC
Prep Batch: 44 Parameter	1390 1052		Date Ana Sample P RL Result	alyzed:	2008-08-12 2008-08-12 Units	Spike	Analyze Prepared Dilution	d By: I	DC DC RL 1.00
Prep Batch: 44 Parameter GRO Surrogate	1390 1052 Flag	Flag	Date Ana Sample P RL Result 44.7 Result	ulyzed: Preparation: Units	2008-08-12 2008-08-12 Units	Spike Amount	Analyzed Prepared Dilution 1 Percent Recovery	d By: I d By: I Reco Lin	RL 1.00 Nery
Prep Batch: 44 Parameter GRO	1390 1052 Flag (TFT)	Flag	Date Ana Sample P RL Result 44.7	alyzed: reparation:	2008-08-12 2008-08-12 Units mg/Kg	-	Analyzed Prepared Dilution 1 Percent	d By: I d By: I Reco Lin	RL 1.00 wery hits 135.2

# Sample: 170112 - SB-8 (18'-20')

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Laboratory:	Midland					
Analysis:	BTEX		Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	51389		Date Analyzed:	2008-08-12	Analyzed By:	DC
Prep Batch:	44052		Sample Preparation:	2008-08-12	Prepared By:	.DC
			$\mathbf{RL}$			
Parameter		Flag	Result	Units	Dilution	$\mathbf{RL}$
Benzene			< 0.0100	mg/Kg	1	0.0100
Toluene			< 0.0100	mg/Kg	1	0.0100
Ethylbenzene	e.		< 0.0100	mg/Kg	1	0.0100
Xylene			< 0.0100	mg/Kg	1	0.0100



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	Surrogate		Flag	Result	Units	Dilutio		ike ount ⁻	Percent Recovery		cover imits
	Trifluorotolu	ene (TFT)		0.744	mg/Kg	1	1.	00	74	<u>68</u> ·	- 136
-	4-Bromofluo	robenzene (4-BFB)		0.771	mg/Kg	1	1.	00	. 77	48.5	2 - 1
1	Sample: 17	0112 - SB-8 (18'-2	:0')			·					
]	Laboratory:	Midland									
	Analysis:	Chloride (Titration	)	Analy	tical Metho	od: SM 4	500-Cl B		Prep M	fethod:	N/
(	QC Batch:	51340		Date A	Analyzed:	2008-0	08-12		Analyz	ed By:	AC
]	Prep Batch:	44022		Sample	e Preparat	ion: 2008-0	08-11		Prepare	ed By:	A
1	Parameter	Flag		${f RL}$		Units		D	ilution		F
-	Chloride	r lag		<100		mg/Kg			50		<u> </u>
-		·····				0/0					
I	Sample: 17 Laboratory: Analysis:	0112 - SB-8 (18'-2 Midland TPH DRO	0')	Analytical	Method:	Mod. 801	5B		Prep M	lethod:	N/
	Laboratory:	Midland	0')	Analytical Date Anal Sample Pr	yzed:	Mod. 801 2008-08-1 2008-08-1	1		Prep M Analyze Prepare	ed By:	ĹĎ
	Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO 51327 44003	0')	Date Anal Sample Pr RL	yzed:	2008-08-1 2008-08-1	1		Analyze Prepare	ed By:	LD LD
	Laboratory: Analysis: QC Batch: Prep Batch: Parameter	Midland TPH DRO 51327	0')	Date Anal Sample Pr RL Result	yzed:	2008-08-1 2008-08-1 Units	1	Di	Analyze Prepare	ed By:	
	Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO 51327 44003	0')	Date Anal Sample Pr RL	yzed:	2008-08-1 2008-08-1	1	Di	Analyze Prepare	ed By:	LD LD R
	Laboratory: Analysis: QC Batch: Prep Batch: Parameter	Midland TPH DRO 51327 44003	0')	Date Anal Sample Pr RL Result	yzed:	2008-08-1 2008-08-1 Units	1		Analyze Prepare	ed By: ed By:	LD LD R 50
	Laboratory: Analysis: QC Batch: Prep Batch: Parameter	Midland TPH DRO 51327 44003 Flag	0') Result	Date Anal Sample Pr RL Result	yzed: eparation:	2008-08-1 2008-08-1 Units	1		Analyze Prepare	ed By: ed By: Rec	LE LE R 50
	Laboratory: Analysis: QC Batch: Prep Batch: Parameter DRO	Midland TPH DRO 51327 44003 Flag		Date Anal Sample Pr RL Result <50.0	yzed: eparation:	2008-08-1 2008-08-1 Units mg/Kg	1 1 Spike		Analyze Prepare lution 1 Percent	ed By: ed By: Rec	LE LE F 50 cover mits
	Laboratory: Analysis: QC Batch: Prep Batch: Parameter DRO Surrogate 1-Triacontane	Midland TPH DRO 51327 44003 Flag	Result 108	Date Anal Sample Pr RL Result <50.0 Units	yzed: eparation:  Dilu	2008-08-1 2008-08-1 Units mg/Kg	1 1 Spike Amount		Analyze Prepare lution 1 Percent Recovery	ed By: ed By: Rec Lin	LD LD R 50 cover mits
	Laboratory: Analysis: QC Batch: Prep Batch: Parameter DRO Surrogate 1-Triacontane	Midland TPH DRO 51327 44003 Flag Flag	Result 108	Date Anal Sample Pr RL Result <50.0 Units	yzed: eparation:  Dilu	2008-08-1 2008-08-1 Units mg/Kg	1 1 Spike Amount		Analyze Prepare lution 1 Percent Recovery	ed By: ed By: Rec Lin	LD LD R 50 cover mits
	Laboratory: Analysis: QC Batch: Prep Batch: Parameter DRO Surrogate 1-Triacontane Sample: 170	Midland TPH DRO 51327 44003 Flag Flag	Result 108	Date Anal Sample Pr RL Result <50.0 Units	yzed: eparation: Dilu	2008-08-1 2008-08-1 Units mg/Kg	1 1 Spike Amount		Analyze Prepare lution 1 Percent Recovery	ed By: ed By: Rec Lin 10 -	LD LD R 50 over mits 250
	Laboratory: Analysis: QC Batch: Prep Batch: Parameter DRO Surrogate -Triacontane Sample: 170 Laboratory:	Midland TPH DRO 51327 44003 Flag Flag 9 0112 - SB-8 (18'-20 Midland	Result 108	Date Anal Sample Pr RL Result <50.0 Units mg/Kg	yzed: eparation: Dilu Dilu Method:	2008-08-1 2008-08-1 <u>Units</u> mg/Kg ation	1 Spike Amount 100		Analyze Prepare	ed By: ed By: Rec Lin 10 -	LD LD R 50 over mits 250
	Laboratory: Analysis: QC Batch: Prep Batch: Parameter DRO Surrogate 1-Triacontane Sample: 170 Laboratory: Analysis:	Midland TPH DRO 51327 44003 Flag Flag 9 0112 - SB-8 (18'-20 Midland TPH GRO	Result 108	Date Anal Sample Pr RL Result <50.0 Units mg/Kg	yzed: eparation: Dilu Dilu Method: zzed:	2008-08-1 2008-08-1 Units mg/Kg ttion 1 S 8015B	1 Spike Amount 100		Analyze Prepare	ed By: ed By: Rec Lin 10 -	LD LD R 50 over mits 250
	Laboratory: Analysis: QC Batch: Prep Batch: Parameter DRO Surrogate h-Triacontane Sample: 170 Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO 51327 44003 Flag Flag 9 0112 - SB-8 (18'-20 Midland TPH GRO 51390 44052	Result 108	Date Analy Sample Pr RL Result <50.0 Units mg/Kg Analytical Date Analy Sample Pre RL	yzed: eparation: Dilu Dilu Method: zzed:	2008-08-1 2008-08-1 Units mg/Kg ation 1 S 8015B 2008-08-12 2008-08-12	1 Spike Amount 100	]	Analyze Prepare	ed By: ed By: Rec Lin 10 -	5 503 DC DC
	Laboratory: Analysis: QC Batch: Prep Batch: Parameter DRO Surrogate h-Triacontane Sample: 170 Laboratory: Analysis: QC Batch:	Midland TPH DRO 51327 44003 Flag 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Result 108	Date Analy Sample Pr RL Result <50.0 Units mg/Kg Analytical Date Analy Sample Pre	yzed: eparation: Dilu Dilu Method: zzed:	2008-08-1 2008-08-1 Units mg/Kg ttion 1 S 8015B 2008-08-12	1 Spike Amount 100	]	Analyze Prepare	ed By: ed By: Rec Lin 10 -	LD LD R 50 cover mits 250 5 503 DC

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#### Sample: 170113 - SB-9 (11')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 51389 44052		Analytical Date Analy Sample Pre	zed:	S 8021B 2008-08-12 2008-08-12		Prep Meth Analyzed I Prepared I	By: DC
			RL	•			¢	
Parameter	Flag		Result		Units	Di	lution	$\mathbf{RL}$
Benzene			< 0.0100	)	mg/Kg		1	0.0100
Toluene			< 0.0100	)	mg/Kg		1	0.0100
Ethylbenzene			< 0.0100	)	mg/Kg		1	0.0100
Xylene			< 0.0100		mg/Kg		1	0.0100
						Spike	Percent	Recovery
Surrogate		Flag	$\mathbf{Result}$	Units	Dilution	Amount	Recovery.	Limits
Trifluorotolue	ne (TFT)		0.738	mg/Kg	1	1.00	74	68 - 136.9
4-Bromofluor	obenzene (4-BFB)		0.768	mg/Kg	1 .	1.00	77	48.2 - 155

#### Sample: 170113 - SB-9 (11')

Laboratory:	Midland			`	
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	51340	Date Analyzed:	2008-08-12	Analyzed By:	AG
Prep Batch:	44022	Sample Preparation	: 2008-08-11	Prepared By:	AG
		$\mathbf{RL}$			
Parameter	Flag	$\mathbf{Result}$	Units	Dilution	$\mathbf{RL}$
Chloride		<100	mg/Kg	50	2.00

#### Sample: 170113 - SB-9 (11')

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	51327	Date Analyzed:	2008-08-11	Analyzed By:	LD
Prep Batch:	44003	Sample Preparation:	2008-08-11	Prepared By:	LD

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_			RL				
Parameter	Fla	g	Result	Uni	its	Dilution	$\mathbf{RL}$
DRO			<50.0	mg/ł	Kg	1	50.0
					Spike	Percent	Recovery
Surrogate	Flag	$\mathbf{Result}$	Units	Dilution	Amount	Recovery	Limits
n-Triacontane		110	mg/Kg	1	100	110	10 - 250.4

# Sample: 170113 - SB-9 (11')

-

A C	Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 51390 44052		Date Ana	ll Method: llyzed: 'reparation:	S 8015B 2008-08-12 2008-08-12		Prep Me Analyze Preparec	d By: DC
				$\mathbf{RL}$					
P	Parameter	Flag		$\mathbf{Result}$		Units		Dilution	$\mathbf{RL}$
ē	GRO			11.3		mg/Kg		1	1.00
S	urrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
	rifluorotolue	ene (TFT)		0.856	mg/Kg	1	1.00	86	67.5 - 135.2
⁷ 4	-Bromofluor	obenzene (4-BFB)		0.794	mg/Kg	1	1.00	79	63.8 - 141

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# Sample: 170114 - SB-9 (30')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 51389 44052		Analytica Date Ana Sample Pi		S 8021B 2008-08-12 2008-08-12		Prep Met Analyzed Prepared	By: DC
			R	L				
Parameter	Flag	S	$\mathbf{Resu}$	lt	Units '	D	ilution	$\mathbf{RL}$
Benzene			< 0.010	0	mg/Kg		1	0.0100
Toluene			< 0.010	0	mg/Kg		1	0.0100
Ethylbenzene	!		< 0.010	0	mg/Kg		1	0.0100
Xylene			< 0.010	0	mg/Kg		1	0.0100
						Spike	Percent	Recovery
Surrogate		Flag	$\cdot$ Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)		0.744	mg/Kg	1	1.00	74	68 - 136.9
4-Bromofluor	obenzene (4-BFB)		0,736	mg/Kg	1	1.00	74	48.2 - 155



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-	'0114 - SB-9 (30')				
Laboratory: Analysis:	Midland Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N / A
QC Batch:	51340	Date Analyzed:	2008-08-12	Analyzed By:	,
Prep Batch: 44022		Sample Preparation: 2008-08-11		U U	AG

Prep Batch:	44022	Sample Preparatic	on: 2008-08-11	Prepared By	
		$\mathbf{RL}$			
Parameter	$\mathbf{Flag}$	$\mathbf{Result}$	$\mathbf{Units}$	<ul> <li>Dilution</li> </ul>	$\mathbf{RL}$
Chloride		<100	^ mg/Kg	50	2.00

### Sample: 170114 - SB-9 (30')

	Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO 51327 44003			Analytical Me Date Analyze Sample Prepa	d:	Mod. 8 2008-08 2008-08	3-11	Analyz	Aethod: zed By: red By:	
	_		-		RL						
	Parameter		Flag		Result		Unit	ts	Dilution		RL
•	DRO		_		<50.0		mg/K	g	1		50.0
	Surrogate	Flag		Result	Units	Dilu	tion	Spike Amount	Percent Recovery	Recov Lim	v
	n-Triacontane	)		106	mg/Kg		l	100	106	10 - 2	50.4

#### Sample: 170114 - SB-9 (30')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 51390 44052		Date Ana	l Method: lyzed: reparation:	S 8015B 2008-08-12 2008-08-12		Prep Me Analyzee Preparec	d By: DC
			$\mathbf{RL}$					
Parameter	Flag		$\mathbf{Result}$		Units		Dilution	$\mathbf{RL}$
GRO	В		4.47		mg/Kg		1	1.00
						Spike	Percent	Recovery
Surrogate		Flag	$\mathbf{Result}$	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)		0.865	mg/Kg	1	1.00	86	67.5 - 135.2
4-Bromofluor	obenzene (4-BFB)	·	0.837	mg/Kg	1	1.00	84	63.8 - 141

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	Report Date: Aug 163-1724-000	ust 14, 200	)8		Order: 8080838 eral 34 #1	Page Number: 35 of 50 Carlsbad, NM			
	Method Blank (	l) QČ	Batch: 51308						
	QC Batch: 5130 Prep Batch: 4400			Date Analyzed: QC Preparation				lyzed By: pared By:	
	Parameter		Flag		MDL esult		Units		RL
	DRO		F lag		15.8		mg/Kg		50
	Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery		overy nits
	n-Triacontane		72.4	mg/Kg	1	100	72	30.9 -	146.4
	Method Blank (1 QC Batch: 51327 Prep Batch: 44003	,	Batch: 51327	Date Analyzed: QC Preparation	2008-08-11 : 2008-08-11			lyzed By: bared By:	LD LD
	Parameter		E) e a		ADL		11:		RL
	DRO	<u> </u>	Flag		esult 15.8	<u> </u>	Units mg/Kg		<u></u> 50
					• • • • • • • •	Spike	Percent	Reco	verv
	Surrogate	Flag	Result		Dilution	Amount	Recovery	Lin	nits
	n-Triacontane		76.4	mg/Kg	1	100	76	30.9 -	146.4
	Method Blank (1 QC Batch: 51331	-	Batch: 51331	Date Analyzed:	2008-08-11	,		yzed By:	
	Prep Batch: 44022			QC Preparation			Prep	ared By:	AG
	Parameter		Flag		1DL esult		· Units		RL
	Chloride			<0	.500		mg/Kg		2
	Method Blank (1	QC	Batch: 51338						
	QC Batch: 51338 Prep Batch: 44022			Date Analyzed: QC Preparation:	2008-08-11 2008-08-11			yzed By: ared By:	AG AG
1	Parameter		Flag		1DL sult		Units		RL
	Chloride Flag				.500		mg/Kg		

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Report Date: August 14, 2 163-1724-000		Work Order:         8080838         Page N           Federal 34 #1						
Method Blank (1)	2C Batch: 51340							
QC Batch: 51340 Prep Batch: 44022		Date Ana QC Prep		2008-08-12 2008-08-11			yzed By: ared By:	AG AG
Parameter	Flag		ME Resu		Units			$\mathbf{RL}$
Chloride		< 0.5	00	mg/Kg			2	
Method Blank (1) Q	C Batch: 51371							
QC Batch: 51371 Prep Batch: 44030		Date Ana QC Prepa		2008-08-12 2008-08-11	Analyzed Prepared			DC DC
-		• •					U	
Parameter	Flag			1DL esult	Un		$\mathbf{RL}$	
Benzene	1 109		<0.00		mg			0.01
Toluene			<0.00		mg/			0.01
Ethylbenzene		<0.00	)530	mg/Kg			0.01	
Xylene			<0.0	)136	mg			0.01
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Reco Lim	
Trifluorotoluene (TFT)		0.789	mg/Kg	1	1.00	79	48.3 -	
4-Bromofluorobenzene (4-BI	0.775	mg/Kg	1	1.00	78	37.7 -	128.9	
Method Blank (1) Q QC Batch: 51372 Prep Batch: 44030	C Batch: 51372	Date Ana		2008-08-12 2008-08-11			vzed By: ured By:	DC DC
rep batch: 44050	p Batch: 44030 QC Preparation: 2008-08-11							DC
Poromotor		MDI		<b>T</b> T •		рт		
Parameter GRO	Flag	Result 0.969			Uni mg/l			$\frac{\text{RL}}{1}$
			0.30	J				
<b>.</b>	-	<b>D</b>	<b></b> .		Spike	Percent	Reco	
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Lim	
Trifluorotoluene (TFT)	מי	0.903	mg/Kg	1	1.00	90	39.2 -	
4-Bromofluorobenzene (4-BF	Dj	0.800	mg/Kg	1	1.00	80	16.8 -	138.1

# Method Blank (1) QC Batch: 51389

QC Batch: 51389	Date Analyzed: 2008-08-12	Analyzed By: DC
Prep Batch: 44052	QC Preparation: 2008-08-12	Prepared By: DC



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			λı	DL				
Parameter	Flag		Res		I I	nits		
Benzene	1 145		<0.005			/Kg		
Toluene			< 0.004		, mg			
Ethylbenzene			<0.005			/Kg		
Xylene		· .	<0.01			/Kg		
			۲.		Spike	Percent	Red	cove
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Li	mit
Trifluorotoluene (TFT)		0.724	mg/Kg	1	1.00	72	48.3	- 1
4-Bromofluorobenzene (4-BFB	·)	0.723	mg/Kg	1	1.00	72	37.7	- 1
QC Batch: 51390 Prep Batch: 44052 Parameter	Flag	Date An QC Prep	alyzed: 24 paration: 24 MDL Result		Uni	Prep	lyzed By bared By:	
GRO		<u></u>	0.872	· · · · · · · · · · · · · · · · · · ·	mg/	Kg		
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Rec Lie	ove mit
Trifluorotoluene (TFT)		0.866	mg/Kg	1	1.00	87	39.2	
	)	0.809	mg/Kg	1	1.00	81	16.8	- 1
4-Bromofluorobenzene (4-BFB								
4-Bromofluorobenzene (4-BFB Laboratory Control Spike ( QC Batch: 51308 Prep Batch: 44003	(LCS-1)	Date An QC Prep		008-08-11 008-08-11			lyzed By: pared By:	
Laboratory Control Spike QC Batch: 51308 Prep Batch: 44003	LC	QC Prep S	paration: 20	008-08-11 Spike	Matri Resul	Prep	bared By:	j ec.
Laboratory Control Spike QC Batch: 51308		QC Prep CS ult U	Daration: 20 Units D	008-08-11	Resul	Prep x t Rec.	bared By: R Li	l ec. mit
Laboratory Control Spike QC Batch: 51308 Prep Batch: 44003 Param	LC Res 20	QC Prep 2S ult U 8 ma	Daration: 20 Units D g/Kg	008-08-11 Spike il. Amount 1 250	Resul	Prep x t <u>Rec.</u> 8 83	bared By:	ا ec. mit
Laboratory Control Spike QC Batch: 51308 Prep Batch: 44003 Param DRO	LC Res 20	QC Prep 2S ult U 8 ma	Durits D g/Kg based on the	008-08-11 Spike il. Amount 1 250	Resul	Prep x t <u>Rec.</u> 8 83	bared By: R Li	ec. mit
Laboratory Control Spike QC Batch: 51308 Prep Batch: 44003 Param DRO	LC Res 20 e spike result.	QC Prep 2S ult U 8 ma	Units D g/Kg based on the	008-08-11 Spike til. Amount 1 250 spike and spike	Resul	Prep x <u>t Rec.</u> 8 83 esult.	bared By: R Li	l ec. mit

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control spikes continu	ed										
-	LCS	LCSD			Spike	LCS	LCSI	)	Rec		
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	4	Lim		
	LCS	LCSD			Spike	LCS	LCSI	)	Rec		
Surrogate	$\mathbf{Result}$	$\mathbf{Result}$	$\mathbf{Units}$	Dil.	Amount	Rec.	Rec.		Lim		
n-Triacontane ⁵	121	134	mg/Kg	1	100	121	134	ć	38 - 13		
Laboratory Control	l Spike (LCS	-1)									
QC Batch: 51327		D	ate Analyzed:	2008-08	-11		An	alyzed I	By: I		
Prep Batch: 44003			C Preparation:					pared H			
									_		
_		LCS			Spike	Matri			Rec.		
Param		Result	Units	Dil.	Amount	Result			Limit		
DRO		234	mg/Kg	1	250	<15.8	94	27.	.8 - 15		
Percent recovery is bas	sed on the sph	te result. Ar	D is based on	one spike	unu spike u	upileate re	Jui				
Percent recovery is bas Param DRO	-	LCSD Result U	Units Dil. g/Kg 1	Spike Amount 250	Matrix Result <15.8	Rec.	Rec. Limit 7.8 - 152.1	RPD 5	Li		
Param		LCSD Result U 245 mg	Jnits Dil. g/Kg 1	Spike Amount 250	Matrix Result <15.8	Rec. 98 2	Rec. Limit 7.8 - 152.1		Li		
Param DRO		LCSD Result U 245 mg	Jnits Dil. g/Kg 1	Spike Amount 250	Matrix Result <15.8	Rec. 98 2	Rec. Limit 7.8 - 152.1	5	Liı 2		
Param DRO Percent recovery is bas Surrogate	sed on the spil LCS Result	LCSD Result U 245 mg ce result. RF LCSD Result	Jnits Dil. g/Kg 1	Spike Amount 250	Matrix Result <15.8 and spike d	Rec. 98 2 uplicate re LCS Rec.	Rec. Limit 7.8 - 152.1 ssult. LCSD Rec.	5	Lin 2 Rec. Limi		
Param DRO Percent recovery is bas	sed on the spil	LCSD Result U 245 mg ce result. RF LCSD	Units Dil. g/Kg 1 PD is based on	Spike Amount 250 the spike a	Matrix Result <15.8 and spike d Spike	Rec. 98 2 uplicate re LCS	Rec. Limit 7.8 - 152.1 esult. LCSD	5	Lin 2 Rec. Limi		
Param DRO Percent recovery is bas Surrogate	sed on the spil LCS Result 127	LCSD Result U 245 mg te result. RF LCSD Result 128 -1) Da	Units Dil. g/Kg 1 PD is based on Units	Spike Amount 250 the spike a Dil.	Matrix Result <15.8 and spike d Spike Amount 100	Rec. 98 2 uplicate re LCS Rec.	Rec. Limit 7.8 - 152.1 esult. LCSD Rec. 128	5	Lin 2 Rec. Limi 8 - 13		
Param DRO Percent recovery is bas Surrogate n-Triacontane Laboratory Control QC Batch: 51331 Prep Batch: 44022	sed on the spil LCS Result 127	LCSD Result U 245 mg te result. RF LCSD Result 128 -1) Da QC LCS	Units Dil. g/Kg 1 PD is based on Units mg/Kg ate Analyzed: C Preparation:	Spike Amount 250 the spike a Dil. 1 2008-08- 2008-08-	Matrix Result <15.8 and spike d Spike Amount 100 11 11 11 Spike	Rec. 98 2 uplicate re LCS Rec. 127	Rec. Limit 7.8 - 152.1 esult. LCSD Rec. 128 Ana Prep	5 3 lyzed B pared B	Lin 2 Rec. Limit 8 - 13 Ay: A y: A y: A Rec		
Param DRO Percent recovery is bas Surrogate n-Triacontane Laboratory Control QC Batch: 51331 Prep Batch: 44022 Param	sed on the spil LCS Result 127	LCSD Result U 245 mg te result. RF LCSD Result 128 ·1) Da QC LCS Result	Units Dil. g/Kg 1 PD is based on Units mg/Kg ate Analyzed: C Preparation:	Spike Amount 250 the spike a Dil. 1 2008-08- 2008-08- 2008-08- Dil.	Matrix Result <15.8 and spike d Spike Amount 100 11 11 11 Spike Amount	Rec. 98 2 uplicate re LCS Rec. 127 Mat Res	Rec. Limit 7.8 - 152.1 esult. LCSD Rec. 128 Ana Prep	5 3 lyzed B bared B	Lin 2 Rec. Limit 8 - 13 y: A y: A Rec Lim		
Param DRO Percent recovery is bas Surrogate n-Triacontane Laboratory Control QC Batch: 51331 Prep Batch: 44022 Param Chloride	sed on the spil LCS Result 127 <b>Spike (LCS</b>	LCSD Result U 245 mg te result. RF LCSD Result 128 -1) Da QC LCS Result 101	Units Dil. g/Kg 1 PD is based on Units mg/Kg ate Analyzed: C Preparation: Units mg/Kg	Spike Amount 250 the spike a Dil. 1 2008-08- 2008-08- Dil. 1	Matrix Result <15.8 and spike d Spike Amount 100 11 11 11 11 100	Rec. 98 2 uplicate re LCS Rec. 127 Mat Res <0.3	Rec. Limit 7.8 - 152.1 ssult. LCSD Rec. 128 Ana Prep rix ult Re 500 10	5 3 lyzed B bared B	Lin 2 Rec. Limi 8 - 13 y: A y: A Rec Lim		
Param DRO Percent recovery is bas Surrogate n-Triacontane Laboratory Control QC Batch: 51331 Prep Batch: 44022 Param	sed on the spil LCS Result 127 <b>Spike (LCS</b>	LCSD Result U 245 mg te result. RF LCSD Result 128 -1) Da QC LCS Result 101 e result. RP	Units Dil. g/Kg 1 PD is based on Units mg/Kg ate Analyzed: C Preparation: Units mg/Kg	Spike Amount 250 the spike a Dil. 1 2008-08- 2008-08- Dil. 1 the spike a	Matrix Result <15.8 and spike d Spike Amount 100 11 11 11 11 11 100 and spike du	Rec. 98 2 uplicate re LCS Rec. 127 Mat Res <0.3	Rec. Limit 7.8 - 152.1 ssult. LCSD Rec. 128 Ana Prep rix ult Re 500 10 sult.	5 3 lyzed B bared B	Lin 2 Rec. Limi 8 - 13 Sy: A y: A y: A Rec Lim 85 - 1		
Param DRO Percent recovery is bas Surrogate n-Triacontane Laboratory Control QC Batch: 51331 Prep Batch: 44022 Param Chloride	sed on the spil LCS Result 127 <b>Spike (LCS</b>	LCSD Result U 245 mg te result. RF LCSD Result 128 (1) Da QC LCS Result 101 e result. RP LCSD	Units Dil. g/Kg 1 PD is based on Units mg/Kg ate Analyzed: C Preparation: Units mg/Kg	Spike Amount 250 the spike a Dil. 1 2008-08- 2008-08- Dil. 1	Matrix Result <15.8 and spike d Spike Amount 100 11 11 11 11 100	Rec. 98 2 uplicate re LCS Rec. 127 Mat Res <0.3	Rec. Limit 7.8 - 152.1 ssult. LCSD Rec. 128 Ana Prep rix ult Re 500 10	5 3 lyzed B bared B			

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⁵High surrogate recovery due to peak interference.

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Laborato	ory Control Spike	(LCS-1)									
QC Batch: Prep Batch			Date Analyz QC Prepara		08-08-1 108-08-1				alyzed B epared B		
Param		LC: Resu		its	Dil.	Spike Amount	Ma Res		lec.	Rec. Limit	
Chloride	<del></del>	101			$\frac{D \Pi}{1}$	100	<0.			85 - 11	
	covery is based on th									00 11	
		LCSD		Ę	Spike	Matrix		Rec.		RPD	
Param		$\mathbf{Result}$	Units 1		mount	Result	Rec.	Limit	RPD	Limit	
Chloride		102	mg/Kg	1	100	< 0.500	102	85 - 115	1	20	
Prep Batch	1: 44022	LCS	QC Preparat	tion: 200	08-08-11	Spike	Mat	Pre	alyzed By pared By		
Param		Resu		ts I	Dil.	Amount	Res		ec.	Limit	
Chloride		98.8	3 mg/I	Кg	1	100	<0.5	500 9	99 8	35 - 115	
Percent rec	overy is based on th	ie spike result. F	RPD is based	l on the s	pike an	d spike du	olicate re	sult.			
		LCSD		S	pike	Matrix		Rec.		RPD	
Param		Result	Units I		-	Result	Rec.	Limit	RPD	Limit	
Param Chloride		Result		Dil. An	nount 100	Result <0.500	Rec. 98	Limit 85 - 115	RPD 1	20	
Chloride Percent reco Laborator: QC Batch:		Result 98.0 he spike result. F (LCS-1)	mg/Kg RPD is based Date Analyze	Dil.     Ar.       1     1       I on the s       ed:     200	nount 100 pike and 08-08-12	<0.500 1 spike dup	98	85 - 115 sult. Ana	1 alýzed By	: DC	
Chloride Percent reco Laborator	y Control Spike ( · 51371	Result 98.0 he spike result. F (LCS-1) I (	mg/Kg RPD is based	Dil.     Ar.       1     1       I on the s       ed:     200	nount 100 pike and 08-08-12 08-08-11	<0.500 I spike dup	98 blicate re	85 - 115 sult. Ana	1 lýzed By pared By	20 : DC : DC	
Chloride Percent reco Laborator: QC Batch:	y Control Spike ( · 51371	Result 98.0 he spike result. F (LCS-1)	mg/Kg RPD is based Date Analyze	Dil.     Ar.       1     1       I on the s       ed:     200	nount 100 spike and 08-08-12 08-08-11 S	<0.500 1 spike dup	98	85 - 115 sult. Ana	1 lýzed By pared By I	20 : DC	
Chloride Percent reco Laborator QC Batch: Prep Batch: Param Benzene	y Control Spike ( · 51371	Result 98.0 te spike result. F (LCS-1) I (LCS	mg/Kg RPD is based Date Analyze QC Preparat	Dil.     Ar       1     1       1     on the s       ed:     200       ion:     200       Dil.     Dil.	nount 100 spike and 08-08-12 08-08-11 S An	<0.500 l spike dup pike nount	98 blicate re Matrix	85 - 115 sult. Ana Prej Rec.	1 Ilýzed By pared By I L	20 : DC : DC Rec. imit	
Chloride Percent reco Laborator: QC Batch: Prep Batch: Prep Batch: Param Benzene Toluene	y Control Spike ( • 51371 : 44030	Result 98.0 he spike result. F (LCS-1) LCS Result 0.846 0.865	mg/Kg RPD is based Date Analyze QC Preparat Units mg/Kg mg/Kg	Dil.         Ar           1         1           1 on the s         1           ed:         200	nount 100 pike and 08-08-12 08-08-11 S An 1 1	<0.500 d spike dup pike nount .00 .00	98 Dicate re Matrix Result <0.00580 <0.00470	85 - 115 sult. Ana Prej Rec. ) 85 ) 86	1 llýzed By pared By I L 73.3 78.6	20 : DC : DC Rec. imit - 116.6 - 115.1	
Chloride Percent reco Laborator QC Batch: Prep Batch: Param Benzene	y Control Spike ( • 51371 : 44030	Result 98.0 he spike result. F (LCS-1) LCS Result 0.846	mg/Kg RPD is based Date Analyze QC Preparat Units mg/Kg	Dil.         Ar           1         1           I on the s         1           ed:         200	nount 100 pike and 08-08-12 08-08-11 S An 1 1 1	<0.500 d spike dup pike nount .00 .00	98 Dicate re Matrix Result <0.00580	85 - 115 sult. Ana Prej Rec. ) 85 ) 86 ) 84	1 lýzed By pared By I T3.3 78.6 77.4	20 : DC : DC Rec. imit - 116.6	

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



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⁷ Report Date: August 14, 2008 163-1724-000				<pre></pre>					umber: Carlst	
	LCSD			Spike	Mat			Rec.		RP
Param	Result	Units	Dil					Limit	RPD	Lin
Benzene		mg/Kg		1.00	< 0.00			3 - 116.6	6	2
Toluene		mg/Kg		1.00	<0.00			6 - 115.1	5	2
Ethylbenzene		mg/Kg		1.00	< 0.00			4 - 114.9	6	2
Xylene		mg/Kg		3.00	< 0.0			2 - 114.7	6	2
Percent recovery is based on the	spike result.	RPD is	based	on the spik	e and sp	ike duplica	te resu	lt.	e	
	LCS		CSD			Spike	LCS	LCSD		lec.
Surrogate	Resul		esult	Units	Dil.	Amount	Rec.	Rec.		imit
Trifluorotoluene (TFT)	0.954		805	mg/Kg	1	1.00	95	80		124
4-Bromofluorobenzene (4-BFB)	0.762	2 0.	810	mg/Kg	1	1.00	76	81	47.2	- 130
QC Batch: 51372 Prep Batch: 44030	,	Date A QC Pr							yzed By ared By:	
Devee			TINIA	ויח	Spil		atrix	D		lec.
Param GRO	Resu 8.70		Units ng/Kg	Dil.	Amou 10.0		esult 969	<u>Rec.</u> 77	57.5	imit
Percent recovery is based on the s									01.0	- 100
refeate recovery is based on the r			Dubeq	-	-	-				
n	LCSD	TT •/	יים	Spike	Mati			lec.	DDD	RP
Param GRO	Result	Units	Dil					imit	RPD	Lim
·····		mg/Kg		10.0	0.96			- 106.4	8	20
Percent recovery is based on the s	-			on the spike	e and spi	ike duplicat				
<b>a</b>	LCS		SD	<b>TT T</b>	DU	Spike	LCS	LCSD		ec.
Surrogate	Result		sult	Units		Amount	Rec.	Rec.		mit
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)	0.897 0.866		)29 394	mg/Kg mg/Kg	1 1	$\begin{array}{c} 1.00 \\ 1.00 \end{array}$	90 87	93 89	63.8 53.3	
Laboratory Control Spike (LC				mg/ ng		1.00				120
QC Batch: 51389	·	Date A	nalyze	d: 2008-0	8-12			Analy	zed By:	DC
Prep Batch: 44052		QC Pre							red By:	
	LCS				Spike	Mat	trix			.ec.
Param	Result		Inits	Dil	Amoun			Rec.		mit
Benzene	0.790		g/Kg	1	1.00	<0.0		79	73.3 -	
Toluene	0.801		g/Kg	1	1.00	<0.0		80	78.6 -	
kithter (hongono)	0.788	m	g/Kg	1	1.00	< 0.0	0530	79	77.4 -	114
Ethylbenzene Xylene	2.37		g/Kg	1	3.00	<0.0		79	78.2 -	

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mber: 41 of 50 Carlsbad, NM		Page N					rder: 808 ral 34 #3		W			ust 14, 2008		Report Date 163-1724-00
RPD		Rec.	I		atrix	Ma	Spike				LCSD			
	RPD	limit		Rec.	esult		Amount	Dil	lits l	$\mathbf{U}_{1}$	Result			Param
2 20	6.6 2	- 116.6	73.3	80	00580	<0.0	1.00	1	/Kg	mg	0.804			Benzene
3 20	5.1 <u>3</u>	- 115.1	78.6	82	00470	<0.0	1.00	1	/Kg		0.822			Foluene
3 20	1.9 3	- 114.9	77.4	81	00530	<0.0	,1.00	1	/Kg	mg	0.810		е	Ethylbenzene
2 20	.7 2	- 114.7	78.2	81	.0136	<0.	3.00	1	/Kg	mg	2.43			Kylene
		t.	te result	uplica	spike du	e and s	the spike	sed on	D is ba	t. RF	pike result	based on the s	verg	Percent recov
Rec.		LCSD	LCS	ĸe	$\mathbf{Spik}$				LCSD		LC			
Limit		Rec.	Rec.		Amou	Dil.	Jnits		Result		Res			urrogate
45 - 124.2		77	77		1.00	1	g/Kg		0.774		0.7			rifluorotolue
47.2 - 130.4	8 47.	78	78	0	1.00	1	g/Kg	m	0.776	75	0.7	ene (4-BFB)	rob	-Bromofluor
	nalyzed B repared B			·			2008-0 2008-0		te Anal Prepa		S-1)		51 51	2 aboratory 2 CBatch: 2 repBatch:
Rec.		P	ıtrix		oike	-				CS				
Limit		Rec. 72	sult		ount		Dil.		Uni	sult 11				aram RO
57.5 - 106.4			872		0.0		1		mg/		••••••••••••••••••••••••••••••••••••••			
		Ĵ•	e result	iplicat	spike du	e and s	the spike	ea on	J is das	t. RP		based on the sp	very	ercent recov
RPD		.ec.			ıtrix		Spike				LCSD			
	RPD	mit		Rec.			Amount				Result			aram
6 20	4 6	- 106.4		78	872		10.0	1	/Kg		8.64			RÔ
			e result	plicat	pike du	and s	the spike	ed on	) is bas	5. RP	ike result	pased on the sp	/ery	ercent recov
Rec.		LCSD	LCS		Spik	<b></b>			LCSD					
Limit		Rec.	Rec.		Amou	Dil.			Result		Resi	3(T)		urrogate
63.8 - 134.3 53.3 - 123.6		87 83 -	88 85		1.00 1.00	1 1	g/Kg g/Kg		$0.867 \\ 0.833$		0.88 0.85			rifluorotolue Bromofluoro
<u> </u>				,	1.00		g/Kg	me	0.000	<u></u>	0.8	ne (4-DI D)	obe	
	I	I							2	17009	Sample: 1	6-1) Spiked	ce (	latrix Spik
ed By: LD	nalyzed B	Analy				8-11	2008-08	zed:	e Analy	Da			51	C Batch:
	repared B						2008-08		Prepar				44	
ed By: LD	repared D													
-	repared D		otni	٦.4	niko	C-				IC	ъл			
ed By: LD Rec. Limit		Rec.	atrix esult		pike 10unt		Dil.	t a	· Uni		M Res			aram
e	repare													

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



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		MSD			Spike	Matrix		Rec.			RPD			
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit		RPD	Limi			
DRO		244	mg/Kg	1	250	47.3	79	18 - 179	9.5	2	20			
Percent recovery is based	l on the sp	ike result.	RPD is l	based on	the spike a	nd spike dı	plicate	result.						
	MS	MSD				Spike	MS	S N	ASD		Rec.			
Surrogate	Result	$\mathbf{Result}$	U	Jnits	Dil.	Amount	Red	c. I	Rec.		Limit			
n-Triacontane	102	102	m	g/Kg	1	100	10	2	102	34	.1 - 158			
Matrix Spike (MS-1)	Spiked	Sample: 17	0112											
QC Batch: 51327			Date An	alvzed:	2008-08-2	11			Analyz	zed By	r: LD			
Prep Batch: 44003				paration:	2008-08-				Prepar	-				
		MS				Spike	Mat				Rec.			
Param		Resul	+ Τ	Units	Dil.	Amount	Res		Rec.		Limit			
DRO		<u> </u>		ng/Kg	<u> </u>	250	15.8		71		- 179.5			
											110.0			
Demonstructure in here d								esuur						
Percent recovery is based	on the spi			Jaseu on	ine spike a	ilu spike ut	pincate i	court.						
Percent recovery is based	on the spi	MSD			Spike	Matrix	-	Rec.						
Param	on the spi	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit		<u>RPD</u>	Limit			
Param DRO		MSD Result 202	Units mg/Kg	Dil.	Spike Amount 250	Matrix Result 15.89	Rec.	Rec. Limit 18 - 179		RPD 5				
Param		MSD Result 202	Units mg/Kg	Dil.	Spike Amount 250	Matrix Result 15.89	Rec.	Rec. Limit 18 - 179			Limit			
Param DRO	on the spi	MSD Result 202 ke result. I	Units mg/Kg	Dil.	Spike Amount 250	Matrix Result 15.89 nd spike du	Rec. 74 plicate r	Rec. Limit 18 - 179 result.	).5	5	20			
Param DRO Percent recovery is based		MSD Result 202	Units mg/Kg RPD is b	Dil.	Spike Amount 250	Matrix Result 15.89	Rec.	Rec. Limit 18 - 179 result.		5	Limit			
Param DRO	on the spi MS	MSD Result 202 ke result. I MSD	Units mg/Kg RPD is b U	Dil. 1 pased on t	Spike Amount 250 the spike a	Matrix Result 15.89 nd spike du Spike	Rec. 74 plicate r MS	Rec. Limit 18 - 179 result. S M c. R	0.5 1SD	5 I	Limit 20 Rec.			
Param DRO Percent recovery is based Surrogate	on the spi MS Result 101	MSD Result 202 ke result. I MSD Result	Units mg/Kg RPD is b U mg	Dil. 1 based on t	Spike Amount 250 the spike as Dil.	Matrix Result 15.89 nd spike du Spike Amount	Rec. 74 plicate r MS Rec	Rec. Limit 18 - 179 result. S M c. R	0.5 ISD Rec.	5 I	Limit 20 Rec.			
Param DRO Percent recovery is based Surrogate n-Triacontane Matrix Spike (MS-1)	on the spi MS Result 101	MSD Result 202 ke result. H MSD Result 105 Sample: 170	Units mg/Kg RPD is b U mg	Dil. 1 pased on t nits g/Kg	Spike Amount 250 the spike as Dil.	Matrix Result 15.89 nd spike du Spike Amount 100	Rec. 74 plicate r MS Rec	Rec.           Limit           18 - 179           result.           S         M           S.         R           1         1	0.5 ISD Rec. 105	5 I 34.	Limit 20 Rec. Jimit 1 - 158			
Param DRO Percent recovery is based Surrogate n-Triacontane Matrix Spike (MS-1)	on the spi MS Result 101	MSD Result 202 ke result. H MSD Result 105 Sample: 170	Units mg/Kg RPD is b U mg	Dil. 1 pased on t nits g/Kg alyzed:	Spike Amount 250 the spike a Dil. 1	Matrix Result 15.89 nd spike du Spike Amount 100	Rec. 74 plicate r MS Rec	Rec.           Limit           18 - 179           result.           S           M           .           R           1	0.5 ISD Rec.	5 I 34. ed By:	Limit 20 Rec. Jimit 1 - 158			
Param DRO Percent recovery is based Surrogate n-Triacontane Matrix Spike (MS-1) QC Batch: 51331	on the spi MS Result 101	MSD Result 202 ke result. H MSD Result 105 Sample: 170	Units mg/Kg RPD is b U mg 0100 Date Ana	Dil. 1 pased on t nits g/Kg alyzed:	Spike Amount 250 the spike an Dil. 1 2008-08-1	Matrix Result 15.89 nd spike du Spike Amount 100	Rec. 74 plicate r MS Rec 101	Rec.           Limit           18 - 179           result.           S           M           .           R           1	).5 ISD Rec. 105 Analyze	5 I 34. ed By:	Limit 20 Rec. Jimit 1 - 158			
Param DRO Percent recovery is based Surrogate n-Triacontane Matrix Spike (MS-1) QC Batch: 51331	on the spi MS Result 101	MSD Result 202 ke result. H MSD Result 105 Sample: 170	Units mg/Kg RPD is b U mg 0100 Date Ana QC Prep	Dil. 1 pased on t nits g/Kg alyzed:	Spike Amount 250 the spike an Dil. 1 2008-08-1	Matrix Result 15.89 nd spike du Spike Amount 100	Rec. 74 plicate r MS Rec 101	Rec. Limit 18 - 179 result. S M 2. R 1 1	).5 ISD Rec. 105 Analyze	5 I 34. ed By: ed By:	Limit 20 Rec. Jimit 1 - 158 AG AG			
Param DRO Percent recovery is based Gurrogate I-Triacontane Matrix Spike (MS-1) QC Batch: 51331 Prep Batch: 51331 Prep Batch: 44022	on the spi MS Result 101	MSD Result 202 ke result. H MSD Result 105 Sample: 170 I C MS	Units mg/Kg RPD is b U mg 0100 Date Ana QC Prep t I	Dil. 1 pased on t inits g/Kg alyzed: aration:	Spike Amount 250 the spike at Dil. 1 2008-08-1 2008-08-1	Matrix Result 15.89 and spike du Spike Amount 100 1 1 2 5pike	Rec. 74 plicate r MS Rec 101	Rec. Limit 18 - 179 result. 5 M 2. R 1 1	).5 ISD Rec. 105 Analyze Prepare	5 I 34. ed By: ed By:	Limit 20 Rec. Jimit 1 - 158 AG AG Rec.			
Param DRO Percent recovery is based Surrogate h-Triacontane Matrix Spike (MS-1) QC Batch: 51331 Prep Batch: 51331 Prep Batch: 44022	on the spi MS Result 101 Spiked S	MSD Result 202 ke result. H MSD Result 105 Sample: 170 K MS Resul 5170	Units mg/Kg RPD is b U mg 0100 Date Ana QC Prep t U	Dil. 1 pased on t nits g/Kg alyzed: aration: Units ng/Kg	Spike Amount 250 the spike as Dil. 1 2008-08-1 2008-08-1 Dil. 50	Matrix Result 15.89 ad spike du Spike Amount 100 1 1 1 Spike Amount 5000	Rec. 74 plicate r MS Rec 101 101	Rec. Limit 18 - 179 result. S M 2. R 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	).5 ISD Rec. 105 Analyze Prepare Rec.	5 I 34. ed By: ed By:	Limit 20 Rec. Limit 1 - 158 AG AG Rec. Limit			
Param DRO Percent recovery is based Surrogate n-Triacontane Matrix Spike (MS-1) QC Batch: 51331 Prep Batch: 44022	on the spi MS Result 101 Spiked S	MSD Result 202 ke result. H MSD Result 105 Sample: 170 K MS Resul 5170	Units mg/Kg RPD is b U mg 0100 Date Ana QC Prep t U	Dil. 1 pased on t nits g/Kg alyzed: aration: Units ng/Kg	Spike Amount 250 the spike as Dil. 1 2008-08-1 2008-08-1 Dil. 50	Matrix Result 15.89 ad spike du Spike Amount 100 1 1 1 Spike Amount 5000	Rec. 74 plicate r MS Rec 101 101	Rec. Limit 18 - 179 result. S M 2. R 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	).5 ISD Rec. 105 Analyze Prepare Rec.	5 I 34. ed By: ed By:	Limit 20 Rec. Limit 1 - 158 AG AG Rec. Limit			
Param DRO Percent recovery is based Surrogate h-Triacontane Matrix Spike (MS-1) QC Batch: 51331 Prep Batch: 51331 Prep Batch: 44022	on the spi MS Result 101 Spiked S	MSD Result 202 ke result. H MSD Result 105 Sample: 170 Ke result. F	Units mg/Kg RPD is b U mg 0100 Date Ana QC Prep t U	Dil. 1 pased on t nits g/Kg alyzed: aration: Units ng/Kg	Spike Amount 250 the spike as Dil. 1 2008-08-1 2008-08-1 Dil. 50 he spike as	Matrix Result 15.89 ad spike du Spike Amount 100 1 1 1 Spike Amount 5000 ad spike du	Rec. 74 plicate r MS Rec 101 101	Rec. Limit 18 - 179 result. S M 2. R 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	).5 ISD Rec. 105 Analyz Prepare Rec. 100	5 I 34. ed By: ed By:	Limit 20 Rec. Jimit 1 - 158 AG AG AG Rec. Limit 5 - 115			



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Matrix Spike (MS-1)	Spiked Sa	mple: 17	0110								
QC Batch: 51338 Prep Batch: 44022			Date An QC Prep	alyzed: paration:	2008-08- 2008-08-				Analyzed B Prepared B		
		MS				Spike	Mat			Rec.	
Param Chloride		Resu 5130		Units ng/Kg	Dil 50	Amount 5000	Res 16		Rec. 99	Limit 85 - 11	
Percent recovery is based of	on the spike								33	00-11	
recent recovery is based of				Jased OII	-	-	upilcate re				
Param		MSD Result	Units	Dil.	Spike Amount	Matrix	Rec.	Rec. Limit	RPD	RPI Limi	
Chloride		5160	mg/Kg	<u>50</u>	5000	Result 167	<u>100</u>	85 - 11		20	
Percent recovery is based of											
Matrix Spike (MS-1)	Spiked Sa	-			0000.00	10	•	А	nalyzed B	v: AG	
QC Batch: 51340 Prep Batch: 44022			Date An QC Prep		2008-08- 2008-08-				repared B		
-			QC Prep				Mati	Р			
Prep Batch: 44022		MS Resul	QC Prep lt	paration: Units	2008-08- Dil.	11 Spike Amount	Resi	P rix 1lt	repared B	y: AG Rec. Limit	
Prep Batch: 44022 Param Chloride		MS Resul 4980	QC Prep ltn	Daration: Units ng/Kg	2008-08- Dil. 50	11 Spike <u>Amount</u> 5000	Rest <25	P rix 1lt .0	repared B	y: AG Rec. Limit	
Prep Batch: 44022	on the spike	MS Resul 4980	QC Prep ltn	Daration: Units ng/Kg	2008-08- Dil. 50	11 Spike <u>Amount</u> 5000	Rest <25	P rix 1lt .0	repared B	y: AG Rec. Limit	
Prep Batch: 44022 Param Chloride Percent recovery is based o	I	MS Resul 4980 result. F	QC Prep lt ) n RPD is b	Units ng/Kg ased on	2008-08- Dil. 50 the spike a Spike	11 Spike Amount 5000 and spike du Matrix	Resu <25 uplicate res	P rix <u>1lt</u> .0 sult. Rec.	repared By Rec. 100	y: AG Rec. Limit 85 - 115 RPD	
Prep Batch: 44022 Param Chloride Percent recovery is based o Param	I R	MS Resul 4980 result. F MSD Result	QC Prep lt	Units ng/Kg based on Dil.	2008-08- Dil. 50 the spike a Spike Amount	11 Spike Amount 5000 and spike du Matrix Result	Resu <25 uplicate res Rec.	P nix nlt .0 sult. Rec. Limit	repared By Rec. 100 RPD	y: AG Rec. Limit 85 - 113 RPD Limit	
Prep Batch: 44022 Param Chloride Percent recovery is based of Param Chloride	I R	MS Resul 4980 result. I MSD Result 5000	QC Prep lt ) n RPD is b Units mg/Kg	Units ng/Kg pased on Dil. 50	2008-08- Dil. 50 the spike a Spike Amount 5000	11 Spike Amount 5000 and spike du Matrix Result <25.0	Resu <25 aplicate res Rec. 100	P rix nlt .0 sult. Rec. Limit 85 - 115	repared By Rec. 100 RPD	y: AG Rec. Limit 85 - 113 RPD	
Prep Batch: 44022 Param Chloride Percent recovery is based o Param	I R	MS Resul 4980 result. F MSD Result 5000 result. F mple: 170	QC Prep lt ) n RPD is b Units mg/Kg RPD is b	Units ng/Kg ased on Dil. 50 ased on a	2008-08- Dil. 50 the spike a Spike Amount 5000	11 Spike Amount 5000 and spike du Matrix Result <25.0 and spike du	Resu <25 aplicate res Rec. 100	P rix <u>ilt</u> .0 sult. Rec. Limit 85 - 115 sult.	repared By Rec. 100 RPD	y: AG Rec. Limit 85 - 113 RPD Limit 20	
Prep Batch: 44022 Param Chloride Percent recovery is based of Param Chloride Percent recovery is based of Matrix Spike (MS-1) QC Batch: 51371	I R on the spike	MS Resul 4980 result. F MSD Result 5000 result. F mple: 170	QC Prep lt	Units ng/Kg ased on Dil. 50 ased on a	2008-08- Dil. 50 the spike a Spike Amount 5000 the spike a 2008-08- 2008-08-	11 Spike Amount 5000 and spike du Matrix Result <25.0 and spike du	Resu <25 aplicate res Rec. 100	P rix ilt .0 sult. Rec. Limit 85 - 115 sult. A Pr	Rec. 100 RPD 0 nalyzed By	y: AG Rec. Limit 85 - 11: RPD Limit 20	
Prep Batch: 44022 Param Chloride Percent recovery is based of Param Chloride Percent recovery is based of Matrix Spike (MS-1) QC Batch: 51371 Prep Batch: 44030 Param Benzene	n the spike Spiked Sar	MS Result 4980 result. F MSD Result 5000 result. F mple: 170 I MS Result 1.66	QC Prep lt	Units ng/Kg based on Dil. 50 ased on ased on alyzed: aration: hits /Kg	2008-08- Dil. 50 the spike a Spike Amount 5000 the spike a 2008-08- 2008-08-	11 Spike Amount 5000 and spike du Matrix Result <25.0 and spike du 12 11 Spike Amount 1.00	Resi <25 uplicate res Rec. 100 uplicate res Matrix Result <0.00580	P rix ilt .0 sult. Rec. Limit 85 - 115 sult. A P Rec Rec	Rec. 100 RPD 0 0 nalyzed By repared By c. I 5 62.2	y: AG Rec. Limit 85 - 115 RPD Limit 20 y: DC y: DC y: DC Rec. Limit - 134.3	
Prep Batch: 44022 Param Chloride Percent recovery is based of Param Chloride Percent recovery is based of Matrix Spike (MS-1) QC Batch: 51371 Prep Batch: 44030 Param	I R on the spike Spiked Sar	MS Result 4980 result. F MSD Result 5000 result. F mple: 170 I MS Result	QC Prep lt	Units ng/Kg based on Dil. 50 ased on ased on alyzed: aration: hits /Kg /Kg	2008-08- Dil. 50 the spike a Spike Amount 5000 the spike a 2008-08- 2008-08- 2008-08- 2008-08-	11 Spike Amount 5000 and spike du Matrix Result <25.0 and spike du 12 11 Spike Amount	Resa <25 uplicate res Rec. 100 uplicate res Matrix Result	P rix ilt .0 sult. Rec. Limit 85 - 115 sult. A P Rec Rec 166 176	Rec. 100 RPD 0 0 nalyzed By repared By c. I 5 62.2 5 62.6	y: AG Rec. Limit 85 - 115 RPD Limit 20 y: DC y: DC y: DC r: DC Rec. Limit	

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





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#### matrix spikes continued ...

		MS			Spike	Matrix		$\operatorname{Rec.}$
Param		Result	$\mathbf{Units}$	Dil.	Amount	$\mathbf{Result}$	Rec.	Limit
Xylene	9	5.41	mg/Kg	1	3.00	< 0.0136	180	64.3 - 148.8

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	$\mathbf{Result}$	Rec.	$\mathbf{Limit}$	RPD	Limit
Benzene	10	1.53	mg/Kg	1	1.00	< 0.00580	153	62.2 - 134.3	8	20
Toluene	11	1.60	mg/Kg	1	1.00	< 0.00470	<b>16</b> 0	62.6 - 145.4	10	20
Ethylbenzene	12	1.60	mg/Kg	1	1.00	< 0.00530	160	64.6 - 146.4	11	20
Xylene	13	4.85	mg/Kg	1	<b>3</b> .00	< 0.0136	162	64.3 - 148.8	11	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	$\mathbf{Result}$	$\mathbf{Result}$	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	0.797	0.823	mg/Kg	1	1	80	82	38.8 - 127.5
4-Bromofluorobenzene (4-BFB)	0.827	0.859	mg/Kg	1	1	83	86	49.3 - 142.4

#### Matrix Spike (MS-1) Spiked Sample: 170109

ē1	QC Batch:	51372	Date Analyzed:	2008-08-12	Analyzed By:	DC
5)	QC Batch: Prep Batch:	44030	QC Preparation:	2008-08-11	Prepared By:	DC

	$\mathbf{MS}$			Spike	Matrix		Rec.
Param	$\mathbf{Result}$	$\mathbf{Units}$	Dil.	Amount	$\mathbf{Result}$	Rec.	Limit
GRO	15.3	mg/Kg	1	10.0	11.3029	40	10 - 139.3

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

	MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{Result}$	Units	Dil.	Amount	$\mathbf{Result}$	Rec.	Limit	RPD	Limit
GRO	16.9	mg/Kg	1	10.0	11.3029	56	10 - 139.3	10	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	$\mathbf{Result}$	Result	Units	Dil.	Amount	Rec.	Rec.	$\mathbf{Limit}$
Trifluorotoluene (TFT)	0.972	0.920	mg/Kg	1	1	97	92	21.3 - 119
4-Bromofluorobenzene (4-BFB)	0.947	0.880	mg/Kg	1	1	95	88	52.5 - 154

⁹Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

¹⁰Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

¹¹Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

¹²Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control. ¹³Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.





#### Matrix Spike (MS-1) Spiked Sample: 170117

QC Batch: Prep Batch:	Date Analyzed: QC Preparation:	Analyzed By: Prepared By:	

	MS			Spike	Matrix		Rec.
Param	$\mathbf{Result}$	$\mathbf{Units}$	Dil.	Amount	$\mathbf{Result}$	Rec.	Limit
Benzene	1.21	mg/Kg	1	1.00	< 0.00580	121	62.2 - 134.3
Toluene	1.26	mg/Kg	1	1.00	< 0.00470	126	62.6 - 145.4
Ethylbenzene	1.27	mg/Kg	1	1.00	0.0517	122	64.6 - 146.4
Xylene	3.82	mg/Kg	1	3.00	0.0743	125	64.3 - 148.8

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
Benzene	1.31	mg/Kg	1	1.00	< 0.00580	131	62.2 - 134.3	8	20
Toluene	1.36	mg/Kg	1	1.00	< 0.00470	136	62.6 - 145.4	8	20
Ethylbenzene	1.37	mg/Kg	1	1.00	0.0517	132	64.6 - 146.4	8	20
Xylene	4.14	mg/Kg	1	3.00	0.0743	136	64.3 - 148.8	8	20

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

Δ.	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	$\mathbf{Result}$	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	0.756	0.762	mg/Kg	1	1	76	76	38.8 - 127.5
4-Bromofluorobenzene (4-BFB)	0.784	0.780	mg/Kg	1	1	78	78	49.3 - 142.4

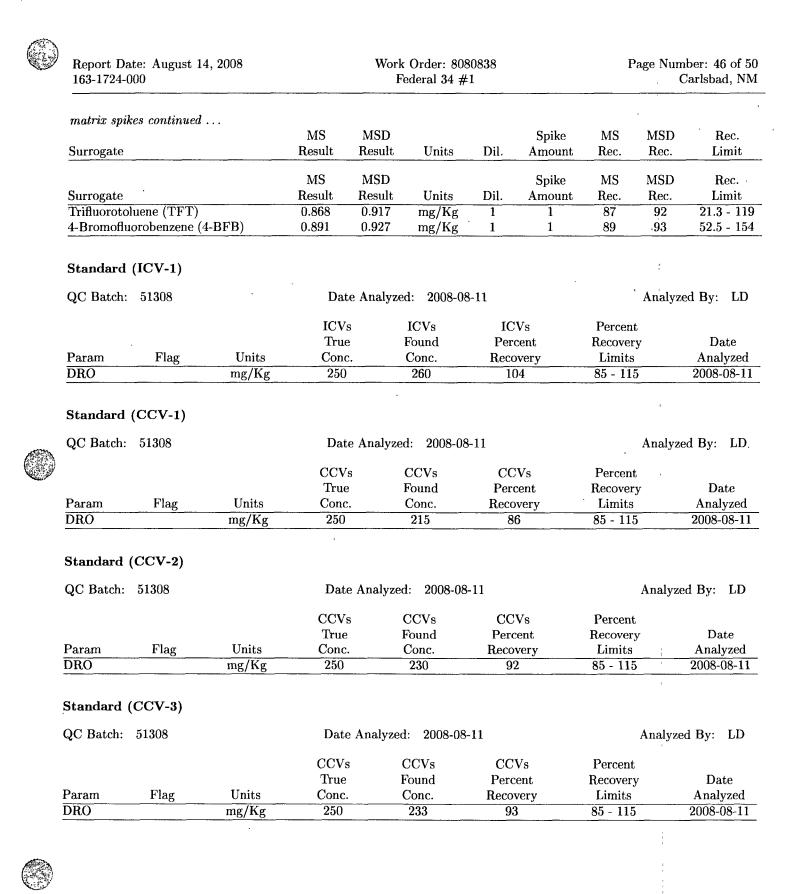
#### Matrix Spike (MS-1) Spiked Sample: 170110

QC Batch: Prep Batch:	51390 44052		e Analyzed: Preparation:	2008-08 2008-08		Analyzed By: DC Prepared By: DC		
Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		10.6	mg/Kg	1	10.0	1.9169	87	10 - 139.3

		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	14	7.50	mg/Kg	1	10.0	1.9169	56	10 - 139.3	34	20
Percent recovery is based of	on the spi	ke result.	RPD is ba	sed on	the spike ar	nd spike du	iplicate	result.		

continued ...

¹⁴MS/MSD RPD out of RPD Limits. Use LCS/LCSD to demonstrate analysis is under control.



163-1724-00	e: August 14 )0	4, 2008	· V	Vork Order: 80 Federal 34 #			umber: 47 of Carlsbad, N
Standard (	ICV-1)						
QC Batch:	51327		Date Ana	alyzed: 2008-0	8-11	Ana	lyzed By: LI
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		mg/Kg	250	213	85	85 - 115	2008-08-1
Standard (	CCV-1)						
QC Batch:	51327		Date Ana	lyzed: 2008-0	8-11	Anal	yzed By: LD
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		mg/Kg	250	222	89	85 - 115	2008-08-1
Standard ( QC Batch:	,		Date Ana	lyzed: 2008-08	8-11	Anal	yzed By: AG
)			ICVs	ICVs	ICVs	Percent	•
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzec
		mg/Kg	100	100	100	85 - 115	2008-08-1
Chloride							
Chloride Standard (	CCV-1)						
			Date Ana	lyzed: 2008-08	3-11	Anal	yzed By: AG
Standard (			Date Ana CCVs	-		Analy	yzed By: AG
Standard (				lyzed: 2008-08 CCVs Found	3-11 CCVs Percent	·	yzed By: AG Date
Standard (		Units	CCVs True Conc.	CCVs	CCVs	Percent Recovery Limits	Date Analyzed
Standard ( QC Batch:	51331	Units mg/Kg	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date Analyzed
Standard ( QC Batch: Param Chloride	51331 Flag		CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Standard ( QC Batch: Param	51331 Flag		CCVs True Conc. 100	CCVs Found Conc.	CCVs Percent Recovery 100	Percent Recovery Limits 85 - 115	Date Analyzed
Standard (G QC Batch: Param Chloride Standard (1	51331 Flag		CCVs True Conc. 100 Date Anal	CCVs Found Conc. 99.6 yzed: 2008-08	CCVs Percent Recovery 100	Percent Recovery Limits 85 - 115 Analy	Date Analyzed 2008-08-1
Standard (G QC Batch: Param Chloride Standard (1	51331 Flag		CCVs True Conc. 100 Date Anal ICVs	CCVs Found Conc. 99.6 yzed: 2008-08 ICVs	CCVs Percent Recovery 100 3-11 ICVs	Percent Recovery Limits 85 - 115 Analy Percent	Date Analyzed 2008-08-1
Standard (G QC Batch: Param Chloride Standard (1	51331 Flag		CCVs True Conc. 100 Date Anal	CCVs Found Conc. 99.6 yzed: 2008-08	CCVs Percent Recovery 100	Percent Recovery Limits 85 - 115 Analy	Analyzed 2008-08-11

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163-1724-0	ate: August 14, 2 000	2008	Wa	ork Order: 808 Federal 34 #1		Page Number: 48 of 5 Carlsbad, NN	
Standard	(CCV-1)					1	
QC Batch:	51338		Date Analy	yzed: 2008-08	3-11	Anal	yzed By: AG
			$\operatorname{CCVs}$	$\mathbf{CCVs}$	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	99.5	100	85 - 115	2008-08-11
Standard	(ICV-1)						
QC Batch:	51340		Date Analy	zed: 2008-08	-12	Analy	yzed By: AG
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	102	102	85 - 115	2008-08-12
Standard QC Batch:	. ,		Date Analy	zed: 2008-08-	-12	Analy	vzed By: AG
Standard QC Batch:	. ,		·	zed: 2008-08-		1 -	vzed By: AG
	. ,		CCVs	CCVs	$\rm CCVs$	Percent	
QC Batch:	51340	Unite	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
	. ,	Units mg/Kg	CCVs	CCVs	$\rm CCVs$	Percent	Date Analyzed
QC Batch:	51340 Flag (ICV-1)		CCVs True Conc. 100	CCVs Found Conc.	CCVs Percent Recovery 98	Percent Recovery Limits 85 - 115	Date Analyzed
QC Batch: Param Chloride Standard	51340 Flag (ICV-1)		CCVs True Conc. 100 Date Analy	CCVs Found Conc. 98.5 zed: 2008-08-	CCVs Percent Recovery 98	Percent Recovery Limits 85 - 115 Analy	Date Analyzed 2008-08-12
QC Batch: Param Chloride Standard	51340 Flag (ICV-1)		CCVs True Conc. 100 Date Analy ICVs	CCVs Found Conc. 98.5 zed: 2008-08- ICVs	CCVs Percent Recovery 98 -12 ICVs	Percent Recovery Limits 85 - 115 Analy Percent	Date Analyzed 2008-08-12 rzed By: DC
QC Batch: Param Chloride Standard	51340 Flag (ICV-1)		CCVs True Conc. 100 Date Analy	CCVs Found Conc. 98.5 zed: 2008-08-	CCVs Percent Recovery 98	Percent Recovery Limits 85 - 115 Analy	Date Analyzed 2008-08-12
QC Batch: Param Chloride Standard QC Batch:	51340 Flag (ICV-1) 51371	mg/Kg	CCVs True Conc. 100 Date Analy ICVs True	CCVs Found Conc. 98.5 zed: 2008-08- ICVs Found	CCVs Percent Recovery 98 -12 -12 ICVs Percent	Percent Recovery Limits 85 - 115 Analy Percent Recovery	Date Analyzed 2008-08-12 rzed By: DC Date Analyzed
QC Batch: Param Chloride Standard QC Batch: Param Benzene Toluene	51340 Flag (ICV-1) 51371 Flag	mg/Kg Units mg/Kg mg/Kg	CCVs True Conc. 100 Date Analy ICVs True Conc. 0.100 0.100	CCVs Found Conc. 98.5 zed: 2008-08- ICVs Found Conc.	CCVs Percent Recovery 98 	Percent Recovery Limits 85 - 115 Analy Percent Recovery Limits	Date Analyzed 2008-08-12 rzed By: DC Date
QC Batch: Param Chloride Standard QC Batch: Param Benzene Toluene Ethylbenzen	51340 Flag (ICV-1) 51371 Flag	mg/Kg Units mg/Kg mg/Kg mg/Kg	CCVs True Conc. 100 Date Analy ICVs True Conc. 0.100 0.100 0.100	CCVs Found Conc. 98.5 zed: 2008-08- ICVs Found Conc. 0.0917	CCVs Percent Recovery 98 12 12 ICVs Percent Recovery 92	Percent Recovery Limits 85 - 115 Analy Percent Recovery Limits 85 - 115	Date Analyzed 2008-08-12 zed By: DC Date Analyzed 2008-08-12
QC Batch: Param Chloride Standard QC Batch: Param Benzene Toluene	51340 Flag (ICV-1) 51371 Flag	mg/Kg Units mg/Kg mg/Kg	CCVs True Conc. 100 Date Analy ICVs True Conc. 0.100 0.100	CCVs Found Conc. 98.5 zed: 2008-08- ICVs Found Conc. 0.0917 0.0940	CCVs Percent Recovery 98 .12 .12 ICVs Percent Recovery 92 94	Percent Recovery Limits 85 - 115 Analy Percent Recovery Limits 85 - 115 85 - 115	Date Analyzed 2008-08-12 zed By: DC Date Analyzed 2008-08-12 2008-08-12 2008-08-12
QC Batch: Param Chloride Standard QC Batch: Param Benzene Toluene Ethylbenzen Xylene	51340 Flag (ICV-1) 51371 Flag	mg/Kg Units mg/Kg mg/Kg mg/Kg	CCVs True Conc. 100 Date Analy ICVs True Conc. 0.100 0.100 0.100	CCVs Found Conc. 98.5 zed: 2008-08- ICVs Found Conc. 0.0917 0.0940 0.0944	CCVs Percent Recovery 98 	Percent Recovery Limits 85 - 115 Analy Percent Recovery Limits 85 - 115 85 - 115 85 - 115	Date Analyzed 2008-08-12 rzed By: DC Date Analyzed 2008-08-12 2008-08-12
QC Batch: Param Chloride Standard QC Batch: Param Benzene Toluene Ethylbenzen	51340 Flag (ICV-1) 51371 Flag	mg/Kg Units mg/Kg mg/Kg mg/Kg	CCVs True Conc. 100 Date Analy ICVs True Conc. 0.100 0.100 0.100	CCVs Found Conc. 98.5 zed: 2008-08- ICVs Found Conc. 0.0917 0.0940 0.0944	CCVs Percent Recovery 98 	Percent Recovery Limits 85 - 115 Analy Percent Recovery Limits 85 - 115 85 - 115 85 - 115	Date Analyzed 2008-08-12 rzed By: DC Date Analyzed 2008-08-12 2008-08-12 2008-08-12

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Report Date: A 163-1724-000	August 14, 2	2008	W	ork Order: 8080 Federal 34 #1		Page N	umber: 49 of 5 Carlsbad, NM
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene	- 0	mg/Kg	0.100	0.0946	95	85 - 115	2008-08-12
Toluene		mg/Kg	0.100	0.0947	95	85 - 115	2008-08-12
Ethylbenzene		mg/Kg	0.100	0.0908	91	85 - 115	2008-08-12
Xylene		mg/Kg	0.300	0.273	91	85 - 115	2008-08-12
Standard (IC)	V-1)						
QC Batch: 513			Date Analy	vzed: 2008-08-	-12	Anal	yzed By: DC
					1011		
			ICVs	ICVs	ICVs	Percent	
					Percent	Recovery	Date
<b>D</b>		TT	True	Found		•	A 1 1
	Flag	Units mg/Kg		Found Conc. 1.13	Recovery 113	Limits 85 - 115	Analyzed 2008-08-12
	Flag		True Conc.	Conc.	Recovery	Limits	
GRO			True Conc.	Conc.	Recovery	Limits	
Param GRO Standard (CC QC Batch: 513	V-1)		True Conc.	Conc. 1.13	Recovery 113	Limits 85 - 115	
GRO Standard (CC	V-1)		True Conc. 1.00	Conc. 1.13	Recovery 113	Limits 85 - 115	2008-08-12
GRO Standard (CC	V-1)		True Conc. 1.00 Date Analy	Conc. 1.13 vzed: 2008-08-	Recovery 113 12	Limits 85 - 115 Anal Percent	2008-08-12
GRO Standard (CC QC Batch: 513	<b>V-1)</b> 772		True Conc. 1.00 Date Analy CCVs	Conc. 1.13 rzed: 2008-08- CCVs	Recovery 113 12 CCVs Percent	Limits 85 - 115 Anal	2008-08-12 yzed By: DC Date
GRO Standard (CC QC Batch: 513 Param I	V-1)	mg/Kg	True Conc. 1.00 Date Analy CCVs True	Conc. 1.13 rzed: 2008-08- CCVs Found	Recovery 113 12 CCVs	Limits 85 - 115 Analy Percent Recovery	2008-08-12 yzed By: DC Date Analyzed
GRO Standard (CC QC Batch: 513 Param I GRO	<b>V-1)</b> 372 Flag	mg/Kg Units	True Conc. 1.00 Date Analy CCVs True Conc.	Conc. 1.13 rzed: 2008-08- CCVs Found Conc.	Recovery 113 12 CCVs Percent Recovery	Limits 85 - 115 Anal Percent Recovery Limits	2008-08-12 yzed By: DC Date Analyzed
GRO Standard (CC QC Batch: 513 Param H GRO Standard (ICV	V-1) 572 Flag 7-1)	mg/Kg Units	True Conc. 1.00 Date Analy CCVs True Conc.	Conc. 1.13 rzed: 2008-08- CCVs Found Conc. 1.10	Recovery 113 12 CCVs Percent Recovery 110	Limits 85 - 115 Anal Percent Recovery Limits 85 - 115	2008-08-12 yzed By: DC Date Analyzed
GRO Standard (CC QC Batch: 513 Param H GRO Standard (ICV	V-1) 572 Flag 7-1)	mg/Kg Units	True Conc. 1.00 Date Analy CCVs True Conc. 1.00	Conc. 1.13 rzed: 2008-08- CCVs Found Conc. 1.10	Recovery 113 12 CCVs Percent Recovery 110	Limits 85 - 115 Anal Percent Recovery Limits 85 - 115	2008-08-12 yzed By: DC Date Analyzed 2008-08-12
GRO Standard (CC QC Batch: 513 Param H GRO Standard (ICV	V-1) 72 Flag 7-1)	mg/Kg Units	True Conc. 1.00 Date Analy CCVs True Conc. 1.00 Date Analy	Conc. 1.13 zzed: 2008-08- CCVs Found Conc. 1.10 zed: 2008-08-	Recovery 113 12 CCVs Percent Recovery 110 12	Limits 85 - 115 Analy Percent Recovery Limits 85 - 115 Analy	2008-08-12 yzed By: DC Date Analyzed 2008-08-12
GRO Standard (CC QC Batch: 513 Param I GRO Standard (ICV QC Batch: 513	V-1) 72 Flag 7-1)	mg/Kg Units	True Conc. 1.00 Date Analy CCVs True Conc. 1.00 Date Analy ICVs	Conc. 1.13 vzed: 2008-08- CCVs Found Conc. 1.10 zed: 2008-08- ICVs	Recovery 113 12 CCVs Percent Recovery 110 12 ICVs Percent	Limits 85 - 115 Analy Percent Recovery Limits 85 - 115 Analy Percent	2008-08-12 yzed By: DC Date Analyzed 2008-08-12 yzed By: DC
GRO Standard (CC QC Batch: 513 Param I GRO Standard (ICV QC Batch: 513 Param	V-1) 572 Flag 7-1)	mg/Kg Units mg/Kg	True Conc. 1.00 Date Analy CCVs True Conc. 1.00 Date Analy ICVs True	Conc. 1.13 vzed: 2008-08- CCVs Found Conc. 1.10 zed: 2008-08- ICVs Found	Recovery 113 12 CCVs Percent Recovery 110 12 ICVs	Limits 85 - 115 Analy Percent Recovery Limits 85 - 115 Analy Percent Recovery	2008-08-12 yzed By: DC Date Analyzed 2008-08-12 yzed By: DC
GRO Standard (CC QC Batch: 513 Param I GRO Standard (ICV QC Batch: 513 Param Benzene	V-1) 72 Flag 7-1)	mg/Kg Units mg/Kg Units	True Conc. 1.00 Date Analy CCVs True Conc. 1.00 Date Analy ICVs True Conc.	Conc. 1.13 rzed: 2008-08- CCVs Found Conc. 1.10 zed: 2008-08- ICVs Found CVs Found Conc.	Recovery         113         12         CCVs         Percent         Recovery         110         12         ICVs         Percent         Recovery         Recovery	Limits 85 - 115 Analy Percent Recovery Limits 85 - 115 Analy Percent Recovery Limits	2008-08-12 yzed By: DC Date Analyzed 2008-08-12 yzed By: DC Date Analyzed
GRO Standard (CC QC Batch: 513	V-1) 72 Flag 7-1)	mg/Kg Units mg/Kg Units mg/Kg	True Conc. 1.00 Date Analy CCVs True Conc. 1.00 Date Analy ICVs True Conc. 0.100	Conc.           1.13           rzed:         2008-08-           CCVs           Found           Conc.           1.10           zed:         2008-08-           ICVs           Found           Conc.           1.00	Recovery         113         12         CCVs         Percent         Recovery         110         12         ICVs         Percent         Recovery         91	Limits 85 - 115 Analy Percent Recovery Limits 85 - 115 Analy Percent Recovery Limits 85 - 115	2008-08-12 yzed By: DC Date Analyzed 2008-08-12 yzed By: DC Date Analyzed 2008-08-12

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QC Batch: 51389

Date Analyzed: 2008-08-12

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Analyzed By: DC

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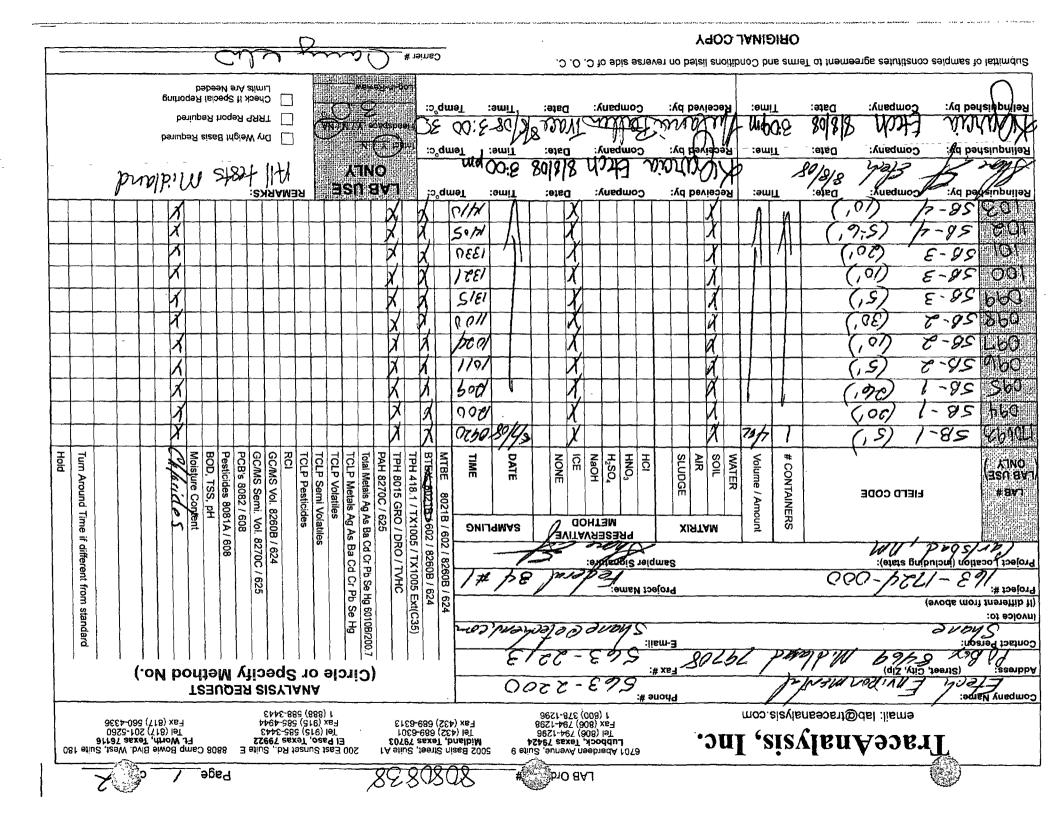


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Report Date: 163-1724-000	August 14, 5	2008	W	ork Order: 808 Federal 34 #1		Page N	umber: 50 of 50 Carlsbad, NM
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	$\mathbf{Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0960	96	85 - 115	2008-08-12
Toluene		mg/Kg	0.100	0.0968	97	85 - 115	2008-08-12
Ethylbenzene		mg/Kg	0.100	0.0942	94	85 - 115	2008-08-12
Xylene		mg/Kg	0.300	0.280	93	85 - 115	2008-08-12
Standard (IC QC Batch: 51			Date Anal	yzed: 2008-08-	-12	Anal	yzed By: DC
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	1.03	103	85 - 115	2008-08-12
Standard (CO	CV-1)						
QC Batch: 51	390		Date Analy	/zed: 2008-08-	12	Analy	yzed By: DC
			$\mathbf{CCVs}$	CCVs	CCVs	Percent	
	•		True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	1.10	110	85 - 115	2008-08-12

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ORIGINAL COPY # reimeO Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C. weiyes-m-go bebeeN anA stimil Check If Special Reporting Relinquished by: Received by: :ewn :eteO :YneqmoJ 2 :o`qmoT :ewiii :0160 :Ynsqmo beninpag troqag 9887 818 32F 80 0);9 x 00.6 WILLIN / L epectspear DyC 2001 Dry Weight Basis Required Relinquished by: (X)œu :ວ**ຼdɯə**ɪ :Kuedwog :emi] :YnaqmoD Received by: Date: ;euili :eted puppin stat 114 W000.2 8018 ŊЦ wal :əted XING :Kuedwog Relinguid by: REMARKS: :o_dwe_ :Auedwog Received by: ;eug :eteQ :ewij 30 059 95 χ 6 5891 V  $\mathcal{L}$ -95 21 してオ 85 07 0 85 11 X 80M چ ا g CM 179 507 2, Ð. 60 N 12,58 15 80 0) 85 X Ō/ 0151 17 み X 19 901 hst ,00 X SM .85 1ph S 4 794 **Holig** 85 \$ 2 3 Hold TCLP TCLP PAH TPH 8015 GRO / DRO / TVHC BTEX 8021B / 902 / 8260B / 624 MTBE PCB's 8082 / 608 RC TPH 418.1 / TX1005 / TX1005 Ext(C35) Moisture Content BOD, TSS, pH Pesticides 8081A / GC/MS Semi. Vol. GC/MS Vol. 8260B / 624 TCLP Volatiles TCLP Metals Ag As TIME DATE NaOH H₂SO₄ SOIL WATER Turn Total Metals Ag As Ba NONE **D**E HNO3 # <u>Б</u> SLUDGE AIR Volume / **XINO** plande CONTAINERS Jasu aku 8270C / 625 Around Pesticides Semi Volatiles #8V1 **EIELD CODE** 8021B 'Amount Time METHOD / 602 **ONLIGMAS** XIATAM if different 608 . 8270C 8 Sampler Stature: Ba Cd Ø 1995 Cr Pb Se 8260B Project Location (including state) / 625 3 ß olap. 000 Cr Pb Æ from Project Name: Project #: Hg 6010B/200.7 624 (If different from above) Se standard Invoice to: Ъ С WJ'ANOYJA 34045 OVDUS al Contact Person: :lism-3 E120-E99 (diz 'Alio 'Jeeds) 19 VO 5 (Circle or Specify Method No.) :ssanbbA :# X&-] 293-3500 VSN **TSEUDER SIEVLANA** :# euoud Company Name: 1 (888) 288-3443 moo.aiavlenseoseu@del :lieme 8021-875 (008) 1 9921-875 (008) 1 FL Worth, Texas 76116 Tel (817) 201-5260 Fax (817) 560-4336 Fax (915) 585-4944 Tel (915) 585-3443 Tel (432) 689-6313 Fax (432) 689-6313 6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 Tei (806) 794-1296 TraceAnalysis, Inc. EI Paso, Texas 79922 E0797 26x97 , bnsibil 081 sliug, izeW. West, Suite 180 200 East Sunset Rd., Suite E FA sting , testig nize 8 2002 КАВ Ого вал XEXOXOX Page_



200 Fail: Sonse, Roba, Sonte S. – Fl Paso, Texas 79927 500, Base Stiles, Roba, Sente S. – Fl Paso, Texas 79927 500, Base Stiles, Sonte A.) – Midtana Texas 79703 60, El cono Stanksey, State Stöll, FL Monto, Texas 76137

Lobrock Texas 79424 - 200+379+1295 11 Paso, Texas 79922 - 896+596+3415 Mistana Texas 79703 1 Worth Taxas 76135 - L-Mail TaxAstraceanalysis com 506+794+1_00 CA 915+585+3442 FA 132+580+6301 FA 311+10+1_201

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NELAP Certifications

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

Midland: T104704392-08-TX



### Analytical and Quality Control Report

Shane Estep Etech Environmental Safety

P.O. Box 8469 Midland, TX, 79708 Report Date: August 13, 2008

Work Order: 8080837

Project Location:Carlsbad, NMProject Name:Federal 34 #1Project Number:163-1724-000

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
170091	SB-10 (4'-6')	soil	2008-08-07	17:04	2008-08-08
170092	SB-10 (30')	soil	2008-08-07	17:19	2008-08-08

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.



Michael april

Dr. Blair Leftwich, Director

Standard Flags  ${f B}$  - The sample contains less than ten times the concentration found in the method blank.



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Page 2 of 13

### Case Narrative

Samples for project Federal 34 #1 were received by TraceAnalysis, Inc. on 2008-08-08 and assigned to work order 8080837. Samples for work order 8080837 were received intact at a temperature of 3.0 deg. C.

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

Test	Method	
BTEX	S 8021B	
Chloride (Titration)	SM 4500-Cl B	
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 8080837 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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





Report Date: August 13, 2008 163-1724-000

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## **Analytical Report**

#### Sample: 170091 - SB-10 (4'-6')

Laboratory: Analysis: QC Batch: Prep Batch:	BTEX 51371		Analytical Method: Date Analyzed: Sample Preparation:	S 8021B 2008-08-12 2008-08-11	Prep Method: Analyzed By: Prepared By:	
			$\mathbf{RL}$			
Parameter		Flag	Result	Units	Dilution	$\mathbf{RL}$
Benzene			0.0160	mg/Kg	1	0.0100
Toluene			0.0255	mg/Kg	1	0.0100
Ethylbenzene			0.0444	mg/Kg	1	0.0100
Xylene			0.0910	mg/Kg	1	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.756	mg/Kg	1	1.00	76	68 - 136.9
4-Bromofluorobenzene (4-BFB)	<u>.</u>	0.780	mg/Kg	1	1.00	78	48.2 - 155

#### Sample: 170091 - SB-10 (4'-6')

Chloride		247	mg/Kg	50	2.00
Parameter	Flag	Result	Units	Dilution	RL
		$\mathbf{RL}$			
Prep Batch:	44022	Sample Preparation:	2008-08-11	Prepared By:	AG
QC Batch:	51331	Date Analyzed:	2008-08-11	Analyzed By:	$\mathbf{AG}$
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland	4			

#### Sample: 170091 - SB-10 (4'-6')

Laboratory: Analysis: QC Batch: Prep Batch:	TPH DRO 51308	Analytical Method: Date Analyzed: Sample Preparation:	Mod. 8015B 2008-08-11 2008-08-11	Prep ['] Method: Analyzed By: Prepared By:	LD
Parameter	Flag	RL Result	Units	Dilution	RL
DRO		100	mg/Kg	1	50.0

163-1724-00	e: August 13, 2008 0			Work Orde Federa	er: 8080837 1 34 #1		Page Number: 5 of 13 Carlsbad, NM		
Surrogate	Flag	Result	Units		lution	Spike Amount	Percent Recovery	Recover Limits	
n-Triacontar	16	163	mg/Kg		1	100	163	10 - 250	
Sample: 17	'0091 - SB-10 (4'	-6')							
Laboratory:	Midland						1		
Analysis:	TPH GRO		Analytical		S 8015B		Prep Me		
QC Batch:	51372		Date Anal		2008-08-12		Analyzed		
Prep Batch:	44030		Sample Pr	reparation:	2008-08-11		Preparec	l By: DC	
_	<i>,</i>		RL				1	_	
Parameter	Flag		Result		Units		Dilution	R	
GRO			26.3		mg/Kg		1	1.(	
						Spike	Percent	Recovery	
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits	
Trifluorotolu			0.886	mg/Kg	1	1.00	89	67.5 - 135.	
4-Bromofluor	cobenzene (4-BFB)		0.850	mg/Kg	1	1.00	85	63.8 - 141	
_	0092 - SB-10 (30	')					:		
Laboratory:	Midland	,							
Analysis:	BTEX		Analytical M		S 8021B		Prep Me		
QC Batch:	51371		Date Analyz		2008-08-12		Analyzéd	v	
	44030		Sample Prep	paration:	2008-08-11		Prepared	By: DC	
Prep Batch:									
			RL		** *.				
Parameter	Flag	5	Result		Units	]	Dilution		
Parameter Benzene	Flag	5	Result <0.0100		mg/Kg		1	0.010	
Parameter Benzene Toluene		5	Result <0.0100 <0.0100		mg/Kg mg/Kg	] 	1 1	0.010 0.010	
Parameter Benzene		5	Result <0.0100		mg/Kg mg/Kg mg/Kg	1	1	0.010 0.010 0.010	
Parameter Benzene Toluene Ethylbenzene		5	Result <0.0100 <0.0100 <b>0.0144</b>		mg/Kg mg/Kg		1 1 1 1.	0.010 0.010 0.010 0.010	
Parameter Benzene Toluene Ethylbenzene Xylene			Result <0.0100 <0.0100 <b>0.0144</b> <b>0.0292</b>	Units	mg/Kg mg/Kg mg/Kg mg/Kg	Spike	1 1 1 1. Percent	0.010 0.010 0.010 0.010 Recovery	
Parameter Benzene Toluene Ethylbenzene		g Flag	Result <0.0100 <0.0100 <b>0.0144</b>	Units mg/Kg	mg/Kg mg/Kg mg/Kg		1 1 1 1.	RI 0.010 0.010 0.010 0.010 Recovery Limits 68 - 136.9	



Report Date 163-1724-000	e: August 13, 200	8		rk Order: 808083' Federal 34 #1	7	Page N	umber: 6 of 13 Carlsbad, NM
Sample: 17	0092 - SB-10 (:	30')					
Laboratory:	Midland						
Analysis:	Chloride (Titra	tion)	Analytica	al Method: SM	4500-Cl B	Prep M	Aethod: N/A
QC Batch:	51331		Date Ana	alyzed: 200	8-08-11	Analyz	zed By: AG
Prep Batch:	44022		Sample P	reparation: 2008	8-08-11	Prepar	red By: AG
			RL				
Parameter	Fla	g	Result	Unit	s	Dilution	$\mathbf{RL}$
Chloride		<u> </u>	<100 mg/Kg			50	2.00
	······································				,		
Sample: 17(	0092 - SB-10 (3	80')				•	
Laboratory:	Midland						
Analysis:	TPH DRO		Analytical M	ethod: Mod. 80	)15B	Prep M	fethod: N/A
QC Batch:	51308		Date Analyze			Analyz	,
Prep Batch:	44003		Sample Prepa	aration: 2008-08	-11	Prepar	
,			$\mathbf{RL}$				
Parameter	Flag	5	Result	Unit	s [,]	Dilution	$\mathbf{RL}$
DRO			<50.0	mg/K	g	1	50.0
					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane		121	mg/Kg	1	100	121	10 - 250.4
						1	
ample: 170	0092 - SB-10 (3	0')					
	Midland						
Analysis:	TPH GRO		Analytical Me			Prep Met	
•	51372		Date Analyzed			Analyzed	•
rep Batch:	44030		Sample Prepa	ration: 2008-08-	11	Prepared	By: DC
			$\mathbf{RL}$			1	
Parameter	Flag	5	Result	Units	3	Dilution	$\mathbf{RL}$

GRO		10.9		mg/Kg		1	1.00
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.916	mg/Kg	1	1.00	92	67.5 - 135.2
4-Bromofluorobenzene (4-BFB)		0.874	mg/Kg	1	1.00	87	63.8 - 141

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Report Date: Augu 163-1724-000	st 13, 2008			Work Order: 8080837 Federal 34 #1				
Method Blank (1)	) QC Batch: 51308	3				•		
QC Batch: 51308 Prep Batch: 44003			nalyzed: paration:	2008-08-11 2008-08-11			lyzed By: pared By:	
			М	DL				
Parameter	Flag		Res			Jnits		RI
DRO			<1	5.8	m	lg/Kg		50
Surrogate	Flag Result	Units	Г	Dilution	Spike Amount	Percent Recovery		overy nits
n-Triacontane	72.4	mg/Kg		1	100	1100000000000000000000000000000000000	30.9 -	
		0/_C	J			. <u></u>		
Method Blank (1)	QC Batch: 51331					• ,		
QC Batch: 51331		Date An	alvzed:	2008-08-11		Anal	yzed By:	AG
Prep Batch: 44022			paration:				ared By:	AG
-						-	·	
Parameter	Flor		M Res	DL	т	Jnits		RL
Chloride	Flag		<0.5 <0.5			g/Kg		$\frac{\pi L}{2}$
						6/116		
						,		
Method Blank (1)	QC Batch: 51371							
QC Batch: 51371		Date An	alyzed:	2008-08-12		Anal	yzed By:	DC
Prep Batch: 44030				2008-08-11			ared By:	DC
					•			
Parameter	Floor			MDL esult	т	Units		RL
Parameter Benzene	Flag			esult 00580	-	g/Kg		$\frac{\text{RL}}{0.01}$
Foluene				0380 0470		ig/Kg		0.01
Ethylbenzene				0530		g/Kg	7	0.01
Kylene				.0136		g/Kg		0.01
			<b>TT</b> •		Spike	Percent	Reco	
Surrogate Trifluorotoluene (TF'	Flag	Result 0.789	Units	Dilution			Lim	
-Bromofluorobenzen		$0.789 \\ 0.775$	mg/Kg mg/Kg		1.00 1.00	79 78	48.3 - 37.7 -	
- Dromonuorobenzen		0.110	ng/ rvg	<u>,                                     </u>	1.00	10	51.1 -	140.9

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#### Method Blank (1) QC Batch: 51372

QC Batch:	51372	Date Analyzed:	2008-08-12	Analyzed By:	DC
Prep Batch:	44030	QC Preparation:	2008-08-11	Prepared By:	DC



	eport Date: August 13, 200 3-1724-000				Work Ord Feder	al 34 #1		Page Number: 8 of Carlsbad, N			
P					MI					,	
	rameter	Flag			Rest			Uni			
GF	<u>10</u>				0.9	09		mg/I	Ng		
	rrogate	Fla		esult	Units		ition	Spike Amount	Percent Recovery	7	ecove Limits
	fluorotoluene (TFT)	• •		0.903	mg/Kg		1	1.00	90		$\frac{12}{2} - 13$
<u>4-E</u>	Bromofluorobenzene (4-BFE	s)		0.800	mg/Kg	•	1	1.00	80	16.	<u>8 - 13</u>
La	boratory Control Spike	(LCS-1)								·	
-	Batch: 51308			Date Ana		2008-08-				alyzed E	
Pre	ep Batch: 44003		ſ,	lC Preb	aration:	2008-08-	11		Pre	epared B	y: I
			LCS				Spike	Matri	x	1	Rec.
Par	ram		Result	U	nits	Dil.	Amount	Resul		I.	Limit
DR	.0		208	mę	g/Kg	1	250	<15.8	8 83	27.	8 - 15
DR	ram O cent recovery is based on tl	Res 21 he spike re	6 n	Units ig/Kg PD is ba	1	amount 250 ne spike a	Result <15.8 nd spike		Limit 7.8 - 152.1 esult.	RPD 4	Lir 2
	LC	CS I	LCSD				Spike	LCS	LCSE	)	Rec.
Sur	rogate Res		Result	Ur	nits	Dil.	Amount	Rec.	Rec.		Limit
n-T	riacontane ¹ 12	21	134	mg	/Kg	1	100	121	134	38	8 - 13
Lat	Doratory Control Spike	(LCS-1)	D	ate Ana	lvzed:	2008-08-1	1		Ana	alvzed B	v: A
Lab QC	Doratory Control Spike Batch: 51331 p Batch: 44022	(LCS-1)				2008-08-1 2008-08-1		·		alyzed B pared B	
Lat QC Prej	Batch: 51331 p Batch: 44022	(LCS-1)	Q LCS	C Prepa	aration:	2008-08-1	.1 Spike	Mat	Pre	pared By	y: A Rec
Lat QC Prej Par	Batch: 51331 p Batch: 44022 am	(LCS-1)	Q LCS Result	C Prepa	aration: Units	2008-08-1 Dil.	1 Spike Amoun	t Res	Pre trix ult Re	pared B	y: A Rec Limi
Lat QC Pre Pre	Batch: 51331 p Batch: 44022 am oride	· · · ·	Q LCS Result 101	C Prepa	Inits g/Kg	2008-08-1 Dil.	1 Spike Amoun 100	t Res <0.	Pre crix ult Re 500 10	pared B	
Lat QC Pre Pre	Batch: 51331 p Batch: 44022 am	e spike re	Q LCS <u>Result</u> 101 sult. RI	C Prepa	Inits g/Kg	2008-08-1 Dil. 1 e spike a	1 Spike Amoun 100 nd spike c	t Res <0. luplicate re	Pre crix ult Re 500 10 esult.	pared B	y: A Rec Limi 85 - 1
Lat QC Pre Pre	Batch: 51331 p Batch: 44022 am oride cent recovery is based on th	· · · ·	Q LCS Result 101 sult. RI	C Prepa	aration: Units g/Kg ased on th	2008-08-1 Dil.	1 Spike Amoun 100	t Res <0 luplicate re	Pre crix ult Re 500 10	pared B	y: A Rec Limi



Report Date: August 13, 2008 Page Number: 9 of 13 163-1724-000 Federal 34 #1 Carlsbad, NM Laboratory Control Spike (LCS-1) QC Batch: 51371 Date Analyzed: 2008-08-12 Analyzed By: DC Prep Batch: 44030 QC Preparation: Prepared By: DC 2008-08-11 LCS Rec. Spike Matrix Param Result Units Dil. Amount Result Rec. Limit Benzene mg/Kg 73.3 - 116.6 0.846 1 1.00< 0.00580 85 Toluene 0.865 mg/Kg 1 1.00< 0.00470 86 78.6 - 115.1

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

mg/Kg

mg/Kg

0.844

2.54

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	$\mathbf{Result}$	Rec.	$\mathbf{Limit}$	RPD	Limit
Benzene	0.895	mg/Kg	1	1.00	< 0.00580	90	73.3 - 116.6	6	20
Toluene	0.909	mg/Kg	1	1.00	< 0.00470	91	78.6 - 115.1	5	20
Ethylbenzene	0.900	mg/Kg	1	1.00	< 0.00530	90	77.4 - 114.9	6	20
Xylene	2.69	mg/Kg	1	3.00	< 0.0136	90	78.2 - 114.7	6	20

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

Gumarata	LCS Result	LCSD Result	Units	Dil	Spike	LCS	LCSD	Rec. Limit
Surrogate	nesuit	nesuit	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	0.954	0.805	mg/Kg	1	1.00	95	80	45 - 124.2
4-Bromofluorobenzene (4-BFB)	0.762	0.810	mg/Kg	1	1.00	76	81	47.2 - 130.4

#### Laboratory Control Spike (LCS-1)

QC Batch: 51372 Prep Batch: 44030		Date Anal QC Prepa	•	2008-0 2008-0						lyzed B pared B	
P	LCS	<b>.</b>		20	. *	oike		atrix	2		Rec.
Param	Result			Dil.		ount		esult	Rec.		Limit
GRO	8.70	mg/	Kg	1	1	0.0	0.	969	77	57.5	5 - 106.4
Percent recovery is based on the	spike result. F LCSD	RPD is bas	sed on	the spike Spike		spike dı atrix	iplicat		ec.	1	RPD
Param		Units	Dil.	Amount	-	sult	Rec.		nit	RPD	Limit
GRO		ng/Kg	1	10.0		969	84		106.4	8	20
Percent recovery is based on the	spike result. F	RPD is bas	sed on	the spike	e and s	spike du	plicat	e result	•		
	LCS	LCSD				Spik	æ	LCS	LCSD	1	Rec.
Surrogate	Result	Result	U	nits	Dil.	Amou		Rec.	Rec.	3	Limit
Trifluorotoluene (TFT)	0.897	0.929	m	g/Kg	1	1.00	)	90	93	63.8	3 - 134.3
4-Bromofluorobenzene (4-BFB)	0.866	0.894		g/Kg	1	1.00	)	87	89	53.3	- 123.6

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Ethylbenzene

Xylene

## Work Order: 8080837

1

1

1.00

3.00

< 0.00530

< 0.0136

84

85

77.4 - 114.9

78.2 - 114.7

Report Date: August 13 163-1724-000	, 2008		Work Order: 8080837 Federal 34 #1							umber: Carls	bad, NN
Matrix Spike (MS-1)	Spiked	Sample: 1	70092								
QC Batch: 51308 Prep Batch: 44003			Date Ar QC Prej	nalyzed: paration:	2008-08- 2008-08-					lyzed B pared B	
					,				į		
_		MS				Spike	Mat		1		Rec.
Param		Resu		Units	Dil.	Amount	Res		Rec.		Limit
DRO		239		ng/Kg	1	250	47.		77	18	3 - 179.
Percent recovery is based	on the sp	oike result.	RPD is t	based on	the spike a	and spike du	iplicate r	result.			
		MSD			Spike	Matrix		Re	c.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Lin		RPD	Limi
DRO		244	mg/Kg	1	250	47.3	79	18 - 1		2	20
Percent recovery is based	on the sp	ike result.	RPD is b	oased on	the spike a	and spike du	iplicate r	esult.			
	MS	MSD				Spike	MS	1	MSD		Rec.
Surrogate	Result	Result		Jnits	Dil.	Amount	Rec		Rec.		Limit
	400										
n-Triacontane Matrix Spike (MS-1) QC Batch: 51331	102 Spiked	102 Sample: 17	'0100 Date An	•	1		102	2		yzed By	r: AG
n-Triacontane Matrix Spike (MS-1) QC Batch: 51331			0100	alyzed:		11	102	2	Anal		r: AG
n-Triacontane Matrix Spike (MS-1) QC Batch: 51331		Sample: 17	0100 Date An QC Prep	alyzed:	2008-08-	11 11			Anal	yzed By	r: AG : AG
n-Triacontane <b>Matrix Spike (MS-1)</b> QC Batch: 51331 Prep Batch: 44022		Sample: 17 MS	0100 Date An QC Prep	alyzed: paration:	2008-08- 2008-08-	11 11 Spike	Ма	trix	Anal Prepa	yzed By ared By	r: AG : AG Rec.
n-Triacontane Matrix Spike (MS-1) QC Batch: 51331 Prep Batch: 44022 Param		Sample: 17 , MS Resu	0100 Date An QC Prep dt	alyzed: paration: Units	2008-08- 2008-08- Dil.	11 11 Spike Amount	Ma Res	trix sult	Anal Prepa Rec	yzed By ared By	r: AG : AG Rec. Limit
n-Triacontane Matrix Spike (MS-1) QC Batch: 51331 Prep Batch: 44022 Param Chloride	Spiked	Sample: 17 MS Resu 517	Oloo Date An QC Prep dt 10 0 n	alyzed: paration: Units ng/Kg	2008-08- 2008-08- Dil. 50	11 11 Spike Amount 5000	Ma Res 14	trix sult 43	Anal Prepa	yzed By ared By	r: AG : AG Rec. Limit
n-Triacontane Matrix Spike (MS-1) QC Batch: 51331 Prep Batch: 44022 Param Chloride	Spiked	Sample: 17 MS Resu 517 ike result.	Oloo Date An QC Prep dt 10 0 n	alyzed: paration: Units ng/Kg	2008-08- 2008-08- Dil. 50 the spike a	11 11 Amount 5000 nd spike du	Ma Res 14	trix sult 43 esult.	Anal Prepa Rec 100	yzed By ared By	r: AG : AG Rec. Limit 35 - 113
n-Triacontane Matrix Spike (MS-1) QC Batch: 51331 Prep Batch: 44022 Param Chloride Percent recovery is based	Spiked	Sample: 17 MS Resu 517 ike result. MSD	Oloo Date An QC Prep dit n RPD is b	alyzed: paration: Units ng/Kg pased on t	2008-08- 2008-08- Dil. 50 the spike a Spike	11 11 Spike Amount 5000 nd spike du Matrix	Ma Res 14 plicate re	trix sult 43 esult. Ře	Anal Prepa Rec 100	yzed By ared By	r: AG : AG Rec. Limit 35 - 115 RPD
n-Triacontane Matrix Spike (MS-1) QC Batch: 51331 Prep Batch: 44022 Param Chloride Percent recovery is based Param	Spiked	Sample: 17 MS Resu 517 ike result. MSD Result	Oloo Date An QC Prep dt 0 n RPD is b Units	alyzed: paration: Units ng/Kg pased on t Dil.	2008-08- 2008-08- Dil. 50 the spike a	11 11 Amount 5000 nd spike du	Ma Res 14	trix sult 43 esult.	Anal Prepa Rec 100	yzed By ared By	r: AG : AG Rec. Limit 35 - 115 RPD
n-Triacontane Matrix Spike (MS-1) QC Batch: 51331 Prep Batch: 44022 Param Chloride Percent recovery is based Param Chloride	Spiked on the spi	Sample: 17 MS Resu 517 ike result. MSD Result 5190	O100 Date An QC Prep dit 0 n RPD is b Units mg/Kg	alyzed: baration: Units ng/Kg based on t Dil. 50	2008-08- 2008-08- Dil. 50 the spike a Spike Amount 5000	11 Spike Amount 5000 nd spike du Matrix Result 143	Ma Res 14 plicate re Rec. 101	trix sult 43 esult. Re Lin 85 -	Anal Prepa Rec 100	yzed By ared By 	r: AG : AG Rec. Limit 35 - 11. RPD Limi
n-Triacontane Matrix Spike (MS-1) QC Batch: 51331 Prep Batch: 44022 Param Chloride Percent recovery is based Param Chloride Percent recovery is based	Spiked on the spi	Sample: 17 MS Resu 517 ike result. MSD Result 5190	O100 Date An QC Prep dut 0 n RPD is b Units mg/Kg RPD is b	alyzed: baration: Units ng/Kg based on t Dil. 50	2008-08- 2008-08- Dil. 50 the spike a Spike Amount 5000	11 Spike Amount 5000 nd spike du Matrix Result 143	Ma Res 14 plicate re Rec. 101	trix sult 43 esult. Re Lin 85 -	Anal Prepa Rec 100	yzed By ared By 	r: AG : AG Rec. Limit 35 - 11. RPD Limi
n-Triacontane Matrix Spike (MS-1) QC Batch: 51331 Prep Batch: 44022 Param Chloride Percent recovery is based Param Chloride Percent recovery is based Matrix Spike (MS-1)	Spiked on the spi	Sample: 17 MS Resu 517 ike result. MSD Result 5190 ike result. Sample: 17	O100 Date An QC Prep dut RPD is b Units mg/Kg RPD is b 0109	alyzed: paration: <u>Units</u> ng/Kg pased on t <u>Dil.</u> 50 pased on t	2008-08- 2008-08- Dil. 50 the spike a Spike Amount 5000 the spike a	11 Spike Amount 5000 nd spike du Matrix Result 143 nd spike du	Ma Res 14 plicate re Rec. 101	trix sult 43 esult. Re Lin 85 -	Anal; Prepa Rec 100 ec. nit 115	yzed By ared By  0 8 RPD 0	r: AG : AG Limit 35 - 111 RPD Limit 20
n-Triacontane Matrix Spike (MS-1) QC Batch: 51331 Prep Batch: 44022 Param Chloride Percent recovery is based Param Chloride Percent recovery is based Matrix Spike (MS-1) QC Batch: 51371	Spiked on the spi	Sample: 17 MS Resu 517 ike result. MSD Result 5190 ike result. Sample: 17	O100 Date An QC Prep dut 0 n RPD is b Units mg/Kg RPD is b	alyzed: paration: Units ng/Kg pased on t Dil. 50 pased on t alyzed:	2008-08- 2008-08- Dil. 50 the spike a Spike Amount 5000	11 Spike Amount 5000 nd spike du Matrix Result 143 nd spike du	Ma Res 14 plicate re Rec. 101	trix sult 43 esult. Re Lin 85 -	Anal; Prepa Rec 100 ec. nit 115	yzed By ared By 	r: AG : AG Limit 35 - 11 RPD Limit 20
n-Triacontane Matrix Spike (MS-1) QC Batch: 51331 Prep Batch: 44022 Param Chloride Percent recovery is based Param Chloride Percent recovery is based Matrix Spike (MS-1) QC Batch: 51371	Spiked on the spi	Sample: 17 MS Resu 517 ike result. MSD Result 5190 ike result. Sample: 170	O100 Date An QC Prep dut D n RPD is b Units mg/Kg RPD is b 0109 Date Ana	alyzed: paration: Units ng/Kg pased on t Dil. 50 pased on t alyzed:	2008-08- 2008-08- Dil. 50 the spike a Spike Amount 5000 the spike a 2008-08-1 2008-08-1	11 Spike Amount 5000 nd spike du Matrix Result 143 nd spike du	Ma Res 14 plicate re Rec. 101 plicate re	trix sult 43 esult. Re Lin 85 - esult.	Anal; Prepa Rec 100 ec. nit 115	yzed By ared By  ) 8 <u>RPD</u> 0 yzed By ared By	r: AG Rec. Limit 35 - 113 RPD Limit 20 : DC
n-Triacontane Matrix Spike (MS-1) QC Batch: 51331 Prep Batch: 44022 Param Chloride Percent recovery is based Param Chloride Percent recovery is based Matrix Spike (MS-1) QC Batch: 51371	Spiked on the spi	Sample: 17 MS Resu 517 ike result. MSD Result 5190 ike result. Sample: 17	O100 Date An QC Prep Ilt 1 RPD is b Units mg/Kg RPD is b 0109 Date Ana QC Prep	alyzed: baration: Units ng/Kg based on t Dil. 50 based on t alyzed: aration:	2008-08- 2008-08- Dil. 50 the spike a Spike Amount 5000 the spike a 2008-08-1 2008-08-1	11 Spike Amount 5000 nd spike du Matrix Result 143 nd spike du	Ma Res 14 plicate re Rec. 101	trix sult 43 esult. Re Lin 85 - esult.	Anal; Prepa Rec 100 ec. nit 115	yzed By ared By  ) 8 <u>RPD</u> 0 yzed By ared By	: AG Rec. Limit 35 - 115 RPD Limit 20

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²Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

matrix spikes continued												
r -		Μ	S			Spik	ĸe	Mat	trix	,		Rec.
Param		Res	ult	Units	Dil.	Amou	unt	Res	ult	Rec.	1	Limit
Toluene	3	1.1		mg/Kg	1	1.00		< 0.0	0470	176		6 - 145
Ethylbenzene	4	7.1		mg/Kg	1	1.00		<0.0		179		5 - 146
Xylene	5			mg/Kg	1	3.00		<0.0		180	64.3	- 148
Percent recovery is based	on the sp	oike result	t. RPD	is based	on the spike	e and s	pike d	uplicat	e result.	•		
		MSD			Spike	Ma	trix		R	ec.		RP
Param		Result	Units	B Dil.	Amount	Res	sult	Rec.	Li	mit	RPD	Lim
Benzene	6	1.53	mg/K	g 1	1.00	<0.0	0580	153	62.2 -	134.3	8	20
Toluene	7	1.60	mg/K	g 1	1.00	<0.0		160		- 145.4	10	20
Ethylbenzene	8	1.60	mg/K		1.00	`<0.0		160		- 146.4	11	20
Xylene	9	4.85	mg/K	g 1	3.00	<0.0	)136	162	64.3 -	- 148.8	11	20
Percent recovery is based	on the sp	ike result	. RPD	is based	on the spike	e and s	pike dı	iplicate	e result.	• :		
		M	S	MSD			Spi	ke	MS	MSD	]	Rec.
									1110	a + - 10 au		
Surrogate		Res		Result	Units	Dil.	Amo		Rec.	Rec.		imit
		Res 0.7	ult I	Result 0.823	1	Dil.		unt			L	
Irifluorotoluene (TFT) I-Bromofluorobenzene (4-1 Matrix Spike (MS-1)			ult I 97 27 170109	0.823 0.859	mg/Kg mg/Kg	1 1	Amo	ount	Rec.	Rec. ; 82 86	L 38.8 49.3	- 127. - 142.
Irifluorotoluene (TFT) I-Bromofluorobenzene (4-1 Matrix Spike (MS-1) QC Batch: 51372		0.7 0.8	ult H 97 27 170109 Date	0.823 0.859 Analyzed	mg/Kg mg/Kg l: 2008-08	1 1 8-12	Amo 1	ount	Rec. 80	Rec. 82 86 Analy	L 38.8 49.3 yzed By	- 127. - 142.
Irifluorotoluene (TFT) I-Bromofluorobenzene (4-1 Matrix Spike (MS-1) QC Batch: 51372		0.7 0.8	ult H 97 27 170109 Date	0.823 0.859	mg/Kg mg/Kg l: 2008-08	1 1 8-12	Amo 1	ount	Rec. 80	Rec. 82 86 Analy	L 38.8 49.3	- 127. - 142.
Irifluorotoluene (TFT) 4-Bromofluorobenzene (4-1 Matrix Spike (MS-1) QC Batch: 51372		0.7 0.8 Sample: 1	ult I 97 27 170109 Date QC P	0.823 0.859 Analyzed reparatic	mg/Kg mg/Kg l: 2008-08 m: 2008-08	1 1 8-12 8-11	Amo 1	Ma	Rec. 80 83 atrix	Rec. 82 86 Analy	L 38.8 49.3 yzed By ared By	- 127. - 142. : DC : DC Rec.
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-1 Matrix Spike (MS-1) QC Batch: 51372 Prep Batch: 44030 Param		0.7 0.8 Sample: 1 M Res	ult I 97 27 170109 Date QC P S sult	0.823 0.859 Analyzed reparatic Units	mg/Kg mg/Kg l: 2008-08	1 1 8-12 8-11 Sp Amo	Amo 1 1	unt Ma Re	Rec. 80 83 atrix ssult	Rec. 82 86 Analy Prepa Rec.	L 38.8 49.3 yzed By ared By	- 127. - 142. : DC : DC Rec. Limit
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-1 Matrix Spike (MS-1) QC Batch: 51372 Prep Batch: 44030 Param		0.7 0.8 Sample: 1	ult I 97 27 170109 Date QC P S sult	0.823 0.859 Analyzed reparatic	mg/Kg mg/Kg l: 2008-08 m: 2008-08	1 1 8-12 8-11 Sp Amo	Amo 1 1	unt Ma Re	Rec. 80 83 atrix	Rec. 82 86 Analy Prepa	L 38.8 49.3 yzed By ared By	- 127. - 142. : DC : DC Rec. Limit
Irifluorotoluene (TFT) I-Bromofluorobenzene (4-1 Matrix Spike (MS-1) QC Batch: 51372 Prep Batch: 44030 Param GRO	Spiked	0.7 0.8 Sample: 1 M <u>Res</u> 15	ult I 97 27 170109 Date QC P S ult .3	0.823 0.859 Analyzed reparatic Units mg/Kg	mg/Kg mg/Kg l: 2008-08 on: 2008-08 Dil. 1	1 1 8-12 8-11 Sp Amo 10	Amo 1 1 1 ike ount 0.0	unt Ma Re 11.	Rec. 80 83 atrix ssult 3029	Rec. 82 86 Analy Prepa Rec. 40	L 38.8 49.3 yzed By ared By	- 127. - 142. : DC : DC Rec. Limit
Irifluorotoluene (TFT) I-Bromofluorobenzene (4-1 Matrix Spike (MS-1) QC Batch: 51372 Prep Batch: 44030 Param GRO	Spiked	0.7 0.8 Sample: 1 M <u>Res</u> 15	ult I 97 27 170109 Date QC P S ult .3	0.823 0.859 Analyzed reparatic Units mg/Kg	mg/Kg mg/Kg l: 2008-08 on: 2008-08 Dil. 1 on the spike	1 1 8-12 8-11 Sp Amo 10 e and sp	Amo 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	unt Ma Re 11.	Rec. 80 83 atrix sult 3029 e result.	Rec. 82 86 Analy Prepa Rec. 40	L 38.8 49.3 yzed By ared By	- 127. - 142. : DC : DC Rec. Limit - 139.
Trifluorotoluene (TFT)         4-Bromofluorobenzene (4-1)         4-Bromofluorobenzene (4-1)         QC Batch:       51372         Prep Batch:       44030         Param         GRO         Percent recovery is based of	Spiked	0.7 0.8 Sample: 1 M Res 15 ike result.	ult I 97 27 170109 Date QC P S ult .3	0.823 0.859 Analyzed reparatio Units mg/Kg is based o	mg/Kg mg/Kg l: 2008-08 on: 2008-08 Dil. 1	1 1 8-12 8-11 Sp Amo 10 2 and sp Ma	Amo 1 1 1 ike ount 0.0	unt Ma Re 11.	Rec. 80 83 83 extrix sult 3029 e result.	Rec. 82 86 Analy Prepa Rec. 40	L 38.8 49.3 yzed By ared By	- 127. - 142. : DC : DC Rec.
Irifluorotoluene (TFT) 1-Bromofluorobenzene (4-1) Matrix Spike (MS-1) QC Batch: 51372 Prep Batch: 44030 Param GRO Percent recovery is based of Param	Spiked	0.7 0.8 Sample: 1 M Res 15 ike result. MSD	ult I 97 27 170109 Date QC P S ult .3 . RPD i Unit:	0.823 0.859 Analyzed reparatio Units mg/Kg is based o s Dil.	mg/Kg mg/Kg l: 2008-08 on: 2008-08 Dil. 1 on the spike Spike	1 1 8-12 8-11 Sp Amo 10 e and sp Ma 5 Re	Amo 1 1 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0	Ma Re 11. plicate	Rec. 80 83 atrix esult 3029 e result. Ra Lin	Rec. 82 86 Analy Prepa Rec. 40 ec. mit	L 38.8 49.3 yzed By ared By	- 127. - 142. : DC : DC Rec. Limit - 139. RPI
Trifluorotoluene (TFT)         4-Bromofluorobenzene (4-1)         4-Bromofluorobenzene (4-1)         Matrix Spike (MS-1)         QC Batch:       51372         Prep Batch:       44030         Param         BRO         Param         GRO	Spiked	0.7 0.8 Sample: 1 M Res 15 ike result. MSD Result 16.9	ult I 97 27 170109 Date QC P S ult .3 . RPD i Unit: mg/K	0.823 0.859 Analyzed reparatio <u>Units</u> mg/Kg is based o s <u>Dil.</u> g 1	mg/Kg mg/Kg l: 2008-08 on: 2008-08 Dil. 1 on the spike Spike Amount 10.0	1 1 8-12 8-11 Sp Amo 10 e and sp Ma Re 11.;	Amo 1 1 1 1 1 1 1 1 1 1 1 1 1	Ma Re 11. plicate Rec. 56	Rec. 80 83 atrix ssult 3029 e result. Re Lin 10 -	Rec. 82 86 Analy Prepa Rec. 40 ec. mit	L 38.8 49.3 yzed By ared By 10 RPD	- 127. - 142. : DC : DC : DC Rec. Limit - 139. RPI Limi
Prifluorotoluene (TFT) I-Bromofluorobenzene (4-1 Matrix Spike (MS-1) QC Batch: 51372 Prep Batch: 44030 Param GRO Param GRO	Spiked	0.7 0.8 Sample: 1 M Res 15 ike result. MSD Result 16.9 ike result.	ult I 97 27 170109 Date QC P S ult .3 . RPD i Unit: mg/K . RPD i	0.823 0.859 Analyzed reparatio <u>Units</u> mg/Kg is based of s <u>Dil.</u> s based of	mg/Kg mg/Kg l: 2008-08 on: 2008-08 Dil. 1 on the spike Spike Amount 10.0	1 1 8-12 8-11 Sp Amo 10 e and sp Ma Re 11.;	Amo 1 1 1 1 1 1 1 1 1 1 1 1 1	Ma Re 11. plicate Rec. 56 plicate	Rec. 80 83 atrix ssult 3029 e result. Re Lin 10 - e result.	Rec. 82 86 Analy Prepa Rec. 40 ec. mit 139.3	L 38.8 49.3 yzed By ared By 10 10	- 127. - 142. - 142. : DC : DC Rec. Limit - 139. RPI Limi 20
Prifluorotoluene (TFT) I-Bromofluorobenzene (4-1 Matrix Spike (MS-1) QC Batch: 51372 Prep Batch: 44030 Param GRO Percent recovery is based of Param GRO Percent recovery is based of Percent recovery is base	Spiked	0.7 0.8 Sample: 1 MRess 15 ike result. MSD Result 16.9 ike result. MSD	ult I 97 27 170109 Date QC P S ult .3 . RPD i mg/K . RPD i S	0.823 0.859 Analyzed reparatio <u>Units</u> mg/Kg is based o s <u>Dil.</u> g <u>1</u> s based o MSD	mg/Kg mg/Kg l: 2008-08 on: 2008-08 Dil. 1 on the spike Amount 10.0 on the spike	1 1 8-12 8-11 Sp Amo 10 e and sp Ma : Re 11.: e and sp	Amo 1 1 1 1 1 1 1 1 1 1 1 1 1	Ma Re 11. plicate Rec. 56 plicate ike	Rec. 80 83 atrix ssult 3029 e result. R Lin 10 - e result. MS	Rec. 82 86 Analy Prepa Rec. 40 ec. mit 139.3	L 38.8 49.3 yzed By ared By 10 10 10	- 127. - 142. - 142. : DC : DC Rec. Limit - 139. RPI Limi 20 Rec.
Trifluorotoluene (TFT)         4-Bromofluorobenzene (4-1)         4-Bromofluorobenzene (4-1)         Matrix Spike (MS-1)         QC Batch:       51372         Prep Batch:       44030         Param         GRO         Percent recovery is based of the param         Percent recovery is based of the param	Spiked	0.7 0.8 Sample: 1 MRes 15 ike result. MSD Result 16.9 ike result. MS Result. MS Result. MS Result. MS Result. MS Result. MS Result. MS Result. MS Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Res	ult I 97 27 170109 Date QC P S ult .3 . RPD i mg/K . RPD i S ult I	0.823 0.859 Analyzed reparatio Units mg/Kg is based o s Dil. g 1 s based o MSD Result	mg/Kg mg/Kg l: 2008-08 on: 2008-08 Dil. 1 on the spike Spike Amount 10.0 on the spike Units	1 1 8-12 8-11 Sp Ame 10 e and sp 11. e and sp 11. e and sp Dil.	Amo 1 1 1 1 1 1 1 1 1 1 1 1 1	Ma Re 11. plicate Rec. 56 plicate ike ount	Rec. 80 83 83 83 83 84 84 85 84 85 84 85 85 85 85 85 85 85 85 85 85	Rec. 82 86 Analy Prepa Rec. 40 ec. mit 139.3 MSD Rec.	L 38.8 49.3 yzed By ared By 10 10 10	- 127. - 142. - 142. : DC : DC Rec. Limit - 139. RPI Limi 20 Rec. Limit
Trifluorotoluene (TFT)         4-Bromofluorobenzene (4-1)         4-Bromofluorobenzene (4-1)         Matrix Spike (MS-1)         QC Batch:       51372         Prep Batch:       44030         Param         GRO         Param         GRO	Spiked	0.7 0.8 Sample: 1 M Res 15 ike result. MSD Result 16.9	ult I 97 27 170109 Date QC P S ult .3 . RPD i Unit: mg/K	0.823 0.859 Analyzed reparatio <u>Units</u> mg/Kg is based o s <u>Dil.</u> g 1	mg/Kg mg/Kg l: 2008-08 on: 2008-08 Dil. 1 on the spike Spike Amount 10.0	1 1 8-12 8-11 Sp Amo 10 e and sp Ma Re 11.;	Amo 1 1 1 1 1 1 1 1 1 1 1 1 1	Ma Re 11. plicate Rec. 56	Rec. 80 83 atrix ssult 3029 e result. Re Lin 10 -	Rec. 82 86 Analy Prepa Rec. 40 ec. mit	L 38.8 49.3 yzed By ared By 10 RPD	- 127. - 142. : DC : DC : DC Rec. Limit - 139. RPI Limi
Prep Batch: 44030 Param GRO Percent recovery is based of Param GRO Percent recovery is based of Surrogate	Spiked	0.7 0.8 Sample: 1 MRes 15 ike result. MSD Result 16.9 ike result. MS Result. MS Result. MS Result. MS Result. MS Result. MS Result. MS Result. Result. MS Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Result. Res	ult I 97 27 170109 Date QC P S ult .3 . RPD i mg/K . RPD i S ult I	0.823 0.859 Analyzed reparatio Units mg/Kg is based o s Dil. g 1 s based o MSD Result	mg/Kg mg/Kg l: 2008-08 on: 2008-08 Dil. 1 on the spike Spike Amount 10.0 on the spike Units	1 1 8-12 8-11 Sp Ame 10 e and sp 11. e and sp 11. e and sp Dil.	Amo 1 1 1 1 1 1 1 1 1 1 1 1 1	Ma Re 11. plicate Rec. 56 plicate ike ount	Rec. 80 83 83 83 83 84 84 85 84 85 84 85 85 85 85 85 85 85 85 85 85	Rec. 82 86 Analy Prepa Rec. 40 ec. mit 139.3 MSD Rec.	L 38.8 49.3 yzed By ared By 10 10 10	- 127. - 142. - 142. : DC : DC Rec. Limit - 139. RPI Limi 20 Rec. Limit
Prifluorotoluene (TFT) I-Bromofluorobenzene (4-1 Matrix Spike (MS-1) QC Batch: 51372 Prep Batch: 44030 Param GRO Percent recovery is based of Param GRO Percent recovery is based of Percent recovery is base	Spiked	0.7 0.8 Sample: 1 MRess 15 ike result. MSD Result 16.9 ike result. MSD	ult I 97 27 170109 Date QC P S ult .3 . RPD i mg/K . RPD i S ult I	0.823 0.859 Analyzed reparatio <u>Units</u> mg/Kg is based o s <u>Dil.</u> g <u>1</u> s based o MSD	mg/Kg mg/Kg l: 2008-08 on: 2008-08 Dil. 1 on the spike Amount 10.0 on the spike	1 1 8-12 8-11 Sp Amo 10 e and sp Ma : Re 11.: e and sp	Amo 1 1 1 1 1 1 1 1 1 1 1 1 1	Ma Re 11. plicate Rec. 56 plicate ike	Rec. 80 83 atrix ssult 3029 e result. R Lin 10 - e result. MS	Rec. 82 86 Analy Prepa Rec. 40 ec. mit 139.3	L 38.8 49.3 yzed By ared By 10 10 10	- 127 - 142 : DC : DC Rec. Limit 20 Rec. Limit 3 - 11

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⁸Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control. ⁹Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

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Report D 163-1724-	ate: August 13 000	3, 2008			: Order: 808 ederal 34 #			I		ber: 12 of I Carlsbad, NI
matrix spi	ikes continued		MG	MSD			<b>.</b>	16	MCD	D
Surrogate			${ m MS}$ Result	Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
	uorobenzene (4	1-BFB)	0.947	0.880	mg/Kg	1	1	<u> </u>	88	52.5 - 15
		- <u></u> -/			6/6					
Standard	l (ICV-1)				~				1	
QC Batch	: 51308		Da	te Analyze	ed: 2008-08	-11			Analyz	ed By: LD
			ICV		ICVs	IC		Percen		
D	DI	<b>T</b> T <b>•</b>	Tru		Found	Pere		Recover	•	Date
Param	Flag	Units	Con		Conc.	Reco		Limits		Analyzed
DRO		mg/Kg	250	ļ	260	1(		85 - 11	5	2008-08-1
Standard	(CCV-1)	,							I	
QC Batch:	51308		Dat	te Analyze	d: 2008-08	-11			Analyze	ed By: LD
			CCV	<b>'</b> s	CCVs	CC	Vs	Percen	t ·	
			True	е	Found	Perc		Recover	'y	Date
Param	Flag	Units	Cone		Conc.	Reco		Limits		Analyzed
DRO		mg/Kg	250		215	8	6	85 - 11	5	2008-08-1
Standard	(ICV-1)									
QC Batch:	51331		Dat	e Analyze	d: 2008-08-	-11			Analyze	ed By: AG
			ICV	/s	ICVs	IC	Vs	Percen	.t	
			Tru		Found	Per	$\operatorname{cent}$	Recover	ry .	Date
Param	Flag	Units	Con		Conc.	Reco		Limits		Analyzed
Chloride		mg/Kg	10	0	100	1(	00	85 - 11	5	2008-08-1
Standard	(CCV-1)								I	
QC Batch:	51331		Date	e Analyzea	l: 2008-08-	11			Analyze	d By: AG
			CCV	Vs	CCVs	CC	Vs	Percen	t	
			Tru		Found	Perc		Recover		Date
Param	Flag	Units	Con		Conc.	Reco		Limits		Analyzed
Chloride		mg/Kg	100	)	99.6	10		85 - 11	5	2008-08-1

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QC Batch: 51371

Date Analyzed: 2008-08-12

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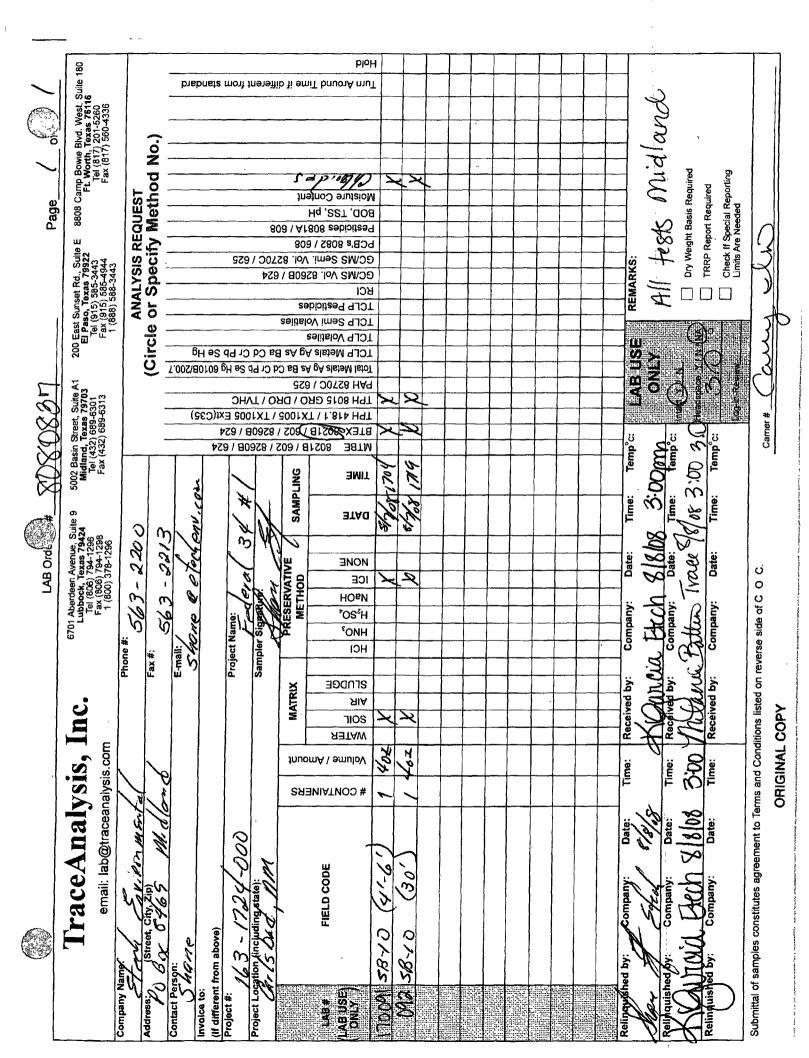
Analyzed By: DC

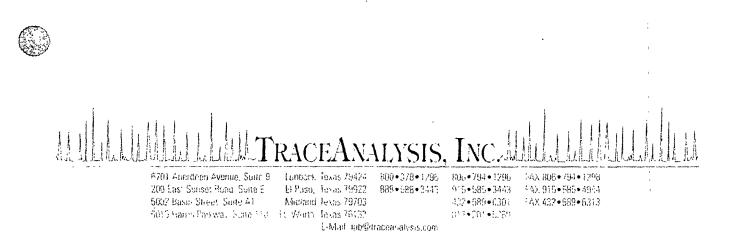
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Report Da 163-1724-0	te: August 13 000	3, 2008	W	ork Order: 808 Federal 34 #		Page	umber: 13 of 13 Carlsbad, NM
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Fla	g Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0917	92	85 - 115	2008-08-12
Toluene		mg/Kg	0.100	0.0940	94	85 - 115	2008-08-12
Ethylbenze	ne	mg/Kg	0.100	0.0944	94	85 - 115	2008-08-12
Xylene		mg/Kg	0.300	0.284	95	85 - 115	2008-08-12
Standard	(CCV-1)					:	
QC Batch:	51371		Date Anal	yzed: 2008-08	-12	Anal	yzed By: DC
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Fla	g Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0946	95	85 - 115	2008-08-12
Toluene		mg/Kg	0.100	0.0947	95	85 - 115	2008-08-12
Ethylbenzer	ne	mg/Kg	0.100	0.0908	91	85 - 115	2008-08-12
Xylene		mg/Kg	0.300	0.273	91	85 - 115	2008-08-12
Standard	(ICV-1)					,	
QC Batch:	51372		Date Analy	yzed: 2008-08-	-12	Anal	yzed By: DC
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	1.13	113	85 - 115	2008-08-12
Standard (	(CCV-1)						
QC Batch:	51372		Date Analy	zed: 2008-08-	12	Anal	yzed By: DC
			CCVs	CCVs	CCVs	Percent	l I
			True	Found	Percent	Recovery	Date
			C	Conc.	D	Limits	Analyzed
Param	Flag	Units	Conc.	Conc.	Recovery	Linnes	Analyzeu







**NELAP** Certifications

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

Midland: T104704392-08-TX

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## Analytical and Quality Control Report

Shane Estep Etech Environmental Safety

P.O. Box 8469 Midland, TX, 79708 Report Date: August 8, 2008

Work Order: 8080142

Project Location:	Carlsbad, NM
Project Name:	Arrington Fed. $34 \# 1$
Project Number:	Arrington Fed. 34 $\#1$

Enclosed are t	he Analytical Report and	Quality Control Rep	port for the following sam	ple(s) submitted to	TraceAnalysis, Inc.
			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
169330	Bottom	soil	2008-08-01	10:51	2008-08-01

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



Dr. Blair Leftwich, Director

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### **Standard Flags**

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



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### **Case Narrative**

Samples for project Arrington Fed. 34 #1 were received by TraceAnalysis, Inc. on 2008-08-01 and assigned to work order 8080142. Samples for work order 8080142 were received intact at a temperature of 4.0 deg. C.

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

Test	Method
BTEX	S 8021B
Chloride (Titration)	SM 4500-Cl B
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 8080142 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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



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Report Date: August 8, 2008 Arrington Fed. 34 #1

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# **Analytical Report**

#### Sample: 169330 - Bottom

Laboratory: Analysis: QC Batch: Prep Batch:	BTEX 51046		Analytical M Date Analys Sample Prej	zed:	S 8021B 2008-08-03 2008-08-01		Prep Me Analyze Prepare	d By:	S 5035 DC DC
_			RL		<b></b>		,		
Parameter	Flag		Result		Units	E	Dilution		RL
Benzene			0.261		mg/Kg		20		0.0100
Toluene			< 0.200		mg/Kg		20		0.0100
Ethylbenzen	e		4.82		mg/Kg		20		0.0100
Xylene			27.9		mg/Kg	·····	20		0.0100
~						Spike	Percent		covery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery		mits
Trifluorotolu	. ,	•	17.3	mg/Kg	20	$\overline{20.0}$	86		136.9
4-Bromofluo	robenzene (4-BFB)	······	21.8	mg/Kg	20	20.0	109	48.2	2 - 155
Sample: 16 Laboratory: Analysis: QC Batch: Prep Batch:	<b>9330 - Bottom</b> Midland Chloride (Titration) 51119 43850		Date A	ical Metho analyzed: e Preparati	2008-08-05	i	Analyz	Method: zed By: red By:	N/A AG AG
Parameter	Flag				Units	1	Dilution		RL
Parameter Chloride	Flag		Result 194		Units mg/Kg	l	Dilution 50	· · · · · · · · · · · · · · · · · · ·	RL 2.00
Chloride	9330 - Bottom		Result			1			
Chloride Sample: 16 Laboratory:	9330 - Bottom Midland		Result 194		mg/Kg	1	50		2.00
Chloride Sample: 16 Laboratory: Analysis:	<b>9330 - Bottom</b> Midland TPH DRO		Result 194 Analytical		mg/Kg Mod. 8015B	1	50 Prep M	Iethod:	2.00 N/A
Chloride Sample: 16 Laboratory: Analysis: QC Batch:	9330 - Bottom Midland TPH DRO 51020		Result 194 Analytical Date Analy	zed:	mg/Kg Mod. 8015B 2008-08-01	1	50 Prep M Analyz	ed By:	2.00 N/A LD
Chloride Sample: 16 Laboratory: Analysis:	<b>9330 - Bottom</b> Midland TPH DRO		Result 194 Analytical	zed:	mg/Kg Mod. 8015B	1	50 Prep M	ed By:	2.00 N/A
Chloride Sample: 16 Laboratory: Analysis: QC Batch:	9330 - Bottom Midland TPH DRO 51020		Result 194 Analytical Date Analy	zed:	mg/Kg Mod. 8015B 2008-08-01	1	50 Prep M Analyz	ed By:	2.00 N/A LD
Chloride Sample: 16 Laboratory: Analysis: QC Batch:	9330 - Bottom Midland TPH DRO 51020		Result 194 Analytical Date Analy Sample Pre	zed:	mg/Kg Mod. 8015B 2008-08-01		50 Prep M Analyz	ed By:	2.00 N/A LD

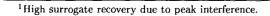


Prep Batch: 43787QC Preparation: 2008-08-01Prepared By: DCMDL ParameterMDL FlagResultUnitsRLBenzene<0.00580mg/Kg0.01	Report Date: Au Arrington Fed. 3				Work Order Arrington Fe			Page	Number: 5 of 12 Carlsbad, NM
n-Triacontane       1       255       mg/Kg       10       100       255       10 - 250.4         Sample:       169330 - Bottom       Laboratory:       Midland       Analytical Method:       \$ \$ \$015B       Prep Method:       \$ \$ 5035         QC Batch:       51047       Date Analyzed:       2008-08-03       Analyzed By:       DC         Prep Batch:       43787       Sample Preparation:       2008-08-01       Prepared By:       DC         Parameter       Flag       Result       Units       Dilution       RL         QRO       1840       mg/Kg       20       1.00         Surrogate       Flag       Result       Units       Dilution       Recovery       Limits         Triflucoroluene (TFT)       21.3       mg/Kg       20       20.0       106       67.5 - 135.2         4.Bromofluorobenzene (4-BFB)       26.4       mg/Kg       20       20.0       132       63.8 - 141         Method Blank (1)       QC Batch:       51020       QC Preparation:       2008-08-01       Analyzed By:       LD         Prep Batch:       43756       QC Preparation:       2008-08-01       Analyzed By:       LD         Surrogate       Flag       Result       Uni	Surrogoto	Flog	Pogult	Unita	D:1	ition	-		
Sample: 169330 - Bottom         Laboratory:       Midland         Analysis:       TPH GRO       Analytical Method:       S 8015B       Prep Method:       S 5035         QC Batch:       51047       Date Analyzed:       2008-08-03       Analyzed By:       DC         Prep Batch:       43787       Sample Preparation:       2008-08-01       Prepared By:       DC         RL       Rice       Result       Units       Dilution       RL         GRO       1840       mg/Kg       20       1.00         Surrogate       Flag       Result       Units       Dilution       Recovery         Surrogate       Flag       Result       Units       Dilution       Recovery       Limits         Trifluorotoluene (TFT)       21.3       mg/Kg       20       20.0       106       67.5       135.2         4-Bromofluorobenzene (4-BFB)       26.4       mg/Kg       20       20.0       132       63.8 - 141         Method Blank (1)       QC Batch:       51020       Date Analyzed:       2008-08-01       Analyzed By:       LD         Prep Batch:       43756       QC Preparation:       2008-08-01       Prepared By:       50         Surrogate									
Laboratory: Midland Analysis:Midland TPH GRO Jote Analyzed:Analytical Method: S 8015B Date Analyzed: 2008-08-03 2008-08-01Prep Method: S 5035 				IIg/IXg	,		100	200 +	10 - 200.4
Analysis:TPH GRO Stample Prep Batch:Analytical Method:S 8015B Date Analyzed:Prep Method:S 5035 Analyzed By:DCPrep Batch:43787Sample Preparation:2008-08-03Analyzed By:DCParameterFlagResultUnitsDilutionRLGRO1840mg/Kg201.00SurrogateFlagResultUnitsDilutionAnalyzed By:Trifluorotoluene (TFT)21.3mg/Kg2020.010667.5 - 135.24-Bromofluorobenzene (4-BFB)26.4mg/Kg2020.010667.5 - 135.24-Bromofluorobenzene (4-BFB)26.4mg/Kg2020.010667.5 - 135.2QC Batch:51020Date Analyzed:2008-08-01Analyzed By:LDPrep Batch:43756QC Preparation:2008-08-01Analyzed By:LDPrep Batch:43756QC Preparation:2008-08-01Prepared By:LDPrep Batch:51020Date Analyzed:2008-08-01Analyzed By:LDPrep Batch:43756QC Preparation:20.2mg/Kg50SurrogateFlagResultUnitsDilutionAmountRecoveryLimitsNCO20.2mg/Kg11007930.9 - 146.4Method Blank (1)QC Batch:51046Prepared By:DCPrep Batch:43787QC Preparation:2008-08-03Analyzed By:DCPrep Batch:43787	Sample: 169330	- Bottom							
QC Batch:51047 Prep Batch:Date Analyzed:2008-08-03 2008-08-01Analyzed By:DC Prepared By:DC Prepared By:DCParameterFlagResultUnitsDilutionRL ResultRecoveryLimitsGRO1840mg/Kg201.00RL RecoveryRecoveryLimitsSurrogateFlagResultUnitsDilutionRecoveryLimitsTrifluorotoluene (TFT)21.3mg/Kg2020.010667.5 - 135.24-Bromofluorobenzene (4-BFB)26.4mg/Kg2020.013263.8 - 141Method Blank (1)QC Batch:51020Date Analyzed:2008-08-01Analyzed By:LDPrep Batch:43756QC Preparation:2008-08-01Analyzed By:LDParameterFlagResultUnitsRLDRO20.2mg/Kg50SurrogateFlagResultUnitsRLMethod Blank (1)QC Batch:51046QCDate Analyzed:2008-08-01Analyzed By:LDParameterFlagResultUnitsRLMethod Blank (1)QC Batch:51046QC Batch:51046Date Analyzed:2008-08-03Analyzed By:DC79.0mg/Kg11007930.9 - 146.4Method Blank (1)QC Batch:51046Prepared By:DCPrep Batch:43787QC Preparation:2008-08-03Analyzed By:DC <td>Laboratory: Mid</td> <td>land</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td></td>	Laboratory: Mid	land						1	
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Prep Batch:Sample Preparation: $2008-08-01$ Prepared By:DCParameterFlagResultUnitsDilutionRLGRO1840mg/Kg201.00SurrogateFlagResultUnitsDilutionAmountRecoveryTrifluorotoluene (TFT)21.3mg/Kg2020.010667.5 - 135.24-Bromofluorobenzene (4-BFB)26.4mg/Kg2020.013263.8 - 141Method Blank (1)QC Batch:51020Date Analyzed:2008-08-01Analyzed By:LDPrep Batch:43756QC Preparation:2002mg/Kg50SurrogateFlagResultUnitsRLDRO20.2mg/Kg50SurrogateFlagResultUnitsRLDRO20.2mg/Kg50SurrogateFlagResultUnitsRecoverySurrogateFlagResultUnitsSpikePercentNethod Blank (1)QC Batch:51046PilutionAmountRecoveryQC Batch:51046Date Analyzed:2008-08-03Analyzed By:DCPrep Batch:43787QC Preparation:2008-08-03Analyzed By:DCPrep Batch:51046Date Analyzed:2008-08-03Analyzed By:DCPrep Batch:51046Date Analyzed:2008-08-03Analyzed By:DCPrep Batch:51046Date Analyzed:2008-08-03Prepared By: </td <td>QC Batch: 510</td> <td>47</td> <td></td> <td>Date Ana</td> <td>lyzed:</td> <td>2008-08-03</td> <td></td> <td>Analyz</td> <td>ed By: DC</td>	QC Batch: 510	47		Date Ana	lyzed:	2008-08-03		Analyz	ed By: DC
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$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Parameter	Flag	S	$\mathbf{Result}$		Units	١	Dilution	$\mathbf{RL}$
	GRO			1840		mg/Kg		20	1.00
							Spike	Percent	Recoverv
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Surrogate		Flag	Result	Units	Dilution	-		
4-Bromofluorobenzene (4-BFB) $26.4 \text{ mg/Kg}$ $20$ $20.0$ $132$ $63.8 - 141$ Method Blank (1)QC Batch: 51020Date Analyzed: 2008-08-01Analyzed By: LDQC Batch: 51020Date Analyzed: 2008-08-01Prepared By: LDPrep Batch: 43756QC Preparation: 2008-08-01Prepared By: LDParameterFlagResultUnitsRLDRO $20.2$ mg/Kg $50$ SurrogateFlagResultUnitsDilutionAmountRecoverySurrogateFlagResultUnitsDilutionAmountRecoveryLimitsNethod Blank (1)QC Batch: 51046Date Analyzed: 2008-08-03Analyzed By: DCPrepared By: DCPrep Batch:51046Date Analyzed: 2008-08-03Analyzed By: DCPrepared By: DCPrep Batch:51046Date Analyzed: 2008-08-03Analyzed By: DCPrepared By: DCPrep Batch:51046Date Analyzed: 2008-08-03Analyzed By: DCPrepared By: DCParameterFlagResultUnitsRLBenzene $< 0.00580$ mg/Kg0.01		(FT)			mg/Kg				
Method Blank (1)QC Batch: 51020QC Batch:51020Date Analyzed:2008-08-01Analyzed By:LDPrep Batch:43756QC Preparation:2008-08-01Prepared By:LDMDLMDLParameterFlagResultUnitsRLDRO20.2mg/Kg50SurrogateFlagResultUnitsDilutionAmountNethod Blank (1)QC Batch:51046SpikePercentRecoveryQC Batch:51046Date Analyzed:2008-08-03Analyzed By:DCPrep Batch:43787QC Preparation:2008-08-03Analyzed By:DCParameterFlagResultUnitsRLPrepared By:DCPrep Batch:51046State2008-08-01Prepared By:DCPrep Batch:51046StateStateStateStateParameterFlagResultUnitsRLBenzene<0.00580			)						
ParameterFlagResultUnitsRLDRO20.2mg/Kg50SurrogateFlagResultUnitsDilutionAmountRecoveryLimitsn-Triacontane79.0mg/Kg11007930.9 - 146.4Method Blank (1)QC Batch: 51046Date Analyzed: 2008-08-03Analyzed By: DCQC Batch:51046Date Analyzed: 2008-08-03Analyzed By: DCPrep Batch:43787QC Preparation: 2008-08-01Prepared By: DCParameterFlagResultUnitsRLBenzene<0.00580mg/Kg0.01	QC Batch: 5102	20	Batch: 51020		•				•
DRO20.2mg/Kg50SurrogateFlagResultUnitsDilutionAmountRecoveryLimitsn-Triacontane79.0mg/Kg11007930.9 - 146.4Method Blank (1)QC Batch: 51046Date Analyzed: 2008-08-03Analyzed By: DCQC Batch:51046Date Analyzed: 2008-08-03Analyzed By: DCPrep Batch:43787QC Preparation: 2008-08-01Prepared By: DCParameterFlagResultUnitsRLBenzene<0.00580mg/Kg0.01	_							1	
Surrogate       Flag       Result       Units       Dilution       Amount       Recovery       Limits         n-Triacontane       79.0       mg/Kg       1       100       79       30.9 - 146.4         Method Blank (1)       QC Batch: 51046       Date Analyzed:       2008-08-03       Analyzed By:       DC         QC Batch:       51046       Date Analyzed:       2008-08-03       Analyzed By:       DC         Prep Batch:       43787       QC Preparation:       2008-08-01       Prepared By:       DC         Parameter       Flag       Result       Units       RL         Benzene       <0.00580			Flag						
SurrogateFlagResultUnitsDilutionAmountRecoveryLimitsn-Triacontane79.0mg/Kg11007930.9 - 146.4Method Blank (1)QC Batch: 51046Date Analyzed:2008-08-03Analyzed By:DCQC Batch:51046Date Analyzed:2008-08-03Analyzed By:DCPrep Batch:43787QC Preparation:2008-08-01Prepared By:DCParameterFlagResultUnitsRLBenzene<0.00580	DRO				20.2		mg	/Kg	50
n-Triacontane 79.0 mg/Kg 1 100 79 30.9 - 146.4 Method Blank (1) QC Batch: 51046 QC Batch: 51046 Date Analyzed: 2008-08-03 Analyzed By: DC Prep Batch: 43787 QC Preparation: 2008-08-01 Prepared By: DC MDL Parameter Flag Result Units RL Benzene <a href="https://www.sci.example.com">NDL</a> MDL MDL MDL MDL MDL MDL MDL MDL	~	_					-		•
Method Blank (1)QC Batch: 51046QC Batch:51046Date Analyzed: 2008-08-03Analyzed By: DCPrep Batch:43787QC Preparation: 2008-08-01Prepared By: DCMDLMDLParameterFlagResultUnitsRLBenzene<0.00580		Flag				ion A			
QC Batch:51046Date Analyzed:2008-08-03Analyzed By:DCPrep Batch:43787QC Preparation:2008-08-01Prepared By:DCMDLMDLParameterFlagResultUnitsRLBenzene<0.00580	n-Triacontane		79.0	mg/Kg	1		100	79	30.9 - 146.4
Prep Batch: 43787QC Preparation: 2008-08-01Prepared By: DCMDL ParameterMDL FlagResultUnitsRLBenzene<0.00580	Method Blank (	1) QC I	Batch: 51046					1	
Prep Batch: 43787QC Preparation: 2008-08-01Prepared By: DCMDL ParameterMDL FlagResultUnitsRLBenzene<0.00580	QC Batch: 5104	6		Date Ana	lyzed: 20	08-08-03		Anal	yzed By: DC
ParameterFlagResultUnitsRLBenzene<0.00580	Prep Batch: 4378	7		QC Prepa	ration: 20	08-08-01			
Benzene <0.00580 mg/Kg 0.01	Parameter		Flag				I	nits	RL
0, 0									
	Toluene								0.01

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n: 51047 ch: 43787 or oluene (TFT) luorobenzene (4-BF Blank (1) QC	Flag Flag BFB) QC Batch: 5104 Flag Flag	Date An QC Prep Result	•	ult 30	Un mg/ Spike Amount 1.00 1.00	Kg Kg Percent Recovery 81 78 Analy Prepa	F 0. 0. Recover Limits 48.3 - 132 37.7 - 122 zed By: Dured By: Dur
zene coluene (TFT) huorobenzene (4-BF <b>Blank (1)</b> Q( n: 51047 ch: 43787 r oluene (TFT) uorobenzene (4-BF <b>Blank (1)</b> Q(	Flag BFB) QC Batch: 5104 Flag Flag	0.813 0.783 Pate And QC Prep	Rest <0.005 <0.01 Units mg/Kg mg/Kg alyzed: 20 paration: 20 MDL Result	ult 30 36 Dilution 1 1 1 008-08-03	mg/ mg/ Spike Amount 1.00 1.00 Unit	Kg Kg Percent Recovery 81 78 Analy Prepa	0. 0. Recover Limits 48.3 - 132 37.7 - 128 zed By: D red By: D
zene coluene (TFT) huorobenzene (4-BF <b>Blank (1)</b> Q( n: 51047 ch: 43787 r oluene (TFT) uorobenzene (4-BF <b>Blank (1)</b> Q(	Flag BFB) QC Batch: 5104 Flag Flag	0.813 0.783 Pate And QC Prep	<0.005 <0.01 Units mg/Kg mg/Kg alyzed: 20 paration: 20 MDL Result	30 36 Dilution 1 1 008-08-03	mg/ mg/ Spike Amount 1.00 1.00 Unit	Kg Kg Percent Recovery 81 78 Analy Prepa	0. 0. Recover Limits 48.3 - 132 37.7 - 128 zed By: D red By: D
Blank (1) QC Blank (1) QC n: 51047 ch: 43787 oluene (TFT) uorobenzene (4-BF Blank (1) QC	BFB) QC Batch: 5104 Flag Flag	0.813 0.783 Pate And QC Prep	<0.01 Units mg/Kg mg/Kg alyzed: 20 paration: 20 MDL Result	36 Dilution 1 1 008-08-03	mg/ Spike Amount 1.00 1.00	Kg Percent Recovery 81 78 Analy Prepa	0. Recover Limits 48.3 - 13: 37.7 - 12: 37.7 - 12: zed By: D red By: D
Blank (1) QC Blank (1) QC n: 51047 ch: 43787 or oluene (TFT) uorobenzene (4-BF Blank (1) QC	BFB) QC Batch: 5104 Flag Flag	0.813 0.783 Pate And QC Prep	mg/Kg mg/Kg alyzed: 2( paration: 2( MDL Result	1 1 008-08-03	Amount 1.00 1.00 Unit	Recovery 81 78 Analy Prepa	Limits 48.3 - 133 37.7 - 128 zed By: D red By: D
Blank (1) QC Blank (1) QC n: 51047 ch: 43787 or oluene (TFT) uorobenzene (4-BF Blank (1) QC	BFB) QC Batch: 5104 Flag Flag	0.813 0.783 Pate And QC Prep	mg/Kg mg/Kg alyzed: 2( paration: 2( MDL Result	1 1 008-08-03	1.00 1.00 Unit	81 78 Analy Prepa	48.3 - 13: 37.7 - 128 zed By: D red By: D
Blank (1) QC n: 51047 ch: 43787 er oluene (TFT) luorobenzene (4-BF Blank (1) QC	QC Batch: 5104 Flag Flag	7 Date An QC Prep Result	alyzed: 2( varation: 2( MDL Result	008-08-03	Unit	Analy Prepa	zed By: D red By: D
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oluene (TFT) uorobenzene (4-BF <b>Blank (1)</b> QC	Flag					s	г
oluene (TFT) luorobenzene (4-BF Blank (1) QC			0.969				F
oluene (TFT) luorobenzene (4-BF Blank (1) QC				······	mg/ŀ	(g	
uorobenzene (4-BF Blank (1) QC	FB)		Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Blank (1) QC	FB)	0.971	mg/Kg	1	1.00	97	39.2 - 135
., .		0.882	mg/Kg	1	1.00	88	16.8 - 138
• 51110	C Batch: 51119						
h: 43850						v	zed By: A0 red By: A1
~	Flag		MDL Bogult		Unit		R
	I lag						
:h: r	51119 43850	51119	51119 Date Ana 43850 QC Prep Flag	51119Date Analyzed: 2043850QC Preparation: 20MDLFlagFlagResult<0.500	51119         Date Analyzed:         2008-08-05           43850         QC Preparation:         2008-08-05           MDL         Result             <0.500	51119         Date Analyzed:         2008-08-05           43850         QC Preparation:         2008-08-05           MDL         Interview         Units           Flag         Result         Units           <0.500	51119Date Analyzed:2008-08-05Analyzed:43850QC Preparation:2008-08-05PrepareMDLMDLFlagResultUnits<0.500

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Arrington Fed Param DRO Percent recove	l. 34 #1				۸ <b>:</b>		0142			1 460 1	Number	
DRO					AITII	gton Fed. 3	4 #1			-	Carls	bad, Nl
DRO												
DRO			LCSD	TT	-: D''	Spike	Matrix	D		Rec.	חחח	RPI
			Result 296		$\frac{\text{nits}}{W_{\pi}}$ Dil	l. Amoun 250	t Result 20.2	Rec.		Limit 5 - 152.1	RPD 3	Limi 20
I ercent recove	ry is hasod	on the sn			/Kg 1 D is based			110			<u> </u>	20
	i y is based				D 15 Daseu	on me spin						_
~		LCS	LCS				Spike		$\mathbf{CS}$	LCSD		Rec.
Surrogate	2	Result	Res		Units	Dil.	Amount		ec.	Rec.		Limit
n-Triacontane		125	13	7	mg/Kg	1	100	1	25	137	38	- 130.4
Laboratory (	Control S	pike (LC:	S-1)							I		
OC Batah	51046			Det	te Analyze	ed: 2008-(	0.09			٩٣٥	unod Dr	DC
-	43787 .				Preparati						yzed By ared By	
Trep Daten.	40101			QU	тератал	ion. 2000-0				тер	areu Dy	. DO
			LC	S			Spike	Mat	riv		1	Rec.
Param			Res		Units	Dil.	Amount	Res		Rec.		imit
Benzene			0.9	_	mg/Kg	1	1.00	<0.00		94		- 116.6
Toluene			0.9									
Ethylbenzene			0.9	60	mg/Kg	1	1.00	< 0.00	0470	96	78.6	- 115.1
- ULLT IN ULLUIT					mg/Kg mg/Kg	1 1	$\begin{array}{c} 1.00\\ 1.00 \end{array}$	<0.00 <0.00		96 93		
=			0.9 0.9 2.8	32	mg/Kg mg/Kg mg/Kg	1 1 1	1.00 1.00 3.00	<0.00 <0.00 <0.0	)5 <b>3</b> 0	96 93 95	77.4	- 114.9
Xylene           Percent recover	ry is based	on the sp	0.9	32 35	mg/Kg mg/Kg	1	1.00 3.00	<0.00 <0.0	)530 136	93 95	77.4	- 114.9
Xylene	ry is based	on the sp	0.9 2.8 ike result	32 35	mg/Kg mg/Kg	1 1 on the spik	1.00 3.00 e and spike d	<0.00 <0.0	0530 136 e resul	93 95 lt.	77.4	- 114.9 - 114.7
Xylene Percent recover	ry is based	on the sp	0.9 2.8 ike result LCSD	32 35 t. RPI	mg/Kg mg/Kg D is based	1 1 on the spik Spike	1.00 3.00 e and spike d Matrix	<0.00 <0.0 uplicate	)530 136 e resul	93 95 lt. Rec.	77.4 78.2	- 114.9 - 114.7 RPD
Xylene Percent recover Param	ry is based	on the sp	0.9 2.8 ike result LCSD Result	32 35 t. RPI Uni	mg/Kg mg/Kg D is based ts Dil.	1 1 on the spik Spike Amount	1.00 3.00 e and spike d Matrix Result	<0.00 <0.0 uplicate Rec.	0530 136 e resul I	93 95 It. Rec. Jimit	77.4 78.2 RPD	- 114.9 - 114.7 RPD Limit
Xylene Percent recover Param Benzene	ry is based	on the sp	0.9 2.8 ike result LCSD	32 35 t. RPI 	mg/Kg mg/Kg D is based ts Dil. Kg 1	1 1 on the spik Spike Amount 1.00	1.00 3.00 e and spike d Matrix Result <0.00580	<0.00 <0.0 uplicate	0530 136 e resul 1 1 73.3	93 95 It. Rec. Jimit - 116.6	77.4 78.2	- 114.9 - 114.7 RPD
Xylene Percent recover Param Benzene Toluene	ry is based	on the sp	0.9 2.8 ike result LCSD Result 0.904	32 35 t. RPI Uni mg/l mg/l	mg/Kg mg/Kg D is based ts Dil. Kg 1 Kg 1	1 1 on the spik Spike Amount	1.00 3.00 e and spike d Matrix Result	<0.00 <0.0 uplicate <u>Rec.</u> 90	0530 136 e resul 1 1 73.3 78.6	93 95 It. Rec. Jimit	77.4 78.2 <u>RPD</u> 4	- 114.9 - 114.7 RPD Limit 20
Xylene Percent recover Param Benzene Toluene Ethylbenzene	ry is based	on the sp	0.9 2.8 ike result LCSD Result 0.904 0.922	32 35 t. RPI 	mg/Kg mg/Kg D is based ts Dil. Kg 1 Kg 1 Kg 1	1 on the spik Spike Amount 1.00 1.00	1.00 3.00 e and spike d Matrix Result <0.00580 <0.00470	<0.00 <0.0 uplicate <u>Rec.</u> 90 92	0530 136 e resul 1 73.3 78.6 77.4	93 95 It. Rec. Jimit - 116.6 - 115.1	77.4 78.2 RPD 4 4	Limit 20 20
Xylene Percent recover Param Benzene Toluene Ethylbenzene Xylene			0.9 2.8 ike result LCSD Result 0.904 0.922 0.897 2.74	32 35 t. RPI <u>Uni</u> mg/I mg/I mg/I	mg/Kg mg/Kg D is based ts Dil. Kg 1 Kg 1 Kg 1 Kg 1	1 0n the spike Amount 1.00 1.00 3.00	1.00 3.00 e and spike d Matrix Result <0.00580 <0.00470 <0.00530 <0.0136	<0.00 <0.0 uplicate <u>Rec.</u> 90 92 90 91	0530 136 e resul 1 73.3 78.6 77.4 78.2	93 95 lt. imit - 116.6 - 115.1 - 114.9 - 114.7	77.4 78.2 RPD 4 4 4	- 114.9 - 114.7 RPD Limit 20 20 20
Xylene Percent recover Param Benzene Toluene Ethylbenzene Xylene			0.9 2.8 ike result LCSD Result 0.904 0.922 0.897 2.74	32 35 t. RPI mg/l mg/l mg/l mg/l	mg/Kg mg/Kg D is based ts Dil. Kg 1 Kg 1 Kg 1 Kg 1	1 0n the spike Amount 1.00 1.00 3.00	1.00 3.00 e and spike d Matrix Result <0.00580 <0.00470 <0.00530 <0.0136	<0.00 <0.0 uplicate 90 92 90 91 uplicate	0530 136 e resul 1 73.3 78.6 77.4 78.2	93 95 lt. imit - 116.6 - 115.1 - 114.9 - 114.7	77.4 78.2 RPD 4 4 4 4 4	- 114.9 - 114.7 RPD Limit 20 20 20
Xylene Percent recover Param Benzene Foluene Ethylbenzene Kylene Percent recover Surrogate	ry is based		0.9 2.8 ike result LCSD Result 0.904 0.922 0.897 2.74 ke result	32 35 t. RPI mg/l mg/l mg/l 5. RPE	mg/Kg mg/Kg D is based ts Dil. Kg 1 Kg 1 Kg 1 Kg 1 D is based	1 0n the spike Amount 1.00 1.00 3.00	1.00 3.00 e and spike d Matrix Result <0.00580 <0.00470 <0.00530 <0.0136 e and spike du	<0.00 <0.0 uplicate 90 92 90 91 uplicate ke	0530 136 e resul 137 73.3 78.6 77.4 78.2 e resul	93 95 lt. imit - 116.6 - 115.1 - 114.9 - 114.7 t.	77.4 78.2 RPD 4 4 4 4 4	- 114.9 - 114.7 RPD Limit 20 20 20 20
Xylene	ry is based		0.9 2.8 ke result LCSD Result 0.904 0.922 0.897 2.74 ke result LC	32 35 t. RPI mg/l mg/l mg/l c. RPE S ult	mg/Kg mg/Kg D is based ts Dil. Kg 1 Kg 1 Kg 1 D is based LCSD	1 1 on the spik Spike Amount 1.00 1.00 3.00 on the spike	1.00 3.00 e and spike d Matrix Result <0.00580 <0.00470 <0.00530 <0.0136 e and spike du Spil	<0.00 <0.0 uplicate 8 ec. 90 92 90 91 uplicate ke unt	0530 136 e resul 73.3 78.6 77.4 78.2 e resul LCS	93 95 lt. Rec. imit - 116.6 - 115.1 - 114.9 - 114.7 t. LCSD	77.4 78.2 RPD 4 4 4 4 4 L	- 114.9 - 114.7 RPD Limit 20 20 20 20 Rec.

²High surrogate recovery due to peak interference.



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

D	LCSD	TT	D'I	Spike		latrix		Re		DDD	RPD
Param GRO	Result 9.31	Units mg/Kg		Amount 10.0		$\frac{1}{0.442}$	Rec. 93	Lim 57.5 -		<u>RPD</u> 11	Limit 20
									100.4		20
Percent recovery is based on the s	pike result.	RPD 1S	based on	the spike	and	spike duj	oncate	result.			
	LCS	5 LC	$\mathbf{SD}$			Spike	e L	CS	LCSD		Rec.
Surrogate	Resu				Dil.	Amou		lec.	Rec.		Limit
Trifluorotoluene (TFT)	1.03			g/Kg	1	1.00		.03	100		3 - 134.3
4-Bromofluorobenzene (4-BFB)	0.95	2 0.9	22 m	g/Kg	1	1.00		95	92	53.3	8 - 123.6
Laboratory Control Spike (LC	CS-1)								i N		
QC Batch: 51119		Date Ar	alyzed:	2008-08	-05				Analy	zed By	: AG
Prep Batch: 43850			paration:			\$				ared By	
		,		,					1		
	LC	IS				Spike	M	atrix	1		Rec.
Param	Res		Units	Dil.	A	Amount		sult	Rec		Limit
Chloride	10		mg/Kg	1		100		.500	101		35 - 115
Percent recovery is based on the s	pike result.	RPD is l	based on	the spike	and	spike dur	licate 1	esult.			
5	•			· · · · <b>·</b> · · ·		· F · · · · · · F					
	T COD										DDD
Daram	LCSD Begult	Unita	Dil	Spike		Matrix	Dee	Re		מממ	RPD Limit
	Result	Units mg/Kg	Dil.	Amoun	t .	Result	Rec.	Lin	nit ,	RPD	Limit
Chloride	Result 103	mg/Kg	1	Amount 100	t	Result <0.500	103	Lin * 85 -	nit ,	RPD 2	
Chloride Percent recovery is based on the sp	Result 103	mg/Kg RPD is t	1	Amount 100	t	Result <0.500	103	Lin * 85 -	nit ,		Limit
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 51020	Result 103 pike result.	mg/Kg RPD is t 59330 Date An	1 pased on alyzed:	Amount 100 the spike 2008-08	t and s	Result <0.500	103	Lin * 85 -	nit 115 Analy	2 vzed By	Limit 20 7: LD
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 51020	Result 103 pike result.	mg/Kg RPD is t 59330 Date An	1 pased on	Amount 100 the spike	t and s	Result <0.500	103	Lin * 85 -	nit 115 Analy	2	Limit 20 7: LD
QC Batch: 51020 Prep Batch: 43756	Result 103 pike result. Sample: 16 MS	mg/Kg RPD is b 59330 Date An QC Prep	1 pased on alyzed: paration:	Amoun 100 the spike 2008-08 2008-08	-01 -01 -01	Result <0.500 spike dup Spike	103 licate r Mat	Lin 85 - esult.	nit 115 Analy	2 vzed By ared By	Limit 20 7: LD 7: LD Rec.
Chloride Percent recovery is based on the sp <b>Matrix Spike (MS-1)</b> Spiked QC Batch: 51020 Prep Batch: 43756 Param	Result 103 pike result. Sample: 16 MS Resu	mg/Kg RPD is b 59330 Date An QC Prep	1 pased on aalyzed: paration: Units	Amoun 100 the spike 2008-08 2008-08 2008-08 Dil.	t and s -01 -01 S Ar	Result <0.500 spike dup Spike mount	103 licate r Mat Res	Lin 85 - esult. rix ılt	nit 115 Analy Prepa Rec.	2 vzed By ared By	Limit 20 7: LD 7: LD 7: LD Rec. Limit
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 51020 Prep Batch: 43756 Param DRO	Result 103 pike result. Sample: 16 MS Resu 1120	mg/Kg RPD is b 59330 Date An QC Prep	1 pased on aalyzed: paration: Units ng/Kg	Amount 100 the spike 2008-08 2008-08 2008-08 Dil. 10	t and s -01 -01 S Ar	Result <0.500 spike dup Spike mount 250	103 licate n Mat Rest	Lin 85 - esult. rix ılt 0	nit 115 Analy Prepa	2 vzed By ared By	Limit 20 7: LD 7: LD Rec.
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 51020 Prep Batch: 43756 Param DRO	Result 103 pike result. Sample: 16 MS Resu 1120	mg/Kg RPD is b 59330 Date An QC Prep	1 pased on aalyzed: paration: Units ng/Kg	Amount 100 the spike 2008-08 2008-08 2008-08 Dil. 10	t and s -01 -01 S Ar	Result <0.500 spike dup Spike mount 250	103 licate n Mat Rest	Lin 85 - esult. rix ılt 0	nit 115 Analy Prepa Rec.	2 vzed By ared By	Limit 20 7: LD 7: LD 7: LD Rec. Limit
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 51020 Prep Batch: 43756 Param DRO	Result 103 pike result. Sample: 16 MS Resu 112( pike result.	mg/Kg RPD is b 59330 Date An QC Prep	1 pased on aalyzed: paration: Units ng/Kg	Amount 100 the spike 2008-08 2008-08 2008-08 Dil. 10 the spike a	t and s -01 -01 S Ar and s	Result <0.500 spike dup bpike mount 250 spike dup	103 licate n Mat Rest	Lin 85 - esult. rix 1lt 0 esult.	nit 115 Analy Prepa Rec. 24	2 vzed By ared By	Limit 20 7: LD 7: LD 7: LD Rec. Limit - 179.5
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 51020	Result 103 pike result. Sample: 16 MS Resu 1120	mg/Kg RPD is b 59330 Date An QC Prep	1 pased on aalyzed: paration: Units ng/Kg	Amount 100 the spike 2008-08 2008-08 2008-08 Dil. 10	t and s -01 -01 S Ar and s M	Result <0.500 spike dup bpike mount 250 spike dup fatrix	103 licate n Mat Rest	Lin 85 - esult. rix ılt 0	nit 115 Analy Prepa Rec. 24	2 vzed By ared By	Limit 20 7: LD 7: LD 7: LD Rec. Limit

³Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.



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	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount		Rec.	Limit
n-Triacontane 4 5	295	855	mg/Kg	10	100	295	855	34.1 - 158
Matrix Spike (MS-1)	Spiked Sam	ple: 1689	51					
QC Batch: 51046		Da	te Analyzed	l: 2008-0	08-03		Anal	yzed By: DC
Prep Batch: 43787			C Preparatio					ared By: DC
		MS			Spike	Matrix		Rec.
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene		1.03	mg/Kg	1	1.00	< 0.00580	103	62.2 - 134.3
Toluene		1.07	mg/Kg	1	1.00	< 0.00470	107	62.6 - 145.4
Ethylbenzene		1.07	mg/Kg	1	1.00	< 0.00530	107	64.6 - 146.4
Xylene		3.25	mg/Kg	1	3.00	<0.0136	108	64.3 - 148.8
Percent recovery is based of	on the spike r	esult. RP	D is based of	on the spik	e and spike du	iplicate resu	ut.	
	MS	D		Spike	Matrix		Rec.	RPD
Param	Res	ult Un	its Dil.	Amount	$\mathbf{Result}$	Rec.	Limit	RPD Limit
Benzene	1.0	)1 mg/	/Kg 1	1.00	< 0.00580	101 62.	2 - 134.3	2 20
Benzene Toluene	1.0 1.0	)1 mg/ )3 mg/	/Kg 1 /Kg 1	1.00 1.00	<0.00580 <0.00470	101 62. 103 62.	2 - 134.3 6 - 145.4	$\begin{array}{c ccc} 2 & 20 \\ 4 & 20 \end{array}$
Benzene Toluene Ethylbenzene	1.0 1.0 1.0	)1 mg/ )3 mg/ )6 mg/	/Kg 1 /Kg 1 /Kg 1	1.00 1.00 1.00	<0.00580 <0.00470 <0.00530	101         62.1           103         62.1           106         64.1	2 - 134.3 6 - 145.4 6 - 146.4	$\begin{array}{cccc} 2 & 20 \\ 4 & 20 \\ 1 & 20 \end{array}$
Benzene Toluene Ethylbenzene Xylene	1.0 1.0 1.0 3.2	)1 mg/ )3 mg/ )6 mg/ 20 mg/	/Kg 1 /Kg 1 /Kg 1 /Kg 1	$     1.00 \\     1.00 \\     1.00 \\     3.00     $	$\begin{array}{c} < 0.00580 \\ < 0.00470 \\ < 0.00530 \\ < 0.0136 \end{array}$	101         62.           103         62.           106         64.           107         64.	2 - 134.3 6 - 145.4 6 - 146.4 3 - 148.8	$\begin{array}{c ccc} 2 & 20 \\ 4 & 20 \end{array}$
Benzene Toluene Ethylbenzene Xylene	1.0 1.0 1.0 3.2	)1 mg/ )3 mg/ )6 mg/ 20 mg/	/Kg 1 /Kg 1 /Kg 1 /Kg 1	$     1.00 \\     1.00 \\     1.00 \\     3.00     $	$\begin{array}{c} < 0.00580 \\ < 0.00470 \\ < 0.00530 \\ < 0.0136 \end{array}$	101         62.           103         62.           106         64.           107         64.	2 - 134.3 6 - 145.4 6 - 146.4 3 - 148.8	$\begin{array}{cccc} 2 & 20 \\ 4 & 20 \\ 1 & 20 \end{array}$
Benzene Toluene Ethylbenzene Xylene	1.0 1.0 1.0 3.2	)1 mg/ )3 mg/ )6 mg/ 20 mg/	/Kg 1 /Kg 1 /Kg 1 /Kg 1	$     1.00 \\     1.00 \\     1.00 \\     3.00     $	$\begin{array}{c} < 0.00580 \\ < 0.00470 \\ < 0.00530 \\ < 0.0136 \end{array}$	101         62.           103         62.           106         64.           107         64.           uplicate resu	2 - 134.3 6 - 145.4 6 - 146.4 3 - 148.8	$\begin{array}{cccc} 2 & 20 \\ 4 & 20 \\ 1 & 20 \end{array}$
Benzene Toluene Ethylbenzene Xylene Percent recovery is based o	1.0 1.0 1.0 3.2	01 mg/ 03 mg/ 06 mg/ 20 mg/ esult. RP	/Kg         1           /Kg         1           /Kg         1           /Kg         1           /Kg         1           D is based of MSD           Result	1.00 1.00 1.00 3.00 on the spike Units	<0.00580 <0.00470 <0.00530 <0.0136 e and spike du	101         62.           103         62.           106         64.           107         64.           aplicate result         RS	2 - 134.3 6 - 145.4 6 - 146.4 3 - 148.8 lt. MSD	2 20 4 20 1 20 2 20 Rec. Limit
Benzene Toluene Ethylbenzene Xylene Percent recovery is based o Surrogate Trifluorotoluene (TFT)	1.0 1.0 1.0 3.2 on the spike r	01 mg/ 03 mg/ 06 mg/ 20 mg/ esult. RP MS Result 0.772	/Kg         1           /Kg         1           /Kg         1           /Kg         1           /Kg         1           D is based of         MSD           Result         0.814	1.00 1.00 1.00 3.00 on the spike	<0.00580 <0.00470 <0.00530 <0.0136 e and spike du Spil	101         62.           103         62.           106         64.           107         64.           aplicate result         result           ke         MS	2 - 134.3 6 - 145.4 6 - 146.4 3 - 148.8 It. MSD Rec.	2 20 4 20 1 20 2 20 Rec. Limit 38.8 - 127.5
Benzene Toluene Ethylbenzene Xylene Percent recovery is based o Surrogate Trifluorotoluene (TFT)	1.0 1.0 1.0 3.2 on the spike r	01 mg/ 03 mg/ 06 mg/ 20 mg/ esult. RP MS Result	/Kg         1           /Kg         1           /Kg         1           /Kg         1           /Kg         1           D is based of         MSD           Result         0.814	1.00 1.00 1.00 3.00 on the spike Units	<0.00580 <0.00470 <0.00530 <0.0136 e and spike du Spil Dil. Amo	101         62.           103         62.           106         64.           107         64.           uplicate result         Rec.	2 - 134.3 6 - 145.4 6 - 146.4 3 - 148.8 It. MSD Rec.	2 20 4 20 1 20 2 20 Rec. Limit 38.8 - 127.5
Benzene Toluene Ethylbenzene Xylene Percent recovery is based of Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-E Matrix Spike (MS-1) QC Batch: 51047	1.0 1.0 1.0 3.2 on the spike r	01 mg/ 03 mg/ 06 mg/ 00 mg/ esult. RP MS Result 0.772 0.802 ple: 16933	/Kg 1 /Kg 1 /Kg 1 D is based o MSD Result 0.814 0.836	1.00 1.00 3.00 on the spike Units mg/Kg mg/Kg	<0.00580 <0.00470 <0.00530 <0.0136 e and spike du Spil Dil. Amo 1 1 1 1 8-03	101         62.           103         62.           106         64.           107         64.           uplicate result         Rec.           with Rec.         77	2 - 134.3 6 - 145.4 6 - 146.4 3 - 148.8 It. MSD Rec. 81 84	2 20 4 20 1 20 2 20 Rec. Limit 38.8 - 127.5
Benzene Toluene Ethylbenzene Xylene Percent recovery is based of Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-E Matrix Spike (MS-1) QC Batch: 51047	1.0 1.0 1.0 3.2 on the spike re BFB)	01 mg/ 03 mg/ 06 mg/ 00 mg/ esult. RP MS Result 0.772 0.802 ple: 16933	/Kg         1           /Kg         1           /Kg         1           /Kg         1           D is based of MSD           Result           0.814           0.836           0           te Analyzed:	1.00 1.00 3.00 on the spike Units mg/Kg mg/Kg	<0.00580 <0.00470 <0.00530 <0.0136 e and spike du Spil Dil. Amo 1 1 1 1 8-03	101         62.           103         62.           106         64.           107         64.           uplicate result         Rec.           with Rec.         77	2 - 134.3 6 - 145.4 6 - 146.4 3 - 148.8 It. MSD Rec. 81 84	2 20 4 20 1 20 2 20 Rec. Limit 38.8 - 127.5 49.3 - 142.4
Benzene Toluene Ethylbenzene Xylene Percent recovery is based of Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-E Matrix Spike (MS-1) QC Batch: 51047	1.0 1.0 1.0 3.2 on the spike re BFB)	01 mg/ 03 mg/ 06 mg/ 00 mg/ esult. RP MS Result 0.772 0.802 ple: 16933 Dat QC	/Kg         1           /Kg         1           /Kg         1           /Kg         1           D is based of MSD           Result           0.814           0.836           0           te Analyzed:	1.00 1.00 3.00 on the spike Units mg/Kg mg/Kg	<0.00580 <0.00470 <0.00530 <0.0136 e and spike du Spil Dil. Amo 1 1 1 1 8-03 8-01	101         62.           103         62.           106         64.           107         64.           iplicate result         MS           unt         Rec.           77         80	2 - 134.3 6 - 145.4 6 - 146.4 3 - 148.8 It. MSD Rec. 81 84	2 20 4 20 1 20 2 20 Rec. Limit 38.8 - 127.5 49.3 - 142.4 yzed By: DC ared By: DC

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⁴High surrogate recovery due to peak interference. ⁵High surrogate recovery due to peak interference. ⁶Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

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Report Date: August 8, 200 Arrington Fed. 34 #1	8				er: 80801 Fed. 34 7					Page Nu		10 of 1 bad, NM
	MSE				Spike		trix		Re			RPD
Param	Resul			Dil.	Amount		sult	Rec.	Lin		RPD	Limit
GRO	7 2540		/	20	200	······	38.2	351	10 - 1	139.3	11	20
Percent recovery is based on	the spike resu	ılt. RPI	) is base	ed on t	he spike :	and sp	ike duj	olicate	result.			
I.		MS	MSD				Spi	ke	MS	MSD		Rec.
Surrogate	R	esult	Result	U	nits	Dil.	Amo		Rec.	Rec.		Limit
Trifluorotoluene (TFT)		19.7	21.2		g/Kg	$\overline{20}$	2(		98	106		.3 - 119
4-Bromofluorobenzene (4-BF	B)	25.7	28.2	m	g/Kg	20	2(	)	128	141	52	.5 - 154
Matrix Spike (MS-1) S QC Batch: 51119 Prep Batch: 43850	piked Sample	Dat	l e Analyz Prepara		2008-08- 2008-08-						zed By red By	
	_	MS	** /				oike		atrix			Rec.
Param Chloride		<u>tesult</u> 4940	Uni		 		ount		esult	$\underline{\text{Rec.}}$		Limit
······································			$\frac{mg}{\sqrt{2}}$				000		2.55	98		85 - 115
Percent recovery is based on	the spike resu	lit. KPL	D is base	aonti	ne spike a	ina spi	ike aup	ncate	result.			
1	MSD				Spike		atrix	_	Re			RPD
Param	Resul			$\underline{\text{Dil.}}_{\overline{50}}$	Amount		sult	Rec.	Lin		RPD	Limit
Chloride	4970		<u> </u>	50	5000		2.55	98	85 -	115	1	20
Percent recovery is based on	the spike resu	lt. RPL	Is base	a on ti	ie spike a	nd spi	ke dup	licate	result.			
Standard (ICV-1)	•											
QC Batch: 51020		Date	e Analyz	ed: 2	008-08-0	l				Analy	zed By	: LD
I									Percen			
		ICVs		ICV		IC					1	John
	· · · ·	True		Foun	d	Perc	ent		Recover			Date
	Units	True Conc		Foun Conc	d	Perc Reco	ent very		Limits	3	An	alyzed
	Units mg/Kg	True		Foun	d	Perc	ent very			3	An	alyzed
tandard (CCV-1)		True Conc		Foun Conc	d	Perc Reco	ent very		Limits	3	An	alyzed
		True Conc 250	•	Foun Conc 277	d	Perco Reco 11	ent very		Limits	5	An	alyzed 8-08-01
DRO		True Conc 250 Date	e Analyz	Foun Conc 277 ed: 2	d 	Perce Reco 11	ent very 1		Limit: 85 - 11	5 5 Analy	An 200	alyzed 8-08-01
DRO		True Conc 250	e Analyz	Foun Conc 277	d  008-08-01 s	Perco Reco 11	vent very 1 Vs		Limits	5 5 Analy: t	An 200 zed By	alyzed 8-08-01
DRO Standard (CCV-1) 2C Batch: 51020 Param Filag		True Conc 250 Date	e Analyz	Foun Conc 277 ed: 2 CCV	d  008-08-01 s d	Perc Reco 11	very 1 Vs ent		Limits 85 - 11 Percen	Analy: try	An 200 zed By	alyzed 8-08-01 : LD

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



ملقر	Report Date: Aug Arrington Fed. 34		08		rk Order: 8080 ington Fed. 34	Page N	Number: 11 of 12 Carlsbad, NM		
	Standard (ICV-1	.)							
	QC Batch: 51046			Date Analy	zed: 2008-08-	-03	Anal	yzed By: DC	
				ICVs	ICVs	ICVs	Percent		
				True	Found	Percent	Recovery	Date	
	Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
	Benzene		mg/Kg	0.100	0.0914	91	85 - 115	2008-08-03	
	Toluene		mg/Kg	0.100	0.0931	93	85 - 115	2008-08-03	
	Ethylbenzene		mg/Kg	0.100	0.0907	91	85 - 115	2008-08-03	
	Xylene		mg/Kg	0.300	0.276	92	85 - 115	2008-08-03	
	Standard (CCV- QC Batch: 51046	1)		Date Analy	zed: 2008-08-	03	Anal	yzed By: DC	
		1)		-				yzed By: DC	
		1)		Date Analy: CCVs True	CCVs	03 CCVs Percent	Percent		
		1) Flag	Units	CCVs		CCVs		yzed By: DC Date Analyzed	
	QC Batch: 51046		Units mg/Kg	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date Analyzed	
	QC Batch: 51046 Param			CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed 2008-08-03	
	QC Batch: 51046 Param Benzene		mg/Kg	CCVs True Conc. 0.100	CCVs Found Conc. 0.0910	CCVs Percent Recovery 91	Percent Recovery Limits 85 - 115	Date Analyzed 2008-08-03 2008-08-03	
	QC Batch: 51046 Param Benzene Toluene		mg/Kg mg/Kg	CCVs True Conc. 0.100 0.100	CCVs Found Conc. 0.0910 0.0921	CCVs Percent Recovery 91 92	Percent Recovery Limits 85 - 115 85 - 115	Date Analyzed 2008-08-03 2008-08-03 2008-08-03	
	QC Batch: 51046 Param Benzene Toluene Ethylbenzene	Flag	mg/Kg mg/Kg mg/Kg	CCVs True Conc. 0.100 0.100 0.100	CCVs Found Conc. 0.0910 0.0921 0.0873	CCVs Percent Recovery 91 92 87	Percent Recovery Limits 85 - 115 85 - 115 85 - 115	Date Analyzed 2008-08-03 2008-08-03 2008-08-03	
	QC Batch: 51046 Param Benzene Toluene Ethylbenzene Xylene	Flag	mg/Kg mg/Kg mg/Kg	CCVs True Conc. 0.100 0.100 0.100	CCVs Found Conc. 0.0910 0.0921 0.0873 0.279	CCVs Percent Recovery 91 92 87 93	Percent Recovery Limits 85 - 115 85 - 115 85 - 115 85 - 115	Date	
	QC Batch: 51046 Param Benzene Toluene Ethylbenzene Xylene Standard (ICV-1)	Flag	mg/Kg mg/Kg mg/Kg	CCVs True Conc. 0.100 0.100 0.100 0.300	CCVs Found Conc. 0.0910 0.0921 0.0873 0.279	CCVs Percent Recovery 91 92 87 93	Percent Recovery Limits 85 - 115 85 - 115 85 - 115 85 - 115	Date Analyzed 2008-08-03 2008-08-03 2008-08-03 2008-08-03	
	QC Batch: 51046 Param Benzene Toluene Ethylbenzene Xylene Standard (ICV-1)	Flag	mg/Kg mg/Kg mg/Kg	CCVs True Conc. 0.100 0.100 0.100 0.300 Date Analyz	CCVs Found Conc. 0.0910 0.0921 0.0873 0.279 zed: 2008-08-0	CCVs Percent Recovery 91 92 87 93	Percent Recovery Limits 85 - 115 85 - 115 85 - 115 85 - 115 85 - 115	Date Analyzed 2008-08-03 2008-08-03 2008-08-03 2008-08-03	
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## Standard (CCV-1)

GRO		mg/Kg	1.00	1.14	114	85 - 115	2008-08-03
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
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QC Batch:	51047		Date Ana	alyzed: 2008-08	3-03	Anal	yzed By: DC

### Standard (ICV-1)

QC Batch: 51119

Date Analyzed: 2008-08-05

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Analyzed By: AG

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Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride	1 105	mg/Kg	100	97.6	98	85 - 115	2008-08-05
Standard QC Batch:	. ,		Date Anal	yzed: 2008-08	-05	Anal	yzed By: AG
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# Appendix C – Supporting Documentation

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USDA Department of Agriculture

> Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for Eddy Area, New Mexico

Federal 34 #1



# Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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# **How Soil Surveys Are Made**

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the





individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.



# Soil Map

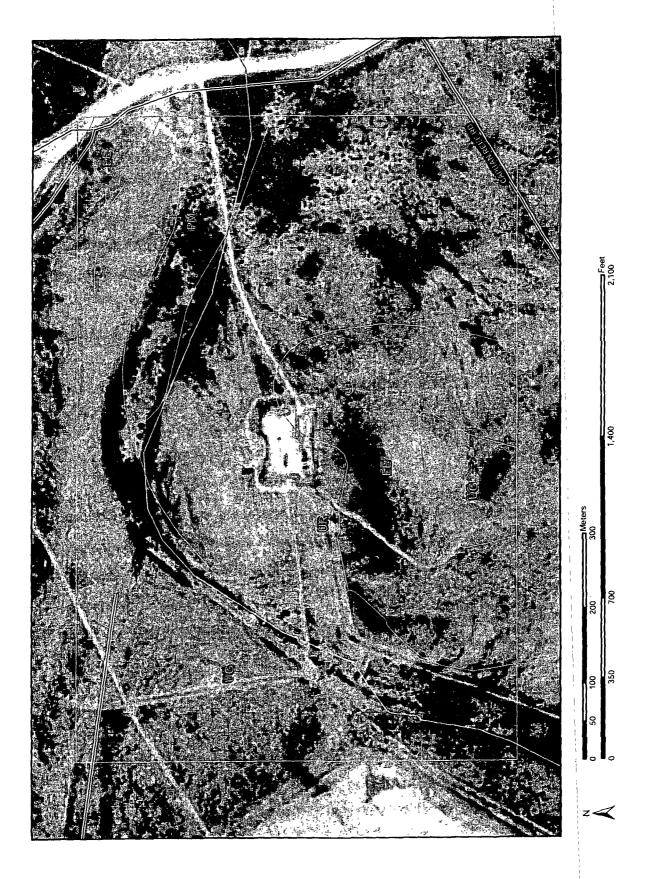
The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.





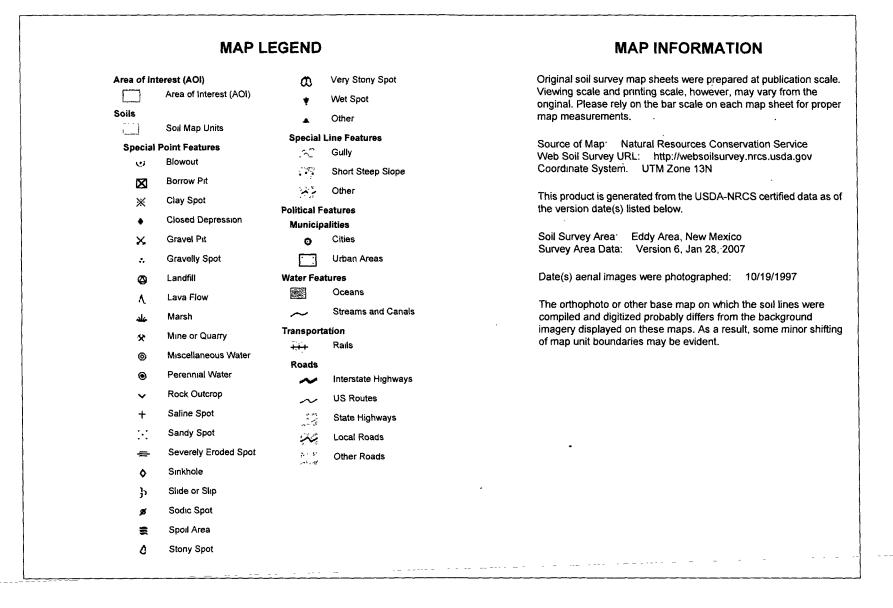
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	Eddy Area, New Mexico (NM614)												
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI										
EE	Ector extremely rocky loam, 9 to 25 percent slopes	26.3	21.3%										
РМ	Pima silt loam, 0 to 1 percent slopes	7.5	6.1%										
UG	Upton gravelly loam, 0 to 9 percent slopes	45.2	36.7%										
UR	Upton-Reagan complex, 0 to 9 percent slopes	44.3	36.0%										
Totals for Area of Interest (AC	)))	123.3	100.0%										

## **Map Unit Legend**

## **Map Unit Descriptions**

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic classes rarely, if ever, can be mapped without including areas of other taxonomic classes for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.





The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A complex consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An association is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.







### Eddy Area, New Mexico Version date:1/28/2007 7:42:44 PM

#### EE—Ector extremely rocky loam, 9 to 25 percent slopes

#### **Map Unit Setting**

*Elevation:* 3,300 to 4,800 feet *Mean annual precipitation:* 10 to 18 inches *Mean annual air temperature:* 58 to 62 degrees F *Frost-free period:* 195 to 210 days

#### Map Unit Composition

Ector and similar soils: 100 percent

#### **Description of Ector**

#### Setting

Landform: Hills, ridges Landform position (two-dimensional): Backslope, footslope, shoulder, toeslope Landform position (three-dimensional): Crest, nose slope, side slope, head slope Down-slope shape: Convex Across-slope shape: Linear

Parent material: Residuum weathered from limestone

#### **Properties and qualities**

Slope: 9 to 25 percent Depth to restrictive feature: 4 to 20 inches to lithic bedrock Drainage class: Well drained Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 2.00 in/hr) Depth to water table: More than 80 inches Frequency of flooding: None Frequency of ponding: None Calcium carbonate, maximum content: 60 percent Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/

cm) Sodium adsorption ratio, maximum: 1.0

Available water capacity: Very low (about 0.4 inches)

#### Interpretive groups

Land capability (nonirrigated): 7s Ecological site: Limestone Hills (R070XD151NM)

### **Typical profile**

0 to 6 inches: Very cobbly loam 6 to 60 inches: Bedrock

#### PM—Pima silt loam, 0 to 1 percent slopes

### **Map Unit Setting**

*Elevation:* 3,200 to 4,200 feet *Mean annual precipitation:* 10 to 16 inches





Mean annual air temperature: 60 to 64 degrees F Frost-free period: 195 to 210 days

Map Unit Composition Pima and similar soils: 100 percent

#### **Description of Pima**

#### Setting

Landform: Alluvial fans, alluvial flats, flood plains Landform position (three-dimensional): Rise, talf Down-slope shape: Linear, convex Across-slope shape: Linear, convex Parent material: Alluvium

#### **Properties and qualities**

Slope: 0 to 1 percent Depth to restrictive feature: More than 80 inches Drainage class: Well drained Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr) Depth to water table: More than 80 inches Frequency of flooding: Rare

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/ cm)

Sodium adsorption ratio, maximum: 1.0 Available water capacity: High (about 11.9 inches)

#### Interpretive groups

Land capability classification (irrigated): 1 Land capability (nonirrigated): 7c Ecological site: Bottomland (R042XC017NM)

#### Typical profile

0 to 3 inches: Silt loam 3 to 60 inches: Silty clay loam

#### UG—Upton gravelly loam, 0 to 9 percent slopes

#### Map Unit Setting

*Elevation:* 3,000 to 4,400 feet *Mean annual precipitation:* 10 to 14 inches *Mean annual air temperature:* 60 to 64 degrees F *Frost-free period:* 200 to 217 days

#### Map Unit Composition

Upton and similar soils: 100 percent

#### **Description of Upton**

#### Setting

Landform: Fans, ridges Landform position (three-dimensional): Side slope, rise Down-slope shape: Convex





Across-slope shape: Convex Parent material: Residuum weathered from limestone

#### Properties and qualities Slope: 0 to 9 percent

Depth to restrictive feature: 7 to 20 inches to petrocalcic Drainage class: Well drained Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.60 in/hr) Depth to water table: More than 80 inches Frequency of flooding: None Frequency of ponding: None Calcium carbonate, maximum content: 75 percent Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm) Sodium adsorption ratio, maximum: 1.0

Available water capacity: Very low (about 1.4 inches)

#### Interpretive groups

Land capability (nonirrigated): 7s Ecological site: Shallow (R042XC025NM)

#### **Typical profile**

0 to 9 inches: Gravelly loam 9 to 13 inches: Gravelly loam 13 to 21 inches: Cemented 21 to 60 inches: Very gravelly loam

### UR-Upton-Reagan complex, 0 to 9 percent slopes

#### Map Unit Setting

*Elevation:* 3,000 to 4,400 feet *Mean annual precipitation:* 10 to 14 inches *Mean annual air temperature:* 60 to 64 degrees F *Frost-free period:* 200 to 220 days

#### **Map Unit Composition**

Upton and similar soils: 55 percent Reagan and similar soils: 35 percent

#### **Description of Upton**

#### Setting

Landform: Fans, ridges Landform position (three-dimensional): Side slope, rise Down-slope shape: Convex Across-slope shape: Convex Parent material: Residuum weathered from limestone

#### **Properties and qualities**

Slope: 0 to 9 percent
Depth to restrictive feature: 7 to 20 inches to petrocalcic
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None





Frequency of ponding: None Calcium carbonate, maximum content: 75 percent Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm) Sodium adsorption ratio, maximum: 1.0 Available water capacity: Very low (about 1.4 inches)

#### Interpretive groups

Land capability (nonirrigated): 7s Ecological site: Shallow (R042XC025NM)

#### **Typical profile**

0 to 9 inches: Gravelly loam

- 9 to 13 inches: Gravelly loam
- 13 to 21 inches: Cemented
- 21 to 60 inches: Very gravelly loam

#### **Description of Reagan**

#### Setting

Landform: Alluvial fans, fan remnants Landform position (three-dimensional): Rise Down-slope shape: Linear, convex Across-slope shape: Linear Parent material: Alluvium and/or eolian deposits

#### Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches Drainage class: Well drained Capacity of the most limiting layer to transmit water (Ksat): Moderately

high to high (0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

### Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 40 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/ cm)

Sodium adsorption ratio, maximum: 1.0

Available water capacity: Moderate (about 8.2 inches)

#### Interpretive groups

Land capability classification (irrigated): 2e Land capability (nonirrigated): 6e Ecological site: Loamy (R042XC007NM)

#### **Typical profile**

0 to 8 inches: Loam 8 to 60 inches: Loam



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