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**App Number:** pSEB0811960554

2RP - 162

DAVID H ARRINGTON OIL & GAS INC

<u>District I</u> 1625 N. French Dr , Hobbs, NM 88240 District II
1301 W Grand Avenue, Artesia, NM 88210
District III 1000 R10 Brazos Road, Aztec, NM 87410 District IV

## State of New Mexico Energy Minerals and Natural Resources

Revised October 10, 2003

Oil Conservation Division 1220 South St. Francis Dr.

MAR 3 1 2009

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

Form C-141

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March 30, 2009 \* Attach Additional Sheets If Necessary Phone: 432-563-2200

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MAR 3 1 2009



# Federal 34 #1 Remediation Report

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



# Federal 34 #1 Remediation Report

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

### **DATE PREPARED:**

March 26, 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.

SHANE ESTEP, P.G.

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## 1.0 Executive Summary

On February 27, 2009, Etech Environmental & Safety Solutions, Inc. (Etech) completed the final soil sampling to conclude the remediation 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.

The scope of work for remediation of the site was approved by the New Mexico Oil Conservation Division (NMOCD) in a letter dated October 14, 2008. The initial remediation was to consist of excavation and off-site disposal of the areas with chloride contamination exceeding 1,000 ppm. The remainder of the soil impacted with chlorides and hydrocarbons was to be blended with clean soil to reduce the contaminant levels.

During the remediation phase of the project Ms. Terry Gregston with the Bureau of Land Management (BLM) conducted an inspection of the site. After discussing the project with Ms. Gregston, it was determined the BLM would not allow blending of the impacted soil for remediation of the site.

Discussions with the NMOCD and BLM were held to determine the best approach to completion of the site remediation. BLM was not concerned with placing the low level impacted soil back into the excavation around the tank battery but the NMOCD was not receptive to action and preferred to have the remaining impacted soil transported off-site for disposal. Etech and DHA expressed concerns with transporting the remaining soil for off-site disposal based on the cost of the proposal and the fact that the site is an active oil & gas production site and another release was highly likely to occur in the future.

A compromise was reached with the NMOCD and agreed to by the BLM. This approach would place the low level impacted soil back into the excavation and then cover the impacted soil with a plastic liner to prevent rainwater and future releases from driving the chlorides deeper to the groundwater.

Final remediation of the site was started on January 27, 2009 by placing the low level impacted soil back into the excavation surrounding the tank battery. This phase of the remediation was completed on February 4, 2009 with the placement of the 20 mil plastic liner around the existing tank battery.

Final clearance samples were collected from the area of the location pad where the impacted soil was stock piled. The sample laboratory analytical results revealed low levels of chloride impacts at one point with the level at 432 mg/kg.

## 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 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"

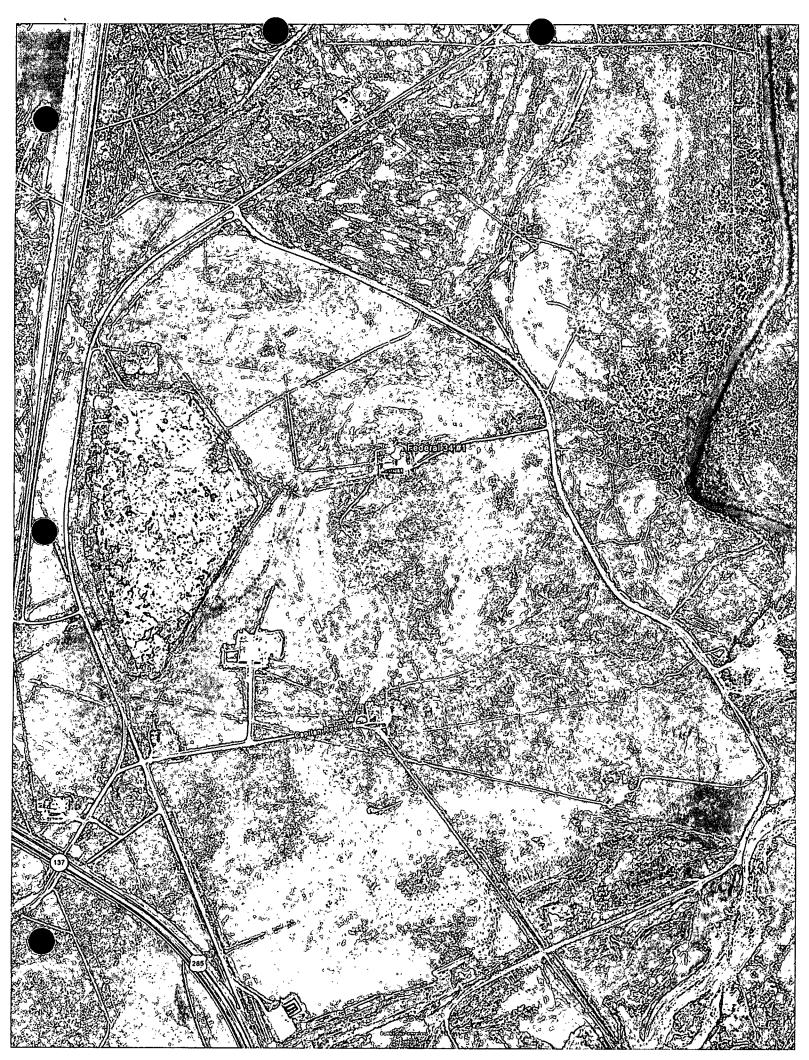
According to the topographic map the surface slope in the area of the spill site is to the southeast. The surrounding land is unimproved range land with oil & gas operations.

### 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 fine-earth 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 Remediation

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

#### 4.1 Initial Remediation Activities

Initial remediation activities were started at the site in October 27 2008. This phase of the remediation involved the excavation and stockpiling of the impacted soil. Impacted soil was excavated from around the storage tanks and all areas within the firewall of the tank battery. The excavation was completed until bedrock was encountered at approximately 2 to 3 feet in depth.

Samples were collected from the bottom of the excavation. The samples were analyzed for chlorides; the laboratory analytical results are presented in the following table:

Analyt	ical Results from Rem	ediation Excavation A	Activities – November 5	, 2008 (mg/kg)
Sample #	N. of West Tanks	S. of West Tanks	NW Gun Barrel	SE Gun Barrel
Chlorides	16	<16	320	96
	,	2		•

Analyt	tical Results from Reme	diation Excavation	Activities – November	r 5, 2008 (mg/kg)
Sample #	Between West Tanks	NE Gun Barrel	Between East Tanks	-
Chlorides	336	336	<16	-
	× 144 ,			* *

Analyt	ical Results from Reme	ediation Excavation A	Activitiès – November	5, 2008 (mg/kg)
Sample #	NE Corner	Central	SW Corner	NW Corner
Chlorides	192	192	48	304
	,	, , ,		

Analytical	Results from Re	emediation Ex	cavation Activ	rities – Nove	mber 5, 2008 (m	g/kg)
Sample #	TPH-GRO	TPH-DRO	Benzene	Toluene	Ethylbenzene	Xylene
NE Corner	<10.0	58.0	< 0.050	< 0.050	0.083	0.458
Central	.333	. 1,660	<0:050	<0:050	0.261	1:01
SW Corner	39.8	324	< 0.050	< 0.050	0.111	0.449
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NR - Indicates analysis not run on sample

Site maps detailing the sample collections points are as follows:

After a review of the initial analytical results, additional excavation activities were conducted within areas determined to still be exceeding the approved remediation levels. The excavation was continued around the gun barrel, between the west storage tanks and within the northwest corner of the tank battery firewall.

After completion of this additional excavation, samples were collected from the bottom of the excavations and submitted to the laboratory for chloride analysis. The laboratory results are summarized in the following table:

Analyt	ical Results from Rem	ediation Excavation A	Activities – November	7, 2008 (mg/kg)
Sample #	Main NW Gun Barrel	Main NE Gun Barrel	Between West Tanks	East Side NW Corner
Chlorides	16	<16	144	48

Based on the results of this new analytical data, all soil impacted above the established remediation levels had been removed from the tank battery area with the exception of the soil remaining under the existing storage tanks.

### 4.2 Off-Site Disposal of Impacted Soil

As approved in the remediation scope of work, the impacted soil with chloride levels exceeding 1,000 mg/kg was transported off-site for disposal at CRI. Approximately 220 cubic yards of impacted soil was transported for off-site disposal. Clean soil was transported to the site to be blended with the remaining impacted soil prior to placing back into the excavation.

#### 4.3 Blending and Backfilling of Excavation

As Etech was preparing to complete the remediation of the site by blending the remaining impacted soil with clean soil to reduce the contaminant levels, Ms. Terry Gregston with the BLM arrived at the site to check on the progress of the project.

Ms. Gregston was informed of the activities conducted to date and of the next step in the completion of the remediation as per the OCD approved remediation work plan. Ms. Gregston stated the BLM does not allow blending of contamination for remediation. After detailing the contaminant levels remaining in the soil at the site she said the BLM would allow the impacted soil to be placed back into the excavation as is since it would have to be dealt with when the site was closed and based on the fact that additional spills are likely to happen again in the future at the site.

The details of the conversion with the BLM were forwarded to the OCD but the OCD did not concur with just placing the impacted soil back into the excavation to complete the remediation of the site. After discussions with the OCD a compromise was reached and agreed to by the BLM.

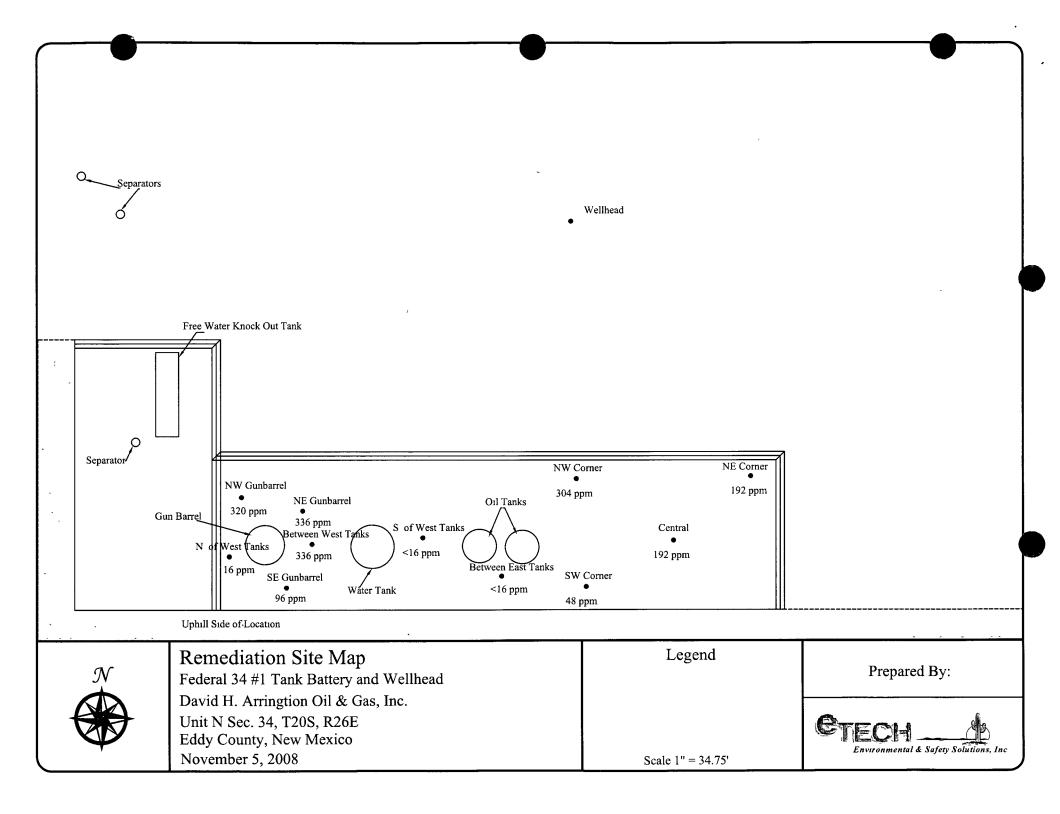
The final remedial method agreed to was to complete the backfilling of the excavation with the impacted soil and clean soil. Next the area of impacted soil would be covered with a 20 mil thick polyethylene liner. The liner would be cut out around the tanks and equipment and would be over the firewall surrounding the tank battery. This liner would reduce the amount of rainfall hitting the impacted soil and would capture most of any future releases at the site.

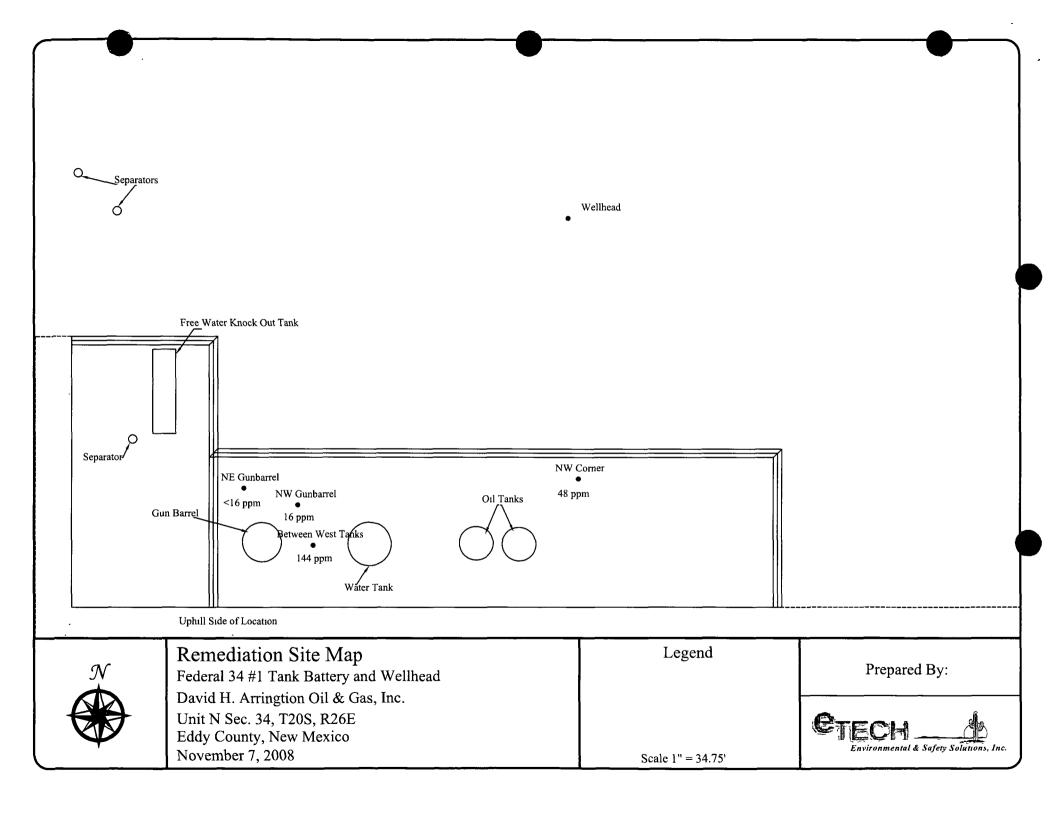
The final phase of the remediation was started January 27, 2009. Samples were collected of the remaining impacted soil to document levels of contamination. Backfilling of the excavation, construction of the firewalls and lining of the area was completed by February 2, 2009.

Analytical results from samples collected from the remaining impacted soil are presented in the following table:

Analytic	al Results from Ba	ckfilled Soil – Dece	ember 3, 2008 (mg/	kg)
Sample #	Chlorides	TPH-GRO	TPH-DRO	Total TPH
Composite Smp #1	148	1,730	1,070	2,800
Composite Smp #2	72.6	508	1,090	1,598
Composite Smp #3	178	1,630	944	2,574
Composite Smp #4	183	1,870	896	2,766
Composite Smp #5	178	1,200	960	2,160
Composite Smp #6	167	1,630	992	2,622

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





## 5.0 Conclusions

According to the original remediation scope of work and the amended scope of work approved by the OCD and BLM all aspects of the field work have been completed. This report provides the documentation to close out the remediation of the Federal 34 #1 site.

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

## **Appendix A – Waste Disposal Manifest**

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Car or Vehicle Initials and No.  Street  City  State  Street  City  State  For Possage are to be prepaid write or usual percent of notices. Special Marks, and Europeans  In Many Haz Containmate Comments  Received 3  Received 3  Received 4  Received 4  Received 5  In the Prepaid  In	r touto	Le To be filled an order extreme decision and or	worning tardis provide for delive	ery thereat.)		<del></del>
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Street  City  State  Rised of Pockage, Description of Articles, Special Marks, and Exceptions  Weight (Subspect to Correction)  NON-HaZ Containmake of Soft  Percent Symmetr of the sharges on the property destribed between  property destribed between  Appl Ham 30-015-22738  If the disperce some between two ports by a correct by losse, the law range for some formers in the state of the disperce of the state of the state of the state of the property state of the state of the property state of the state of the state of the state of the property state of the state of the property state of the state of	Collect on Deliv			· -	1	
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Federal 34 #1 Tank Bultury  The depries of the charges on the property described because where ledges only the amount preparal 1  Clauge Advanced.  The filter containers used for the abspect of the containers used for the abspect of the containers used for the abspect of the low analysis of the law and all other reparameters of the 6 to of the Uniform Frequity  The depries of the 6 to of the Uniform Frequity  The depries of the 6 to of the Uniform Frequity  The supervised of the 6 to of the Uniform Frequity  The property weight to be property in the property of the property weight.  The graved or declared value of the property is the repair of containing to the property of the laterestate Commonweal  Shipper, Per  Agent  Agen  Agent  Agent  Agent  Agent  Agent  Agent  Agent  Agent  Agent		Non-Haz Contaminated Soil	. ,			Remarks
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*If the shipment mo NOTE — Where the The agreed or dec	schared value of the property is hereby specifically stated by the thipper to be not exceeding.  Shipper, Per s	- Freight Classification
Permanent post	schared value of the property is hereby specifically stated by the thipper to be not exceeding.  Shipper, Per s	fregit Classification

# Appendix B – Laboratory Analytical Data



ANALYTICAL RESULTS FOR ETECH ENVIRONMENTAL & SAFETY SOLUTIONS, INC.

ATTN: SHANE ESTEP P.O. BOX 8469 MIDLAND, TX 79708

FAX TO: (432) 563-2213

Receiving Date: 11/05/08 Reporting Date: 11/05/08

Project Owner: DAOG

Project Name: FEDERAL 34 #1 MAIN BATTERY

Project Location: CARLSBAD, NM

Analysis Date: 11/05/08 Sampling Date: 11/05/08 Sample Type: SOIL

Sample Condition: INTACT Sample Received By: ML

Analyzed By: HM

		CI
LAB NO.	SAMPLE ID	(mg/kg)
H16272-1	N. OF WEST TANKS	16
H16272-2	S. OF WEST TANKS	< 16
H16272-3	NW GUN BARREL	320
H16272-4	SE GUN BARREL	96
H16272-5	BETWEEN WEST TANKS	336
H16272-6	NE GUN BARREL	336
H16272-7	BETWEEN EAST TANKS	< 16
Quality Con	trol	500
True Value	QC	500
% Recovery	1	100
Relative Pe	rcent Difference	< 0.1

	T
METHOD: Standard Methods	4500-CIB
Language and the second	

Note: Analyses performed on 1:4 w:v aqueous extracts.

H16272 Etech



ANALYTICAL RESULTS FOR ETECH ENVIRONMENTAL & SAFETY SOLUTIONS, INC. ATTN: SHANE ETEP

P.O. BOX 8469 MIDLAND, TX 79708 FAX TO (432) 563-2213

Receiving Date: 11/05/08
Reporting Date: 11/07/08

Project Owner: DAOG
Project Name: FEDERAL 34 #1 MAIN BATTERY

Project Location: CARLSBAD, NM

Sampling Date: 11/05/08 Sample Type: SOIL

Sample Condition: INTACT Sample Received By: ML

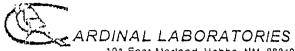
Analyzed By. HM

LAB NO. SAMPLE ID	GRO (C <sub>6</sub> -C <sub>10</sub> ) (mg/kg)	DRO (>C <sub>10</sub> -C <sub>28</sub> ) (mg/kg)	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL BENZENE (mg/kg)	TOTAL XYLENES (mg/kg)
ANALYSIS DATE:	11/06/08	11/06/08	11/07/08	11/07/08	11/07/08	11/07/08
H16272-1 N. OF WEST TANKS	270	556	0.140	0.456	0.859	7.18
H16272-2 S OF WEST TANKS	546	1,450	0.061	0.270	0 738	7.91
H16272-4 SE GUN BARREL	115	82 5	0 059	0.314	0 931	5.32
H16272-7 BETWEEN EAST TANKS	64.7	289	0.103	0.320	0 672	5 02
Quality Control	543	474	0 042	0.055	0.055	0.160
True Value QC	500	500	0.050	0 050	0.050	0 150
% Recovery	109	94.8	84 0	110	110	107
Relative Percent Difference	2.2	1.6	12.0	09	1.8	1.8

METHODS. TPH GRO & DRO - EPA SW-846 8015 M; BTEX - SW-846 8021B.

Lab Director

Date



101 East Marland, Hobbs, NM 88240

(575) 393-2326 Fax (575) 393-2476		Page of
Company Name: Estech Environ mental	BILL TO	ANALYSIS REQUEST
Project Manager: Shane Esten	P.O. #:	
Address: 10 Box, 8469	Company:	
City Medicad State: The Zip: 79708	Attn:	
Phone #:432-563-2200 Fax #:432-563-221.	3 Address:	
Project #: Project Owner: D/FO/6	City:	
Project Name: Factorial, 34 # Main Buttary	State: Zip:	
Project Location Carloback, AM	Phone #	
Sampler Name.	Fax #:	
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Sampler Relinquished Date. Received By:	Au / Phone R	ult:   No Add'l Fax #
Time: 11/56 Shot	REMARI	Hild TPH + BTEX Atter chlorida
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Delivered By: (Circle One) Temp Sample C	Condition CHECKED BY	
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Sampler - UPS - Bus - Other:		



ANALYTICAL RESULTS FOR
ETECH ENVIRONMENTAL & SAFETY SOLUTIONS, INC
ATTN SHANE ETEP
P O. BOX 8469
MIDLAND, TX 79708
FAX TO (432) 563-2213

Receiving Date: 11/05/08 Reporting Date: 11/07/08 Project Owner: DAOG

Project Name: FEDERAL 34 #1 EAST SIDE

Project Location. CARLSBAD, NM

Sampling Date. 11/05/08

Sample Type: SOIL

Sample Condition INTACT Sample Received By. ML

Analyzed By HM

LAB NO. SAMPLE ID	GRO (C <sub>6</sub> -C <sub>10</sub> ) (mg/kg)	DRO (>C <sub>10</sub> -C <sub>28</sub> ) (mg/kg)	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL BENZENE (mg/kg)	TOTAL XYLENES (mg/kg)
ANALYSIS DATE:	11/07/08	11/07/08	11/07/08	11/07/08	11/07/08	11/07/08
H16273-1 NE CORNER	<10.0	58.0	<0 050	<0.050	0.083	0.458
H16273-2 CENTRAL	333	1,660	< 0.050	<0.050	0.261	1.01
H16273-3 SW CORNER	39 8	324	<0 050	<0 050	0.111	0 449
			,			
Quality Control	543	474	0.042	0 055	0.055	0 160
True Value QC	500	500	0 050	0.050	0.050	0.150
% Recovery	109	94 8	84.0	110	110	107
Relative Percent Difference	2.2	1.6	12 0	0.9	18	18

METHODS. TPH GRO & DRO - EPA SW-846 8015 M; BTEX - SW-846 8021B.

Lab Director

Date



ANALYTICAL RESULTS FOR ETECH ENVIRONMENTAL & SAFETY SOLUTIONS, INC.

ATTN: SHANE ESTEP P.O. BOX 8469 MIDLAND, TX 79708

FAX TO: (432) 563-2213

Receiving Date: 11/05/08 Reporting Date: 11/05/08 Analysis Date: 11/05/08 Sampling Date: 11/05/08 Sample Type: SOIL

Project Owner: DAOG
Project Name: FEDERAL 34 #1 EAST SIDE

Sample Condition: INTACT

Project Location: CARLSBAD, NM

Sample Received By: ML

Analyzed By: HM

√ Ci
(mg/kg)
192
192
48
304
1
500
500
100
< 0.1

METHOD: Standard Methods 4500-CFB

Note: Analyses performed on 1:4 w:v aqueous extracts.

How I. Molin

Date

H16273 Etech



## ARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240

(575) 393-2326 Fax (575) 393-2476,		Pageof
Company Name Efect Environ pro- lat	BILL TO	ANALYSIS REQUEST
Project Manager. Shane Ester	P.O. #:	
Address: Pu, Box 8469	Company:	
City: Midland State: 7/ Zip: 79708	Attn:	
Phone #: 563-2200 Fax #: 432-563-2213	Address:	
	City:	
Project # Project Owner: DAO 6 Project Name: Forderal 34 #1 East Side	State <sup>,</sup> Zip <sup>,</sup>	
Project Location: Partition Alga	Phone #:	_
Sampler Name Alan St	Fax #:	
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Received By:    Date:	// / Phone R	Result. □ No  Add'  Phone #: ult: □ No  Add'  Fax #.
Delivered By (Circle One)  Sampler - UPS - Bus - Other.  Stampler - UPS - Bus - Other.	ct (Initials)	

<sup>†</sup> Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476.



ANALYTICAL RESULTS FOR ETECH ENVIRONMENTAL & SAFETY SOLUTIONS, INC.

ATTN: SHANE ESTEP P.O. BOX 8469 MIDLAND, TX 79708 FAX TO: (432) 563-2213

Receiving Date: 11/07/08 Reporting Date: 11/07/08 Project Owner: DAOG

Project Name: FEDERAL 34 #1
Project Location: CARLSBAD, NM

Analysis Date: 11/07/08
Sampling Date: 11/07/08
Sample Type: SOIL
Sample Condition: INTACT

Sample Condition: INTACT Sample Received By: ML

Analyzed By: TR

CI LAB NO. SAMPLE ID (mg/kg) MAIN NW GUN BARREL H16281-1 16 H16281-2 MAIN NE GUN BARREL < 16 H16281-3 MAIN BETWEEN WEST TANKS 144 **EAST SIDE NW CORNER** H16281-4 48 **Quality Control** 490 True Value QC 500 % Recovery 98.0 Relative Percent Difference 2.0

METHOD: Standard Methods 4500-CI'B

Note: Analyses performed on 1:4 w:v aqueous extracts.

Chemist

Date

H16281 Etech



ANALYTICAL RESULTS FOR

ETECH ENVIRONMENTAL & SAFETY SOLUTIONS, INC.

ATTN: SHANE ESTEP

P.O. BOX 8469 MIDLAND, TX 79708 FAX TO: (432) 563-2213

Receiving Date: 11/07/08

Reporting Date: 11/12/08

Project Owner: DAOG

Project Name: FEDERAL 34 #1
Project Location: CARLSBAD, NM

Sampling Date: 11/07/08 Sample Type. SOIL

Sample Condition: INTACT Sample Received By: ML

Analyzed By: CK

GRO .

DRO

 $(C_6-C_{10}).$ 

(>C<sub>10</sub>-C<sub>28</sub>)

LAB NUMBER SAMPLE ID

(mg/kg)

(mg/kg)

ANALYSIS [	DATE	11/10/08	11/10/08
H16281-1	MAIN NW GUN BARREL	64.7	288
H16281-2	MAIN NE GUN BARREL	1,090	747
H16281-3	MAIN BETWEEN WEST TANKS	8,250	5,900
H16281-4	EAST SIDE NW CORNER	69.6	277
Quality Cont	rol	429	411
True Value (	QC	500	500
% Recovery		85.8	82.2
Relative Per	cent Difference	12.7	0.6

METHODS: TPH GRO & DRO: EPA SW-846 8015 M

Lab Director

Date



ANALYTICAL RESULTS FOR

ETECH ENVIRONMENTAL & SAFETY SOLUTIONS, INC.

ATTN: SHANE ESTEP

P.O. BOX 8469

MIDLAND, TX 79708

FAX TO: (432) 563-2213

Receiving Date: 11/07/08 Reporting Date: 11/12/08

Project Owner: DAOG

LAB NUMBI SAMPLE ID

Project Name: FEDERAL 34 #1

Project Location: CARLSBAD, NM

Sampling Date: 11/07/08 Sample Type: SOIL

Sample Condition: INTACT Sample Received By: ML

Analyzed By: ZL

BENZENE TOLUENE BENZENE XYLENES
(mg/kg) (mg/kg) (mg/kg) (mg/kg)

	(			
ANALYSIS DATE	11/11/08	11/11/08	11/11/08	11/11/08
H16281-1 MAIN NW GUN BARREL	<0.050	<0.050	<0.050	<0.150
H16281-2 MAIN NE GUN BARREL	<0.050	<0.050	0.385	4.97
H16281-3 MAIN BETWEEN WEST TANKS	0.174	0.363	3.44	8.13
H16281-4 EAST SIDE NW CORNER	<0.050	<0.050	<0.050	0.547
Quality Control	0.048	0.051	0.055	0.155
True Value QC	0.050	0.050	0.050	0.150
% Recovery	96.0	102	110	103
Relative Percent Difference	6.1	4.0	11.1	11.2

METHOD: EPA SW-846 8260

TEXAS NELAP CERTIFICATION T104704398-08-TX FOR BENZENE, TOLUENE, ETHYL BENZENE, AND TOTAL XYLENES.

Chemist

///iz/08

ARDINAL LABORATORIES
101 East Marland, Hobbs, NM 88240

(575),393,2326 Fax (575) 393-2476 / /		Pageof
Company Name: Stock Environmental	BILL TO	ANALYSIS REQUEST
Project Manager: Shane Estep	P.O. #:	
Address: PD 13.X 8469	Company:	
City Midland State: 7 2ip: 79708	Artn:	
Phone #: 432-563-2200 Fax #: 432-563-2213	Address:	
Project # Project Owner: DADG	City	
Project Name: Federal 34 #1	State: Zip:	
Project Location Carls by 6, NM	Phone #·	
Sampler Name:	Fax #:	<u> </u>
FOR LAB USE ONLY MATRIX	PRESERV SAMPLING	- ." .
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Lab I.D. Sample I.D.	N   N	13010
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		/
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PLEASE NOTE: Matury and Carriages. De americ hatury and thence suches remote for any train enough whether based in co	Office of tool shall be landed to the amount paid by the client	(of the Terms and Conditions, Interest will be charged on all accounts more than
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ANALYTICAL RESULTS FOR

ETECH ENVIRONMENTAL & SAFETY SOLUTIONS, INC.

ATTN: SHANE ESTEP

P.O. BOX 8469

MIDLAND, TX 79708 FAX TO: (432) 563-2213

Receiving Date: 11/17/08 Reporting Date: 11/18/08

Project Owner: DAOG

Project Name: FEDERAL 34 #1

Project Location: CARLSBAD, NM

Sampling Date: 11/17/08

Sample Type: SOIL

Sample Condition: INTACT Sample Received By: ML

Analyzed By: AB

GRO DRO (C<sub>6</sub>-C<sub>10</sub>) (>C<sub>10</sub>-C<sub>28</sub>)

LAB NUMBER SAMPLE ID

(mg/kg) (mg/kg)

ANALYSIS DATE	11/17/08	11/17/08
H16341-1 SE GUNBARREL	44.9	138
Quality Control	538	443
True Value QC	500	500
% Recovery	108	88.6
Relative Percent Difference	0.5	14.8

METHODS: TPH GRO & DRO: EPA SW-846 8015 M

Lab Director

Date



ANALYTICAL RESULTS FOR ETECH ENVIRONMENTAL & SAFETY SOLUTIONS, INC.

ATTN: SHANE ESTEP P.O. BOX 8469 MIDLAND, TX 79708 FAX TO: (432) 563-2213

Receiving Date: 11/17/08 Reporting Date: 11/18/08 Project Owner: DAOG

Project Name: FEDERAL 34 #1
Project Location: CARLSBAD, NM

Analysis Date: 11/17/08 Sampling Date: 11/17/08 Sample Type: SOIL

Sample Condition: INTACT Sample Received By: ML

Analyzed By: TR

METHOD: Standard Methods 4500-CFB

Note: Analysis performed on a 1:4 w:v aqueous extract.

Chemist

71-18 -8

Date

101 East Marland, Hobbs, NM 88240 (575) 393-2326 Fax (575) 393-2476

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(575) 393-2326 Fax (575) 393-2476  Company Name: Efach Environmental Project Manager: Shape Estep									B	3/1	LL TO		ANALYSIS REQUEST											
Project Manager: Shape Estap								P.O. #:																
Address: PU DOX 5469							Company:						]							Ì				
City: Midland State: Trip: 79708							Attn:													1				
Phone #: 432.563-1200 Fax #: 432-563 2213 Project #: Project Owner: DAOG							Address:						1			1	1	1		l				
Project #: Project Owner: DAOC							City:									1								
Project Name: Federal 34 #1							State: Zip:																	
Project Location: (4/15/24)							Phone #:																	
Sampler Name:							Fax #:										1							
FOR LAB USE ONLY			MATRIX			-1	PRESERV. SAMPLI				NG	4	1/1	)		1								
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	d Damages Cardinar's liability and client's exclusive remedy for an ig those for negligence and any other cause whatsoever shall be o															.1			<u></u>	<u>'                                     </u>	1	<del></del>	<u> </u>	<del>!}</del>
service. In no event shall Ca	indinal be liable for incidental or consequental damages, including ig out of or related to the performance of services herounder by C	without i	mitation	n, busine	ss intern	upbons,	loss of	use, o	r loss o	1 pro	ifits incurred by c	lient, da subsidiar	nes,	AU .										
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Time:					LB. I				1	REMARKS				NO	Auu	F 4 X # .								
Relinquished By: / Date: Received By: /															-									
Time:																								
Delivered By: (Circle One) Temp. Sample Conditi							CHE	CKI	ED BY:															
Sampler - UPS - Bus - Other:			Cool Intact (Initials)  Yes Yes  No No								BBB													

<sup>†</sup> Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476.

# Appendix C – Supporting Documentation

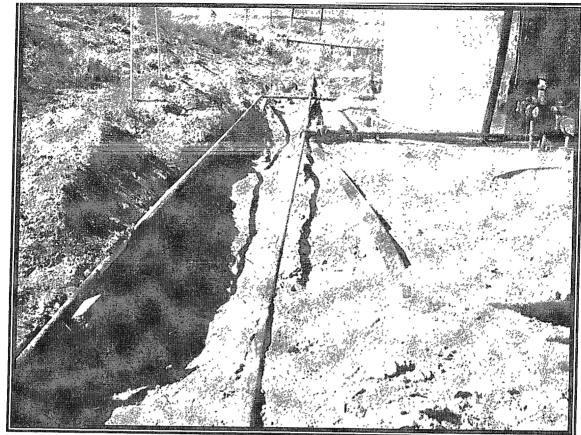


Photo 1 - Backside of tank battery after excavation.

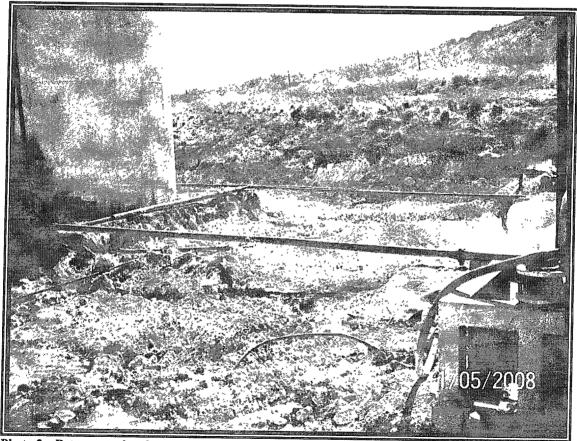


Photo 2 - Between tanks after excavation.

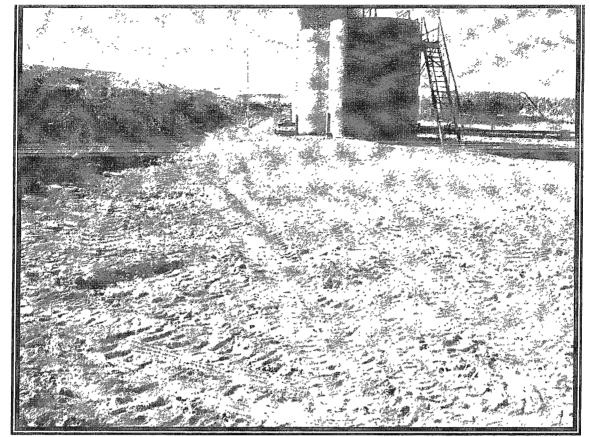


Photo 3 - Tank battery after backfilling.

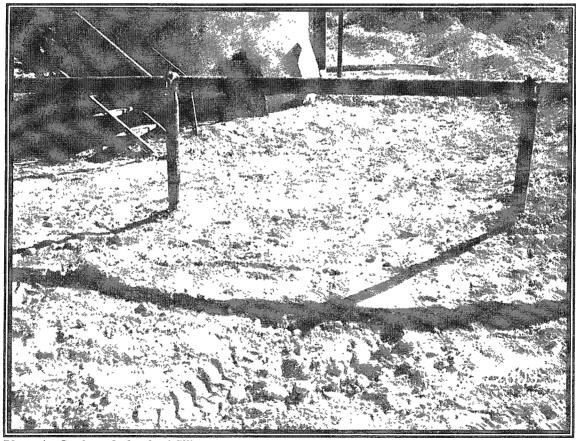


Photo 4 - Gunbarrel after backfilling.

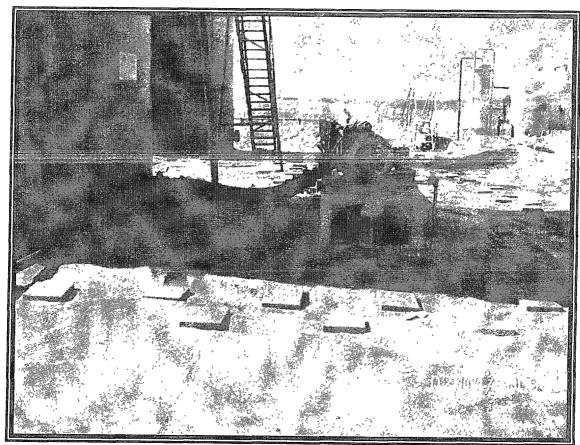


Photo 5 - Front side of tank battery after lining.



Photo 6 - Tank battery after remediation and lining.