1R-389

REPORTS

DATE:

Apache Corporation State C Tract 13 Section 36, Township 21S, Range 37E Remediation/Cleanup Work Plan Lea County, New Mexico

October 24, 2003



Prepared for:

Apache Corporation 2000 Post Oak Boulevard, Suite 100 Houston, Texas 77056-4400

By:

Safety & Environmental Solutions, Inc. 703 E. Clinton Suite 102 Hobbs, New Mexico 88240 (505) 397-0510

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I. Purpose

The purpose of this work plan is to propose a plan for the cleanup of the area identified by the Site Investigation of the State C Tract 13 dated March 10, 2003. The subject area is located in Section 36, Range 37E, Township 21S, in Lea County, New Mexico. This plan will allow closure in a manner that will protect the population, environment and groundwater of the area surrounding the subject location. The site is situated on a relatively level site. (Vicinity Map)

II. Background

The subject site is a suspected pit area which has been used for various purposed by previous owner since the late 1940s.

III. Contaminant and Size of Area

The suspected contaminant is crude oil and produced water associated with the tank battery at the site. The approximate size of the area is 3,600 sq. ft. The crude oil and produced water is considered exempt oilfield waste. No evidence of other contaminants was observed.

IV. Vertical and Horizontal Extent of Contamination

Determination of the vertical and horizontal extent of the contamination has been performed and reported in the March 10, 2003 Site Investigation.

V. Groundwater

The monitor wells installed at the subject site indicate the depth to the static water level to be approximately 43 feet. The actual depth to the water bearing zone was slightly greater than 50 feet.

VI. Action Plan

Closure

The site will be excavated both horizontally and vertically for the removal of the most highly contaminated oily soils (source material). The Site Investigation dated March 10, 2003 identified the depth of the source material varies throughout the site from 0 to approximately 14 feet. The excavated material will be transported to an NMOCD approved disposal facility.

An impermeable liner of 30-millimeter plastic will be installed in the bottom of the excavation in a manner so that any downward infiltrating water will be diverted to the side edges of the liner. This type of installation will prevent ponding of water on top of the liner and minimize any downward migration of water due to inadvertent puncturing of the liner. Any clean soil excavated to facilitate liner installation may be stockpiled on site for later backfill. The liner and placement of clean backfill will greatly minimize if not eliminate human exposure to organic constituents from any of the exposure pathways listed in the Site Investigation.

Clean soil will be backfilled into the excavation above the liner to the surface. The surface will be returned to its natural contour and seeded at the completion of the project.

The bottom and sides of the excavation will be sampled at the final excavation depths. These samples will be tested for TPH, BTEX and Chlorides with a third party laboratory for confirmation and documentation of any contamination levels left in place.

In addition to the excavation and disposal of the highly contaminated soils, a fourth monitor well will be installed south (down-gradient) of the site in an effort to determine the extent of the chloride contamination in the groundwater. If this monitor well does not contain BTEX or Chlorides, an annual monitoring program will commence for a term of two (2) years as a means of monitoring the plume during the natural attenuation of the chlorides. In the event BTEX or chlorides impacts are detected in this well, additional wells would be installed until the extent of the chloride contamination is determined and the same monitoring program will be conducted from the un-impacted well.

After completion of the project, the appropriate reports will be filed with the NMOCD in the closure report.

This proposed closure plan will be initiated once written approval from the NMOCD has been received by Apache Corporation.

VII. Maps and Figures

Figure 1. Vicinity Map

Figure 2. Site Plan (Location of Boreholes and Monitor Well)

Figure 1
Vicinity Map

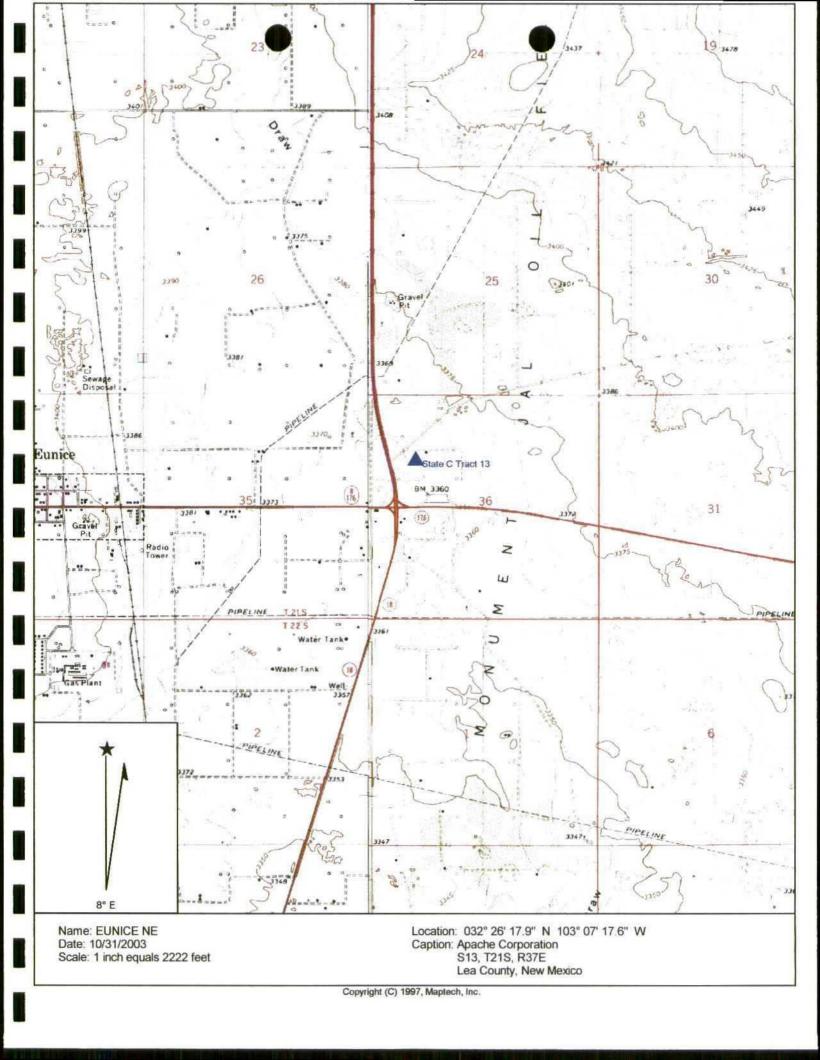
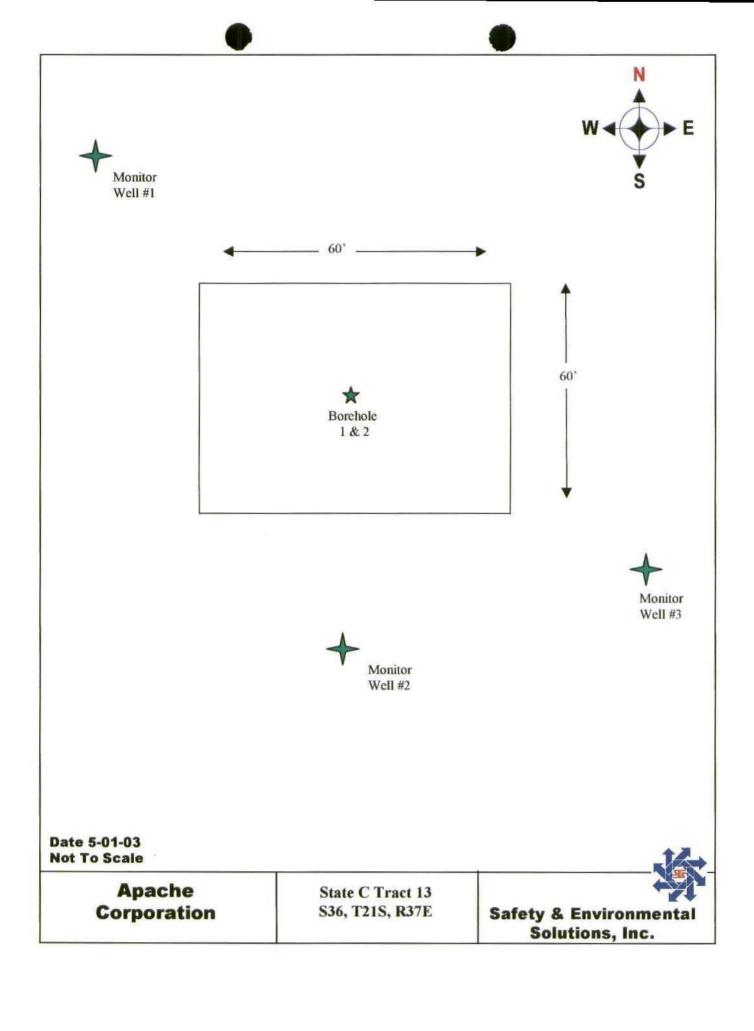
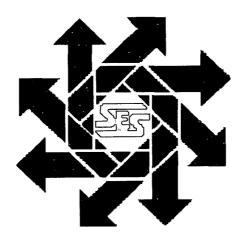


Figure 2 Site Plan (Location of Boreholes and Monitor Wells)



Apache Corporation State C. Tract 13 Site Investigation Section 36, Township 21S, Range 37E Lea County, New Mexico

March 10, 2003



12389

Prepared for:

Apache Corporation 2000 Post Oak Boulevard, Suite 100 Houston, Texas 77056-4400

By:

Safety & Environmental Solutions, Inc. 703 E. Clinton Suite 103 Hobbs, New Mexico 88240 (505) 397-0510

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I. Background

Safety & Environmental Solutions, Inc. (SESI) was contracted by Apache Corporation to perform a site investigation of the abandoned pit site located just south of the State C Tract 13 battery. The subject area is located in Section 36, Range 37E, Township 21S, in Lea County, New Mexico.

II. Surface and Ground Water

According to the landowner, Mr. Bobby Wallach, and the information that was gathered from the New Mexico State Engineer, the groundwater depth in the area is approximately 50 feet.

III. Soils

The soils in the area are predominantly sand and sandy loam.

IV. Work Performed

Drilling of Boreholes

On November 11, 2002 SESI drilled a Borehole in the center of the pit area to a depth of 20 feet. A sample was taken at that depth and sent under chain of Custody to Cardinal Laboratories of Hobbs, New Mexico for analysis. The sample was analyzed for TPH (EPA method600/4-79-020 418.1), BTEX (EPA Method SW-846) & Chlorides (EPA methods 4500-CIB), the results of the analysis are as follows:

	ID	ТРН	Cl	Benzene	Toluene	Ethyl Benzene	Total Xylenes
Ì	20'	22,200	480	0.144	1.65	2.30	7.13

As a result of what was found in Borehole #1, on November 19, 2002 SESI engaged Eco Drilling of Midland, Texas to drill a second borehole in the same location. The second borehole was drilled to a depth of 40 feet and sampled every five feet. The samples were sent under chain of Custody to Cardinal Laboratories for analysis. The samples were analyzed for TPH (EPA SW 846 8015M), BTEX (EPA Method SW-846) & Chlorides (EPA methods 4500-Cl⁻B), the results of the analysis are as follows:

ID	GRO	DRO	Cl	Benzene	Toluene	Ethyl Benzene	Total Xylenes
25'	596	6510	96	0.381	1.12	1.09	3.11
30'	82.6	1890	112	0.176	1.46	4.51	14.0
35'	120	1850	224	1.510	2.29	6.20	18.7
40'	77.4	1200	1200	0.075	0.150	1.96	6.65

Sampling of Water Wells

On November 24, 2002 SESI sampled two existing water wells located to the northeast of the subject site. They samples were sent under chain of custody to Cardinal Laboratories

for analysis. The samples were analyzed for BTEX (EPA method SW246 8260) and general chemistry (Cations & Anions). The results of the analysis are as follows:

ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes
Well	< 0.002	< 0.002	< 0.002	< 0.006
Hose @ Tank	< 0.002	< 0.002	< 0.002	< 0.006

ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (mS/cm)	T-Alkalinity (mgCaCo ₃ /L)
Well	312	134	63	10.4	1673	150
Hose @ Tank	231	88	55	6.06	1163	225

ID	Cl (mg/L)	SO ₄ (mg/L)	CO ₃ (mg/L)	HCO ₃ (mg/L)	pH (s.u.)	TDS (mg/L)
Well	652	209	0	183	6.99	1924
Hose @ Tank	388	178	0	275	7.20	1418

Installation of Groundwater Wells

On January 22, 2003 SESI engaged Eco Drilling of Midland, Texas to install a groundwater monitor well at the subject site. Monitor Well #1 was installed northwest of the center of the pit area to a depth of 72.21 feet. On January 29, 2002 SESI developed Monitor well #1 and found the depth to water to be 46.33 feet. Samples were taken and sent under chain of custody to Cardinal Laboratories. The samples were analyzed for BTEX (EPA method SW246 8260) and general chemistry (Cations & Anions). The results of the analysis are as follows:

ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes
MW 1	< 0.002	< 0.002	< 0.002	<0.006

ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (mS/cm)	T-Alkalinity (mgCaCo ₃ /L)
MW1	230	77	42	17	1495	210

ID	Cl	SO ₄	CO ₃	HCO ₃	pН	TDS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(s.u.)	(mg/L)
MW1	324	212	0	256	7.60	1106

On February 14, 2003 SESI drilled Monitor Well #2. The well was installed south of the center of the pit area to a depth of 57.47 feet. On February 20 2003 SESI developed Monitor Well #2 and found the depth to water to be 46.07 feet. Samples were taken and sent under chain of custody to Cardinal Laboratories. The samples were analyzed for BTEX (EPA method SW246 8260) and general chemistry (Cations & Anions). The results of the analysis are as follows:

ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes
MW 2	0.011	< 0.002	0.003	< 0.006

ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (mS/cm)	T-Alkalinity (mgCaCo ₃ /L)
MW2	3160	537	206	42.2	16530	205

ID	Cl (mg/L)	SO ₄ (mg/L)	CO ₃ (mg/L)	HCO ₃ (mg/L)	рН (s.u.)	TDS (mg/L)
MW2	6098	308	0	256	7.06	9748

On February 17, 2003 SESI drilled Monitor Well #3. The well was installed southwest of the center of the pit area to a depth of 54.71 feet. On February 20 2003 SESI developed Monitor Well #3 and found the depth to water to be 45.84 feet. Samples were taken and sent under chain of custody to Cardinal Laboratories. The samples were analyzed for BTEX (EPA method SW246 8260) and general chemistry (Cations & Anions). The results of the analysis are as follows:

ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	
MW 3	< 0.002	< 0.002	< 0.002	< 0.006	

ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (mS/cm)	T-Alkalinity (mgCaCo ₃ /L)
MW3	238	116	67	9.07	25380	220

ID	Cl	SO ₄	CO ₃	HCO ₃	pН	TDS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(s.u.)	(mg/L)
MW3	508	153	0	268	7.33	1526

V. Conclusions

The results of Boreholes #1 and #2 indicate that contamination has migrated to a depth of 40 feet. However the material, which was sampled at 40 feet, had no smell, but was obviously well degraded hydrocarbon as verified by the analytical results. The result of the monitor well sampling indicates a much higher level of Chlorides in the downgradient well (MW-2).

VI. Figures & Appendices

Figure 1 - Vicinity Map

Figure 2 - Plat of Location

Figure 3 - Water Level Contour Map

Appendix A - Logs of Borings

Appendix B - Analytical Results

Appendix C - Site Photos

Figure 1 Vicinity Map

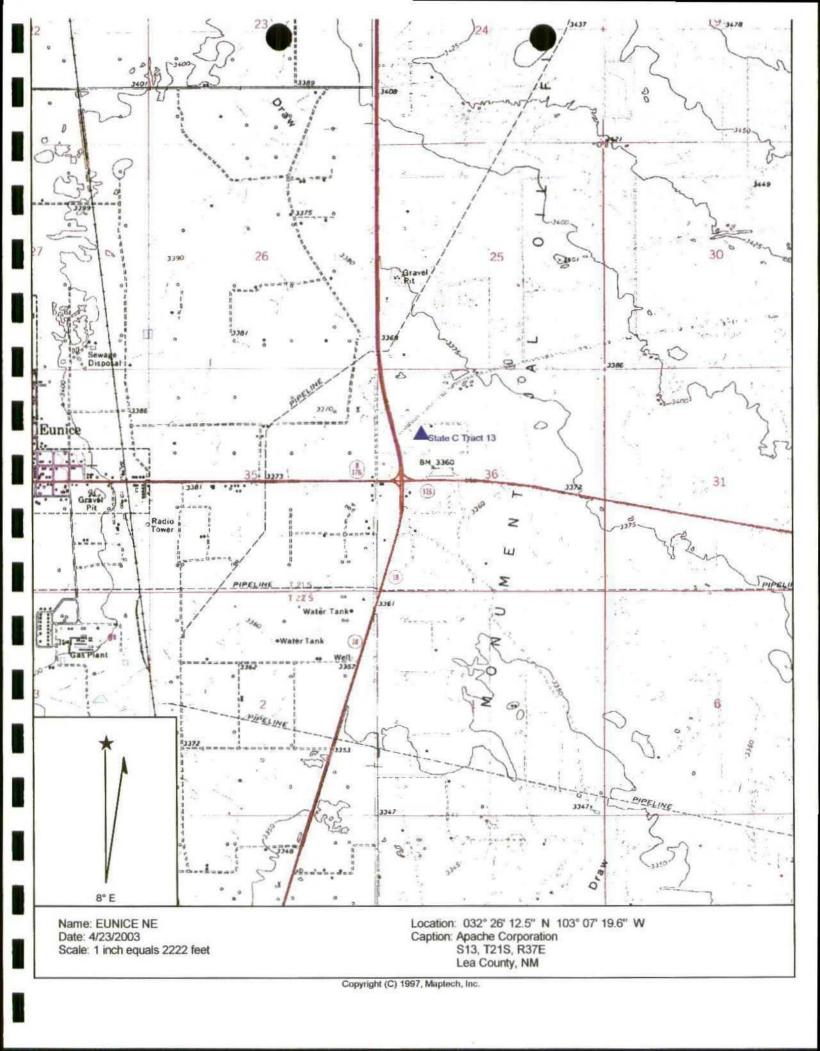
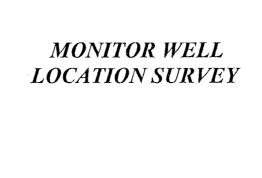


Figure 2 Plat of Location



TBM 100 GRID N:525330.250 GRID E:915264.294 LATITUDE:N32°26'18.118" LONGITUDE:W103°07'16.709" ELEV=3361.54

> MONITOR WELL #2 GRID N:525246.884 GRID E:915254.723 LATITUDE:N32°26'17.294" LONGITUDE:W103°07'16.831" ELEV @ CASING=3362.80 ELEV @ VAULT=3362.85 ELEV @ CONC=3360.20 ELEV @ GROUND=3360.03

876°21'59"W

61.26

MONITOR WELL#3 GRID N:525261.323 GRID E:915314.256 LATITUDE:N32°26'17.430" LONGITUDE:W103°07'16.135" ELEV @ CASING=3362.59 ELEV @ VAULT=3362.62 ELEV @ CONC=3359.84 ELEV @ GROUND=3359.70





SCALE 1" = 2010 20

PETTIGREW AND ASSOCIATES

1110 N. GRIMES HOBBS, N.M. 88240 (505) 393-9827

MONITOR WELL#1 GRID N:525343.912 GRID E:915195.069 LATITUDE:N32°26'18,261" LONGITUDE: W103°07'17.514" ELEV @ CASING=3363.40 ELEV @ VAULT=3363.41 ELEV @ CONC=3360.90 ELEV @ GROUND=3360.72

02/19/2003 PLOTTED 02/19/2003 PRELIMINARY PLAT 02/18/2003 DATE OF SURVEY DATE DESCRIPTION

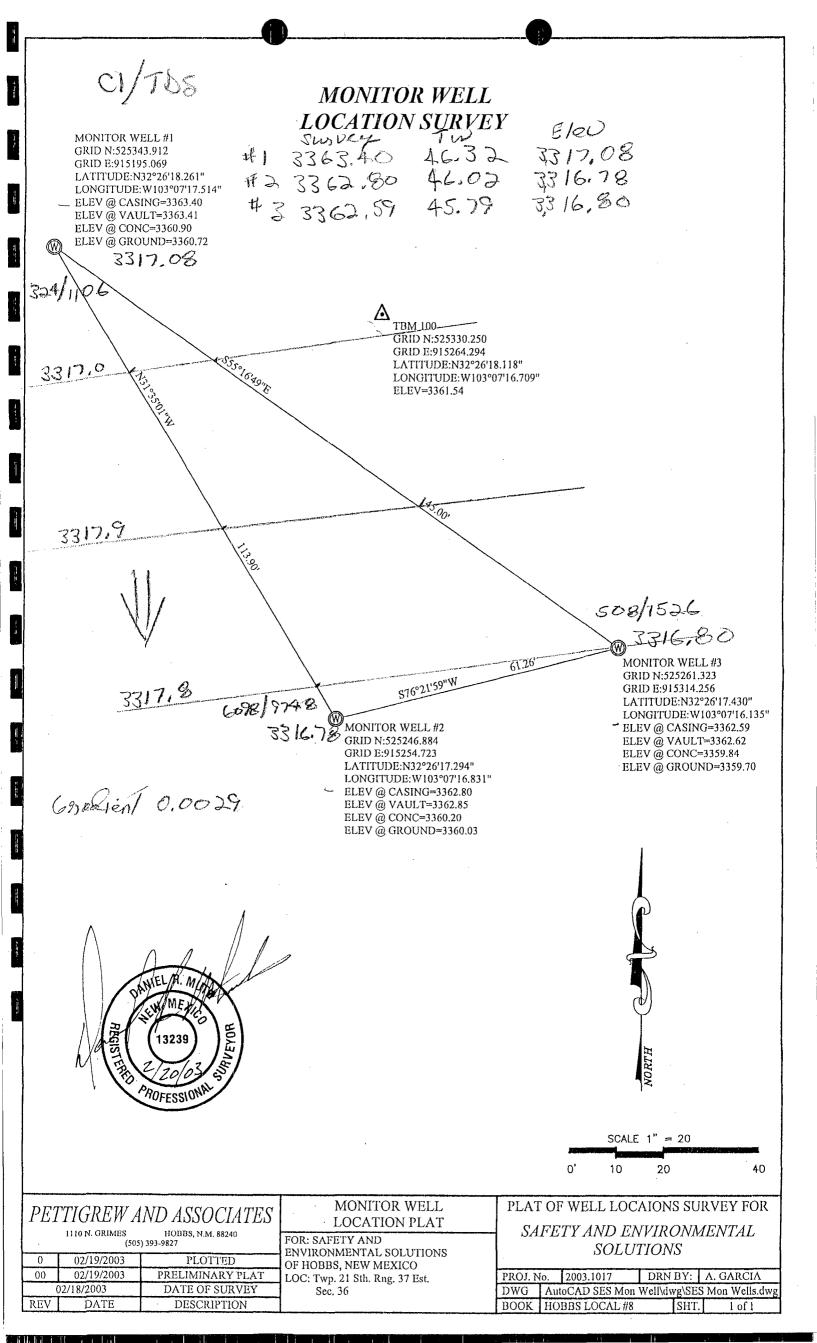
MONITOR WELL LOCATION PLAT

FOR: SAFETY AND ENVIRONMENTAL SOLUTIONS OF HOBBS, NEW MEXICO LOC: Twp. 21 Sth. Rng. 37 Est. Sec. 36

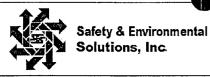
PLAT OF WELL LOCAIONS SURVEY FOR SAFETY AND ENVIRONMENTAL **SOLUTIONS**

	PROJ. N	ο,	2003.1017	DRN BY:	A. GARCIA
I	DWG	Aut	oCAD SES Mon	Well\dwg\SE	S Mon Wells.dwg
1	BOOK	НО	BBS LOCAL #8	SHT	1 of 1

Figure 3 Water Level Contour Map



Appendix A Logs of Borings



LOG OF BORING BH-1

(Page 1 of 1)

Apache Corporation State C, Tract 13 Eunice, New Mexico Date Started Date Completed Hole Diameter

: 11/11/02 : 11/11/02 : 8 1/4 in.

Sampling Method

Drilled By Logged By : Split-spoon : SESI

: Bob Allen

			TOW MOXICO	Drilling Method Drilling Equipment	Stem Auger SHDG-RPST	T		pany Rep		: David U		
Depth in Feet	NSCS	GRAPHIC	DESC	RIPTION	Lab No.	Samples	TPH (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethyl Benzene (mg/Kg)	Total Xylenes (mg/Kg)	Chlorides (mg/Kg)
0- 1- 2- 3-	sw		0-4 ft. SAND, red			10000						
5-			4-5 ft. SAND, black, odor									
7 — 8 — - 9 —	.		5–10 ft. SAND, black									
10- 11- 5 12-	SW		SAND, black			E. A. C.						
tate C Tract 13 BH-1.b			SAND, black									
12 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	CA		15-20 ft. CALICHE									
Notes:					 H7202-1	1	22,200	0.144	1.65	2.30	7.13	480
O S S S S S S S S S S S S S S S S S S S	d back to	surface	with cuttings upon completion									



LOG OF BORING BH-2

(Page 1 of 1)

Apache Corporation State C, Tract 13 Eunice, New Mexico

Date Started Date Completed Hole Diameter

: 11/19/02 : 11/19/02 : 8 1/4 in.

: Hollow Stem Auger Company Rep.

Sampling Method Drilled By Logged By

: Cuttings, core barrel : ECO Drilling

: Bob Allen : David Urbanski

				bllow Stem Auger ME-75	1	Com	pany Rep		: David U	rbanski	
epth in eet	nscs	GRAPHIC	DESCRIPTION	Lab No.	Samples	TPH (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethyl Benzene (mg/Kg)	Total Xylenes (mg/Kg)	
0-											
5	Fill		0-12 ft. Pit material, highly saturated								
-			Bottom of pit 12 ft.								
15-	SP/CA	90 90 00	12-15 ft. SAND and CALICHE, dark stained			i					
- - -	SP		SAND, black, drier, heavy H/C odor								
20-	-	::	20-25 ft. SAND, GRAVEL								
25-		•		H7220-1	1	596,6510	0.381	1.12	1.09	3.11	
30-	- - - SP/GP		25-30 ft. SAND, GRAVEL, grey color 29 ft. Hard chert 31 ft. Large gravel	H7220-2	2	B2.6,1890	0.176	1.46	4.51	14.0	
35-			30-35 ft. SAND, GRAVEL 33 ft. Quartz stringer	H7220-3	3	120,1850	1.510	2.29	6.20	18.7	
	-		35-40 ft. SAND, GRAVEL								
40-			39.5 ft. Saturated, old asphaltines	H7220-4	14	77.4.120	d 0.075	0.150	1.96	6.65	1_1

Plugged back to surface with 15 bags bentonite, hydrated, and one bag cement

TPH values are GRO and DRO, repectively, by method 8015 Mod.

Appendix B Analytical Results



PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS. NM 88240

ANALYTICAL RESULTS FOR

SAFETY & ENVIRONMENTAL SOLUTINS, INC.

ATTN: BOB ALLEN 703 E. CLINTON, #103 HOBBS, NM 88240 FAX TO: (505) 393-4388

Receiving Date: 11/12/02 Reporting Date: 11/14/02 Project Number: NOT GIVEN Project Name: STATE C TRACT 13

Project Location: NOT GIVEN

Sampling Date: 11/11/02

Sample Type: SOIL

Sample Condition: COOL & INTACT

Sample Received By: BC Analyzed By: BC/AH

LAB NUMBER	SAMPLE ID	TPH (mg/Kg)	Cl* (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DAT	E:	11/13/02	11/14/02	11/13/02	11/13/02	11/13/02	11/13/02
H7202-1	BH #1 20'	22200	480	0.144	1.65	2.30	7.13
Quality Control		235	990	0.108	0.102	0.102	0.300
True Value QC	(, '	240	1000	0.100	0.100	0.100	0.300
% Recovery		97.8	99.0	108	102	102	100
Relative Percen	t Difference	4.6	1.0	1.4	7.4	8.2	9.5

METHODS: TRPHC-EPA 600/4-79-020 418.1;CI-Std. Methods 4500-CIB; BTEX-EPA SW-846 8260 *Analysis performed on a 1:4 w.v aqueous extract.

Burgess J. K. Cooke/Ph. D.

Date

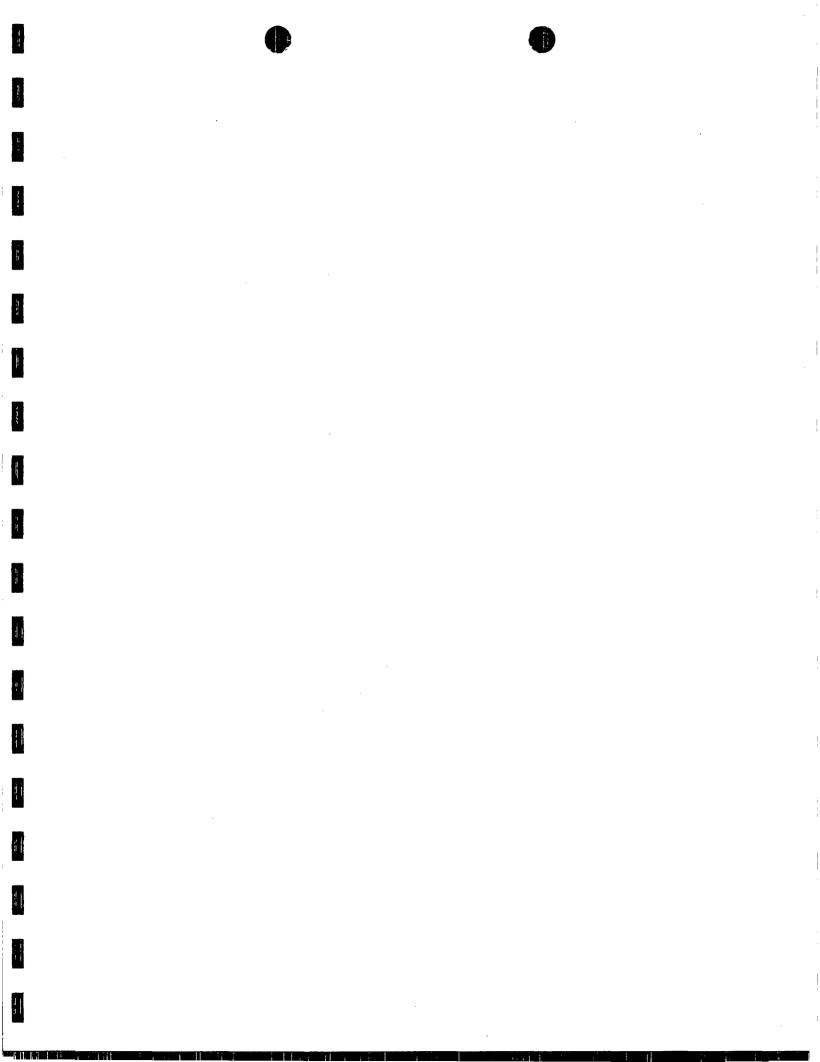
PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable serviced to the liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ARDINAL LABORATORIES, INC. 2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240 (915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

Company Name: SEST	-		ANALYSIS REQUEST
Project Manager:		<i>BILL TO</i> Po#:	
Address: 703 E. CLINTON, #103		Company: SAME	
Olty: HOBBS State: NM Zlp:	88240	Attn:	
Phone #: (505) 397-0510	ANY DESCRIPTION AND THE REAL PROPERTY AND THE PROPERTY AN	Address:	
"ax#: (505) 393_4388	The same of the sa	City:	
Project #: Project Owner:		State: Zlp:	
oject Name: State C TRACT 13		Phone #:	>
		Fax#:	
FOR LAB USE ONLY	MATRIX	PRES. SAMPLING	C.C.
LAB I.D. Sample I.D.	G)RAB OR (C)OMP. CONTAINERS ROUNDWATER VASTEWATER OIL LUDGE	OTHER: CID: DE/COOL OTHER:	TPH BTEX Chlor O
H72024 B4 #1 20'	Κ.	~	20 2 1/1
LEASE NOTE: Liabity and Damages. Cardnafe fabity and efect a exclusive remedy for any olding adelpy whether based to contract or lost, that bat imited to the amount gold by the effect of the haryous, at eating including those for adelphose and any other curse shafteney what he deemed which withing and received by Cardnaf within 30 days after competition of the applicable moves. In no event shaft Cardnafe has table for incloseful or consequential demanges, including without infections benieve the mysterior passes of profits incorrectly effect, its subsidiaries, it is a manifestation of profits incorrectly effect, its subsidiaries, it is a manifestation and of the performance of services the cardnafestation of whether each claim is based upon any of the above stated reasons or otherwise.	ebiekye remedy for any olalim arteing whether based hattoewer shaft be deemed wathed traises made in demages, including without Britistien, betiess a lot vides shereunder by Cardnal, recerdess or whether	IIn cookract or lost, shall be limited to the amoun writing and received by Cardnal within 30 days maydone, lose of use, or lose of profils incurred such claim is based upon any of the above stat	Tamps and Conditions; Interest will be charged on all adocurds more than after compellion of the applicable 30 days part due at the rate of 24% per arrum from the original date of finvolce, and at costs of collections, including attorney's fees.
Sampler Relinquished: Dais: Received By: Phone Result Yes	Time: 2 - 2/1 Received By:	Pho Fax REA	Phone Result D Yes D No Additional Fax #: Fax Result: 15 Yes D No REMARKS:
Relinquished By: DA	Received By: (Lab State) Received By: (Lab State) Received By: (Lab State)	ab Staff)	need by Thurs.
Delivered By: (Circle One)	SampleCohuld	n CHECKED 6Y: (Initials)	
	□ No □ No		

Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.





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ANALYTICAL RESULTS FOR

SAFETY & ENVIRONMENTAL SOLUTIONS, INC.

ATTN: BOB ALLEN 703 E. CLINTON, #103 HOBBS, NM 88240

FAX TO: (505) 393-4388

Receiving Date: 11/19/02

Reporting Date: 11/22/02 Project Number: NOT GIVEN

Project Name: NOT GIVEN Project Location: NOT GIVEN

Sampling Date: 11/19/02 Sample Type: SOIL

Sample Condition: COOL & INTACT

Sample Received By: BC Analyzed By: BC/AH

	GRO	DRO	
	(C ₆ -C ₁₀)	(>C ₁₀ -C ₂₈)	CI*
LAB NUMBER SAMPLE ID	(mg/Kg)	(mg/Kg)	(mg/Kg)

ANALYSIS DATE	11/19/02	11/19/02	11/21/02
H7220-1 BH#2 25'	596	6510	96
H7220-2 BH#2 30'	82.6	1890	112
H7220-3 BH#2 35'	120	1850	224
H7220-4 BH#2 40'	77.4	1200	1200
Quality Control	760	754	970
True Value QC	800	800	1000
% Recovery	95.0	94.3	97.0
Relative Percent Difference	2.3	1.9	2.0

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl⁻: Std. Methods 4500-Cl⁻B *Analyses performed on 1:4 w:v aqueous extracts.

Chemist Chemist

Date

ANTIGER GLASS

testall 10

H7220A.XLS

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FAX TO: (505) 393-4388

Receiving Date: 11/19/02 Reporting Date: 11/22/02

Project Number: NOT GIVEN

Project Name: NOT GIVEN
Project Location: NOT GIVEN

Sampling Date: 11/19/02 Sample Type: SOIL

Sample Condition: COOL & INTACT

Sample Received By: BC Analyzed By: BC/AH

LAB NUMBER	SAMPLE ID	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DA	ΓE	11/20/02	11/20/02	11/20/02	11/20/02
H7220-1	BH#2 25'	0.381	1.12	1.09	3.11
H7220-2	BH#2 30'	0.176	1.46	4.51	14.0
H7220-3	BH#2 35'	1.510	2.29	6.20	18.7
H7220-4	BH#2 40'	0.075	0.150	1.96	6.65
Quality Control		0.109	0.98	0.100	0.288
True Value QC		0.100	0.100	0.100	0.300
% Recovery		109	97.8	100	96.3
Relative Percer	nt Difference	1.9	3.6	4.6	3.2

METHOD: EPA SW-846 8260

Chemist (/

Date

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service, in po event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of soft is incurred by client, its subsidiaries, affiliates of a consequential damages, including, untout limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates of a consequential damages. The profit of the above-stated reasons or otherwise.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ARDINAL LABORATORIES, INC. 2111 Beechwood, Abilene, TX 79603. 101 East Marland, Hobbs, NM 88240 (915) 673-7001 Fax (915) 673-7020. (505) 393-2326 Fax (505) 393-2476

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Company Name: SEST	ender der der der der der der der der der			ANALYSIS REQUEST	OEST.	
Project Manager:		BILL TO PO#:				
Address: 703 E, CLINTON, #	#103	Company: SAME				
City: HOBBS Star	State: NM Zlp: 88240	Altn:				
Phone #: (505) 397-0510		Address:				
Fax #: (505) 393_4388		Clty:				
	Project Owner:	State: Zip:	2		· · · ·	
oject Name:		Phone #:	15			
Project Location:		Fax#:	<u>()</u>			
FOR LAB USE ONLY	a. MATRIX	PRES. SAMPLING	8		-	
LAB I.D. Sample I.D.	(G)RAB OR (C)OME	OTHER: ACID: ICE/COOL OTHER: DATE TIME	TPH BTEX Chori			
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Sampler, Relinquished: Date: Complete the properties of the participation of the particip	Date: 19-0) Received By:	Phone Result		No Additional Fax #:		
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PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR

SAFETY & ENVIRONMENTAL SOLUTIONS, INC.

ATTN: BOB ALLEN 703 E. CLINTON, #103 HOBBS, NM 88240 FAX TO: (505) 393-4388

Receiving Date: 11/25/02

Reporting Date: 11/27/02

Project Number: STATE C TRACT 13

Project Name: APACHE Project Location: NOT GIVEN

Sampling Date: 11/24/02

Sample Type: GROUNDWATER Sample Condition: COOL & INTACT

Sample Received By: BC

Analyzed By: BC

			ETHYL	TOTAL
	BENZENE	TOLUENE	BENZENE	XYLENES
LAB NUMBER SAMPLE ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)

ANALYSIS I	DATE	11/25/02	11/25/02	11/25/02	11/25/02
H7248-1	WELL	<0.002	<0.002	<0.002	<0.006
H7248-2	HOSE @ TANK	<0.002	<0.002	<0.002	<0.006
					1
The second state of the se	6		l. L.		
Quality Con	trol	0.095	0.088	0.091	0.266
True Value	QC	0.100	0.100	0.100	0.300
% Recovery		94.9	87.9	91.1	88.8
Relative Pe	rcent Difference	5.0	4.6	1.3	1.0

METHOD: EPA SW-846 8260

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates for a service and out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.



PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR

SAFETY & ENVIRONMENTAL SOLUTIONS, INC.

ATTN: BOB ALLEN

703 E. CLINTON, STE. 103

HOBBS, NM 88240

FAX TO: (505) 393-4388

Receiving Date: 11/25/02 Reporting Date: 11/26/02

Project Number: STATE C TRACT 13

Project Name: APACHE

Project Location: NOT GIVEN

Sampling Date: 11/24/02

Sample Type: GROUNDWATER

Sample Condition: COOL & INTACT Sample Received By: BC

Analyzed By: AH

		Na	Ca	Mg	K	Conductivity	T-Alkalinity
LAB NUMBER	SAMPLE ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mS/cm)	(mgCaCO ₃ /L)
ANALYSIS DA	TE:	11/20/02	11/25/02	11/25/02	11/25/02	11/25/02	11/25/02
H7248-1	WELL	312	134	63	10.4	1673	150
H7248-2	HOSE @ TANK	231	88	55	6.06	1163	225
Quality Control		NR	43	48	4.62	1322	NR
True Value QC		NR	50	50	5.00	1413	NR
% Recovery		NR	86.0	96.0	92.4	93.6	NR
Relative Perce	nt Difference	NR	0	0	9.0	0.7	NR
METHODS:		SM3	3500-Ca-D	3500-Mg E	8049	120.1	310.1
		CI ⁻	SO ₄	CO ₃	HCO ₃	рН	TDS
		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(s.u.)	(mg/L)
ANALYSIS DA	TE:	11/25/02	11/25/02	11/25/02	11/25/02	11/25/02	11/26/02
H7248-1	WELL	652	209	0	183	6.99	1924
H7248-2	HOSE @ TANK	388	178	0	275	7.20	1418
Quality Control		950	49.87	NR	991	7.01	NR
True Value QC	Total Control	1000	50.00	NR	1000	7.00	NR
% Recovery		95.0	99.7	NR	99.1	100	NR
Relative Perce	nt Difference	2.0	1.3	NR	0	0.3	8.8
METHODS:		SM4500-CI-B	375.4	310.1	310.1	150.1	160.1

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates of authors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ARDINAL LABORATORIES, INC.
2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240

(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

Company Name: CECT				ANALYSIS REQUEST	
Project Manager:		<i>BILL 170</i> Po#:	ď		
Address: 703 E, CLINION,	#103	Company: SAME			
City: HOBBS st	State: NM Zip: 88240	Altn:	70		
Phone #: (505) 397-0510	The state of the s	Address:	- 7		
Fax#: (505) 393_4388		City:	٤		
C	RACT Project Owner:	State: Zip:	\n\ S		
roject Name: Apptchr		Phone #:	130		
roject Location:		Fax#:	r		
FOR LAB USE ONLY	MATRIX	PRES. SAMPLING	<i>C</i>		
LAB I.D. Sample I.D.	RAB OR (C)OMP. DINTAINERS DUNDWATER STEWATER	JER: D: /COOL JER:	BTES		
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LEASE NOTE: Liabilly and Damagos, Cardnafa fabilly are nalyses. At dailing including those for nadigence and any o	LEASE HOIE: Labily and Damages, Cardnafe fability and clerk's exclusive remedy for any plaim acting whather based in coxinact ce tod, what be similard to the amount paid by the elect for the applicable consists of the applicable consists	edin pookraci or toot, shall be limited to the ar In writing and received by Cardinal within 30 in Armythese best firm or has of profits for	nourl paid by the stant for the they after compellon of the applicable that it is utabled in a	Tarma and Conditions: Interest will be charged on at a coourst more than 30 days past due at the rate of 24% per annum from the oxiginal date of involve and at costs of codercious hockstra attorney's less.	oharged on at accounts more than annum from the original date of involve, oneys fees.
mistes or successors arising out of or related to the perform	misses or successors arising out of or related to the performance of services hereunder by Cardinal, regardess of whether such claim is based upon any of the above stated reasons or otherwise.	er such claim is based upon any of the above	1		
Samplar Belinguished:	Date: Received By:	स्टब्स		No Additional Fax #:	
Relinduished By:	Pala S/AL Received By: (Lab Staff)	Lab Staff)			
	Time: O	Marcoll Mark			

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CHECKED BY: (Initials)

Sampler - UPS - Bus - Other: Delivered By: (Circle One)



PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR

SAFETY & ENVIRONMENTAL SOLUTIONS, INC.

ATTN: BOB ALLEN 703 E. CLINTON, #103 HOBBS, NM 88240 FAX TO: (505) 393-4388

FAX 10: (505) 393-4388

Sampling Date: 01/29/03

Sample Type: GROUNDWATER Sample Condition: COOL & INTACT

Sample Received By: AH

Analyzed By: AH

Receiving Date: 01/30/03
Reporting Date: 01/31/03
Project Number: APA-02-002
Project Name: STATE C TRACT 13
Project Location: LEA COUNTY, NM

	Na	Ca	Mg	K	Conductivity	T-Alkalinity
LAB NUMBER SAMPLE ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mS/cm)	(mgCaCO ₃ /L)
ANALYSIS DATE:	01/30/03	01/30/03	01/30/03	01/30/03	01/30/03	01/30/03
H7442-1 MW 1	230	77	42	17	1495	210
Quality Control	NR	42	41	4.67	1322	NR
True Value QC	NR	50	50	5.00	1413	NR
% Recovery	NR	84.0	82.0	93.4	93.6	NR
Relative Percent Difference	NR	0.8	1.4	1.0	0.7	NR
METHODS:	SM	3500-Ca-D	3500-Ma E	8049	120.1	310.1

		CI ⁻	SO ₄	CO ₃	HCO ₃	pН	TDS
		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(s.u.)	(mg/L)
ANALYSIS DA	TE:	01/30/03	01/30/03	01/30/03	01/30/03	01/30/03	01/31/03
H7442-1	MW 1	324	212	0	256	7.60	1106
Quality Control		1000	50.20	NR	1068	6.90	NR
True Value QC	,	1000	50.00	. NR	1000	7.00	NR
% Recovery		100	100	NR	107	98.6	NR
Relative Perce	nt Difference	5.0	0.7	NR	7.7	0	0.4
METHODS:		SM4500-CI-B	375.4	310.1	310.1	150.1	160.1

Chemist

 $\frac{1-31-03}{\text{Date}}$

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliated or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.



PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR

SAFETY & ENVIRONMENTAL SOLUTIONS, INC.

ATTN: BOB ALLEN 703 E. CLINTON, #103 HOBBS, NM 88240 FAX TO: (505) 393-4388

Receiving Date: 01/30/03 Reporting Date: 01/31/03

Project Number: APA-02-002

Project Name: STATE C TRACT 13
Project Location: LEA COUNTY, NM

Sampling Date: 01/29/03

Sample Type: GROUNDWATER Sample Condition: COOL & INTACT

Sample Received By: AH

Analyzed By: BC

LAB NUMBER SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE	01/30/03	01/30/03	01/30/03	01/30/03
H7442-1 MW 1	<0.002	<0.002	<0.002	<0.006
Quality Control	0.109	0.101	0.103	0.301
True Value QC	0.100	0.100	0.100	0.300
% Recovery	109	101	103	100.0
Relative Percent Difference	4.1	0.9	0.9	1.9

METHOD: EPA SW-846 8260

Chamiet

Date

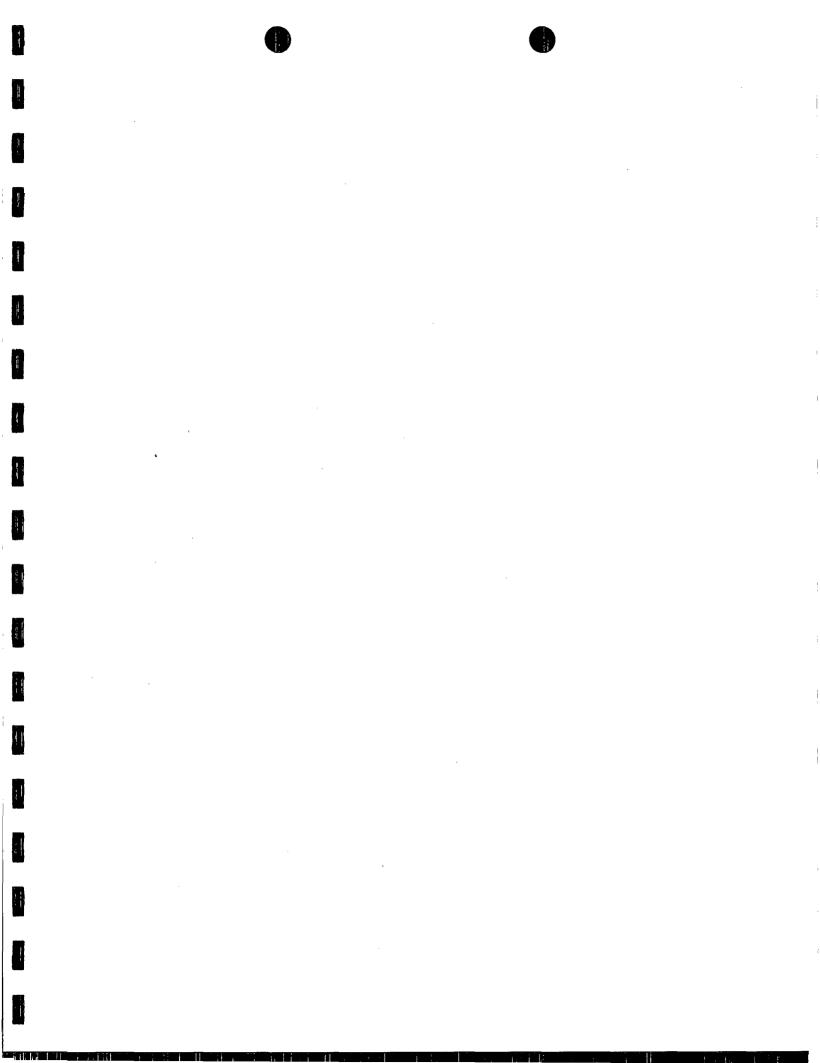
Date

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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(915) 973-7001 Fax (915) 973-7020 (505) 393-2326 Fax (505) 393-2476	2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240	ARDINAL LABORATORIES, INC.
93-2326 Fax (505) 393-2476	101 East Marland, Hobbs, NM 88240	
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1113 — M. 111 M.	Company Name: SIRSI Project Manager: 808 Address: 703 E, CLINIX Clty: HOBBS Phone #: (505) 397-05 Project #: APA - 12-00 Z Project Name: \$7797E C Ject Locallon: Lea Conformation of the project Name: \$7797E C Sal LAB I.D. Sal	SEST 808 1008 1009 1009 1009 1009 1009 1009 1009 1000 1009 1
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Date: Received By: (Lab Str	\sim	
(Circle One) Sample Condition	Relinquished By:	Dat
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[†] Cardinal cannot accept verbal changes. Please fax written changes to 915-073-7020.





PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS. NM 88240

ANALYTICAL RESULTS FOR

SAFETY & ENVIRONMENTAL SOLUTIONS, INC.

ATTN: BOB ALLEN

703 E. CLINTON, STE 103

HOBBS, NM 88240 FAX TO: (505) 393-4388

Receiving Date: 02/21/03 Reporting Date: 02/25/03 Project Number: APA-02-002

Project Name: STATE C TRACT 13 Project Location: EUNICE, NM Sampling Date: 02/21/03

Sample Type: GROUNDWATER Sample Condition: COOL & INTACT

Sample Received By: AH

Analyzed By: AH

•	Na	Ca	Mg	K	Conductivity	T-Alkalinity
LAB NUMBER SAMPLE ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(u s/cm)	(mgCaCO ₃ /L)
ANALYSIS DATE:	02/24/03	02/24/03	02/24/03	02/24/03	02/24/03	02/24/03
H7488-1 MW2	3160	537	206	42.2	16530	205
H7488-2 MW3	238	116	67	9.07	2538	220
Quality, Control	NR	43	55	4.67	1322	NR
True-Value QC	NR	50	50	5.00	1413	NR
% Recovery	NR	86.0	110	93.4	93.6	NR
Relative Percent Difference	NR	0	0	1.0	0.7	NR
METHODS:	SMC	3500-Ca-D	3500-Mg E	8049	120.1	310.1
	CI	SO ₄	CO ₃	HCO₃	pН	TDS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(s.u.)	(mg/L)
ANALYSIS DATE:	02/24/03	02/24/03	02/24/03	02/24/03	02/24/03	02/25/03
117400 4 MANA/O	6000	200	0	250	7.06	0749

	Cl	SO ₄	CO_3	HCO3	рн	103
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(s.u.)	(mg/L)
ANALYSIS DATE:	02/24/03	02/24/03	02/24/03	02/24/03	02/24/03	02/25/03
H7488-1 MW2	6098	308	0	250	7.06	9748
H7488-2 MW3	508	153	0	268	7.33	1526
·						
-						
Quality Control	1000	50.20	NR	1098	6.98	NR
True Value QC	1000	50.00	NR	1000	7.00	NR
% Recovery	100	100	NR	110	. 99.7	NR
Relative Percent Difference	3.0	0.7	NR	3.0	0.1	0.4
METHODS:	SM4500-CI-B	375.4	310.1	310.1	150.1	160.1

Chemist

2-25-03

Date

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims; including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates some satisfactory of the above-stated reasons or otherwise.



PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS. NM 88240

ANALYTICAL RESULTS FOR

SAFETY & ENVIRONMENTAL SOLUTIONS, INC.

ATTN: BOB ALLEN 703 E. CLINTON HOBBS, NM 88240

FAX TO: (505) 393-4388

Receiving Date: 02/21/03 Reporting Date: 02/24/03

Project Number: APA-02-002

Project Name: STATE C TRACT 13

Project Location: EUNICE, NM

Sampling Date: 02/21/03

Sample Type: GROUNDWATER Sample Condition: COOL & INTACT

Sample Received By: AH

Analyzed By: BC

LAB NUMBER SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE	02/21/03	02/21/03	02/21/03	02/21/03
H7488-1 MW 2	0.011	<0.002	0.003	<0.006
H7488-2 MW 3	<0.002	<0.002	<0.002	<0.006
Quality Control	0.108	0.105	0.108	0.312
True Value QC	0.100	0.100	0.100	0.300
% Recovery	108	10.5	108	104.0
Relative Percent Difference	. 3.3	0.4	2.4	3.6

METHOD: EPA SW-846 8260

AR Cooly

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or ton, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates of the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.

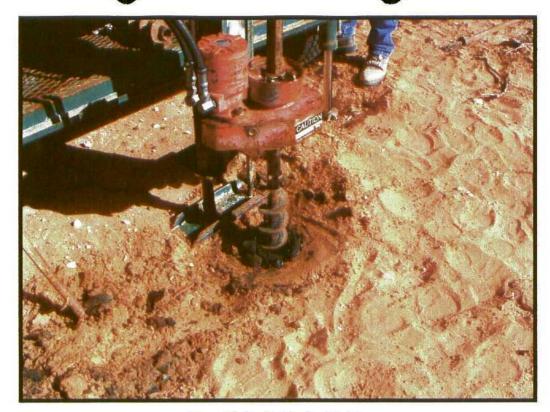
CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

2111 Beechwood Abilene, TX 79603 101 East Marland Hobbs, NM 88240	ARDINAL LABORATORIES, INC.	
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88240		

æ	(915) 673-7001 Fax (915) 673-7020		505) 393-2326 Fa	(505) 393-2326 Fax (505) 393-2476				Pageof	
Company Name:	5751	- 1		8111 70			Α	ANALYSIS REQUEST	
Project Manager:	BOB HLLEN			P.O. #:					
Address: 703	3 E. Cumpon			Company:					
CITY: Hobbs		State: MM Zip:	04288	Attn:					
Phone #: 605	0150-655(Fax#/505/ 393-4388	3-4388	Address:					
Project #: APA	-02-002	Project Owner:		City:					
Project Name: ケアオスを	THRE C TRACT	13		State: Zip:					
Project Location:	3211			Phone #:					
Name:	Summe Caras	7		Fax #:					
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Lab I.D.	Sample I.D.	3 OR (C)OMP.		R: IASE: OOL	BIEX	ATTION S	THION		
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[†] Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476.

Appendix C Site Photos



Bore Hole #1 5' 11-11-02



Bore Hole #1 5' 11-11-02

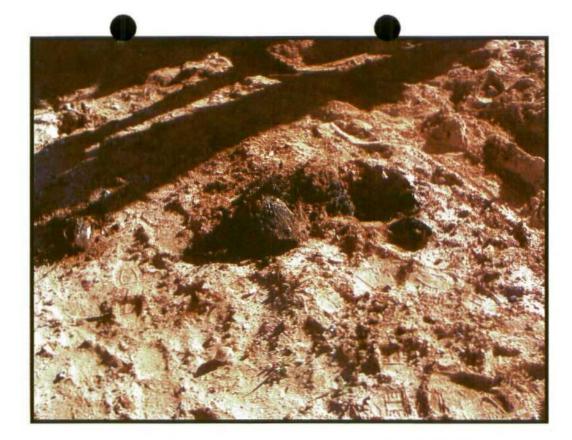
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Borehole #2 Area Before Setup Looking North-East 11/19/02



Borehole #2 Area After Setup Looking South 11/19/02



Borehole #2 Pit Material At Surface 11/19/02



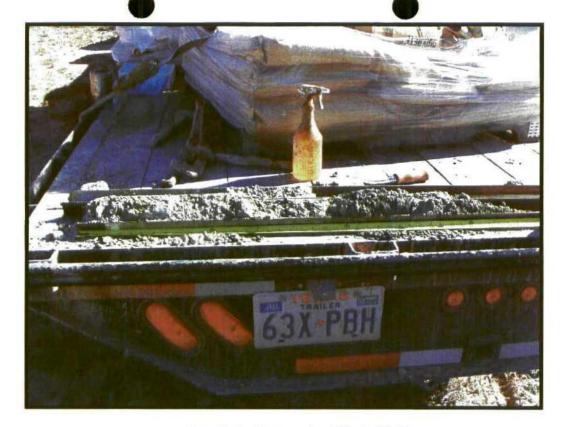
Borehole #2 Auger @ 5' 11/19/02



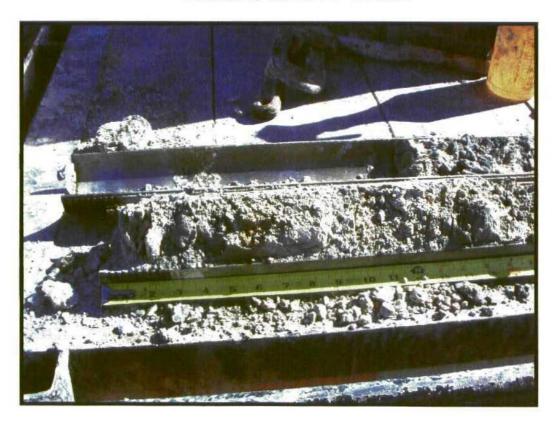
Borehole #2 Core 20-25' 40" Core 11/19/02



Borehole #2 Core 24-25' 11/19/02



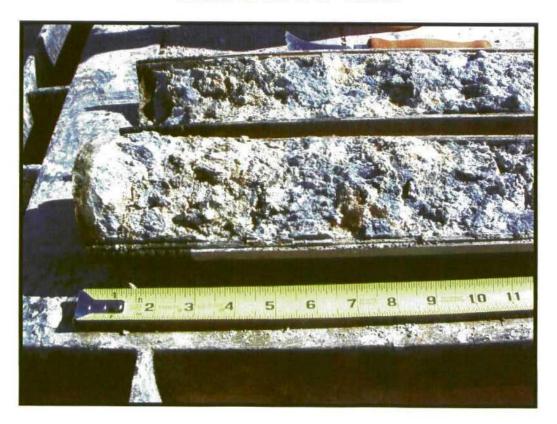
Borehole #2 Core 25-30' 11/19/02



Borehole #2 Core 28-30' 11/19/02



Borehole #2 Core 30-35' 11/19/02



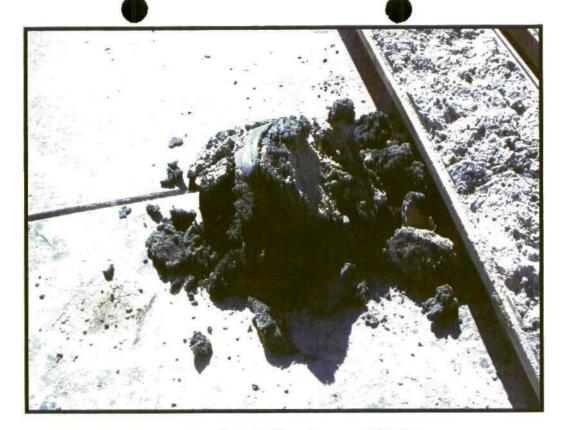
Borehole #2 Core 33-35' 11/19/02



Borehole #2 Core 35-40' 11/19/02



Borehole #2 Core 39-40' 11/19/02

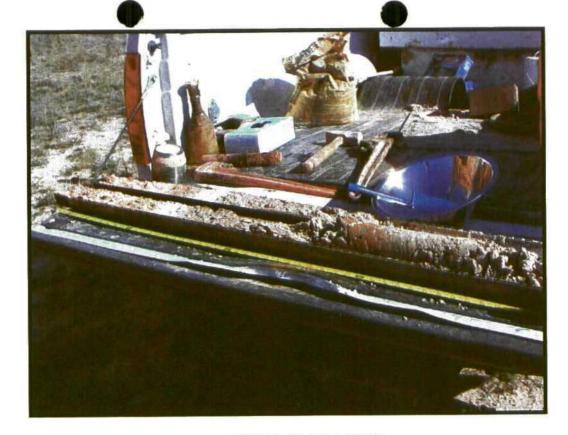


Borehole #2 Core Bottom 11/19/02



Borehole #2 Core Bottom 11/19/02

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MW #1 40-45' 1/22/03



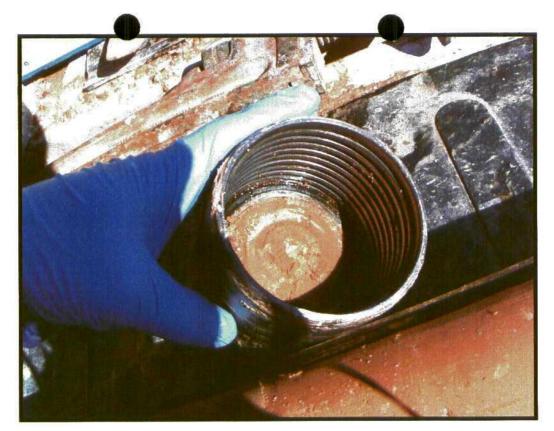
MW #1 40-45' 1/22/03



MW #1 40-45' 1/22/03



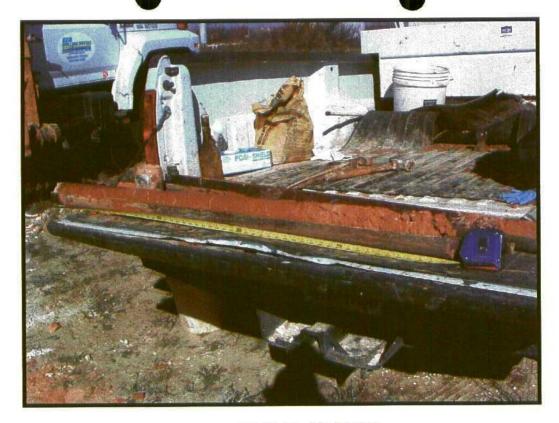
MW #1 45-50' 1/22/03



MW #1 End Cap 45-50' 1/22/03



MW #1 Cuttings 45-50' 1/22/03



MW #1 50-55' 1/22/03



MW #1 55-60' 1/22/03



MW #1 End Cap 55-60' 1/22/03



MW #1 End Cap 55-60' 1/22/03



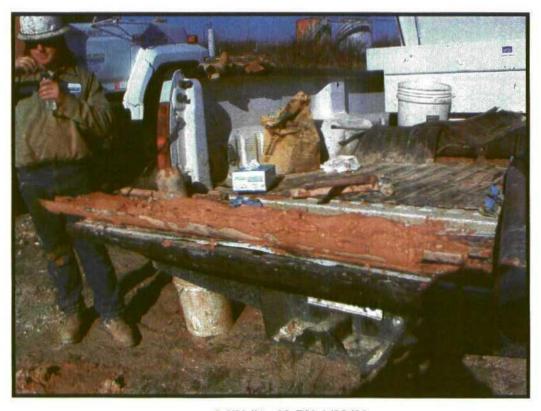
MW #1 60-65' 1/22/03



MW #1 60-65' 1/22/03



MW #1 60-65' 1/22/03



MW #1 65-70' 1/22/03



MW #1 65-70' 1/22/03



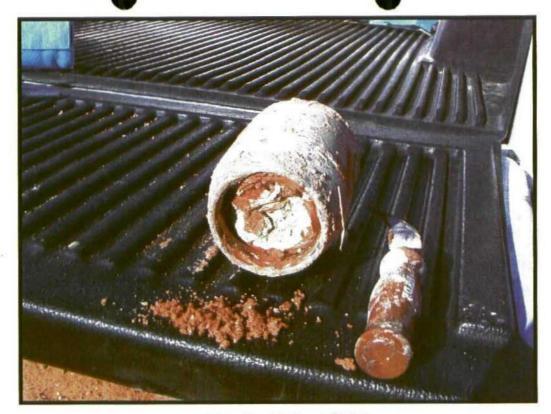
MW #1 65-70' 1/22/03



MW #1 65-70' 1/22/03



MW #1 65' Cap 1/22/03



MW #1 65' Cap 1/22/03



MW #1 65' Cap & Plug 1/22/03



MW #1 65' Core Overall 1/22/03



MW #1 70' Core 1/22/03



MW #1 70' Core 1/22/03



MW #1 70' Core 1/22/03



MW #1 70' Core 1/22/03



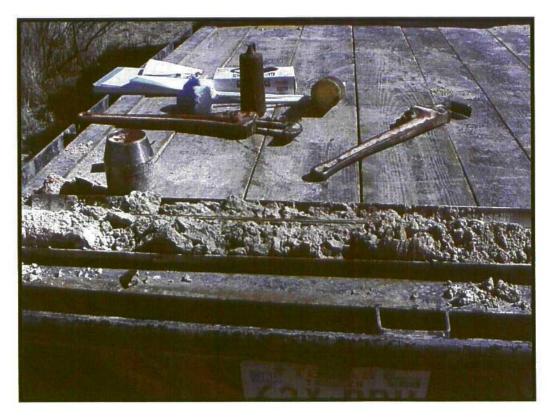
MW #1 70' Cap 1/22/03

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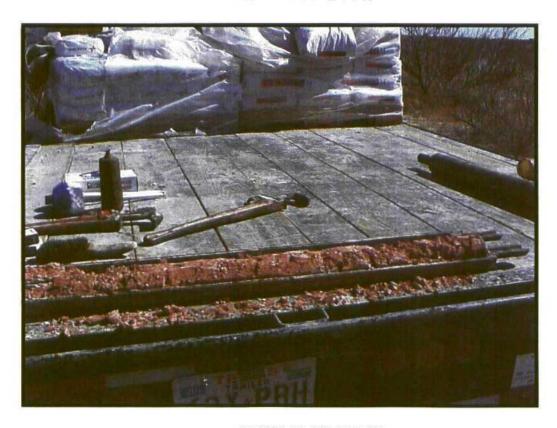
MW-2 40-45' 2/14/03



MW-2 40-45° 2/14/03



MW-2 45-50' 2/14/03



MW-2 45-50' 2/14/03

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MW-3 43-45' 2/17/03



MW-3 47-50' 2/17/03



MW-3 50-55' 2/17/03