GW - 73

WORK PLANS

1995

Western Water Consultants, Inc.

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DETERMINATION OF EXTENT OF SOIL CONTAMINATION AND INSTALLATION OF SOIL VAPOR EXTRACTION SYSTEMS AT THE DOWELL SCHLUMBERGER FACILITY HOBBS, NEW MEXICO

September 29, 1995

Submitted To:

New Mexico Oil Conservation District
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Appendix

1.0 INTRODUCTION

1.0 INTRODUCTION

This report discusses the extent of soil contamination delineation and installation of three soil vapor extraction (SVE) systems at the Dowell Schlumberger facility in Hobbs, New Mexico. A workplan describing these activities was submitted to the New Mexico Oil Conservation Division (NMOCD) on January 27, 1995 and approved in a letter from NMOCD dated May 10, 1995.

1.1 Facility Description

The Dowell Schlumberger facility is located at 1105 West Bender Boulevard in Hobbs, New Mexico. A facility map is shown on Figure 1-1. The facility provides services for area oil and gas production wells. Services include well cementing, well acidizing and stimulating, and formation fracturing. The facility consists of a main office building and laboratory, truck maintenance building and wash bay, dry chemicals warehouse, various aboveground storage tanks, and acid plant.

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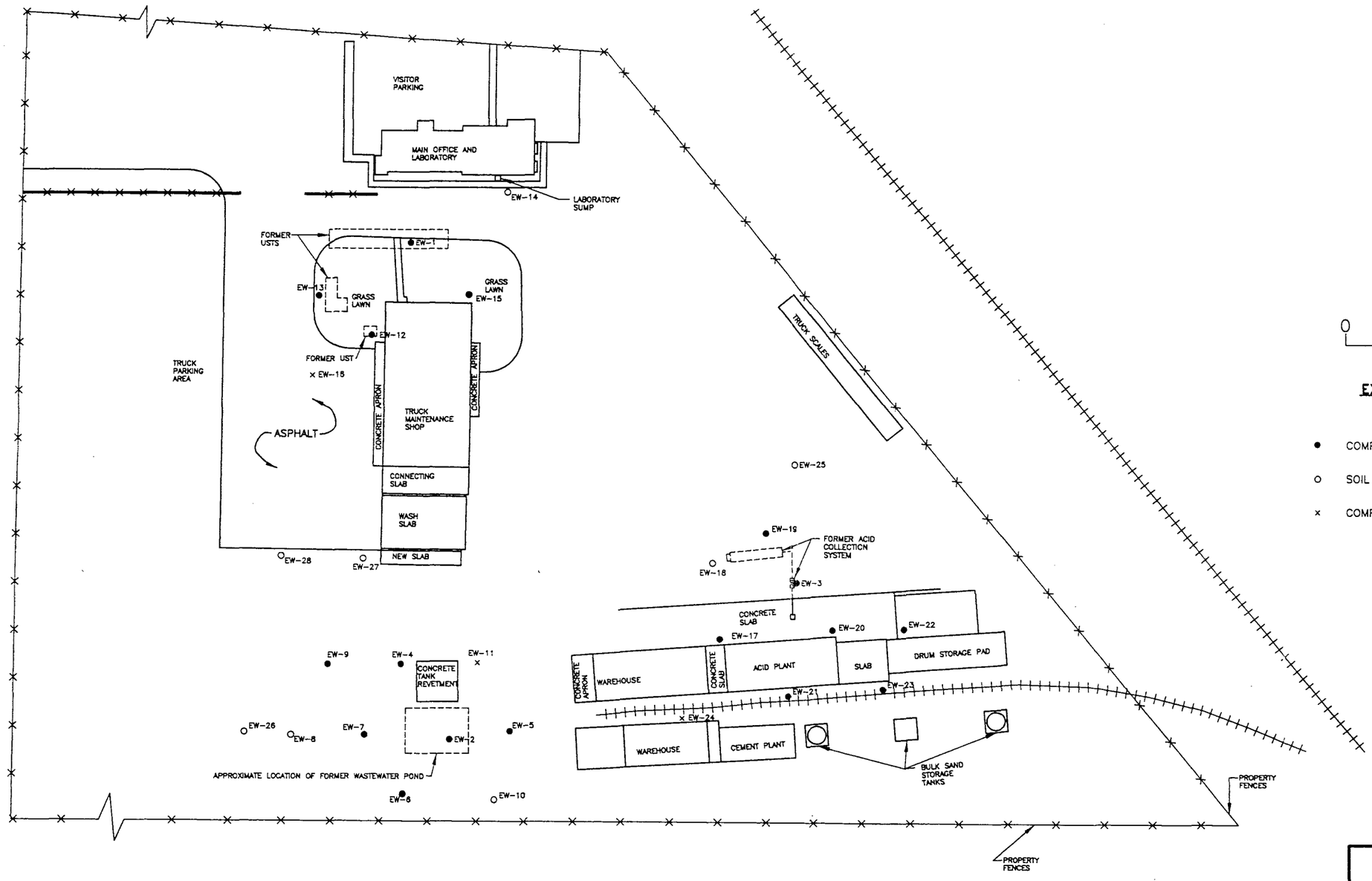

0 80 FT.

SCALE

EXPLANATION

- ● COMPLETED AS SVE WELL
- ○ SOIL BORING
- × COMPLETED AS A FUTURE SVE WELL

FIGURE 1-1

SITE MAP AND LOCATION OF SOIL BORINGS AND SVE WELLS

DOWELL SCHLUMBERGER
HOBBS, NEW MEXICO

Western Water Consultants, Inc.

2.0 SOIL CONTAMINATION DELINEATION

2.0 SOIL CONTAMINATION DELINEATION

This chapter discusses the methods utilized to define the extent of contamination in the caliche at three source areas. The source areas investigated were the former underground storage tank (UST) locations, former wastewater pond, and former acid collection area (Figure 1-1).

2.1 Field Work

On June 11-17, 1995, Western Water Consultants, Inc. (WWC) supervised the drilling of 25 soil borings which ranged in depth from 26-45 feet (Figure 1-1). The soil borings were drilled with a Midway 1250 air rotary rig by Scarborough Drilling of Lamesa, Texas. The borings were located by measuring 50 feet off of three existing SVE wells (EW-1,2, and 3) at the site. These SVE wells were installed at this facility in October of 1994 as part of a SVE pilot test program performed in each source area. The SVE pilot test determined 50 feet to be a conservative estimate of the radius of influence in the caliche underlying the facility.

2.2 Lithology

The upper 12-14 feet consists of unconsolidated light brown to reddish orange silty sand with limestone clasts. This was underlain by pinkish white to light brown caliche to 32-34 feet. The caliche consists of softer, poor to moderately well cemented, fine grained silty sand and limestone clasts with interbeds of harder, moderately well to well cemented, silty sand. The harder interbeds occur where limestone clasts are abundant and calcium carbonate cementing is more competent. Numerous solution cavities were present in the caliche. The lithology below the caliche consists of light brown to pinkish brown, very fine to fine grained sand which is poor to moderately cemented. Two to 15 feet of fill were present in the source areas.

2.0 SOIL CONTAMINATION DELINEATION

2.3 Summary of Drilling at Each Source Area

2.3.1 Former Underground Storage Tank Area

Five soil borings were drilled in the former UST area and by the laboratory sump as shown in Figure 1-1. No obvious subsurface contamination was observed. Drilling depths ranged from 37 to 40 feet. Cuttings and core appeared uncontaminated.

2.3.2 Former Wastewater Pond

Eleven soil borings were drilled in and around the former wastewater pond. Various depths of fill were encountered in this area. Subsurface contamination was the most extensive in EW-7 which was stained light brown to yellow brown and persisted to 32 feet with a hydrocarbon odor. Subsurface contamination was also present in outlying borings EW-4, 5, 6, 8, 9, 10, and 11 but generally only in the lower caliche and to a lesser extent in the upper portion of the sand. Drilling depths ranged from 31 to 45 feet.

2.3.3 Former Acid Collection Area

Nine soil borings were drilled in the area around the former acid collection area and the acid loading facilities. Subsurface staining was observed in both EW-18 and 19 at approximately 27-32 feet. Core samples from this area were stained light grey and had a degraded hydrocarbon odor. Subsurface staining was not observed in EW-25 but cuttings had a moderate hydrocarbon odor at 5 feet and to a lesser degree at 24 feet. Cuttings and core below 24 feet appeared clean.

The most subsurface contamination was observed in EW-20 and EW-22 by the acid loading facilities. The caliche was stained dark grey in EW-20 at 24-32 feet and had a hydrocarbon odor. Staining was not observed in EW-22 but slight to moderate hydrocarbon odors were present down to 20 feet. Subsurface contamination as indicated by staining was not observed in the other soil borings. However, volatile hydrocarbons were detected in the core samples and cuttings.

2.0 SOIL CONTAMINATION DELINEATION

2.4 Field Screening

Field screening was performed by checking cuttings and fresh surfaces on the core for volatile organic compounds (VOCs) with an Environmental Instruments 580D photoionization detector (PID). Headspace samples were collected from stained areas, areas detected by the PID as having VOCs or randomly if staining or VOCs were not detected. The samples were placed in mason jars with aluminum foil inserted under the lid, heated in the sun for 15 to 20 minutes and checked with the PID. The PID was calibrated with a isobutylene standard prior to performing the headspace analysis. Results of the headspace analysis for each boring are shown in Table 2-1.

2.5 Soil Sample Collection and Results

One soil sample was collected for laboratory analysis from each soil boring. The samples were collected as close as possible to the most contaminated interval and submitted to the laboratory for analysis by EPA Method 8260.

Results of the soil data are shown on Table 2-2. Compounds detected in soil at the three source areas include acetone, aromatics such as benzene, ethylbenzene, toluene, and xylenes, and various halogenated compounds such as tetrachloroethylene and 1,1,1-trichloroethane. Laboratory data reports are included as Appendix A.

2.6 Soil Disposal

Drill cuttings and soil removed during the excavation for the SVE system piping were stockpiled on plastic on site. A composite sample was collected from each separate storage pile and analyzed for volatile organic compounds and metals by the toxicity characteristic leaching procedure. As shown on the laboratory data reports in Appendix B, the cuttings and excavated soil are nonhazardous and will be disposed pending NMOCD approval.

If this is listed waste - NMOCD will not approve! NMED, HRMB

Table 2-1. Headspace Sample Data Collected From SVE Wells and Soil Borings at the Dowell Schlumberger Facility, Hobbs, New Mexico.

Sample Location	Source Location	Sample ID	Depth (ft.)	Lithology	PID Reading (ppm)
EW-4	Former	HS-1	17-19	caliche	0
	Wastewater	HS-2	19-24	caliche	35
	Pond	HS-3	27-29	caliche	1
		HS-4	32-34	caliche	114
EW-5		HS-5	17-20	caliche	0
		HS-6	20-25	caliche	8
		HS-7	25-30	caliche	>2,000
EW-6		HS-8	15-20	caliche	0
		HS-9	23-24	caliche	0
		HS-10	30	caliche	647
EW-7		HS-11	14-16	caliche	> 2,000
		HS-12	22	caliche	> 2,000
		HS-13	24-29	caliche	> 2,000
EW-8		HS-14	6	silty sand	165
		HS-15	23	caliche	0
		HS-16	27	caliche	14
		HS-17	33	caliche	771
EW-9		HS-18	6	silty sand	203
		HS-19	18	caliche	76
		HS-20	24-29	caliche	285
		HS-21	32	sand	913
EW-10		HS-22	6	silty sand	38
		HS-23	16	caliche	55
		HS-24	24	caliche	10
		HS-25	30	sand	> 2,000

Table 2-1. Headspace Sample Data Collected From SVE Wells and Soil Borings at the Dowell Schlumberger Facility, Hobbs, New Mexico.

Sample Location	Source Location	Sample ID	Depth (ft.)	Lithology	PID Reading (ppm)
EW-11		HS-26	6	silty sand	5
		HS-27	14	caliche	3
		HS-28	24	caliche	1
		HS-29	28	caliche	0
		HS-30	34	sand	> 2,000
		HS-31	38	sand	130
		HS-32	43	sand	10
EW-26		HS-102	8	silty sand	12
		HS-103	16	caliche	19
		HS-104	24	caliche	9
		HS-105	33	sand	1
		HS-106	38	sand	0
EW-27		HS-107	8	silty sand	22
		HS-108	16	caliche	1
		HS-109	25	caliche	0
		HS-110	30	caliche	0
		HS-111	34	sand	2
EW-28		HS-112	10	silty sand	0
		HS-113	22	caliche	0
		HS-114	30	caliche	0
		HS-115	34	sand	0
EW-12	Former	HS-33	8-10	silty sand	7
	UST	HS-34	18	caliche	1
	Location	HS-35	23	caliche	1
		HS-36	28	caliche	11
		HS-37	34-35	sand	32
		HS-38	37	sand	2

Table 2-1. Headspace Sample Data Collected From SVE Wells and Soil Borings at the Dowell Schlumberger Facility, Hobbs, New Mexico.

Sample Location	Source Location	Sample ID	Depth (ft.)	Lithology	PID Reading (ppm)
EW-13		HS-39	16	caliche	1
		HS-40	24	caliche	0
		HS-41	29	caliche	1
		HS-42	34	caliche	0
		HS-43	37-39	sand	1
EW-14		HS-44	6	silty sand	1
		HS-45	12	silty sand	0
		HS-46	19	caliche	0
		HS-47	26	caliche	2
		HS-48	37	sand	0
EW-15		HS-49	10	silty sand	4
		HS-50	24	caliche	31
		HS-51	32	caliche	0
		HS-52	40	sand	4
EW-16		HS-69	8	silty sand	8
		HS-70	16	caliche	8
		HS-71	24	caliche	18
		HS-72	31	caliche	4
		HS-73	36	sand	6
EW-17	Former Acid Collection Area	HS-53	4	silty sand	56
		HS-54	12	silty sand	2
		HS-55	22	caliche	4
		HS-56	30	caliche	4
		HS-57	36	sand	2
EW-18		HS-58	10	silty sand	0
		HS-59	20	caliche	0
		HS-60	31	caliche	0
		HS-61	34	sand	2
		HS-62	37	sand	0

Table 2-1. Headspace Sample Data Collected From SVE Wells and Soil Borings at the Dowell Schlumberger Facility, Hobbs, New Mexico.

Sample Location	Source Location	Sample ID	Depth (ft.)	Lithology	PID Reading (ppm)
EW-19		HS-63	10	silty sand	0
		HS-64	17	caliche	0
		HS-65	24	caliche	0
		HS-66	31	caliche	0
		HS-67	34	sand	0
		HS-68	37	sand	29
EW-20		HS-74	10	silty sand	540
		HS-75	18	caliche	279
		HS-76	24	caliche	192
		HS-77	36	sand	225
EW-21		HS-78	10	silty sand	55
		HS-79	18	caliche	81
		HS-80	26	caliche	51
		HS-81	27-32	caliche	65
		HS-82	35	sand	17
EW-22		HS-83	8	silty sand	227
		HS-84	16	caliche	79
		HS-85	24	caliche	95
		HS-86	30	caliche	29
		HS-87	34	sand	304
EW-23		HS-88	6	silty sand	88
		HS-89	16	caliche	306
		HS-90	20	caliche	201
		HS-91	24	caliche	3
		HS-92	32	caliche	3
		HS-93	34	sand	29
EW-24		HS-94	8	silty sand	39
		HS-95	16	caliche	7
		HS-96	24	caliche	118

Table 2-1. Headspace Sample Data Collected From SVE Wells and Soil Borings at the Dowell Schlumberger Facility, Hobbs, New Mexico.

Sample Location	Source Location	Sample ID	Depth (ft.)	Lithology	PID Reading (ppm)
EW-25		HS-97	5	silty sand	419
		HS-98	16	caliche	3
		HS-99	24	caliche	43
		HS-100	32	caliche	1
		HS-101	34	sand	1

Note: ppm = parts per million

Table 2-2. Soil Sample Results From Installation of SVE Wells and Soil Borings at the Dowell Schlumberger Facility, Hobbs, New Mexico

Sample Location	Source Area	Date	Depth (ft.)	Benzene (ppm)	Ethyl-benzene (ppm)	Toluene (ppm)	Total Xylenes (ppm)	Naph-thalene (ppm)	1,1-DCA (ppm)	1,1,1-TCA (ppm)	TCE (ppm)	PCE (ppm)	Acetone (ppm)
*EW-4	Former Wastewater Pond	06/13/95	32	ND(0.001)	0.005	0.008	0.029	0.053	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	0.687
*EW-5		06/13/95	28	0.014	13	0.72	74.1	37	0.022	0.332	0.006	0.65	ND(0.001)
*EW-6		06/13/95	32	ND(0.001)	2.99	0.615	12.01	8.66	ND(0.001)	ND(0.001)	ND(0.001	3.34	ND(0.001)
*EW-7		06/13/95	14	1.45	87.6	31.45	217	96.2	ND(0.001)	0.304	ND(0.001	0.335	ND(0.001)
EW-8		06/14/95	27	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	ND(0.001)
*EW-9		06/14/95	27	ND(0.001)	ND(0.001)	ND(0.001)	0.021	0.194	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	0.281
EW-10		06/14/95	28	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	0.01	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	0.475
EW-11		06/14/95	28	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	0.03	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	ND(0.001)
EW-26		06/17/95	37	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	0.039
EW-27		06/17/95	34	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	0.027
EW-28		06/17/95	35	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	ND(0.001)
EW-12	Former UST Location	06/14/95	38	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	ND(0.001)
EW-13		06/14/95	34	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	ND(0.001)
EW-14		06/14/95	32	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	ND(0.001)
EW-15		06/15/95	32	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	ND(0.001)
EW-16		06/15/95	31	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	0.173
*EW-17	Former Acid Collection Area	06/15/95	29	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	0.015	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	0.164
EW-18		06/15/95	31	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	0.253
EW-19		06/15/95	31	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	0.094	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	ND(0.001)
EW-20		06/16/95	26	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	ND(0.001)
EW-21		06/16/95	14	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	ND(0.001)
EW-22		06/16/95	30	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	ND(0.001)
EW-23		06/16/95	26	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	ND(0.001)
EW-24		06/16/95	24	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	ND(0.001)
EW-25		06/16/95	24	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001	ND(0.001)	0.044

Note:
ppm = parts per million
ND = not detected at levels in parentheses
1,1-DCA = 1,1-Dichloroethane
TCE = Trichloroethene
PCE = Tetrachloroethene
1,1,1-TCA = 1,1,1-Trichloroethane

* = additional contaminants detected, see laboratory data reports

2.7 SVE Well Completions and Soil Boring Abandonments

Seventeen of the 25 soil borings were completed as SVE wells (Figure 1-1). Fifteen feet of 2-inch, 20 slot, PVC screen was placed in each SVE extraction well. Screen was not placed above 10 feet in a well to prevent short circuiting the system to the surface. 12/20 silica sand was placed around the screen and 1 to 2 feet above the screen with at least 5 feet of hydrated bentonite chips placed above the sand pack for a seal. Concrete was placed in the boring from the surface to 2 feet below ground surface for a concrete seal. Twelve-inch flush mount well protectors were installed around the casing for protection. Total depth of the completed SVE wells ranged from 25 to 40 feet.

Soil borings were abandoned with bentonite chips placed in the bottom of the borehole and hydrated with water to seal off the underlying sands. The remainder of the borehole was filled within 10 feet of the ground surface with clean cuttings and then filled to the surface with bentonite chips which were hydrated. Detailed well logs and completion/abandonment descriptions for each SVE well and soil boring are provided in Appendix B.

2.8 Discussion of Field Work

The lateral delineation of contamination at each source area was very successful. SVE wells were installed so that minor contamination detected in perimeter soil borings would be remediated. EW-11, 16, and 24, were completed as SVE wells but were not hooked up to the present system. They may be hooked up in the future to draw from the outlying areas of the sources once the main source area has been remediated.

3.0 INSTALLATION OF SVE SYSTEM

3.0 SVE SYSTEM INSTALLATION

The remainder of the SVE system was installed after construction of the SVE wells. Piping to the wells and the manifolds were constructed the week of June 11, 1995 and the fenced enclosures were constructed the week of June 26, 1995. The AcuVac SVE units were delivered the week of July 10, 1995 and installed at that time. Installation of the SVE systems was essentially the same as proposed in the Work Plan with a few modifications as shown on the "As-Built" Drawing (Figure 3-1). The extraction well identifications were revised subsequent to system installation as shown on Figure 3-1. The new identifications provide a logical numbering sequence for the wells. All future reference to the extraction wells will use the revised identifications.

3.1 Piping

All piping connecting the SVE wells is 2-inch Schedule 40 PVC. At the former wastewater pond area (Unit 1) six wells were connected to the system as shown in Figure 3-1. Two wells to the east were completed but not hooked up and are available if it is necessary to extend the area of coverage in the future. The location of the unit and piping was adjusted to minimize interference with facility operations.

Seven wells were connected to the SVE system at the former acid neutralization pit area (Unit 2). Piping for the southern wells was installed aboveground to avoid disturbing existing structures. Buried piping was routed to avoid obstacles and minimize cutting concrete and asphalt as shown in Figure 3-1.

At the former UST area (Unit 3) four wells were connected to the system. In the grass area the trenches were 6-8 inches deep and piping was combined in trenches to minimize disturbance. The AcuVac unit was located in the eastern portion of the grass area away from site activities to minimize impacts from noise.

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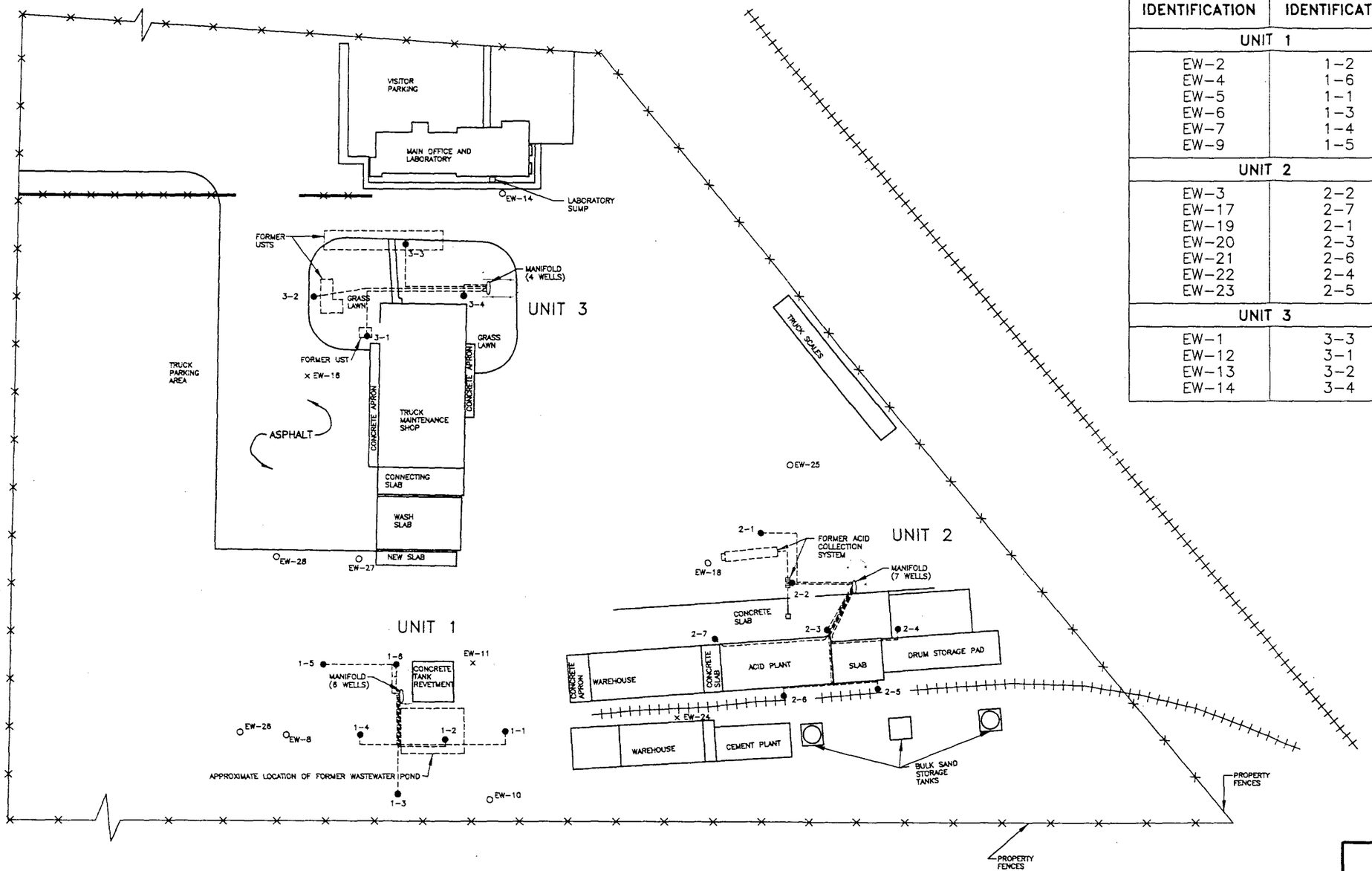

ORIGINAL IDENTIFICATION	REVISED IDENTIFICATION
UNIT 1	
EW-2	1-2
EW-4	1-6
EW-5	1-1
EW-6	1-3
EW-7	1-4
EW-9	1-5
UNIT 2	
EW-3	2-2
EW-17	2-7
EW-19	2-1
EW-20	2-3
EW-21	2-6
EW-22	2-4
EW-23	2-5
UNIT 3	
EW-1	3-3
EW-12	3-1
EW-13	3-2
EW-14	3-4

0 80 FT.
SCALE

EXPLANATION

- ● COMPLETED AS SVE WELL
- ○ SOIL BORING
- × COMPLETED AS A FUTURE SVE WELL
- FENCED ENCLOSURE
- 2" PVC PIPING

FIGURE 3-1

AS-BUILT SITE MAP
SVE SYSTEM

DOWELL SCHLUMBERGER
HOBBS, NEW MEXICO

Western Water Consultants, Inc.

3.2 Vacuum Units

As presented in the Work Plan, the vacuum units are provided by AcuVac. These units are internal combustion engines that drive Roots type blowers. The well vapors are directed to the engine and destroyed by combustion in the internal combustion engine. The exhaust is further treated by catalytic converters.

AcuVac I6 units were installed at the former wastewater pond and acid neutralization areas. An AcuVac I4 unit was installed at the former UST area.

APPENDIX A

Soil Laboratory Analysis

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240
PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-4

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-4.32
Lab Number : H2071-2

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-2	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	0.687	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-4

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-4.32
Lab Number : H2071-2

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-2	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	0.008	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	0.005	<0.001	116.3	116	100
41	m, p - Xylene	0.002	0.020	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	0.009	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	0.003	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	0.009	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	0.033	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	0.003	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	0.004	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	0.008	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-4

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-4.32
Lab Number : H2071-2

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-2	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	0.053	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	96	15
66	Toluene-D8	MI	16
67	4-Bromofluorobenzene	113	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

File 93-007.D

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EWCS

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-5.28
Lab Number: H2071-1

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-1	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.001	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	0.022	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	0.332	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	0.014	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	0.006	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-5

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-5.28
Lab Number: H2071-1

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-1	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	0.720	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	0.650	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	13.000	<0.001	116.3	116	100
41	m, p - Xylene	0.002	69.100	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	5.000	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	15.600	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	39.100	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	44.500	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	85.400	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	9.900	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	11.000	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	19.900	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-5

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-5.28
Lab Number: H2071-1

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-1	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	37.000	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	98	15
66	Toluene-D8	89	16
67	4-Bromofluorobenzene	141	1

METHODS: EPA SW-846-8260.

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-6

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-6.32
Lab Number : H2071-3

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-3	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.001	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-6

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-6.32
Lab Number : H2071-3

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-3	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	0.615	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	3.340	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	2.990	<0.001	116.3	116	100
41	m, p - Xylene	0.002	4.120	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	7.890	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	3.750	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	5.815	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	9.930	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	22.600	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	0.983	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	1.215	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	2.650	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-6.32
Lab Number : H2071-3

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-3	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	8.660	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	MI	15
66	Toluene-D8	MI	16
67	4-Bromofluorobenzene	98	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-7

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-7.14
Lab Number: H2071-4

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-4	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.001	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	0.011	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	0.367	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	0.304	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	1.450	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	0.007	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-7

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-7.14
Lab Number: H2071-4

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-4	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	31.450	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	0.335	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	87.600	<0.001	116.3	116	100
41	m, p - Xylene	0.002	157.000	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	60.000	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	19.300	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	35.500	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	47.900	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	131.000	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	19.600	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	24.400	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	40.000	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-7

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-7.14
Lab Number: H2071-4

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-4	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	96.200	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	126	15
66	Toluene-D8	119	16
67	4-Bromofluorobenzene	MI	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

58-3

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-8.27
Lab Number: H20 2071-5

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

	VOLATILES - 8260 (ppm)	Detection Limit	Sample Result H2071-5	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.001	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-3

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-8.27
Lab Number: H20 2071-5

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

	VOLATILES - 8260 (ppm)	Detection Limit	Sample Result H2071-5	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-8

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-8.27
Lab Number: H20 2071-5

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-5	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	93	15
66	Toluene-D8	78	16
67	4-Bromofluorobenzene	MI	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-9.27
Lab Number: H2071-6

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

	VOLATILES - 8260 (ppm)	Detection Limit	Sample Result H2071-6	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	0.281	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

Eu-9	ppm
Acetone	0.281

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-9

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-9.27
Lab Number: H2071-6

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

	VOLATILES - 8260 (ppm)	Detection Limit	Sample Result H2071-6	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	0.006	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	0.015	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	0.008	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	0.100	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	0.013	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	0.017	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	0.029	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-9

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-9.27
Lab Number: H2071-6

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-6	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	0.194	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	118	15
66	Toluene-D8	MI	16
67	4-Bromofluorobenzene	108	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-10

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-10.28
Lab Number: H2071-7

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-7	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	0.475	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-10

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-10.28
Lab Number: H2071-7

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-7	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-10

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-10.28
Lab Number: H2071-7

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-7	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	0.010	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	70	15
66	Toluene-D8	MI	16
67	4-Bromofluorobenzene	MI	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-11.28
Lab Number: H2071-8

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-8	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.001	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-11

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-11.28
Lab Number: H2071-8

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-8	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
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PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-11

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-11.28
Lab Number: H2071-8

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-8	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	0.030	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	86	15
66	Toluene-D8	91	16
67	4-Bromofluorobenzene	107	1

METHODS: EPA SW-846-8260.

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-12

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-12.38
Lab Number: H2071-9

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-9	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.001	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-12

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-12.38
Lab Number: H2071-9

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-9	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-12

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-12.38
Lab Number: H2071-9

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-9	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	105	15
66	Toluene-D8	107	16
67	4-Bromofluorobenzene	102	1

METHODS: EPA SW-846-8260.

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-13

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-13.34
Lab Number: H2071-10

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-10	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.001	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

IEW-13

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-13.34
Lab Number: H2071-10

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-10	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-13

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-13.34
Lab Number: H2071-10

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-10	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	70	15
66	Toluene-D8	96	16
67	4-Bromofluorobenzene	101	1

METHODS: EPA SW-846-8260.

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
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PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-14

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-14.32
Lab Number: H2071-11

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-11	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.001	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240
PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-14

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-14.32
Lab Number: H2071-11

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-11	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-14

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-14.32
Lab Number: H2071-11

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-11	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	70	15
66	Toluene-D8	MI	16
67	4-Bromofluorobenzene	96	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 * 2111 BEECHWOOD * ABILENE, TX 79603
PHONE (505) 393-2326 * 101 E. MARLAND * HOBBS, NM 88240
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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-15

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-15.32
Lab Number: H2071-12

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

	VOLATILES - 8260 (ppm)	Detection Limit	Sample Result H2071-12	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.001	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-15

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-15.32
Lab Number: H2071-12

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-12	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

PHONE (915) 673-7001 * 2111 BEECHWOOD * ABILENE, TX 79603
PHONE (505) 393-2326 * 101 E. MARLAND * HOBBS, NM 88240
PHONE (505) 326-4669 * 118 S. COMMERCIAL AVE. * FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-15

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-15.32
Lab Number: H2071-12

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-12	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	MI	15
66	Toluene-D8	100	16
67	4-Bromofluorobenzene	93	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240
PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-16

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-16.31
Lab Number: H2071-13

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-13	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	0.173	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-16

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-16.31
Lab Number: H2071-13

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-13	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-16

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-16.31
Lab Number: H2071-13

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-13	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	81	15
66	Toluene-D8	MI	16
67	4-Bromofluorobenzene	95	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 * 2111 BEECHWOOD * ABILENE, TX 79603
PHONE (505) 393-2326 * 101 E. MARLAND * HOBBS, NM 88240
PHONE (505) 326-4669 * 118 S. COMMERCIAL AVE. * FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-17

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-17.29
Lab Number: H2071-14

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-14	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	0.164	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

PHONE (915) 673-7001 * 2111 BEECHWOOD * ABILENE, TX 79603
PHONE (505) 393-2326 * 101 E. MARLAND * HOBBS, NM 88240
PHONE (505) 326-4669 * 118 S. COMMERCIAL AVE. * FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-17

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-17.29
Lab Number: H2071-14

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

	VOLATILES - 8260 (ppm)	Detection Limit	Sample Result H2071-14	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	0.013	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	0.013	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	0.028	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-17

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-17.29
Lab Number: H2071-14

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-14	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	0.015	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	63	15
66	Toluene-D8	MI	16
67	4-Bromofluorobenzene	99	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-18

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-18.31
Lab Number: H2071-15

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-15	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	0.253	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240
PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-16

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-18.31
Lab Number: H2071-15

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-15	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

58-18

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-18.31
Lab Number: H2071-15

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-15	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	78	15
66	Toluene-D8	MI	16
67	4-Bromofluorobenzene	MI	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
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PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-19

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-19.31
Lab Number: H2071-16

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-16	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.001	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EC-19

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-19.31
Lab Number: H2071-16

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-16	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-19

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-19.31
Lab Number: H2071-16

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-16	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	0.094	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	91	15
66	Toluene-D8	MI	16
67	4-Bromofluorobenzene	107	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-20

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-20.26
Lab Number: H2071-17

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-17	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.001	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-20

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-20.26
Lab Number: H2071-17

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-17	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-20

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-20.26
Lab Number: H2071-17

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-17	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	108	15
66	Toluene-D8	MI	16
67	4-Bromofluorobenzene	110	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-21

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-21.14
Lab Number: H2071-18

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

	VOLATILES - 8260 (ppm)	Detection Limit	Sample Result H2071-18	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.001	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-21

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-21.14
Lab Number: H2071-18

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

	VOLATILES - 8260 (ppm)	Detection Limit	Sample Result H2071-18	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-21

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-21.14
Lab Number: H2071-18

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-18	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	109	15
66	Toluene-D8	MI	16
67	4-Bromofluorobenzene	98	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240
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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-32

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-22.30
Lab Number: H2071-19

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-19	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.001	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-22

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-22.30
Lab Number: H2071-19

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-19	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-22

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-22.30
Lab Number: H2071-19

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-19	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	115	15
66	Toluene-D8	102	16
67	4-Bromofluorobenzene	98	1

METHODS: EPA SW-846-8260.

Manuel Garbalena, Chemist

6-26-95
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-23

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-23.26
Lab Number: H2071-20

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-20	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.001	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-23

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-23.26
Lab Number: H2071-20

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-20	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-23

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-23.26
Lab Number: H2071-20

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-20	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	117	15
66	Toluene-D8	113	16
67	4-Bromofluorobenzene	101	1

METHODS: EPA SW-846-8260.

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-24

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-24.24
Lab Number: H2071-21

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-21	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.001	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-24

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-24.24
Lab Number: H2071-21

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-21	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

EW-24

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-24.24
Lab Number: H2071-21

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-21	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	MI	15
66	Toluene-D8	97	16
67	4-Bromofluorobenzene	108	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-25

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-25.24
Lab Number: H2071-22

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

	VOLATILES - 8260 (ppm)	Detection Limit	Sample Result H2071-22	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	0.044	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-25

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-25.24
Lab Number: H2071-22

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

	VOLATILES - 8260 (ppm)	Detection Limit	Sample Result H2071-22	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-25

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-25.24
Lab Number: H2071-22

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-22	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	72	15
66	Toluene-D8	73	16
67	4-Bromofluorobenzene	MI	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/23/95
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-26

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-26.37
Lab Number: H2071-23

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

	VOLATILES - 8260 (ppm)	Detection Limit	Sample Result H2071-23	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	0.039	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-26

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-26.37
Lab Number: H2071-23

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-23	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-26

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-26.37
Lab Number: H2071-23

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-23	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	128	15
66	Toluene-D8	113	16
67	4-Bromofluorobenzene	100	1

METHODS: EPA SW-846-8260.

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-27

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-27.34
Lab Number: H2071-24

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-24	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	0.027	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-27

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-27.34
Lab Number: H2071-24

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-24	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-27

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-27.34
Lab Number: H2071-24

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-24	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	122	15
66	Toluene-D8	109	16
67	4-Bromofluorobenzene	96	1

METHODS: EPA SW-846-8260.

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB. 25

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-28.35
Lab Number: H2071-25

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

	VOLATILES - 8260 (ppm)	Detection Limit	Sample Result H2071-25	Method Blank	QC	%IA	True Value QC
1	Dichlorodifluoromethane	0.001	<0.001	<0.001	93.4	93	100
2	Chloromethane	0.001	<0.001	<0.001	98.5	99	100
3	Vinyl chloride	0.001	<0.001	<0.001	97.0	97	100
4	Bromomethane	0.001	<0.001	<0.001	93.2	93	100
5	Chloroethane	0.001	<0.001	<0.001	97.0	97	100
6	Acetone	0.001	<0.000	<0.001	102.2	102	100
7	1,1-Dichloroethene	0.001	<0.001	<0.001	97.4	97	100
8	Trichlorofluoromethane	0.001	<0.001	<0.001	91.1	91	100
9	Carbon Disulfide	0.001	<0.001	<0.001	134.8	135	100
10	Methylene chloride	0.001	<0.001	<0.001	106.4	106	100
11	trans-1,2-Dichloroethene	0.001	<0.001	<0.001	96.3	96	100
12	1,1-Dichloroethane	0.001	<0.001	<0.001	103.6	104	100
13	Vinyl Acetate	0.001	<0.001	<0.001	102.7	103	100
14	2-Butanone	0.001	<0.001	<0.001	98.1	98	100
15	cis-1,2-Dichloroethene	0.001	<0.001	<0.001	97.7	98	100
16	2,2-Dichloropropane	0.001	<0.001	<0.001	97.3	97	100
17	Chloroform	0.001	<0.001	<0.001	101.1	101	100
18	Bromochloromethane	0.001	<0.001	<0.001	101.1	101	100
19	1,1,1-Trichloroethane	0.001	<0.001	<0.001	98.6	99	100
20	1,2-Dichloroethane	0.001	<0.001	<0.001	104.2	104	100
21	1,1-Dichloropropene	0.001	<0.001	<0.001	100.5	101	100
22	Benzene	0.001	<0.001	<0.001	103.1	103	100
23	Carbon tetrachloride	0.001	<0.001	<0.001	95.9	96	100
24	Trichloroethene	0.001	<0.001	<0.001	76.1	76	100
25	Dibromomethane	0.001	<0.001	<0.001	75.4	75	100
26	Bromodichloromethane	0.001	<0.001	<0.001	77.2	77	100
27	trans-1,3-Dichloropropene	0.001	<0.001	<0.001	93.2	93	100
28	4-methyl-2-pentanone	0.001	<0.001	<0.001	86.9	87	100
29	1,2-Dichloropropane	0.001	<0.001	<0.001	76.7	77	100
30	cis-1,3-Dichloropropene	0.001	<0.001	<0.001	94.2	94	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-28

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-28.35
Lab Number: H2071-25

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-25	Method Blank	QC	%IA	True Value QC
31	Toluene	0.001	<0.001	<0.001	90.9	91	100
32	1,1,2-Trichloroethane	0.001	<0.001	<0.001	91.0	91	100
33	1,3-Dichloropropane	0.001	<0.001	<0.001	96.2	96	100
34	2-Hexanone	0.001	<0.001	<0.001	94.8	95	100
35	Dibromochloromethane	0.001	<0.001	<0.001	102.2	102	100
36	1,2-Dibromoethane	0.001	<0.001	<0.001	98.7	99	100
37	Tetrachloroethene	0.001	<0.001	<0.001	99.8	100	100
38	Chlorobenzene	0.001	<0.001	<0.001	110.0	110	100
39	1,1,1,2-Tetrachloroethane	0.001	<0.001	<0.001	118.1	118	100
40	Ethylbenzene	0.001	<0.001	<0.001	116.3	116	100
41	m, p - Xylene	0.002	<0.001	<0.001	251.3	126	200
42	Bromoform	0.001	<0.001	<0.001	120.1	120	100
43	Styrene	0.001	<0.001	<0.001	119.6	120	100
44	o-Xylene	0.001	<0.001	<0.001	121.3	121	100
45	1,1,2,2-Tetrachloroethane	0.001	<0.001	<0.001	125.1	125	100
46	1,2,3-Trichloropropane	0.001	<0.001	<0.001	123.8	124	100
47	Isopropylbenzene	0.001	<0.001	<0.001	83.5	84	100
48	Bromobenzene	0.001	<0.001	<0.001	111.9	112	100
49	2-Chlorotoluene	0.001	<0.001	<0.001	112.7	113	100
50	n-propylbenzene	0.001	<0.001	<0.001	113.9	114	100
51	4-Chlorotoluene	0.001	<0.001	<0.001	114.7	115	100
52	1,3,5-Trimethylbenzene	0.001	<0.001	<0.001	111.1	111	100
53	tert-Butylbenzene	0.001	<0.001	<0.001	114.5	115	100
54	1,2,4-Trimethylbenzene	0.001	<0.001	<0.001	110.1	110	100
55	1,3-Dichlorobenzene	0.001	<0.001	<0.001	112.1	112	100
56	sec-Butylbenzene	0.001	<0.001	<0.001	119.5	120	100
57	1,4 Dichlorobenzene	0.001	<0.001	<0.001	111.3	111	100
58	4-Isopropyltoluene	0.001	<0.001	<0.001	114.7	115	100
59	1,2-Dichlorobenzene	0.001	<0.001	<0.001	107.9	108	100
60	n-Butylbenzene	0.001	<0.001	<0.001	107.8	108	100

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

SB-28

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: 93-007EW-28.35
Lab Number: H2071-25

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

VOLATILES - 8260 (ppm)		Detection Limit	Sample Result H2071-25	Method Blank	QC	%IA	True Value QC
61	1,2-dibromo-3-chloropropane	0.001	<0.001	<0.001	114.2	114	100
62	1,2,4-Trichlorobenzene	0.001	<0.001	<0.001	82.1	82	100
63	Naphthalene	0.001	<0.001	<0.001	91.9	92	100
64	1,2,3-Trichlorobenzene	0.001	<0.001	<0.001	89.6	90	100

		% Recovery	Relative Percent Difference
65	Dibromofluoromethane	96	15
66	Toluene-D8	MI	16
67	4-Bromofluorobenzene	87	1

METHODS: EPA SW-846-8260.
MI - Matrix Interference

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

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Drill Cuttings Pile

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: COMPOSITE - 1
Lab Number: H2071-26

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

TCLP VOLATILES (ppm)	EPA LIMIT	Detection Limit	Sample Result H2071-26	Method Blank	QC	%IA	True Value QC
Vinyl chloride	0.20	0.001	<0.001	<0.001	97.0	97	100
1,1-Dichloroethylene	0.70	0.001	<0.001	<0.001	97.4	97	100
Methyl ethyl ketone	200.00	0.001	<0.001	<0.001	98.1	98	100
Chloroform	6.00	0.001	<0.001	<0.001	101.1	101	100
1,2-Dichloroethane	0.50	0.001	<0.001	<0.001	104.2	104	100
Benzene	0.50	0.001	<0.001	<0.001	103.1	103	100
Carbon tetrachloride	0.50	0.001	<0.001	<0.001	95.9	96	100
Trichloroethylene	0.50	0.001	<0.001	<0.001	76.1	76	100
Tetrachloroethylene	0.70	0.001	<0.001	<0.001	99.8	100	100
Chlorobenzene	100.00	0.001	<0.001	<0.001	110.0	110	100
1,4-Dichlorobenzene	7.50	0.001	<0.001	<0.001	111.3	111	100

	% Recovery	Relative Percent Difference
Dibromofluoromethane	113	15
Toluene - d8	115	16
Bromofluorobenzene	92	1

METHODS: EPA SW-846-8260, 1311

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

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Dr. II Cuttings Pile

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: COMPOSITE - 1
Lab Number: H2071-26

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: BC

TCLP SEMIVOLATILES (ppm)	EPA LIMIT	Detection Limit	Sample Result H2071-26	Method Blank	QC	%IA	True Value QC
Pyridine	5.00	0.002	<0.040	<0.002	105.9	106	100
1,4-Dichlorobenzene	7.50	0.002	<0.040	<0.002	96.7	97	100
o-Cresol	200	0.002	<0.040	<0.002	110.0	110	100
m, p-Cresol	200	0.004	<0.080	<0.002	166.1	83	200
Hexachloroethane	3.00	0.002	<0.040	<0.002	102.0	102	100
Nitrobenzene	2.00	0.002	<0.040	<0.002	107.1	107	100
Hexachloro-1,3-butadiene	0.500	0.002	<0.040	<0.002	91.2	91	100
2,4,6-Trichlorophenol	2.00	0.002	<0.040	<0.002	100.0	100	100
2,4,5-Trichlorophenol	400	0.002	<0.040	<0.002	95.9	96	100
2,4-Dinitrotoluene	0.130	0.002	<0.040	<0.002	95.9	96	100
Hexachlorobenzene	0.130	0.002	<0.040	<0.002	93.8	94	100
Pentachlorophenol	100	0.002	<0.040	<0.002	95.1	95	100

	% RECOVERY	RELATIVE PERCENT DIFFERENCE
Fluorophenol	29	10
Phenol-d5	20	14
Nitrobenzene-d5	85	20
2-Fluorobiphenyl	89	16
2,4,6-Tribromophenol	69	11
Terphenyl-d14	85	18

METHODS: EPA SW 846-8270

Burgess J. A. Cooke, Ph. D.

6/26/95
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

Drill Cuttings Pit

Receiving Date: 06/12/95
Reporting Date: 06/27/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN

Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: JH

TCLP METALS

LAB NUMBER SAMPLE ID	As ppm	Ag ppm	Ba ppm	Cd ppm	Cr ppm	Pb ppm	Se ppm	Hg ppm
ANALYSIS DATE:	06/27/95	06/27/95	06/27/95	06/27/95	06/27/95	06/27/95	06/27/95	06/27/95
EPA LIMITS:	5	5	100	1	5.0	5.0	0.2	1.0
H2071-26 COMPOSITE - 1	0.3	<0.1	0.58	<0.1	<0.1	<0.1	<0.1	0.0014
Quality Control	5.15	0.487	0.515	0.521	0.508	0.465	0.516	0.0009
True Value QC	5.00	0.500	0.500	0.500	0.500	0.500	0.500	0.0010
% Accuracy	103	97	103	104	102	93	103	85
Relative Percent Difference	0.7	0	9.3	10	9.8	14	0	2.2
METHODS: EPA 600/4-91/010	200.7	200.7	200.7	200.7	200.7	200.7	200.7	245.1

Jane Huang, Chemist

6-27-95
Date

CARDINAL LABORATORIES

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Excavated Soil Pile

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: COMPOSITE - 2
Lab Number: H2071-27

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: MG

TCLP VOLATILES (ppm)	EPA LIMIT	Detection Limit	Sample Result H2071-27	Method Blank	QC	%IA	True Value QC
Vinyl chloride	0.20	0.001	<0.001	<0.001	97.0	97	100
1,1-Dichloroethylene	0.70	0.001	<0.001	<0.001	97.4	97	100
Methyl ethyl ketone	200.00	0.001	<0.001	<0.001	98.1	98	100
Chloroform	6.00	0.001	<0.001	<0.001	101.1	101	100
1,2-Dichloroethane	0.50	0.001	<0.001	<0.001	104.2	104	100
Benzene	0.50	0.001	<0.001	<0.001	103.1	103	100
Carbon tetrachloride	0.50	0.001	<0.001	<0.001	95.9	96	100
Trichloroethylene	0.50	0.001	<0.001	<0.001	76.1	76	100
Tetrachloroethylene	0.70	0.001	0.002	<0.001	99.8	100	100
Chlorobenzene	100.00	0.001	<0.001	<0.001	110.0	110	100
1,4-Dichlorobenzene	7.50	0.001	<0.001	<0.001	111.3	111	100

	% Recovery	Relative Percent Difference
Dibromofluoromethane	113	15
Toluene - d8	115	16
Bromofluorobenzene	92	1

METHODS: EPA SW-846-8260, 1311

Manuel Garbalena, Chemist

6/26/95
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240
PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

Excavated Soil Pile

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

Receiving Date: 06/12/95
Reporting Date: 06/26/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN
Sample ID: COMPOSITE - 2
Lab Number: H2071-27

Analysis Date: 06/26/95
Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: BC

TCLP SEMIVOLATILES (ppm)	EPA LIMIT	Detection Limit	Sample Result H2071-27	Method Blank	QC	%IA	True Value QC
Pyridine	5.00	0.002	<0.040	<0.002	105.9	106	100
1,4-Dichlorobenzene	7.50	0.002	<0.040	<0.002	96.7	97	100
o-Cresol	200	0.002	<0.040	<0.002	110.0	110	100
m, p-Cresol	200	0.004	<0.080	<0.002	166.1	83	200
Hexachloroethane	3.00	0.002	<0.040	<0.002	102.0	102	100
Nitrobenzene	2.00	0.002	<0.040	<0.002	107.1	107	100
Hexachloro-1,3-butadiene	0.500	0.002	<0.040	<0.002	91.2	91	100
2,4,6-Trichlorophenol	2.00	0.002	<0.040	<0.002	100.0	100	100
2,4,5-Trichlorophenol	400	0.002	<0.040	<0.002	95.9	96	100
2,4-Dinitrotoluene	0.130	0.002	<0.040	<0.002	95.9	96	100
Hexachlorobenzene	0.130	0.002	<0.040	<0.002	93.8	94	100
Pentachlorophenol	100	0.002	<0.040	<0.002	95.1	95	100

	% RECOVERY	RELATIVE PERCENT DIFFERENCE
Fluorophenol	36	10
Phenol-d5	24	14
Nitrobenzene-d5	99	20
2-Fluorobiphenyl	105	16
2,4,6-Tribromophenol	93	11
Terphenyl-d14	96	18

METHODS: EPA SW 846-8270

Burgess J. A. Cooke, Ph. D.

6/26/95
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240
PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

Executed Soil Pile

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
PO BOX 4128
LARAMIE, WY 82070

Receiving Date: 06/12/95
Reporting Date: 06/27/95
Project Number: 95-007L-95.1
Project Name: NONE GIVEN
Project Location: NONE GIVEN

Sampling Date: 06/13/95
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ECS
Analyzed By: JH

TCLP METALS

LAB NUMBER SAMPLE ID	As ppm	Ag ppm	Ba ppm	Cd ppm	Cr ppm	Pb ppm	Se ppm	Hg ppm
ANALYSIS DATE:	06/27/95	06/27/95	06/27/95	06/27/95	06/27/95	06/27/95	06/27/95	06/27/95
EPA LIMITS:	5	5	100	1	5.0	5.0	0.2	1.0
H2071-27 COMPOSITE - 2	0.1	<0.1	0.71	<0.1	<0.1	<0.1	<0.1	0.0004
Quality Control	5.15	0.487	0.515	0.521	0.508	0.465	0.516	0.0009
True Value QC	5.00	0.500	0.500	0.500	0.500	0.500	0.500	0.0010
% Accuracy	103	97	103	104	102	93	103	85
Relative Percent Difference	0.7	0	9.3	10	9.8	14	0	2.2
METHODS: EPA 600/4-91/010	200.7	200.7	200.7	200.7	200.7	200.7	200.7	245.1

Jane Huang, Chemist

6-27-95
Date

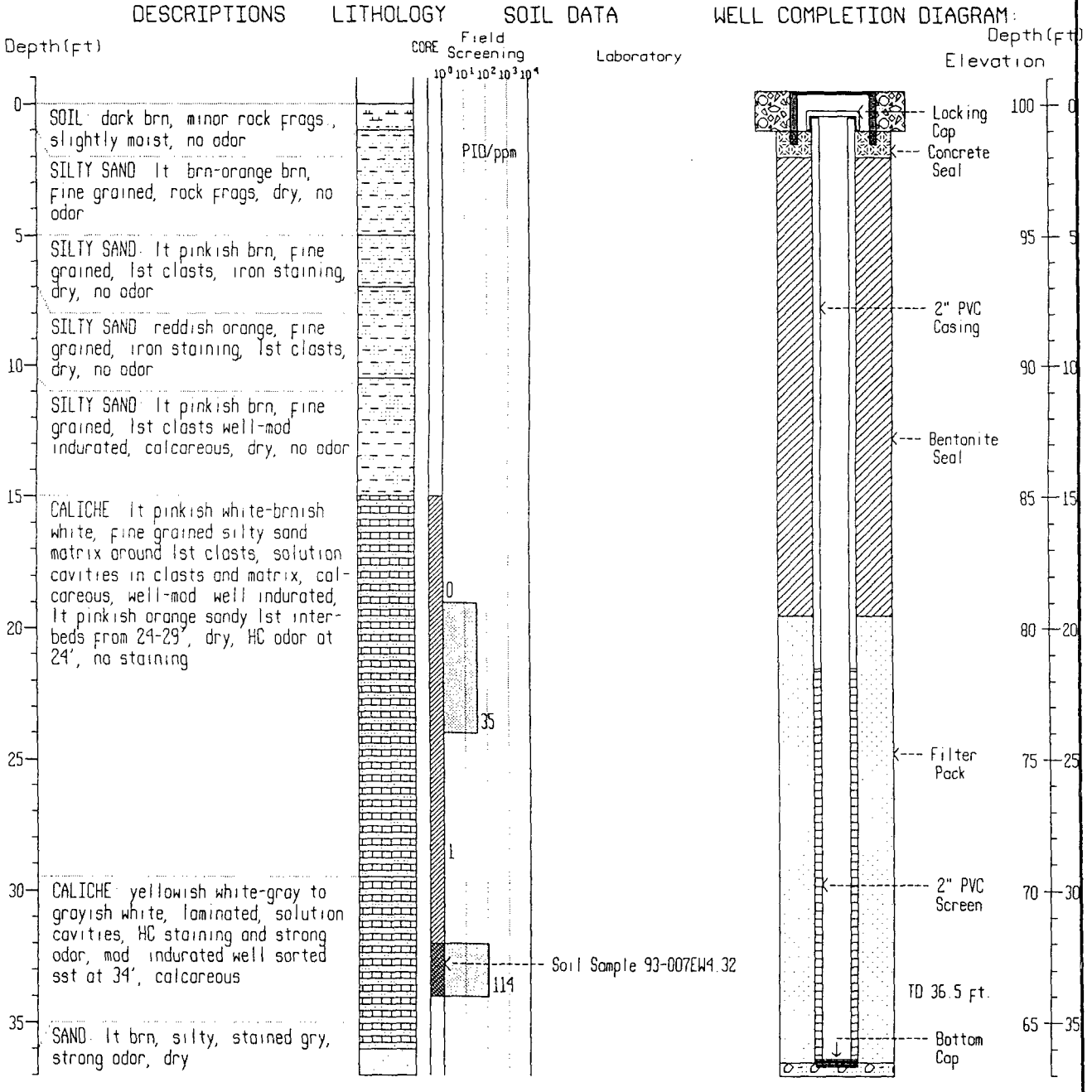
APPENDIX B

Well Logs

SOIL VAPOR EXTRACTION WELL EW-4

LOCATION: Dowell Schlumberger facility, Hobbs, NM
2' S & 11' W of NW corner of concrete tank revetment
LOG: Western Water Consultants Inc (Kevin Mattson)
DRILLER: Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE: June 13, 1995

WELL OWNER: Dowell (JN 93-007)
DRILLING METHOD: Midway 1250 air rotary, 5 in. OD
CASING: 2 in Dia. Flush Joint Sch 40 PVC
SCREEN: Factory Slotted Casing; 0.020 in
FILTER PACK: 12/20 Mesh Silica Sand

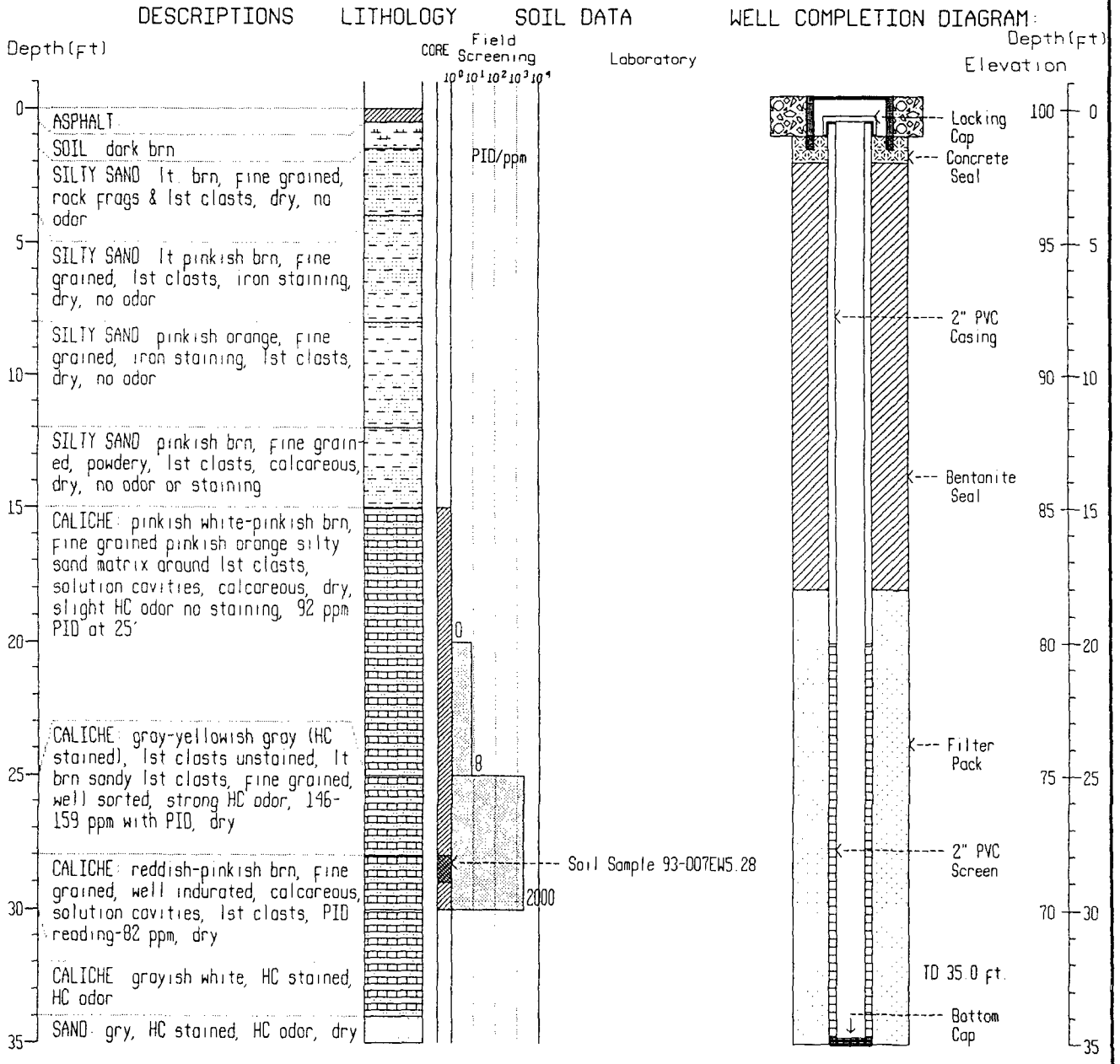


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-5

LOCATION: Dowell Schlumberger facility, Hobbs, NM
36' E & 20.0' S of SE corner of concrete tank revetment
LOG: Western Water Consultants Inc. (Kevin Mattson)
DRILLER: Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE: June 13, 1995

WELL OWNER: Dowell (JN 93-007)
DRILLING METHOD: Midway 1250 air rotary, 5 in OD
CASING: 2 in. Dia. Flush Joint Sch. 40 PVC
SCREEN: Factory Slotted Casing; 0.020 in.
FILTER PACK: 12/20 Mesh Silica Sand

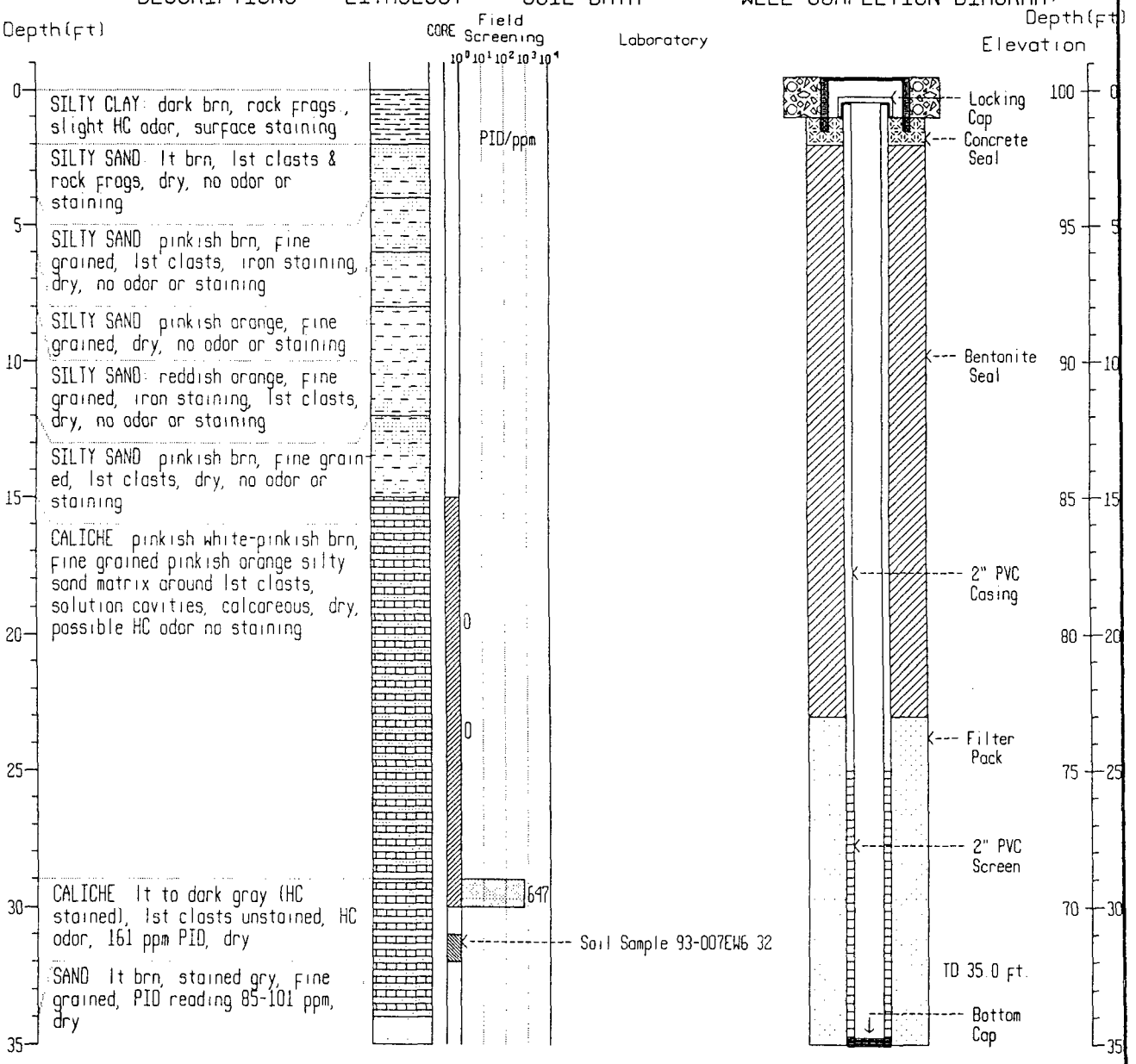


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-6

LOCATION Dowell Schlumberger facility, Hobbs, NM
64' S & 10 0' W of SW corner of concrete tank revetment
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 13, 1995

WELL OWNER Dowell (JN 93-007)
DRILLING METHOD Midway 1250 air rotary, 5 in OD
CASING 2 in Dia Flush Joint Sch. 40 PVC
SCREEN Factory Slotted Casing, 0.020 in.
FILTER PACK 12/20 Mesh Silica Sand

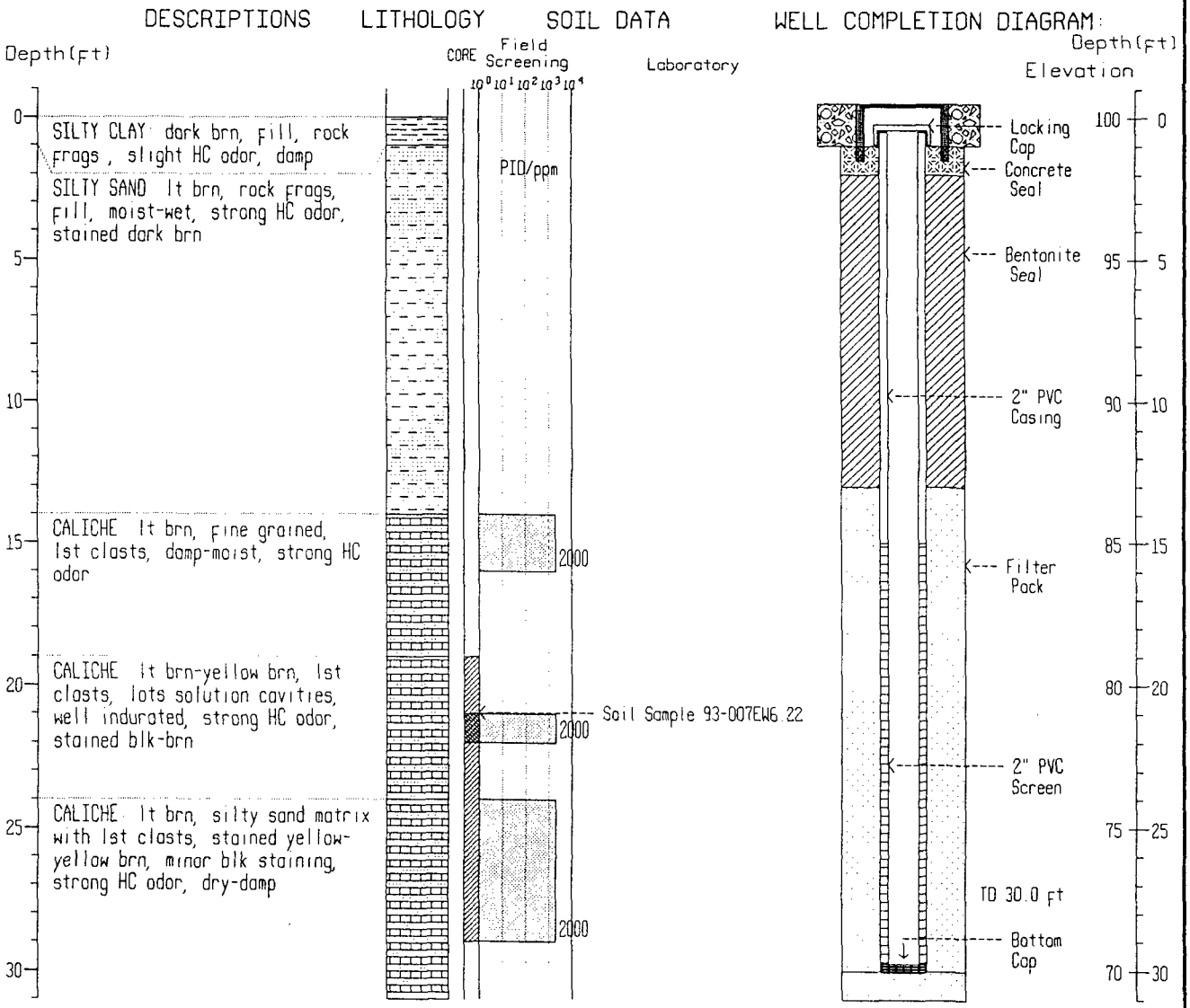


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-7

LOCATION: Dowell Schlumberger facility, Hobbs, NM
23' S & 36.0' W of SW corner of concrete tank revetment
LOG: Western Water Consultants Inc (Kevin Mattson)
DRILLER: Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE: June 13, 1995

WELL OWNER: Dowell (JN 93-007)
DRILLING METHOD: Midway 1250 air rotary, 5 in OD
CASING: 2 in Dia Flush Joint Sch 40 PVC
SCREEN: Factory Slotted Casing; 0.020 in.
FILTER PACK: 12/20 Mesh Silica Sand

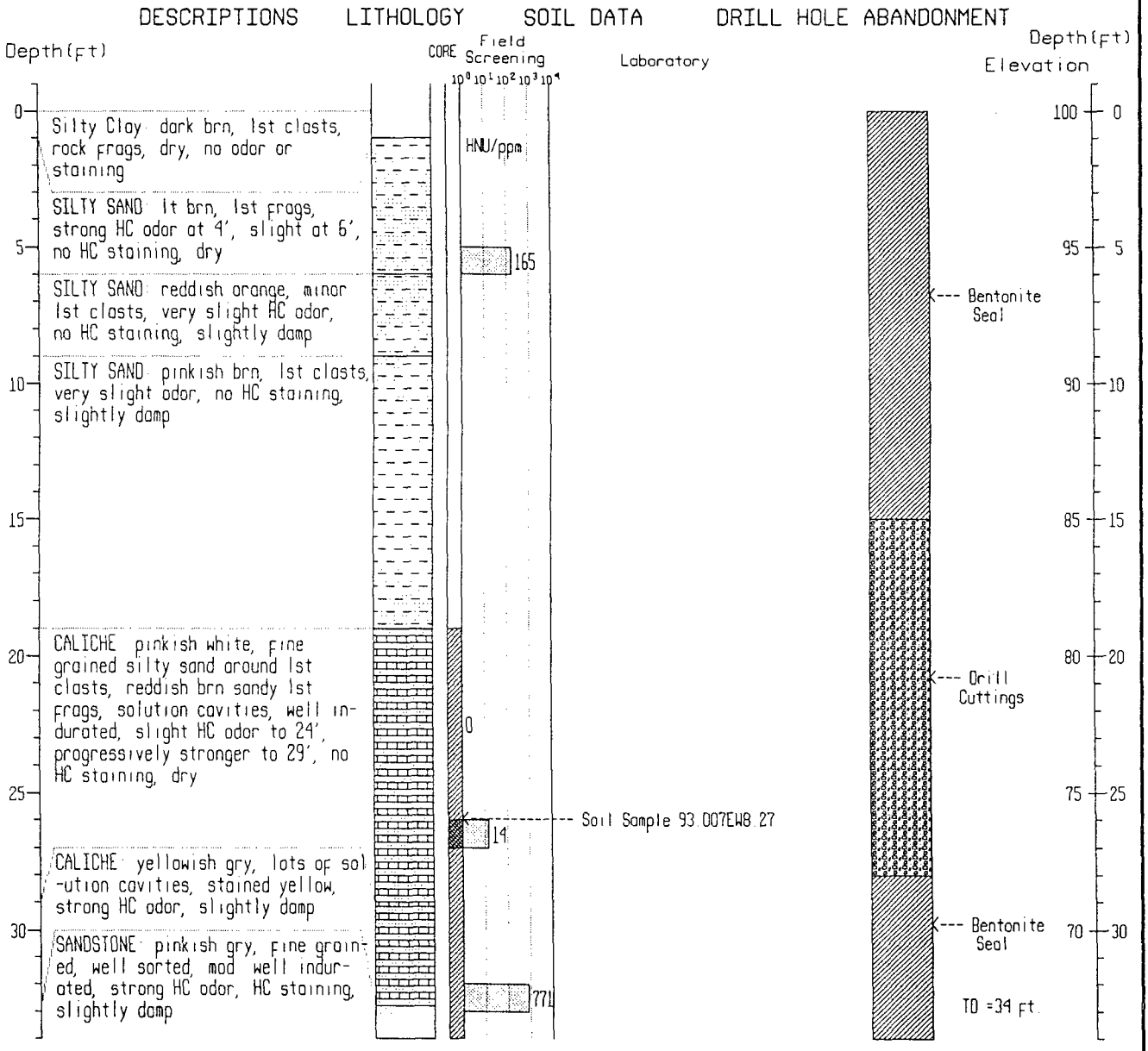


Western Water Consultants, Inc.

SOIL BORING 93007 SB-8

LOCATION Dowell Schlumberger facility, Hobbs, NM
86' W, 23' S of SW corner of concrete tank revetment
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 14, 1995

OWNER Dowell (JN 93007)
DRILLING METHOD Midway 1250, air rotary, 5 in OD
(Reference Datum Arbitrary = 100.00 feet)

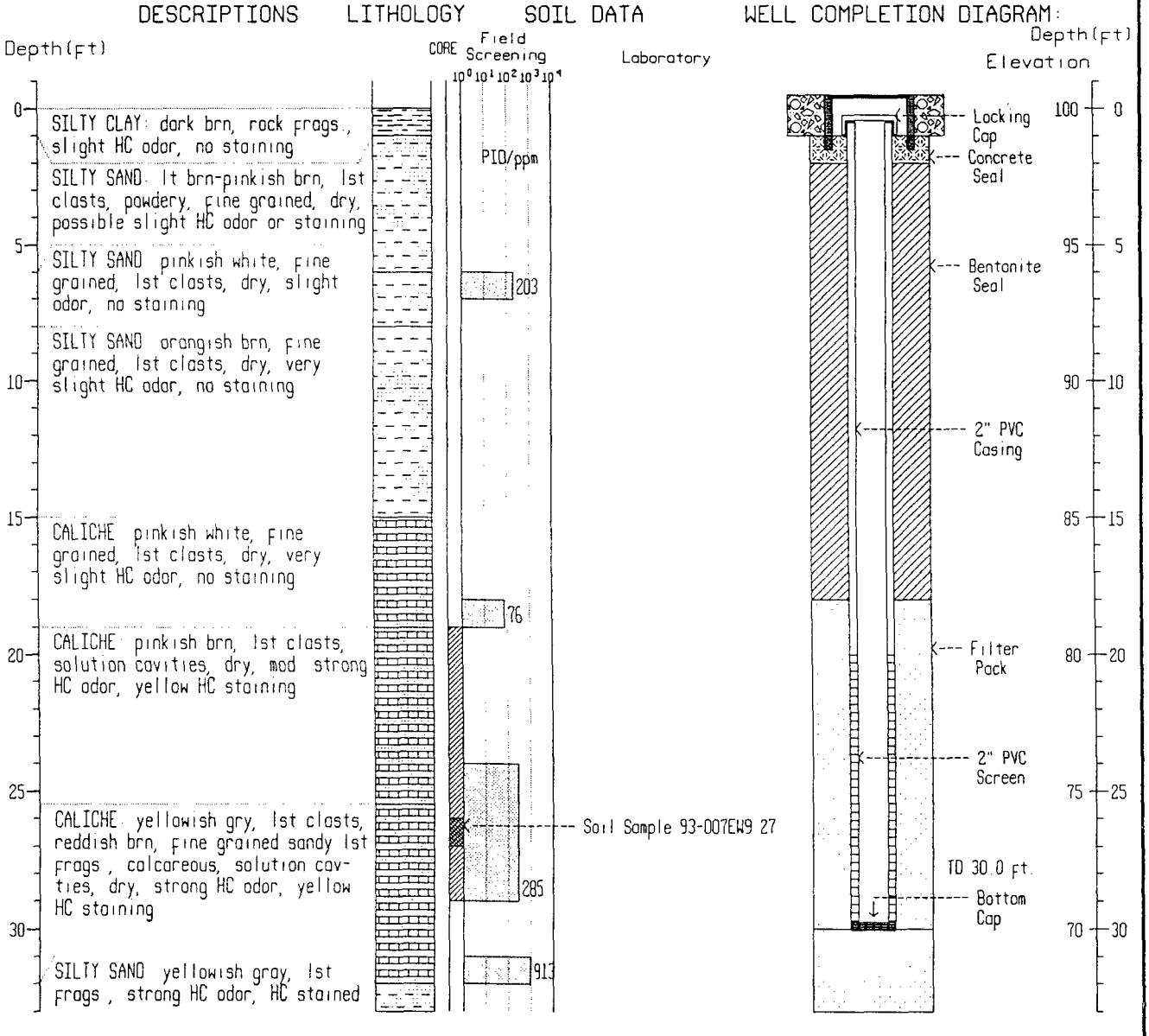


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-9

LOCATION Dowell Schlumberger facility, Hobbs, NM
2' S & 61' W of NW corner of concrete tank revetment
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 14, 1995

WELL OWNER Dowell (JN 93-007)
DRILLING METHOD Midway 1250 air rotary, 5 in OD
CASING 2 in Dia Flush Joint Sch. 40 PVC
SCREEN Factory Slotted Casing, 0.020 in
FILTER PACK 12/20 Mesh Silica Sand

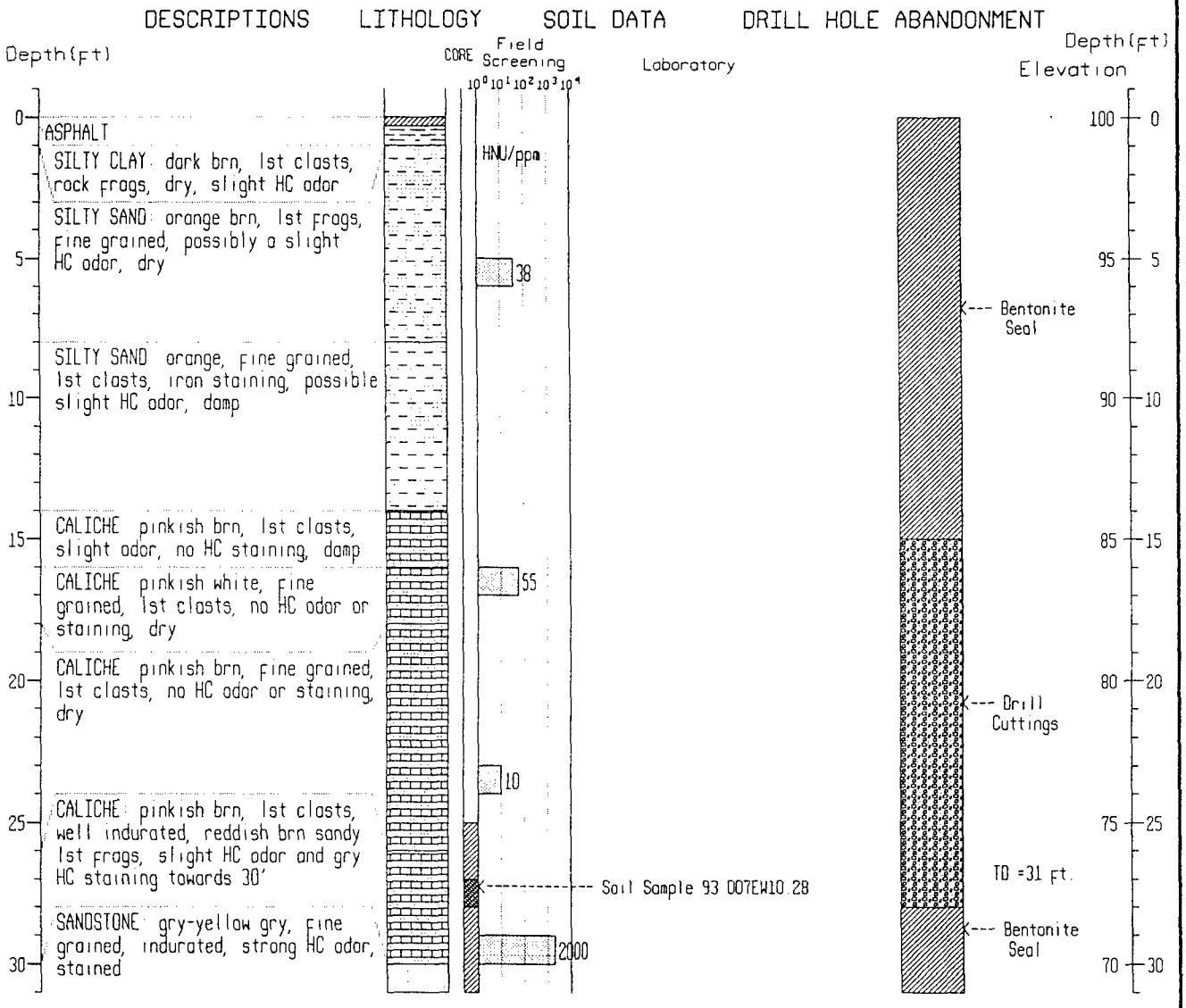


Western Water Consultants, Inc.

SOIL BORING 93007 SB-10

LOCATION Dowell Schlumberger facility, Hobbs, NM
11' E, 68' S of SE corner of concrete tank revetment
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 14, 1995

OWNER Dowell (JN 93007)
DRILLING METHOD Midway 1250, air rotary, 5 in OD
(Reference Datum Arbitrary = 100.00 feet)

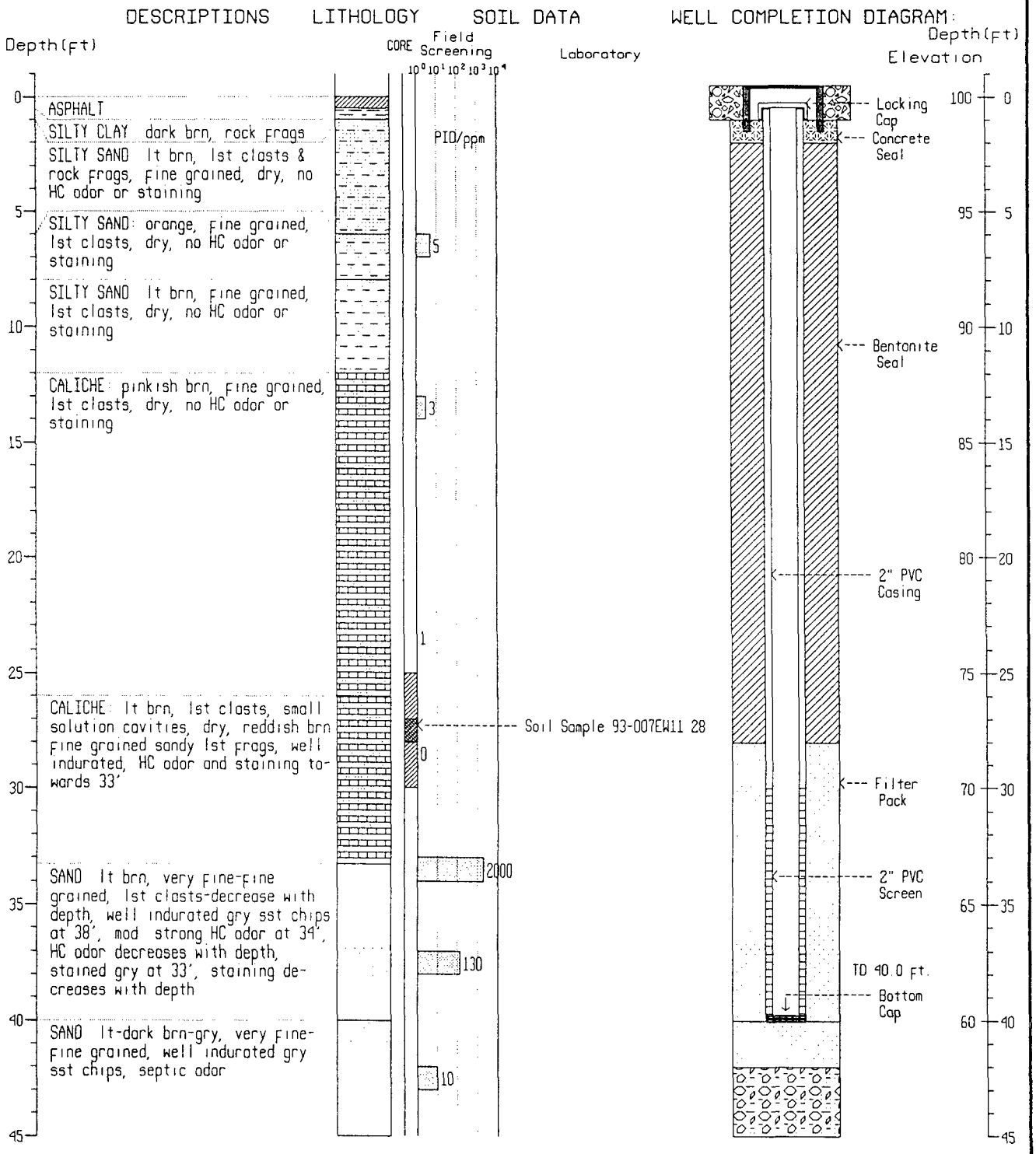


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-11

LOCATION: Dowell Schlumberger facility, Hobbs, NM
1' S & 13' E of NE corner of concrete tank revetment
LOG: Western Water Consultants Inc (Kevin Mattson)
DRILLER: Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE: June 14, 1995

WELL OWNER: Dowell (JN 93-007)
DRILLING METHOD: Midway 1250 air rotary, 5 in. OD
CASING: 2 in. Dia. Flush Joint Sch. 40 PVC
SCREEN: Factory Slotted Casing; 0.020 in.
FILTER PACK: 12/20 Mesh Silica Sand

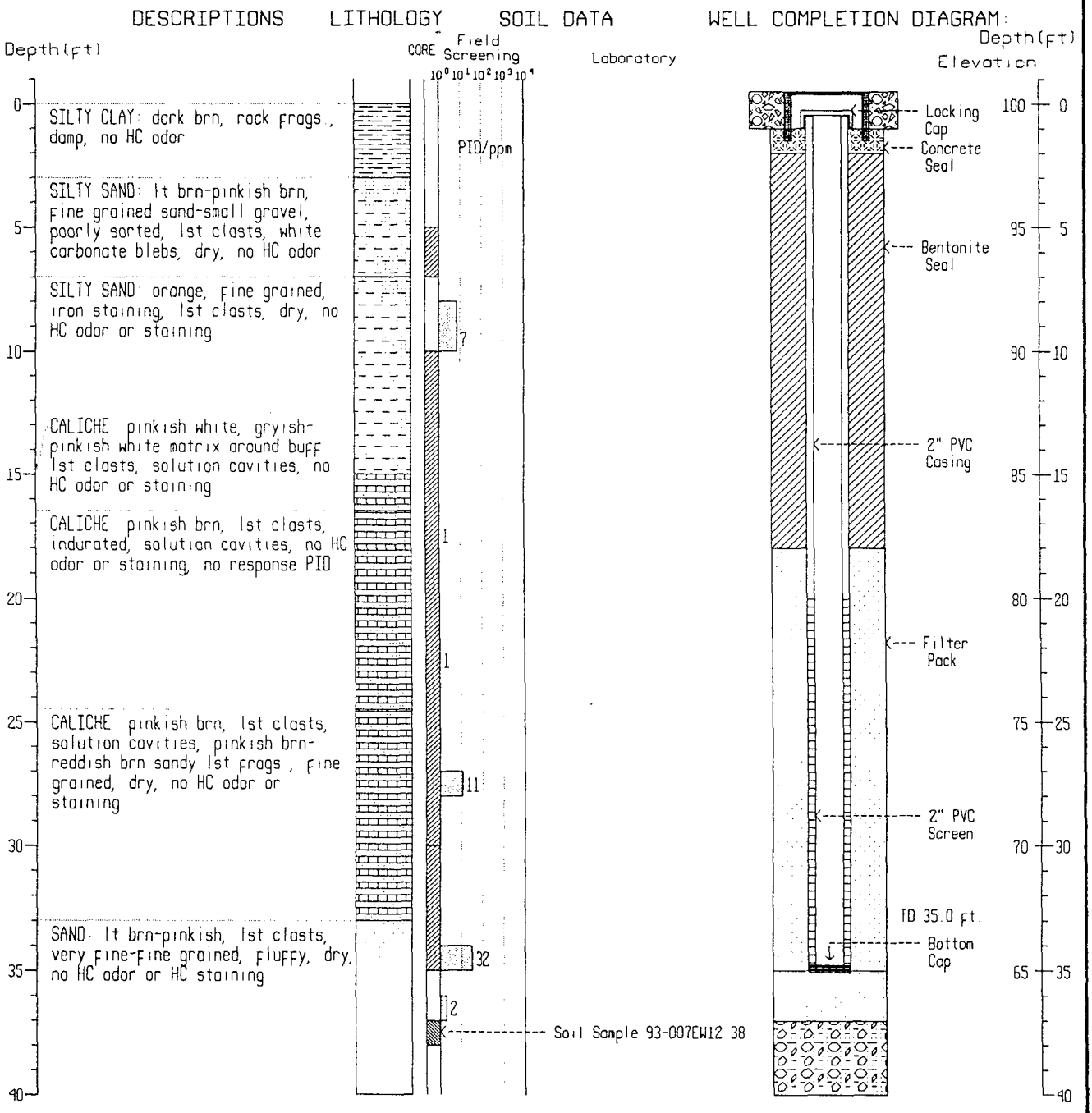


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-12

LOCATION Dowell Schlumberger facility, Hobbs, NM
23' S & 9' W of NW corner of maintenance shop
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 14, 1995

WELL OWNER Dowell (JN 93-007)
DRILLING METHOD Midway 1250 air rotary, 5 in. OD
CASING 2 in. Dia Flush Joint Sch. 40 PVC
SCREEN Factory Slotted Casing, 0.020 in
FILTER PACK 12/20 Mesh Silica Sand

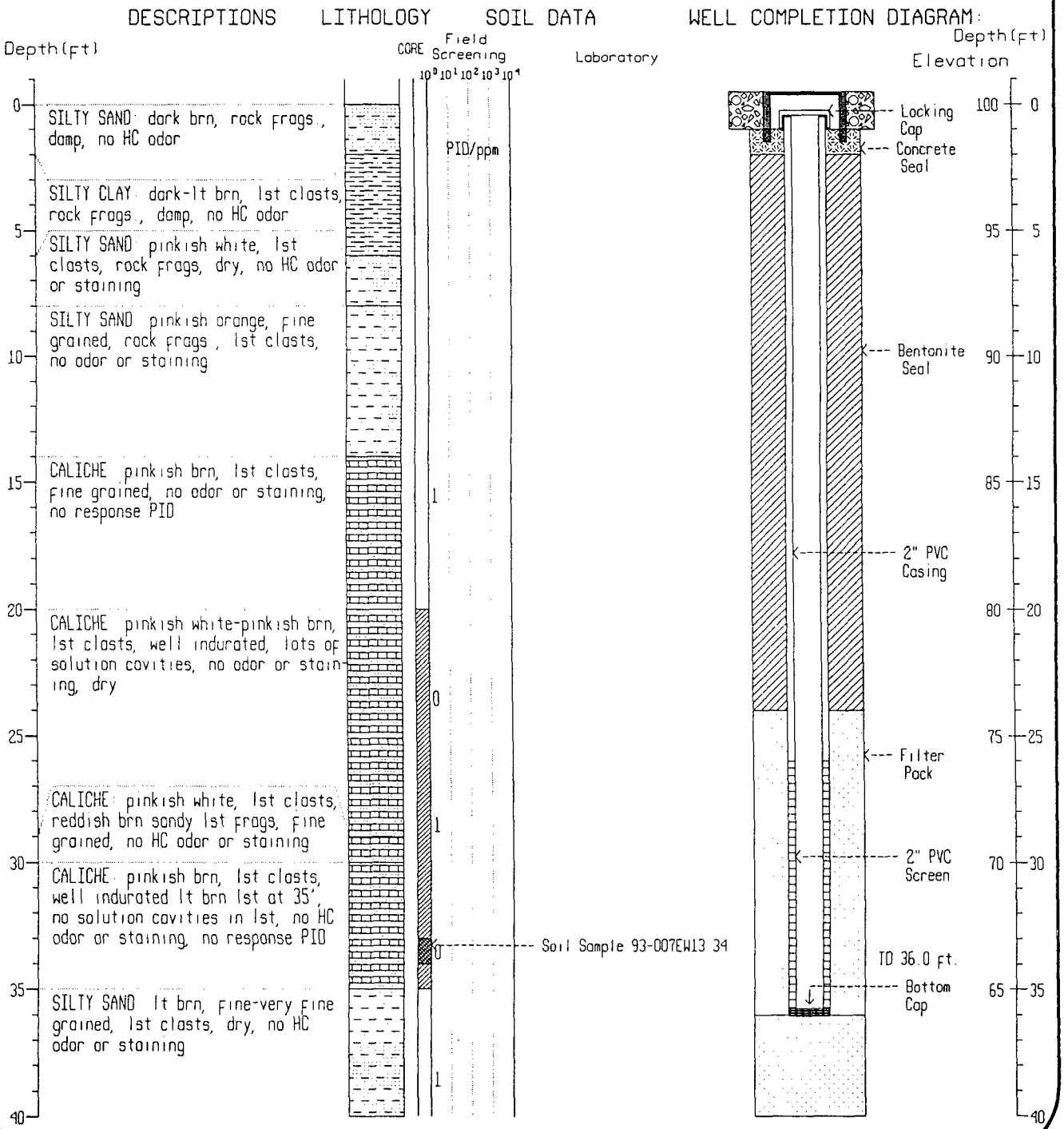


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-13

LOCATION: Dowell Schlumberger facility, Hobbs, NM
4' N & 45.5' W of NW corner of maintenance shop
LOG: Western Water Consultants Inc. (Kevin Mattson)
DRILLER: Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE: June 14, 1995

WELL OWNER: Dowell (JN 93-007)
DRILLING METHOD: Midway 1250 air rotary, 5 in. OD
CASING: 2 in. Dia. Flush Joint Sch. 40 PVC
SCREEN: Factory Slotted Casing, 0.020 in.
FILTER PACK: 12/20 Mesh Silica Sand

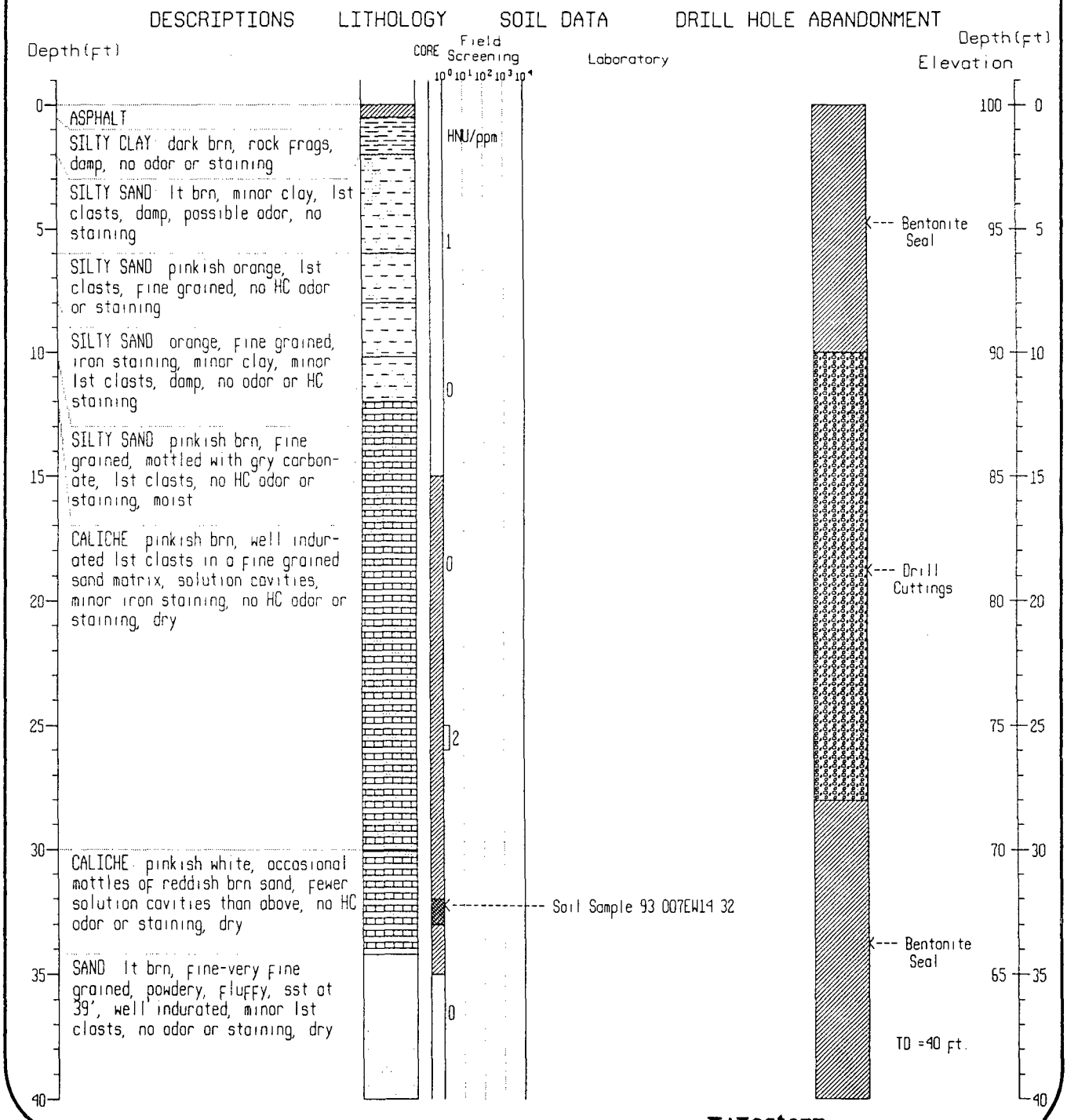


Western Water Consultants, Inc.

SOIL BORING 93007 SB-14

LOCATION Dowell Schlumberger facility, Hobbs, NM
12' S, 18' W of SE corner of main office
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 14, 1995

OWNER Dowell (JN 93007)
DRILLING METHOD Midway 1250, air rotary, 5 in OD

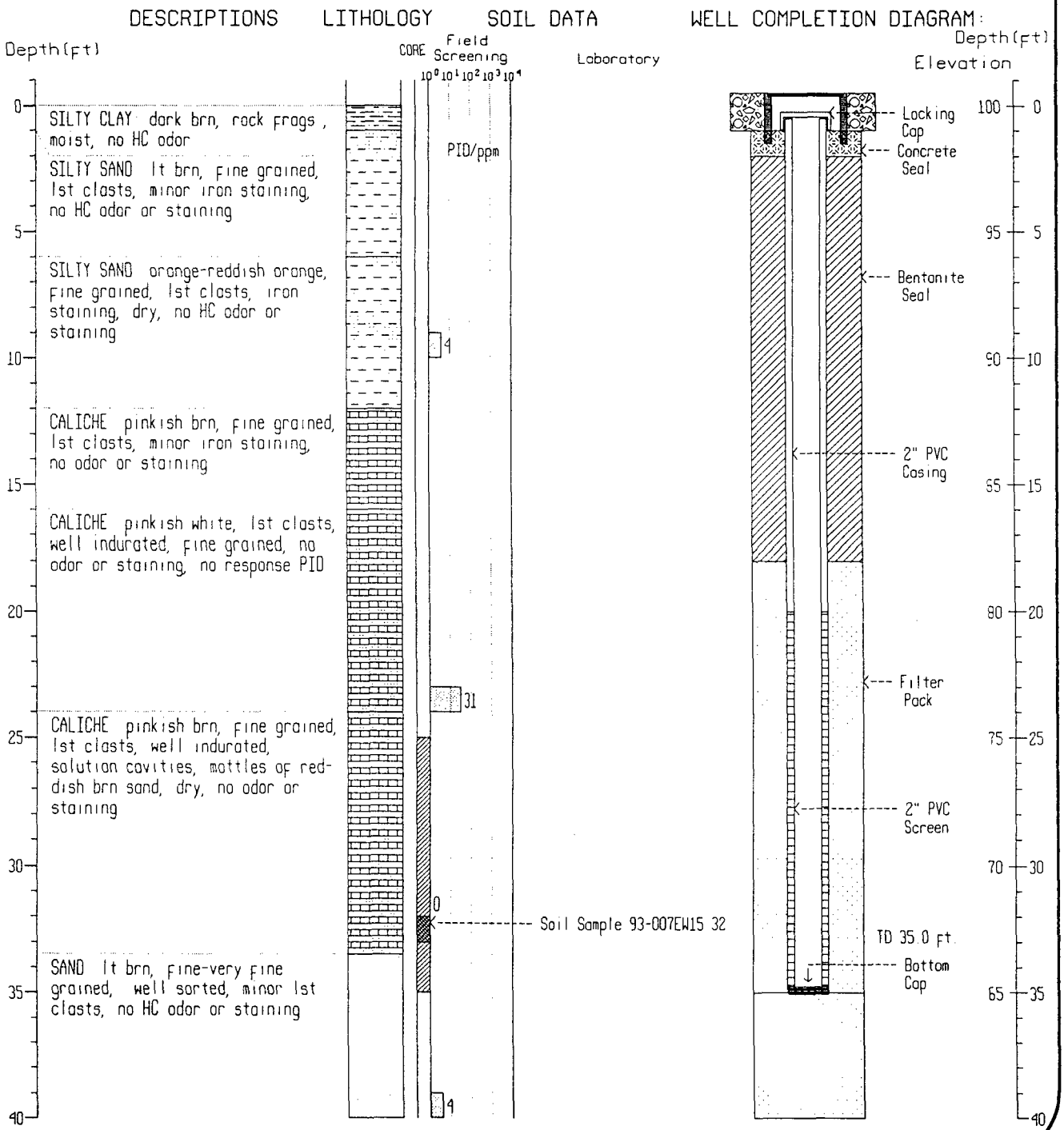


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-15

LOCATION Dowell Schlumberger facility, Hobbs, NM
6' N & 2' W of NE corner of maintenance shop
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 15, 1995

WELL OWNER Dowell (JN 93-007)
DRILLING METHOD Midway 1250 air rotary, 5 in OD
CASING 2 in Dia Flush Joint Sch 40 PVC
SCREEN Factory Slotted Casing, 0.020 in.
FILTER PACK 12/20 Mesh Silica Sand

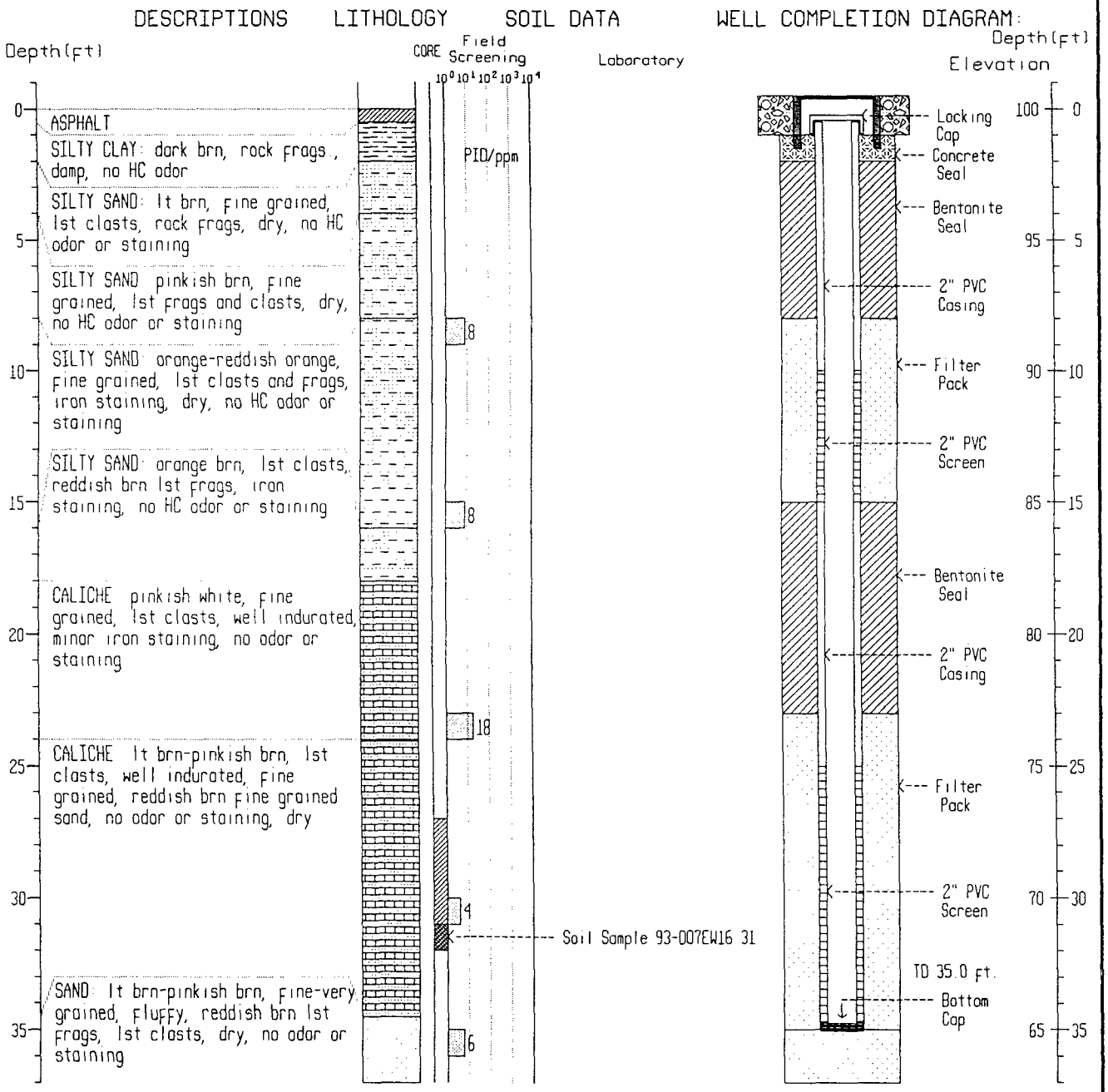


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-16

LOCATION Dowell Schlumberger facility, Hobbs, NM
51 5' S & 49' W of NW corner of maintenance shop
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 15, 1995

WELL OWNER Dowell (JN 93-007)
DRILLING METHOD Midway 1250 air rotary, 5 in OD
CASING 2 in Dia Flush Joint Sch 40 PVC
SCREEN Factory Slotted Casing, 0 020 in
FILTER PACK 12/20 Mesh Silica Sand

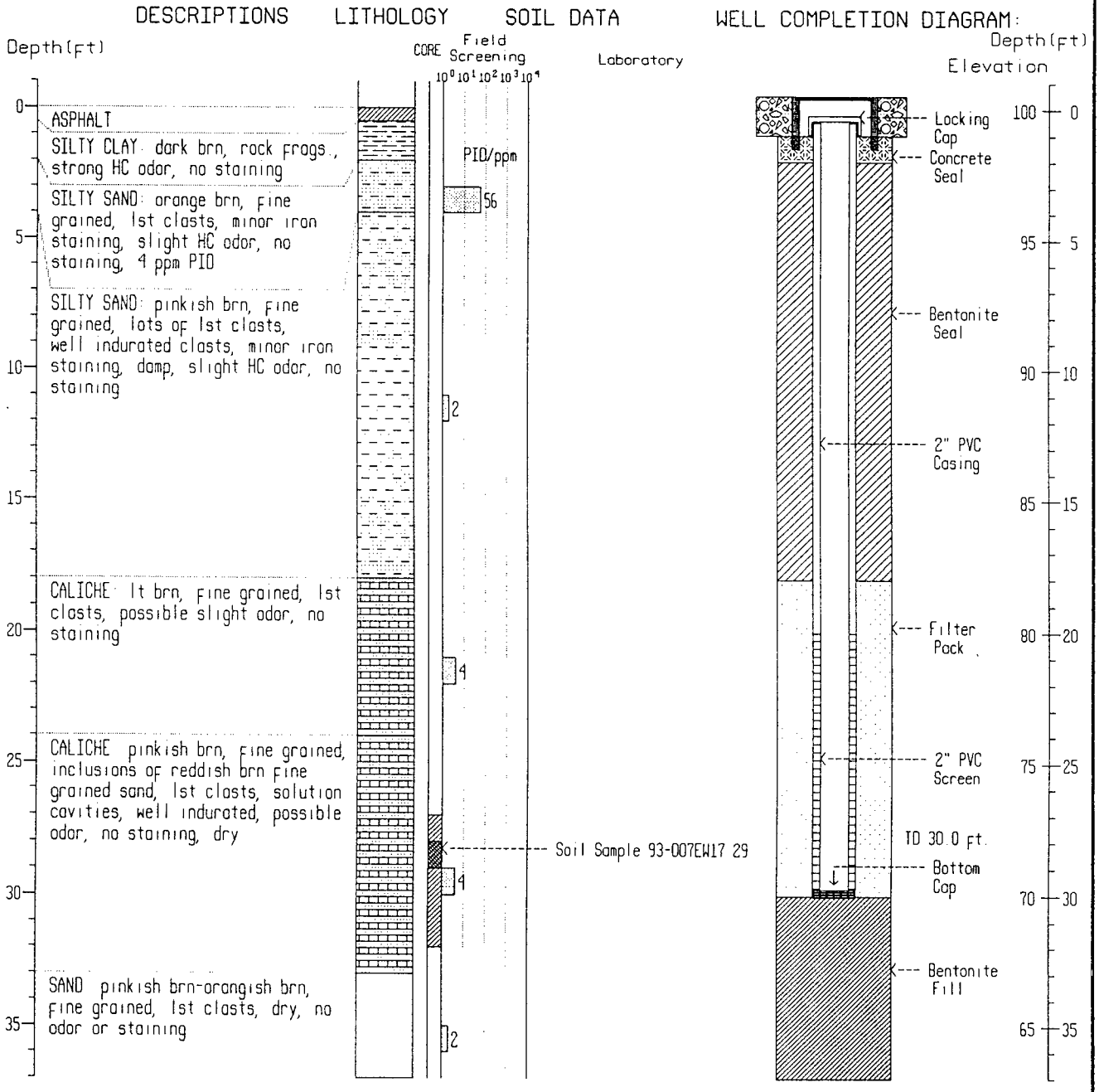


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-17

LOCATION Dowell Schlumberger facility, Hobbs, NM
2.5' W & 9' N of NE corner of acid revetment
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 15, 1995

WELL OWNER Dowell (JN 93-007)
DRILLING METHOD Midway 1250 air rotary, 5 in OD
CASING 2 in Dia Flush Joint Sch 40 PVC
SCREEN Factory Slotted Casing; 0 020 in.
FILTER PACK 12/20 Mesh Silica Sand

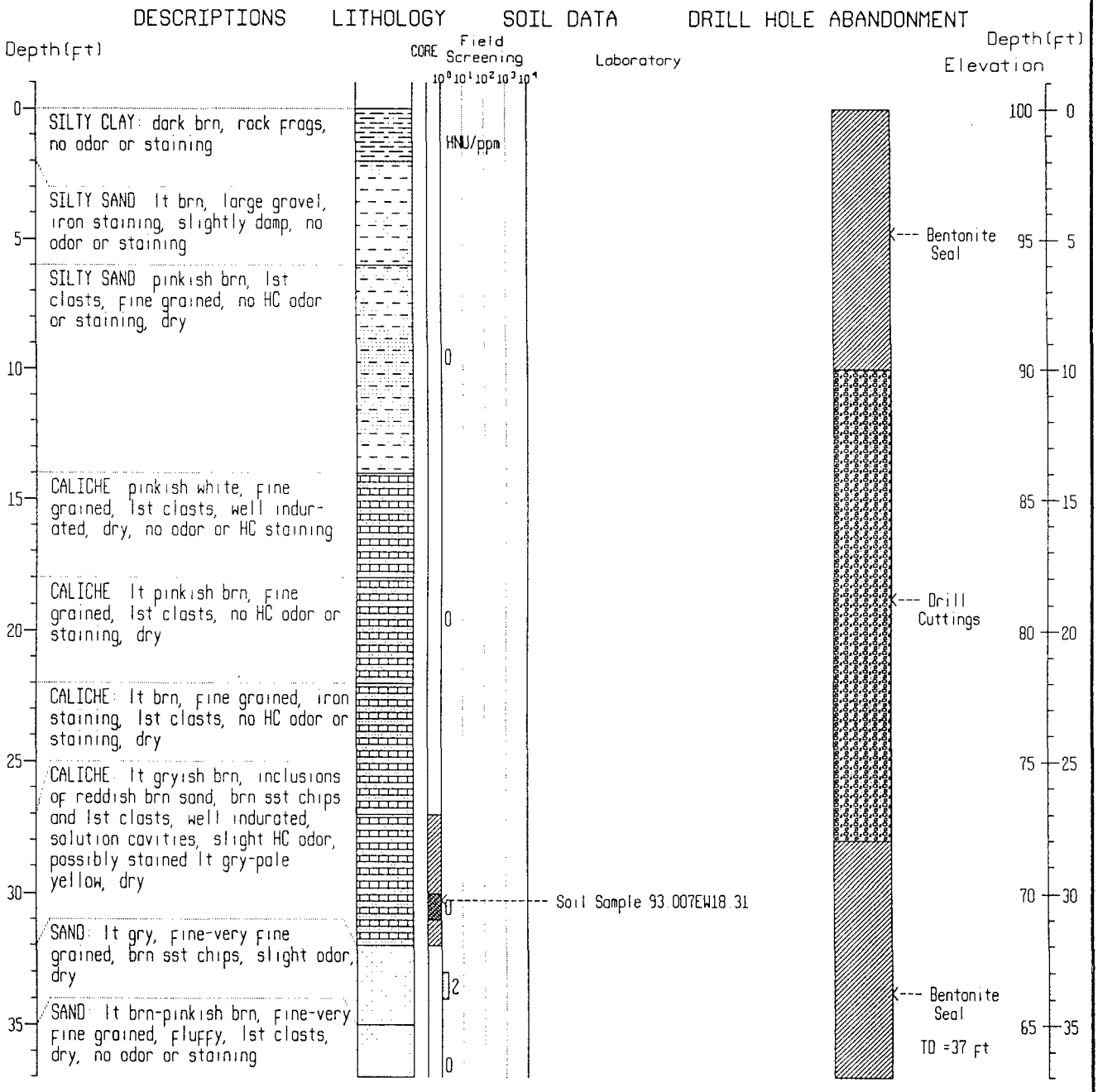


Western Water Consultants, Inc.

SOIL BORING 93007 SB-18

LOCATION Dowell Schlumberger facility, Hobbs, NM
17.5' N, 57' W of EW-3
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 15, 1995

OWNER Dowell (JN 93007)
DRILLING METHOD Midway 1250, air rotary, 5 in OD

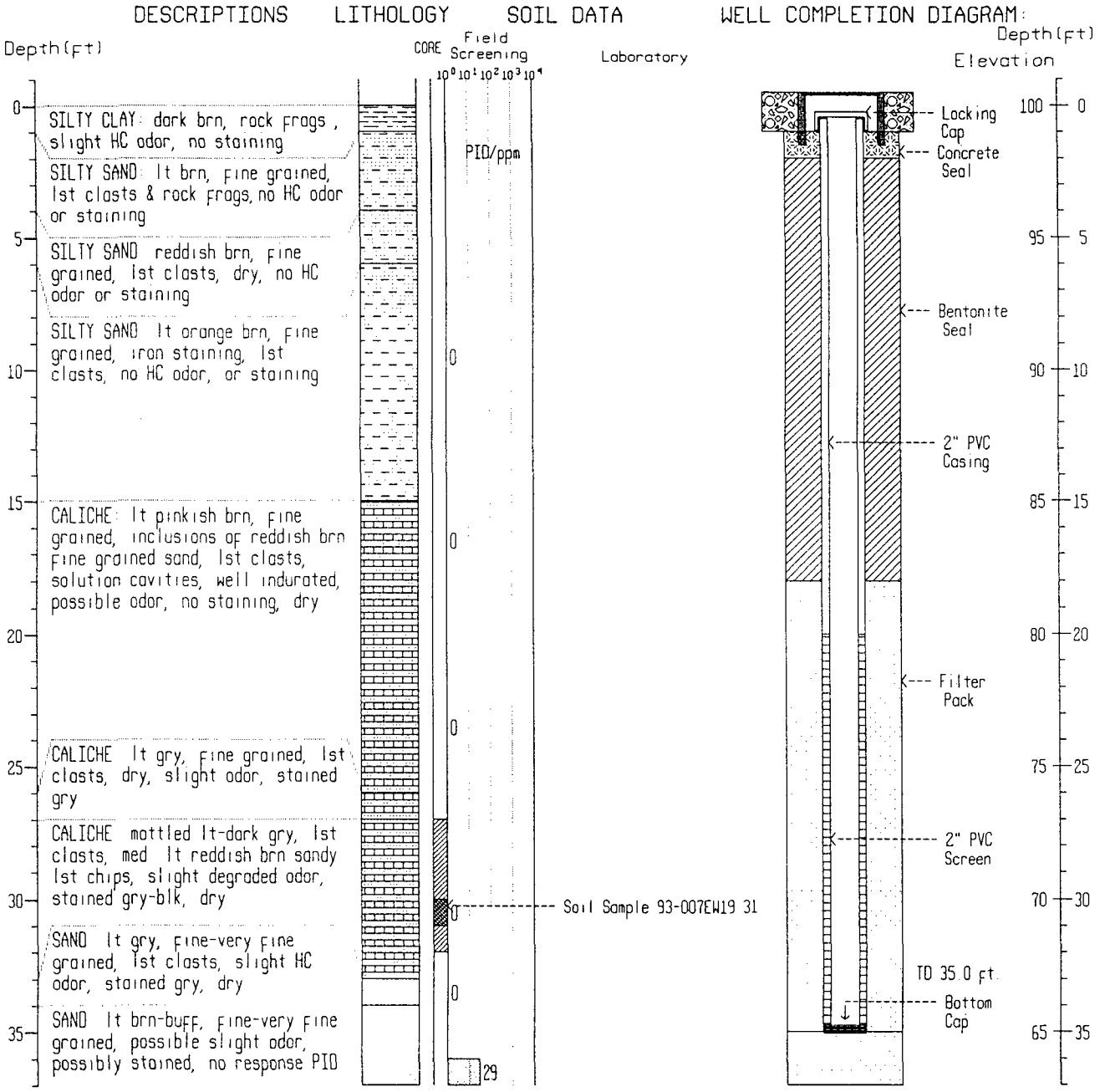


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-19

LOCATION Dowell Schlumberger facility, Hobbs, NM
19' W & 36' N of EW-3
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 15, 1995

WELL OWNER Dowell (JN 93-007)
DRILLING METHOD Midway 1250 air rotary, 5 in OD
CASING 2 in Dia Flush Joint Sch. 40 PVC
SCREEN Factory Slotted Casing; 0.020 in.
FILTER PACK 12/20 Mesh Silica Sand

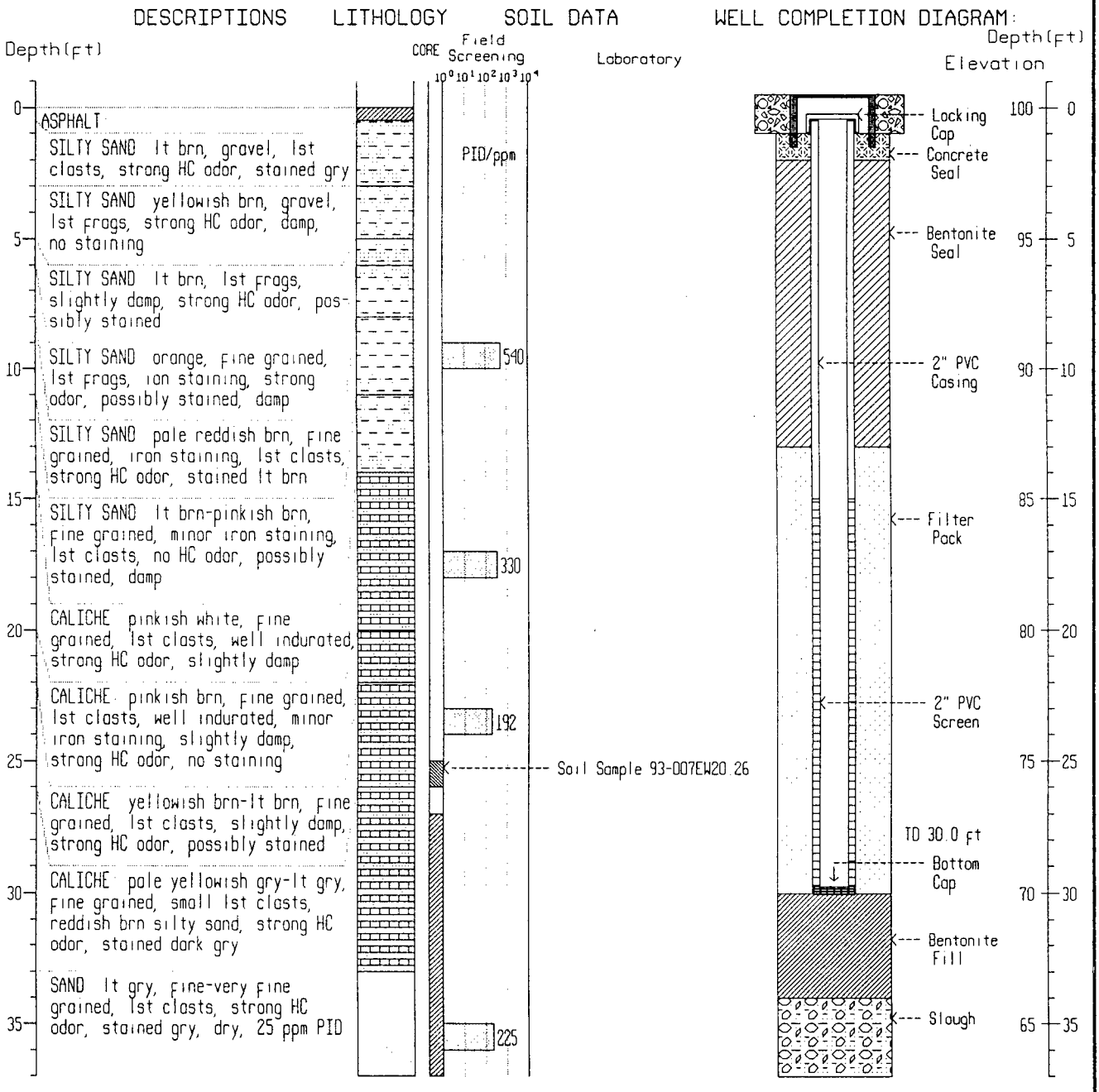


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-20

LOCATION: Dowell Schlumberger facility, Hobbs, NM
2' W & 9.5' N of NE corner of acid revetment
LOG: Western Water Consultants Inc. (Kevin Mattson)
DRILLER: Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE: June 16, 1995

WELL OWNER: Dowell (JN 93-007)
DRILLING METHOD: Midway 1250 air rotary, 5 in. OD
CASING: 2 in. Dia. Flush Joint Sch. 40 PVC
SCREEN: Factory Slotted Casing; 0.020 in.
FILTER PACK: 12/20 Mesh Silica Sand

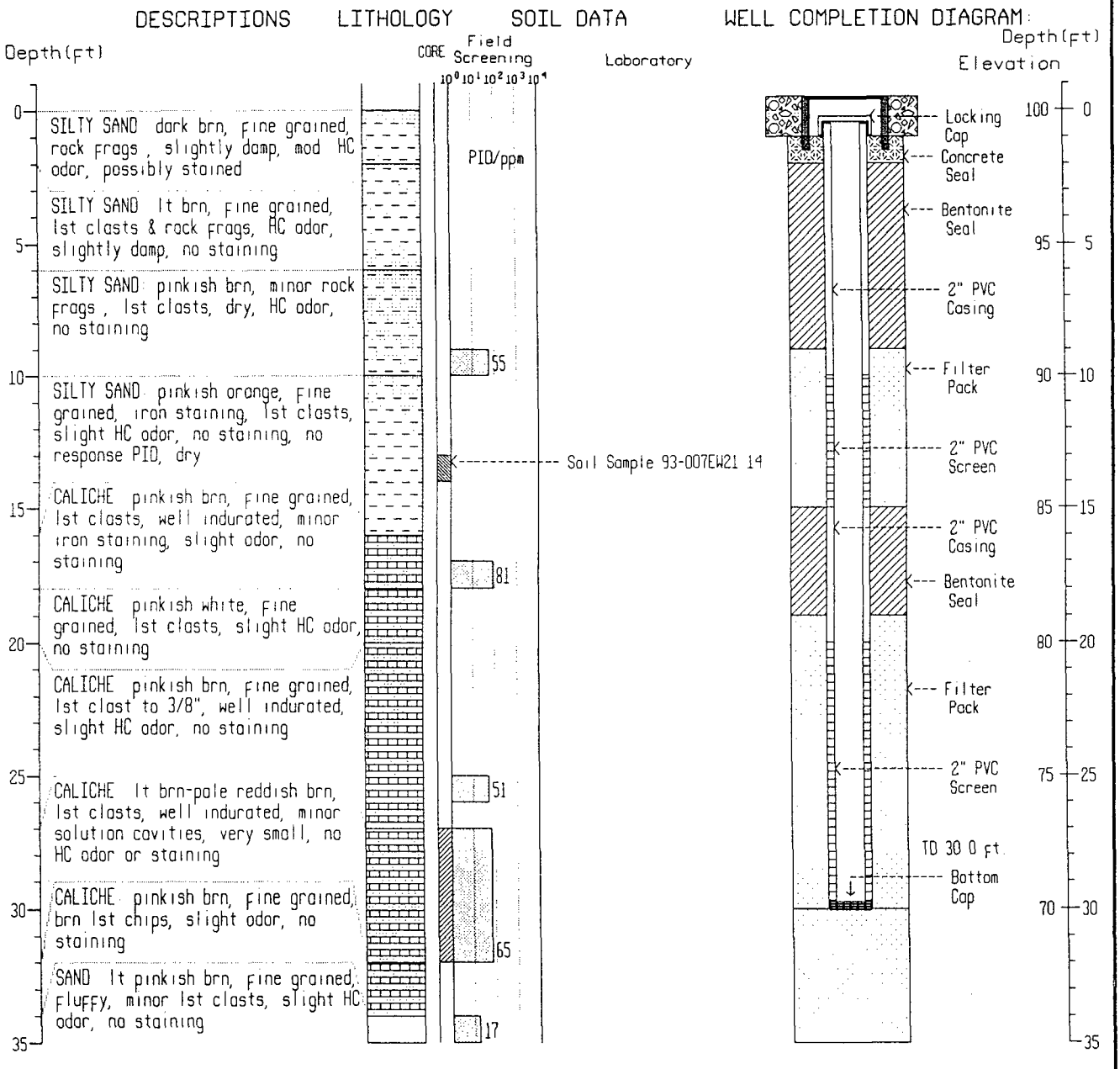


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-21

LOCATION Dowell Schlumberger facility, Hobbs, NM
36' E & 6' S of SW corner of acid revetment
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 15, 1995

WELL OWNER Dowell (JN 93-007)
DRILLING METHOD Midway 1250 air rotary, 5 in OD
CASING 2 in Dia Flush Joint Sch. 40 PVC
SCREEN Factory Slotted Casing; 0.020 in
FILTER PACK 12/20 Mesh Silica Sand

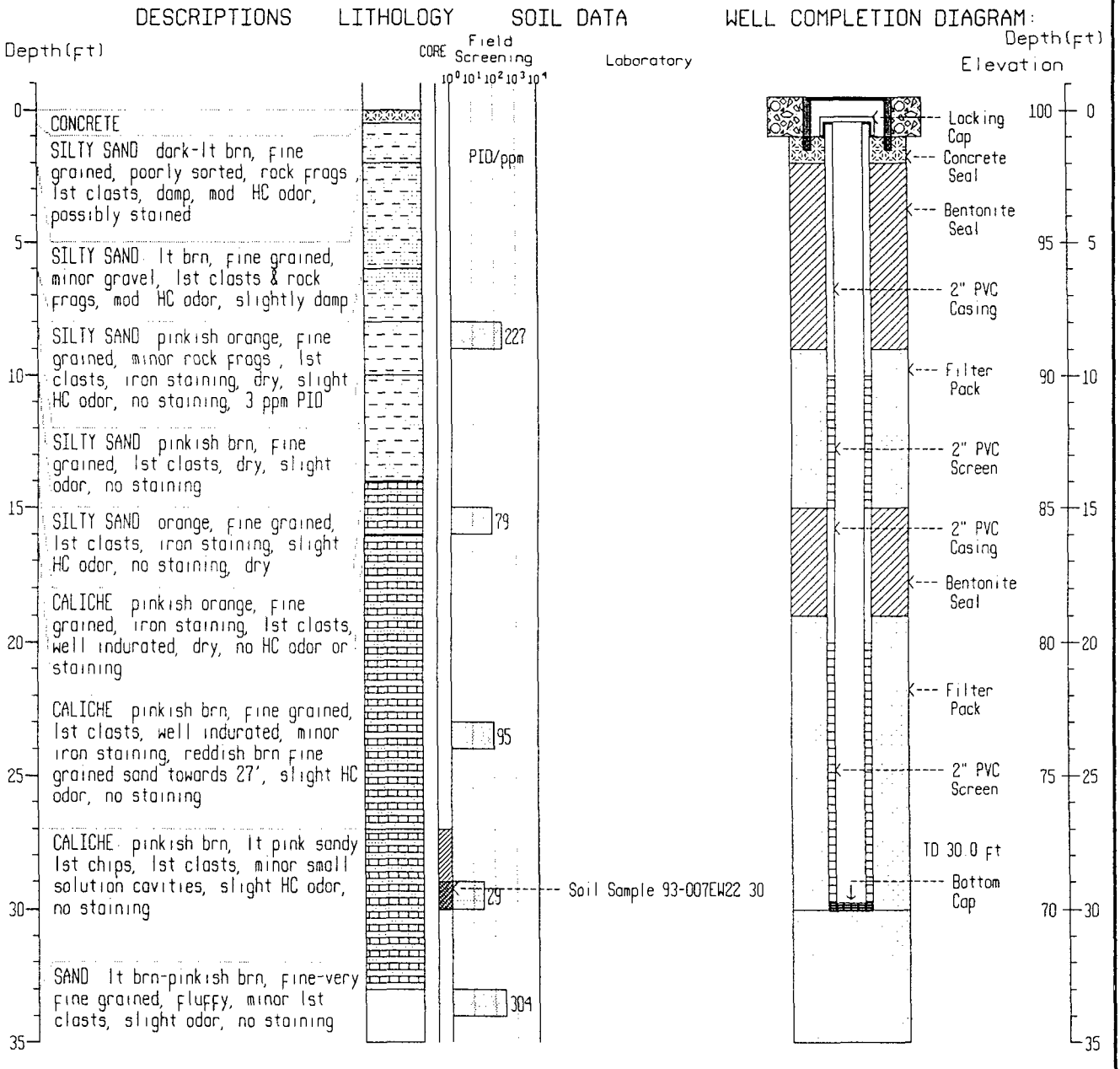


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-22

LOCATION Dowell Schlumberger facility, Hobbs, NM
68' W & 5' N of NE corner of drum storage pad
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 15, 1995

WELL OWNER Dowell (JN 93-007)
DRILLING METHOD Midway 1250 air rotary, 5 in OD
CASING 2 in Dia Flush Joint Sch. 40 PVC
SCREEN Factory Slotted Casing, 0 020 in
FILTER PACK 12/20 Mesh Silica Sand

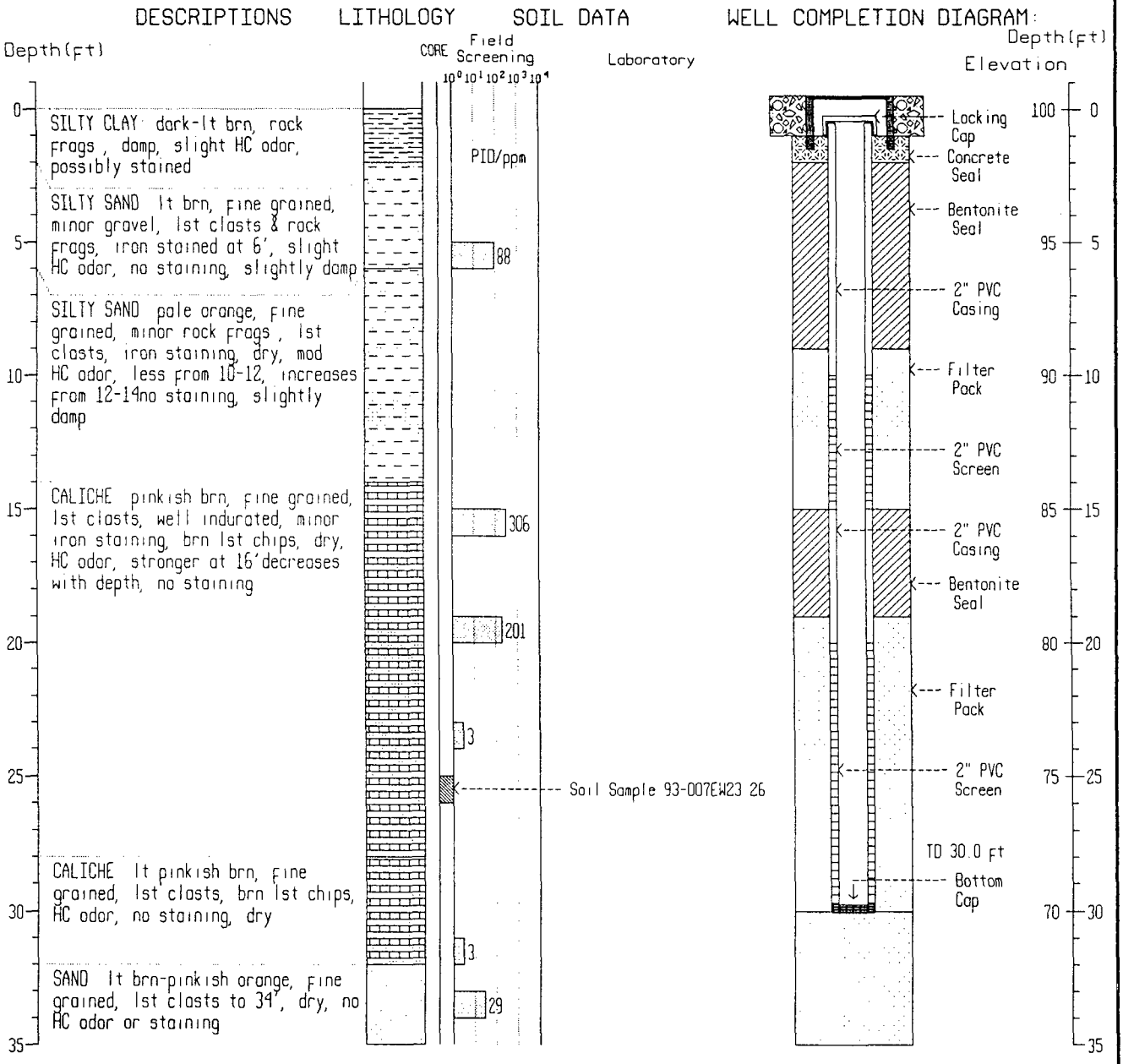


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-23

LOCATION Dowell Schlumberger facility, Hobbs, NM
102' E & 5' S of SW corner of acid revetment
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 15, 1995

WELL OWNER Dowell (JN 93-007)
DRILLING METHOD Midway 1250 air rotary, 5 in OD
CASING 2 in Dia Flush Joint Sch. 40 PVC
SCREEN Factory Slotted Casing, 0 020 in
FILTER PACK 12/20 Mesh Silica Sand

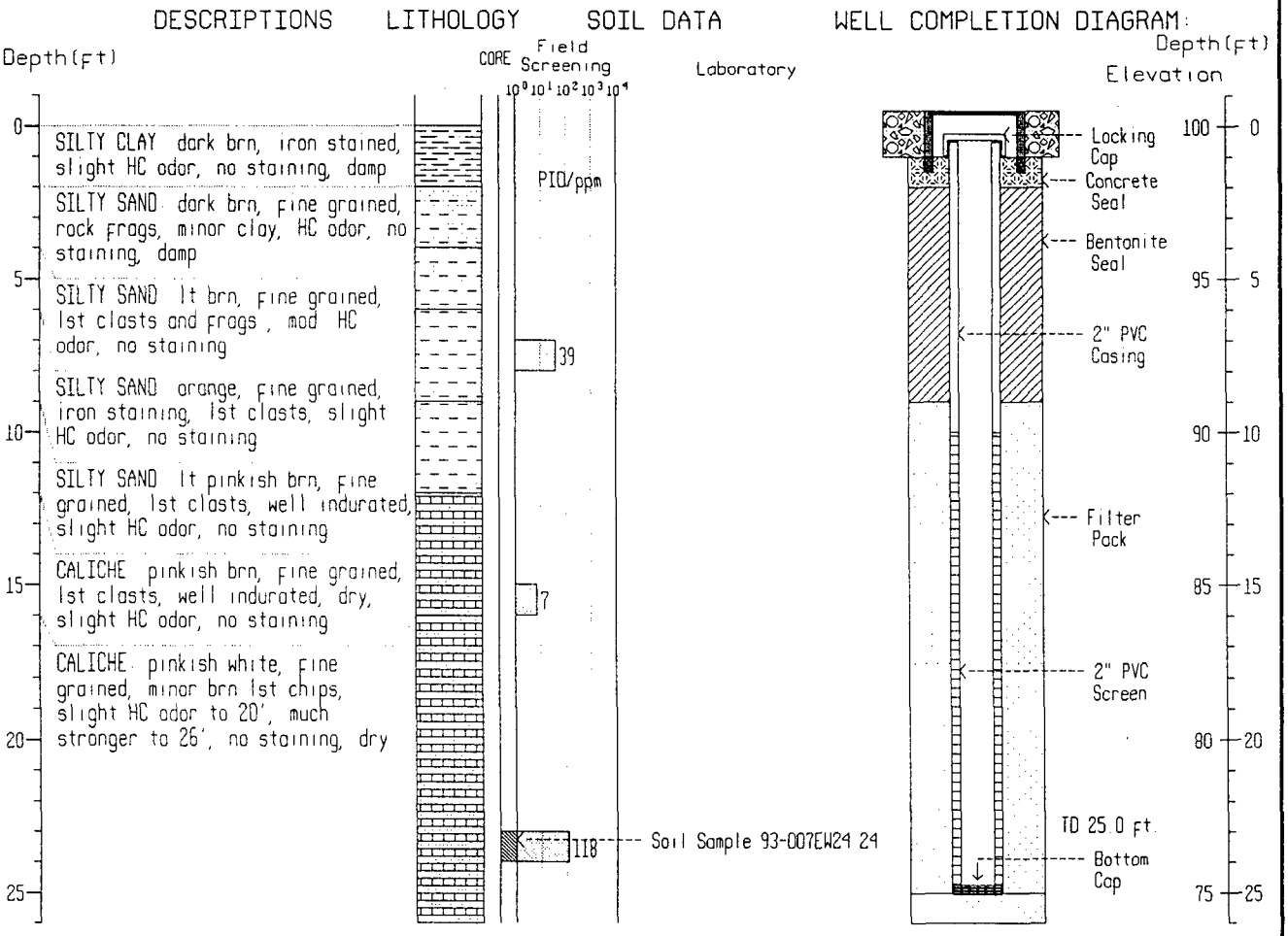


Western Water Consultants, Inc.

SOIL VAPOR EXTRACTION WELL EW-24

LOCATION Dowell Schlumberger facility, Hobbs, NM
38' W & 16' S of SW corner of acid revetment
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 15, 1995

WELL OWNER Dowell (JN 93-007)
DRILLING METHOD Midway 1250 air rotary, 5 in OD
CASING 2 in Dia Flush Joint Sch 40 PVC
SCREEN Factory Slotted Casing; 0.020 in.
FILTER PACK 12/20 Mesh Silica Sand

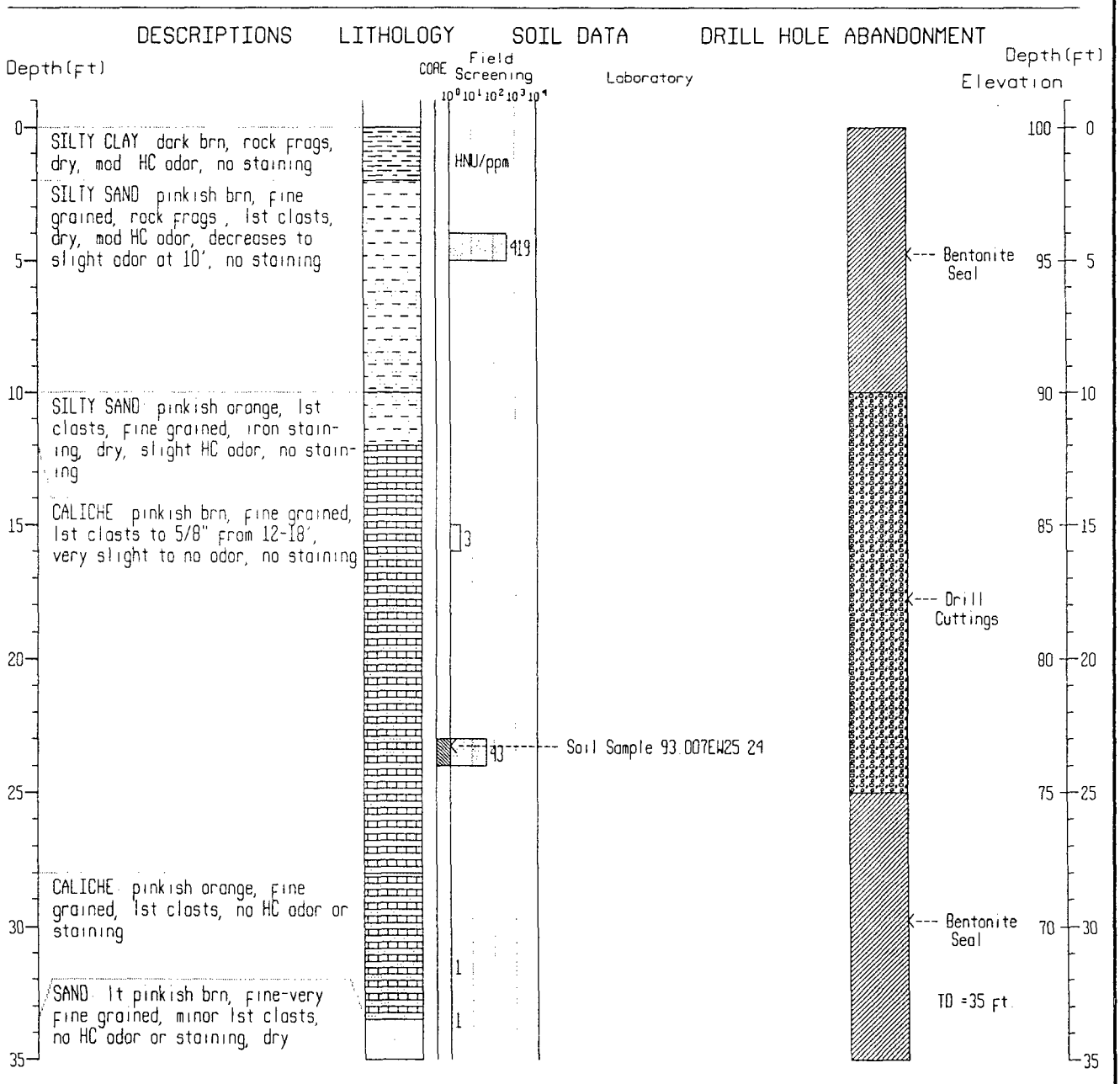


Western Water Consultants, Inc.

SOIL BORING 93007 SB-25

LOCATION Dowell Schlumberger facility, Hobbs, NM
82' N, 4' E of EW-3
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 14, 1995

OWNER Dowell (JN 93007)
DRILLING METHOD Midway 1250, air rotary, 5 in OD

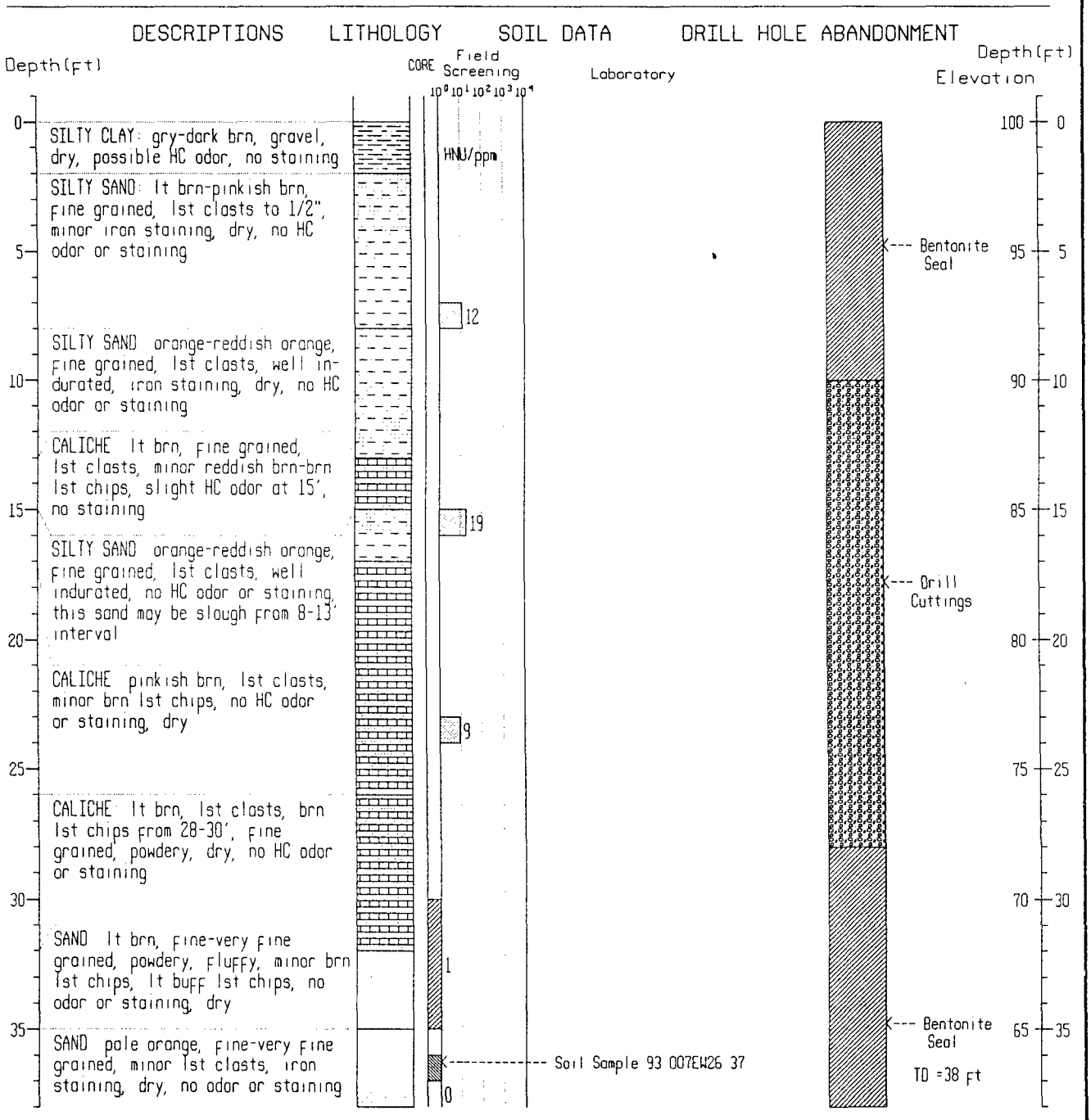


Western Water Consultants, Inc.

SOIL BORING 93007 SB-26

LOCATION Dowell Schlumberger facility, Hobbs, NM
21' S, 118' W of SW corner of concrete tank revetment
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 17, 1995

OWNER Dowell (JN 93007)
DRILLING METHOD Midway 1250, air rotary, 5 in. OD

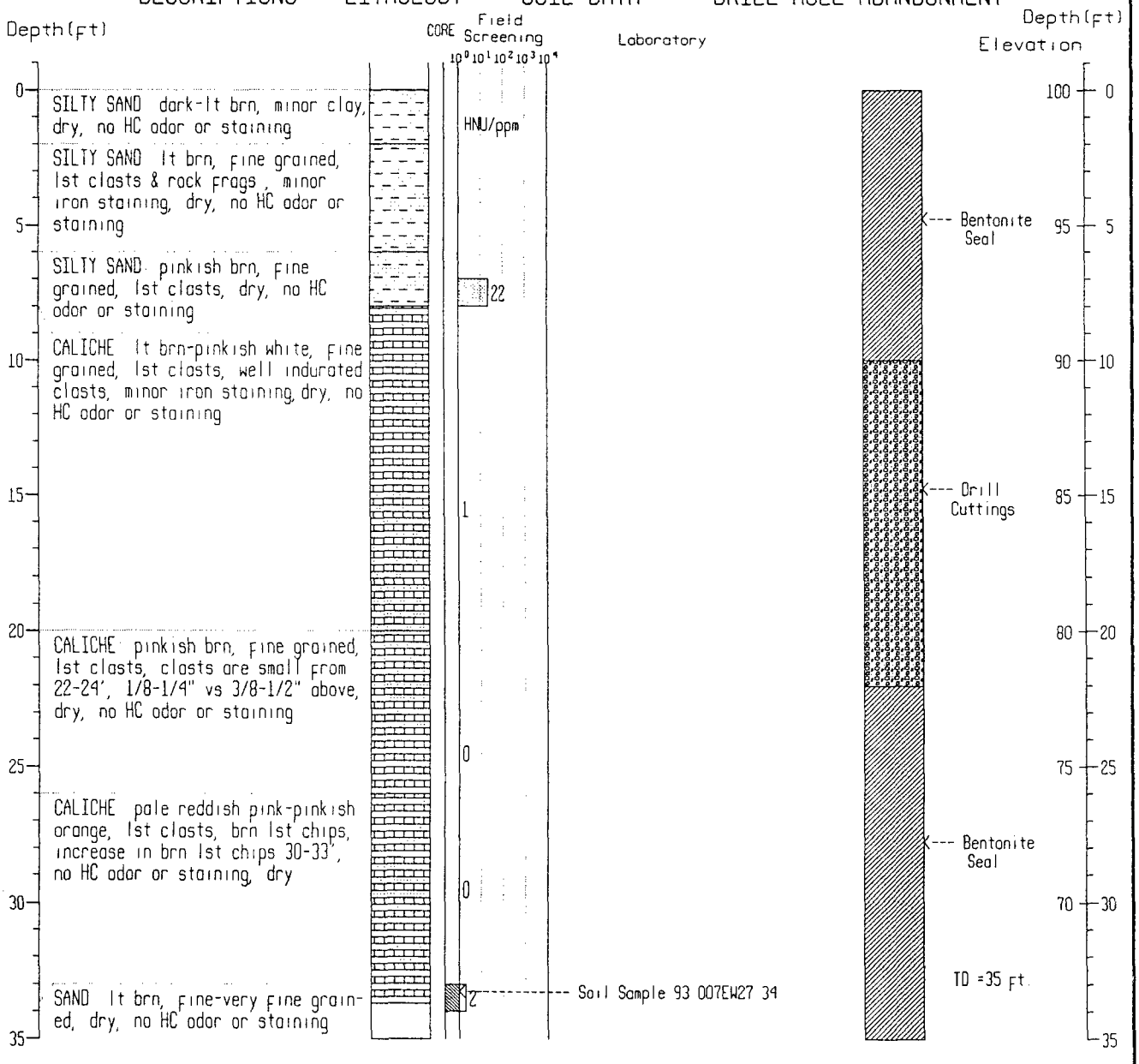


Western Water Consultants, Inc.

SOIL BORING 93007 SB-27

LOCATION Dowell Schlumberger facility, Hobbs, NM
4' N, 12' W of SW corner of storage slab S of wash bay
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER: Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE: June 17, 1995

OWNER Dowell (JN 93007)
DRILLING METHOD Midway 1250, air rotary, 5 in OD

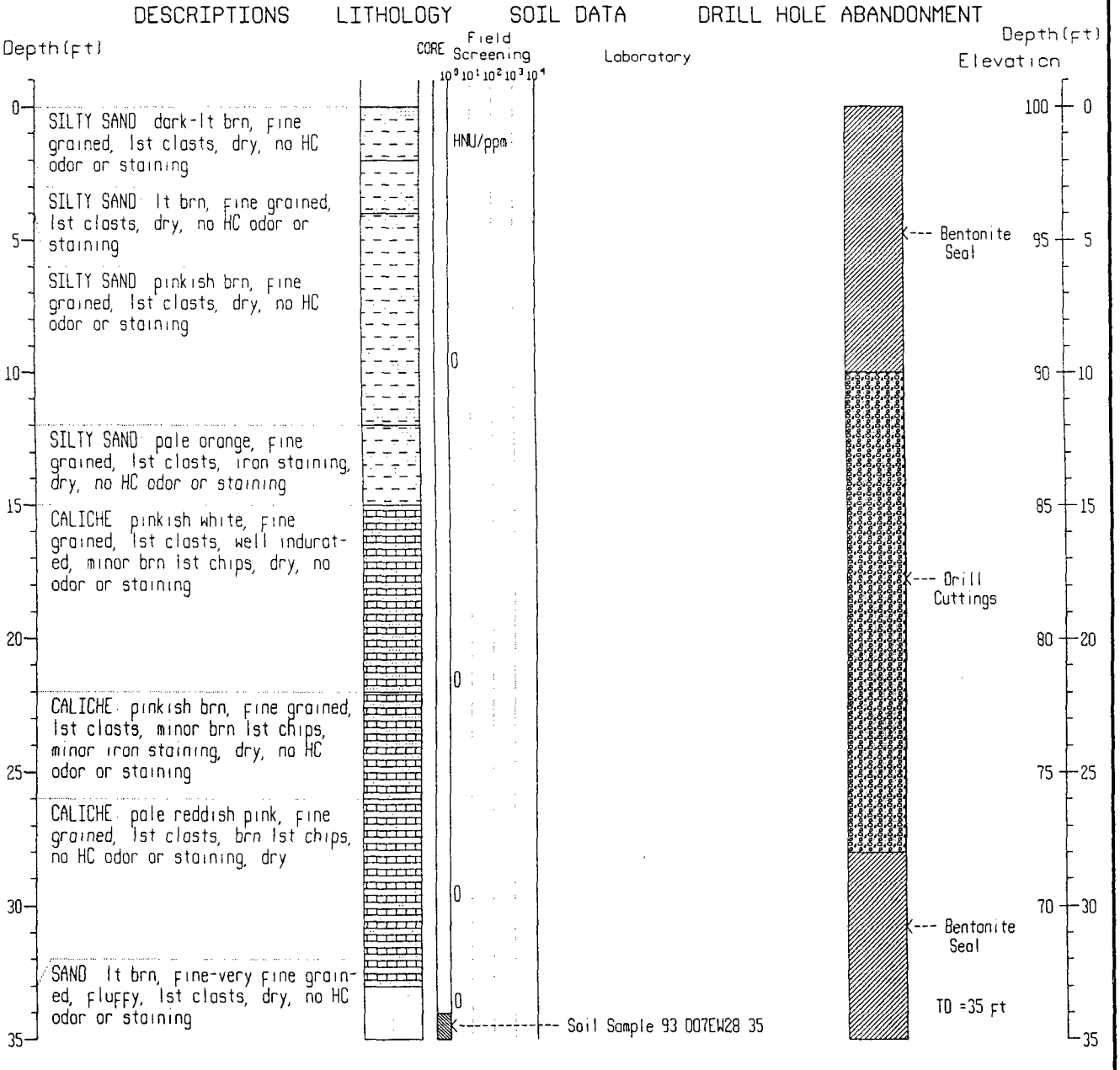


Western Water Consultants, Inc.

SOIL BORING 93007 SB-28

LOCATION Dowell Schlumberger facility, Hobbs, NM
5' N, 68' W of SW corner of storage slab S of wash bay
LOG Western Water Consultants Inc (Kevin Mattson)
DRILLER Scarborough Drilling (Lane Scarborough)
INSTALLATION DATE June 17, 1995

OWNER Dowell (JN 93007)
DRILLING METHOD Midway 1250, air rotary, 5 in OD



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WORK PLAN FOR EXTENT OF SOIL CONTAMINATION DELINEATION AND INSTALLATION OF SOIL VAPOR EXTRACTION SYSTEMS AT THE DOWELL SCHLUMBERGER INCORPORATED FACILITY HOBBS, NEW MEXICO

January 27, 1995

Submitted To:

New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504

Submitted By:

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Western Water Consultants, Inc. has conducted its work and presents these findings in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. No other representation and no warranty or guarantee is made or intended.

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Appendix

1.0 INTRODUCTION

1.0 INTRODUCTION

1.1 Purpose

This document provides a work plan to delineate the extent of soil contamination at three sites on the Dowell Schlumberger Incorporated (Dowell) facility in Hobbs, New Mexico. In addition, the results of soil vapor extraction (SVE) pilot tests conducted at these sites is provided, along with a proposed design for installation of SVE systems.

1.2 Facility Description

The Dowell facility is located at 1105 West Bender Boulevard in Hobbs, New Mexico. A facility map is shown on Figure 1-1. The Dowell facility provides services for area oil and gas production wells. Services include well cementing, well acidizing and stimulating, and formation fracturing. The facility consists of a main office building and laboratory, truck maintenance building and wash bay, dry chemicals warehouse, various aboveground storage tanks, and acid plant.

1.3 Previous Reports

Previous reports, as listed in the Reference section, document the area of the former underground storage tanks, former wastewater pond, and the acid dock/acid collection system as having residual soil contamination. Dowell obtained approval from the Oil Conservation Division (OCD) on September 28, 1994 to perform SVE pilot tests at these three sites.

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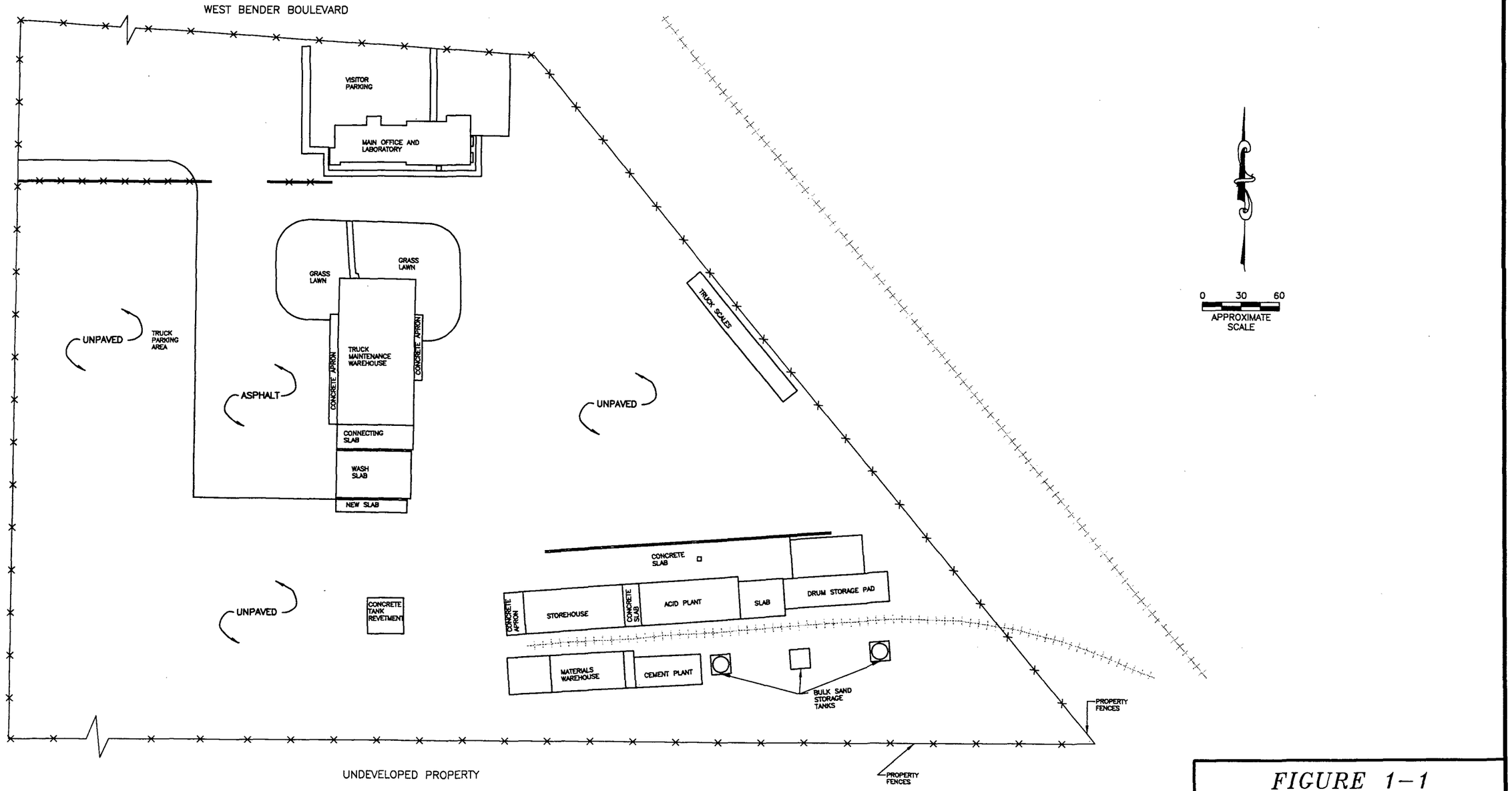

FIGURE 1-1

FACILITY MAP

DOWELL SCHLUMBERGER INCORPORATED
HOBBS, NEW MEXICO

Western Water Consultants, Inc.

2.0 SOIL VAPOR EXTRACTION PILOT TESTS

2.0 SOIL VAPOR EXTRACTION PILOT TESTS

2.1 Field Work

On October 13-16, 1994, Western Water Consultants, Inc. (WWC) installed three soil vapor extraction (SVE) and piezometer well networks at the facility. SVE pilot test networks were installed in the area of former underground storage tanks (UST), former wastewater pond, and former acid collection system (Figure 2-1). Each network consisted of one extraction well, from which soil vapor was extracted, and six piezometers, from which pressure measurements were recorded. SVE pilot tests were performed on November 1-2, 1994.

The extraction wells and piezometers were drilled by Eades Drilling and Water Wells of Hobbs, New Mexico, using an air rotary rig and 6-inch O.D. bits. Core samples were obtained from each extraction well and drill cuttings were obtained from the piezometers. WWC personnel inspected core and cutting samples for apparent soil contamination using an HNu organic vapor detector and by observing staining and odor.

2.2 Regional Geology and Hydrogeology

The facility is underlain by the Ogallala Formation (Fm.) which is 150 to 200 feet thick in the vicinity of Hobbs and consists of unconsolidated sand, silt, clay, and gravel capped by caliche. The caliche at the facility is approximately 35 feet thick. Beneath the caliche is yellow-brown fine-grained sand and sandstone with minor amounts of gravel. The Ogallala Fm. is underlain by red siltstone and claystone referred to locally as "red beds".

The depth to water is approximately 70 feet at the facility. The total depth of the extraction wells and piezometers ranged from 19 to 41 feet such that ground water was not encountered during installation of the SVE test wells. The regional hydraulic gradient, and direction of ground-water flow in the Ogallala Fm., is to the southeast; however, this regional pattern has not been confirmed at the facility.

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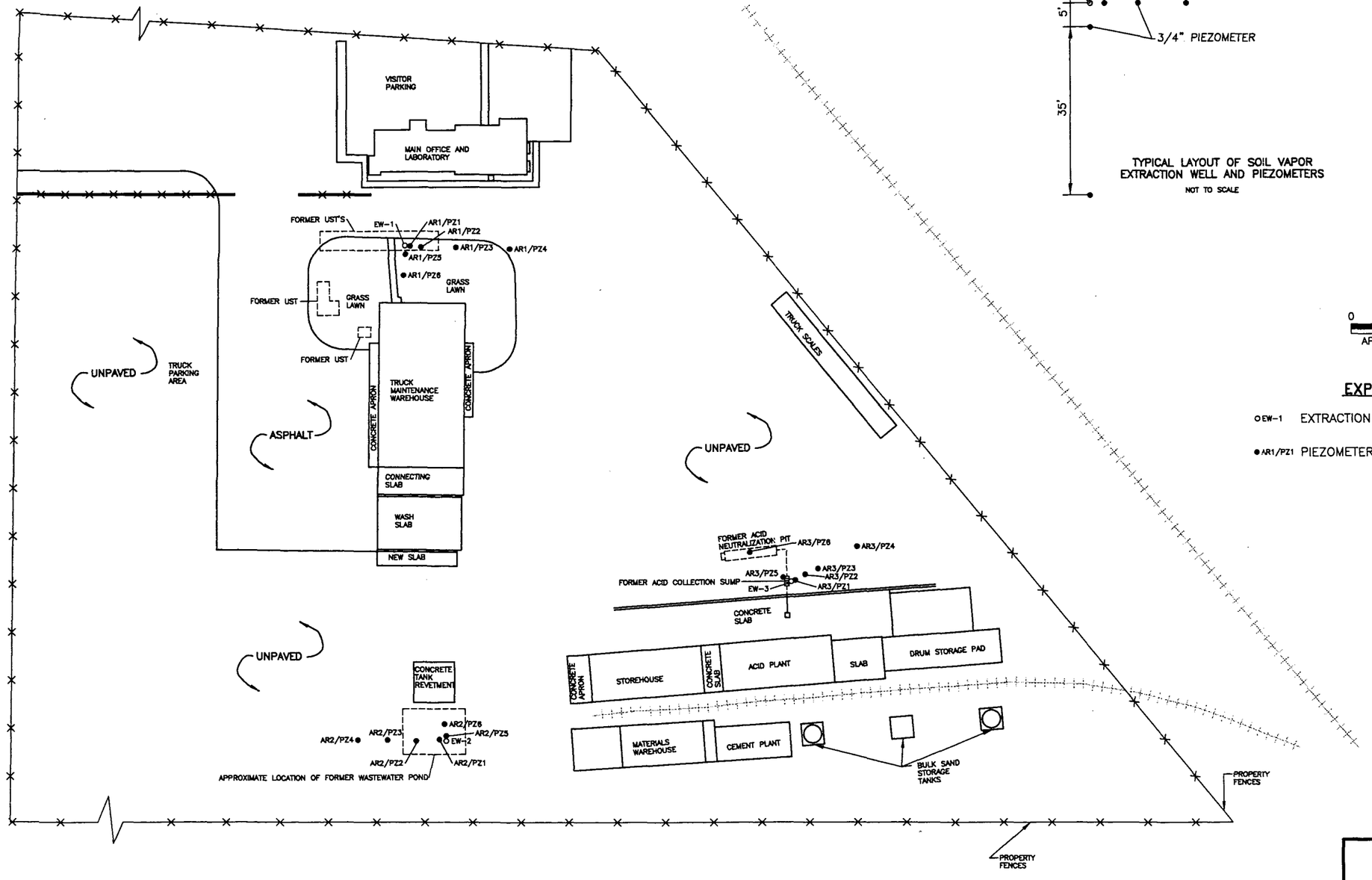

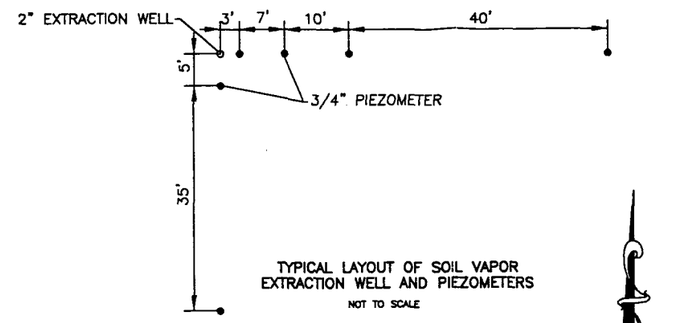

TYPICAL LAYOUT OF SOIL VAPOR EXTRACTION WELL AND PIEZOMETERS

NOT TO SCALE

0 30 60

APPROXIMATE SCALE

EXPLANATION

○EW-1 EXTRACTION WELL LOCATION & NUMBER

●AR1/PZ1 PIEZOMETER LOCATION & NUMBER

FIGURE 2-1

SOIL VAPOR EXTRACTION WELL AND PIEZOMETER LOCATIONS

DOWELL SCHLUMBERGER INCORPORATED
HOBBS, NEW MEXICO

Western Water Consultants, Inc.

2.3 Lithology at the SVE Well Networks

Two distinct lithologic horizons were penetrated by the extraction wells and piezometers. The first horizon is from ground surface to approximately 34 feet and consists of a white to buff fine-grained silty sand with limestone clasts. This horizon is called "caliche" due to the presence of limestone and hard drilling. Drilling was hard where limestone clasts are abundant and the sands are well-cemented, whereas easier drilling occurs in the interbedded layers of less cemented silty sand. Directly beneath the caliche, at 34 feet, is a fine to medium grained, poor to moderately cemented, pinkish-tan sand.

Up to 2 feet of brown soil and 15 feet of fill were encountered at the three sites.

2.4 Summary of Subsurface Conditions at Each SVE Network

Detailed well logs and completion/abandonment data for each extraction well and piezometer are provided in Appendix A.

2.4.1 Former Underground Storage Tank Area

One extraction well and six piezometers were installed at the former UST area as shown in Figure 2-1. The extraction well and piezometers were completed in the pinkish-tan sand 3 to 7 feet beneath the caliche. In the area of well installation, there was no obvious subsurface contamination as indicated by the absence of staining, odor, and background readings from the HNu organic vapor detector. The only exception was a slight odor and detection using the HNu (4-7 ppm) at piezometer AR1/PZ2 at 30-34 feet. Cuttings above and below this depth to 41 feet appeared uncontaminated.

2.4.2 Former Wastewater Pond

One extraction well and six piezometers were installed at the former wastewater pond area. The extraction well and piezometers penetrated various types of fill material and were completed in the caliche at depths ranging from 21 to 25.5 feet. Subsurface contamination was present throughout the area of the extraction well and piezometers. The fill and caliche were stained dark grey to blue/black and had a strong hydrocarbon odor. Piezometers AR2/PZ3 and

AR2/PZ4, located west of the former wastewater pond, had fill material at 4 feet that was wet with product.

2.4.3 Former Acid Collection Area

One extraction well and six piezometers were installed in the area of the former acid collection system that was replaced in December 1993. The extraction well and piezometers penetrated various types of fill material and were completed in the caliche at depths ranging from 19 to 22 feet. Subsurface contamination was apparent by staining and hydrocarbon odor in the vicinity of the removed acid sump and at the neutralization pit. The subsurface at piezometers northeast of the extraction well (AR3/PZ3 and AR3/PZ4) did not appear contaminated.

2.5 Results of Soil Sample Analyses

Table 2-1 lists the results of laboratory analysis of soil samples collected from the extraction wells and selected piezometers. The compounds detected in soil at the three sites include acetone, toluene, ethylbenzene, total xylenes, and tetrachloroethene (PCE). Total concentrations of these compounds in soil range from an estimated concentration of 0.031 mg/kg at the former UST area, to 38 mg/kg at the former wastewater pond, to 48 mg/kg at the former acid collection area.

2.6 Results of SVE Pilot Tests

2.6.1 SVE Pilot Test Procedure

SVE pilot tests were performed on November 1-2, 1994, at the three sites by WWC and AcuVac personnel. The tests were performed by applying a vacuum to the extraction well and monitoring the response in adjoining piezometers. Figure 2-2 is a schematic of the completion of a typical extraction well.

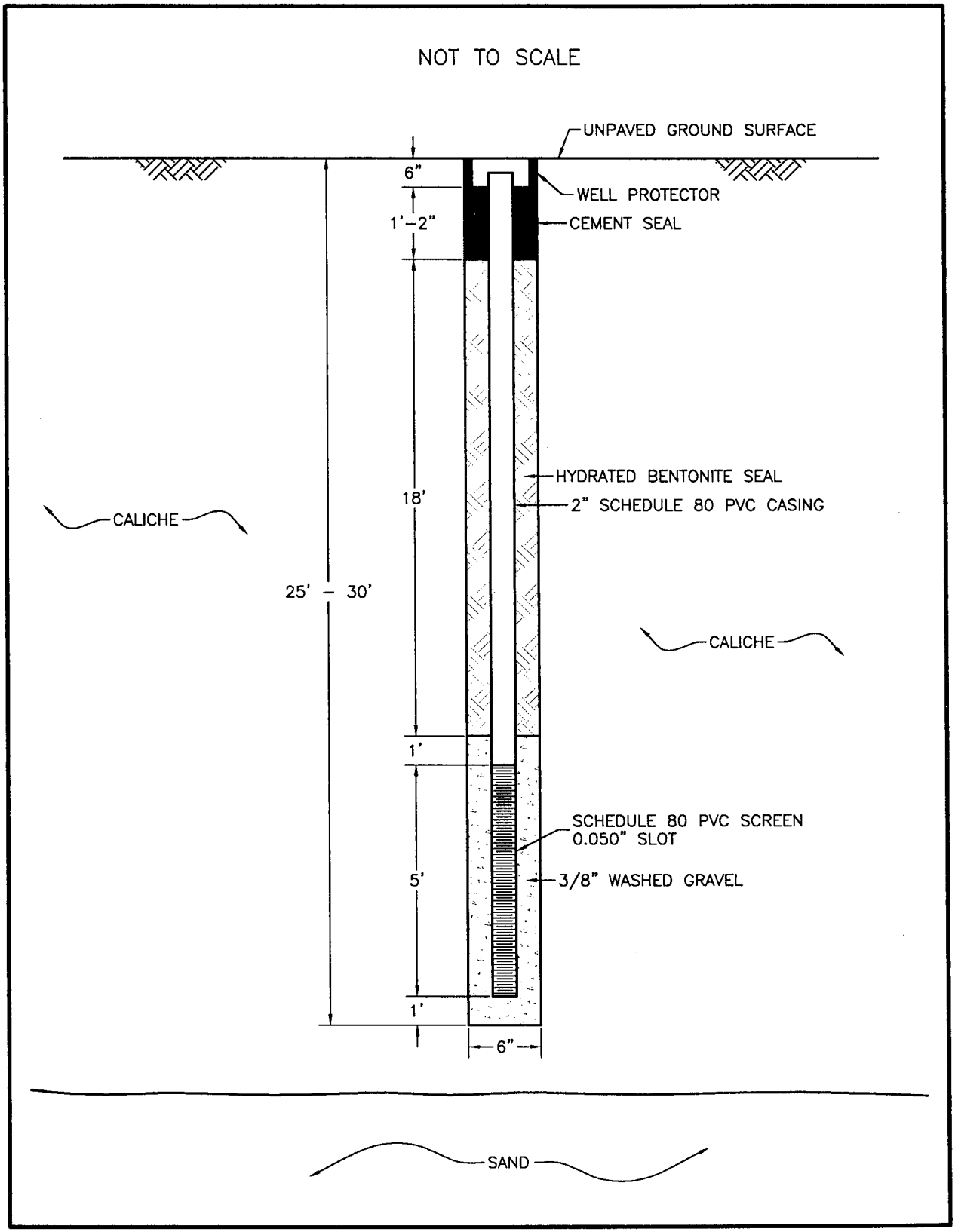

FIGURE 2-2. TYPICAL EXTRACTION WELL FOR SVE PILOT TEST, DOWELL SCHLUMBERGER INCORPORATED, HOBBS, NEW MEXICO.

Table 2-1:Soil Data From SVE Extraction Wells and Piezometers, Dowell Facility, Hobbs, N.M.

SITE	WELL/ PIEZOMETER	SAMPLE DATE	SAMPLE DEPTH (ft)	ACETONE (mg/kg)	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL-BENZENE (mg/kg)	TOTAL XYLENES (mg/kg)	PCE (mg/kg)
Former	EW-1	10/13/94	38-40	0.016(J)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
UST Area	PZ-2	10/13/94	32	0.025(J)	ND(0.005)	ND(0.005)	ND(0.005)	0.002(J)	0.004(J)
(AR 1)	PZ-2	10/13/94	35-37	0.018(J)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
	PZ-5	10/14/94	35-36	0.012(J)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Former	EW-2	10/14/94	21-23	1.3	ND(0.025)	ND(0.025)	0.012(J)	0.079	ND(0.025)
Wastewater	PZ-3	10/15/94	20	0.82	ND(0.025)	0.7	0.72	8	0.52
Pond (AR 2)	PZ-5	10/15/94	16	0.81(J)	ND(0.625)	0.84	2.7	22	12
Former Acid	EW-3	10/15/94	19-20	0.89	ND(0.025)	ND(0.025)	0.007(J)	0.068	0.029
Collection	PZ-2	10/15/94	17	0.012(J)	ND(0.005)	ND(0.005)	0.003(J)	0.021	0.001(J)
Area	PZ-5	10/16/94	15-16	0.075(J)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
(AR 3)	PZ-6	10/16/94	15	ND(1.25)	ND(0.625)	0.17(J)	6.6	41	ND(0.625)

Notes: PCE=Tetrachloroethene
mg/kg=PPM, parts per million
ND=Not Detected at detection limit shown in parentheses.
J=Estimated value detected below the reporting limit.

∞

Vacuum was applied to the extraction well by an AcuVac SVE system (see Appendix D). This system consists of a Roots type blower driven by an internal combustion engine. Soil vapors are drawn from the extraction well by the blower, mixed with propane and atmospheric air, then directed to the engine intake. The soil vapor, propane, and air are used to power the engine. The engine exhaust is treated by three catalytic converters that oxidize hydrocarbons not utilized in the internal combustion engine. As a test proceeds, the ratios of soil vapor, propane, and air are adjusted to maximize combustion efficiency as the soil vapor characteristics changes.

Vacuum at the extraction well and piezometers were measured with Magnehelic gauges. Gauges with several ranges were used to more accurately determine vacuum at the piezometers. At each site, the vacuum at two piezometers was also measured with manometers constructed of 1 inch PVC. Water levels in the manometers were measured with pressure transducers and recorded with a data logger for rapid, automatic readings. These frequent measurements can be used for transient analysis.

A variety of tests were performed at each site. These tests are summarized in Table 2-2 and detailed test information is provided in Appendix B.

2.6.2 Data Collection

Data were collected for two different types of analysis. First, rapid short-term measurement of vacuum at piezometers were collected for transient analysis. The purpose of this analysis is to determine soil characteristics so that vacuum changes can be predicted using mathematical models. The second type of data were longer-term measurements made at piezometers to determine the actual response of the soil system to an applied vacuum. These data sets are discussed below and detailed field data are provided in Appendix B.

Transient short-term vacuum data were collected at individual wells using manometers monitored by pressure transducers. These data proved to be unreliable because of the type of vacuum system used. The AcuVac system uses an internal combustion engine to drive the blower. The engine uses a mixture of soil vapor, propane, and atmospheric air for combustion.

Table 2-2 - SVE Pilot Test Operation Parameters, Dowell Facility, Hobbs, New Mexico

Test No.	Location	Duration (Hours)	Vacuum (In. H_2O)	Flow Rate (cfm)
1a	Former Wastewater Pond	1.5	20	16
1a	Former Wastewater Pond	0.6	28	24
1b	Former Wastewater Pond	0.5	25	25
1b	Former Wastewater Pond	0.5	28	30
2a	Former Acid Collection Area	2.0	18.5	28
2a	Former Acid Collection Area	0.4	20	33
2b	Former Acid Collection Area	1.0	20	33
3a	Former UST Area	1.5	40	18
3a	Former UST Area	1.6	70-80	36-30
3b	Former UST Area	2.5	40-70	25-37

When the AcuVac system is started these inputs must be adjusted to make the engine run. All adjustments were made quickly by the operator but the applied vacuum was not constant for the first few minutes therefore, early time data collected during the adjustment period was not usable. By the time the vacuum was constant the permeable soils had seen significant response and transient analysis was not possible.

Even though a transient analysis of the data is not possible, the general response of the soil to a vacuum at several locations provided reliable information for design of an SVE system.

2.6.3 Data Analysis - Radius of Influence

Radius of influence is a critical factor in the design of an SVE system. It determines the necessary well spacing to ensure complete coverage of the area to be remediated. Radius of influence is dependent on the vacuum applied to the extraction well. For this analysis it is assumed that a moderate range of vacuum will be utilized, 25-40 inches of water. This is within the range of most of the tests conducted at the sites.

The data in Appendix B show that a vacuum response occurs at the most distant piezometers, which are 60, 49, and 73 feet from the extraction well at the three sites. Figure 1 in Appendix B shows a plot of the piezometer vacuum versus distance from the extraction well. The responses at the former wastewater pond and the former acid collection area are very similar. The response at the former UST area shows a larger radius of influence. The differences reflect that the tests conducted at the former wastewater pond and the former acid collection area were in the caliche, whereas the test at the former UST area was conducted in the sand beneath the caliche. This indicates that the two zones have different permeability characteristics.

The radius of influence can be determined using flow equations for air in soil even if a complete transient analysis is not possible. An approximate solution to a transient state equation for the radial flow of air through soil to a well as provided by Johnson et. al. (1990).

$$P' = \frac{Q}{4\pi m(k/\mu)}\left[-0.5772 - \ln\left(\frac{r^2 e \mu}{4ktP_{atm}}\right)\right] \qquad (1)$$

Where:

P'	=	"gauge" pressure measured at a distance r and time t
m	=	formation thickness
r	=	radial distance
k	=	soil permeability
μ	=	absolute viscosity of vapor (assumed to be air)
e	=	vapor filled porosity
t	=	time
Q	=	volumetric flow rate from extraction well
P_{atm}	=	ambient atmospheric pressure

This solution is valid where the variable U is sufficiently small to minimize error in the truncation of the Taylor series approximation, such that:

$$U = \frac{r^2 e \mu}{4ktP_{atm}} < 0.1$$

The assumptions used to develop these equations are similar to those made in many analyses of ground-water flow through a porous media and are presented in Johnson et. al. (1990).

Equation 1 can be rearranged as:

$$P' = \frac{Q}{4\pi m(k/\mu)}[-0.5772 - \ln\frac{r^2 e \mu}{4kP_{atm}})] + \frac{Q}{4\pi m(k/\mu)}\ln t \qquad (2)$$

Equation 2 shows that if time is held constant, a plot of pressure drop versus the natural log of inverse radius squared will yield a straight line. By using a large time, after the effects of a recharge boundary are noticed, the point where this line crosses the x-axis indicates where there is no pressure drop. This distance is defined as the radius of influence.

For determination of the radius of influence, vacuum readings at a single time from all of the piezometers are utilized. Plots of pressure drop (vacuum) versus the natural log of inverse radius squared are presented on Figure 2-3 for the three test sites. A least-squares linear regression was used to determine the radius where the pressure change is predicted to be zero. The results are presented in Table 2-3.

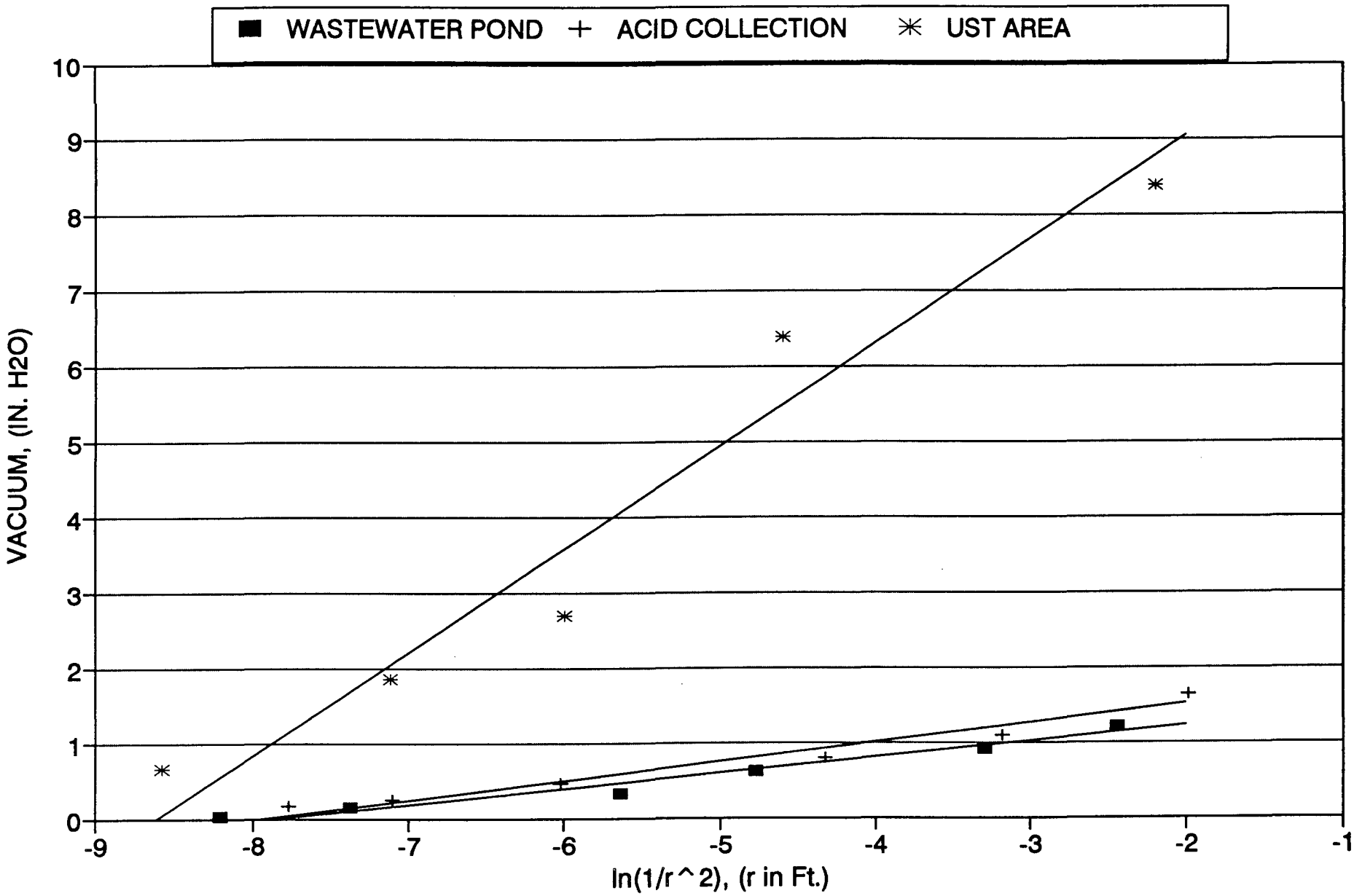

FIGURE 2-3: SVE RADIUS OF INFLUENCE
DOWELL FACILITY, HOBBS, NEW MEXICO

Table 2-3 - Calculations of Radius of Influence for SVE Pilot Tests, Dowell Facility, Hobbs, New Mexico

Test Site	Linear Regression (R-Squared)	$\ln(1/r^2)$ (P' = 0)	Radius of Influence (ft)
Wastewater Pond Area	.96	-7.9	52
Acid Collection Area	.96	-8.0	55
UST Area	.95	-8.6	74

These results show that there is good correlation among the data and that the radius of influence is approximately 52-55 feet in the caliche and approximately 74 feet in the sand for the vacuum applied to the wells during the test (35 to 40 inches of water). In practice the radius used for design of an SVE system should be less than these values to ensure sufficient gradient to move enough air through the soil.

2.6.4 Soil Vapor Quality Monitoring

Soil vapors from extraction wells EW-1, EW-2, and EW-3 were monitored for volatile organic compounds during each pilot test. Field screening included the use of a Environmental Instruments 580 Photoionization Detector (PID) and a Horiba Gas Analyzer. Soil vapor at the former UST area was also measured with a Photovac PID using a 11.6 eV lamp. The field screening measurements are summarized in Table 2-4.

Table 2-4 - Soil Vapor Field Screening Data, Dowell Facility, Hobbs, New Mexico

Test Site	Environmental Instruments (PID)	Photovac PID	HORIBA Gas Analyzer
Wastewater Pond Area (EW-2)	699 ppm	----	1772 ppm
Acid Collection Area (EW-3)	294 ppm	----	580 ppm
UST Area (EW-1)	209 ppm	490 ppm	66 ppm

A soil vapor sample was collected from each extraction well for laboratory analysis by EPA Method 8240. The laboratory analysis of the soil vapor is presented in Table 2-5 and laboratory data sheets are included in Appendix C.

The field and laboratory data indicate that significant concentrations of volatile compounds are present in the soil at the three sites and that SVE will be effective method to remove volatile organic contaminants.

2.6.5 Summary of Results

The pilot test data indicate that SVE systems can be used to remediate the three sites. SVE system design parameters are summarized in Table 2-6. Extraction well spacing of 50 feet is very conservative considering that the radius of influence is over 50 ft. This will ensure complete coverage in the source areas and provide overlap which will expedite remediation.

Table 2-5 - Vapor Sample Laboratory Data from SVE Pilot Tests, November 2, 1994, Dowell Facility, Hobbs, New Mexico

Compound	Former UST Area (EW-1) mg/M^3	Former Wastewater Pond (EW-2) mg/M^3	Former Acid Collection Area (EW-3) mg/M^3
Acetone	9.47	16.50	ND(0.1)
1,1-DCE	29.90	4.44	ND(0.1)
cis-1,2-DCE	ND(0.1)	1.73	ND(0.1)
1,1-DCA	0.49	12.20	ND(0.1)
1,1,1-TCA	20.70	88.50	ND(0.1)
1,1,2-TCA	1.22	ND(0.1)	ND(0.1)
TCE	0.12	ND(0.1)	ND(0.1)
PCE	36.50	30.60	0.5
Carbon Tetrachloride	2.72	9.30	ND(0.1)
Benzene	0.13	4.47	1.28
Ethylbenzene	0.35	11.40	5.48
Toluene	1.01	23.20	5.69
m,p-Xylene	0.68	13.10	8.12
o-Xylene	0.65	19.90	5.10

NOTE:
DCE = Dichloroethene
DCA = Dichloroethane
TCA = Trichloroethane
TCE = Trichloroethene
PCE = Tetrachloroethene
mg/M^3 = Milligrams per meter cubed

Table 2-6 - Summary of SVE System Parameters, Dowell Facility, Hobbs, New Mexico

	Caliche	Sand
Well Vacuum (In. H_2O)	25-40	25-40
Flow Rate (cfm)	30-50	20-25
Radius of influence (ft.)	52-55	72
Well Spacing (ft.)	50	50

3.0 WORK PLAN

3.0 WORK PLAN

3.1 Work Plan Approach

Dowell proposes to conduct soil remediation in a phased manner, beginning with shallow soil. Due to equipment and SVE system design limitations, this work plan addresses soil contamination and remediation in the caliche layer from 0 to 35 feet. The caliche will likely have the greatest amount of residual contamination because it lies directly beneath each source.

The pilot tests indicate that SVE is an excellent method to remove contaminants from the soil at the facility. A radius of influence of over 50 feet enables one extraction well to remove contaminants from a circular area of at least 100 feet in diameter. Using 50 feet as the distance between proposed extraction wells, Figure 3-1 shows proposed SVE wells at each site and the approximate area that will be remediated.

Dowell proposes that investigation of the extent of soil contamination occur during installation of SVE systems. As shown on Figure 3-1, investigative boreholes and SVE wells are located at the periphery of identified areas of soil contamination. During drilling of the investigative boreholes and the SVE wells, if obvious signs of soil contamination are present, additional investigative boreholes will be installed beyond the area of known contamination at 50 foot increments. Any investigative borehole that encounters obvious soil contamination will be completed as a SVE well. This approach requires that decisions be made in the field regarding the presence of soil contamination and the final number and location of SVE wells may vary somewhat from Figure 3-1.

All wells and boreholes will be logged by WWC personnel and soil contamination will be evaluated in the field by headspace analysis using an HNu organic vapor detector with a lamp capable of detecting chlorinated hydrocarbons. Soil samples will be collected at horizons with the greatest potential for contamination and analyzed by Cardinal Laboratories in Hobbs using EPA Method 8240.

How about a
monitor well
to test groundwater?
Also, in order
to determine GW
Hydraulics Need at
least 3 monitor wells!
(one drilled & completed in each Area!)

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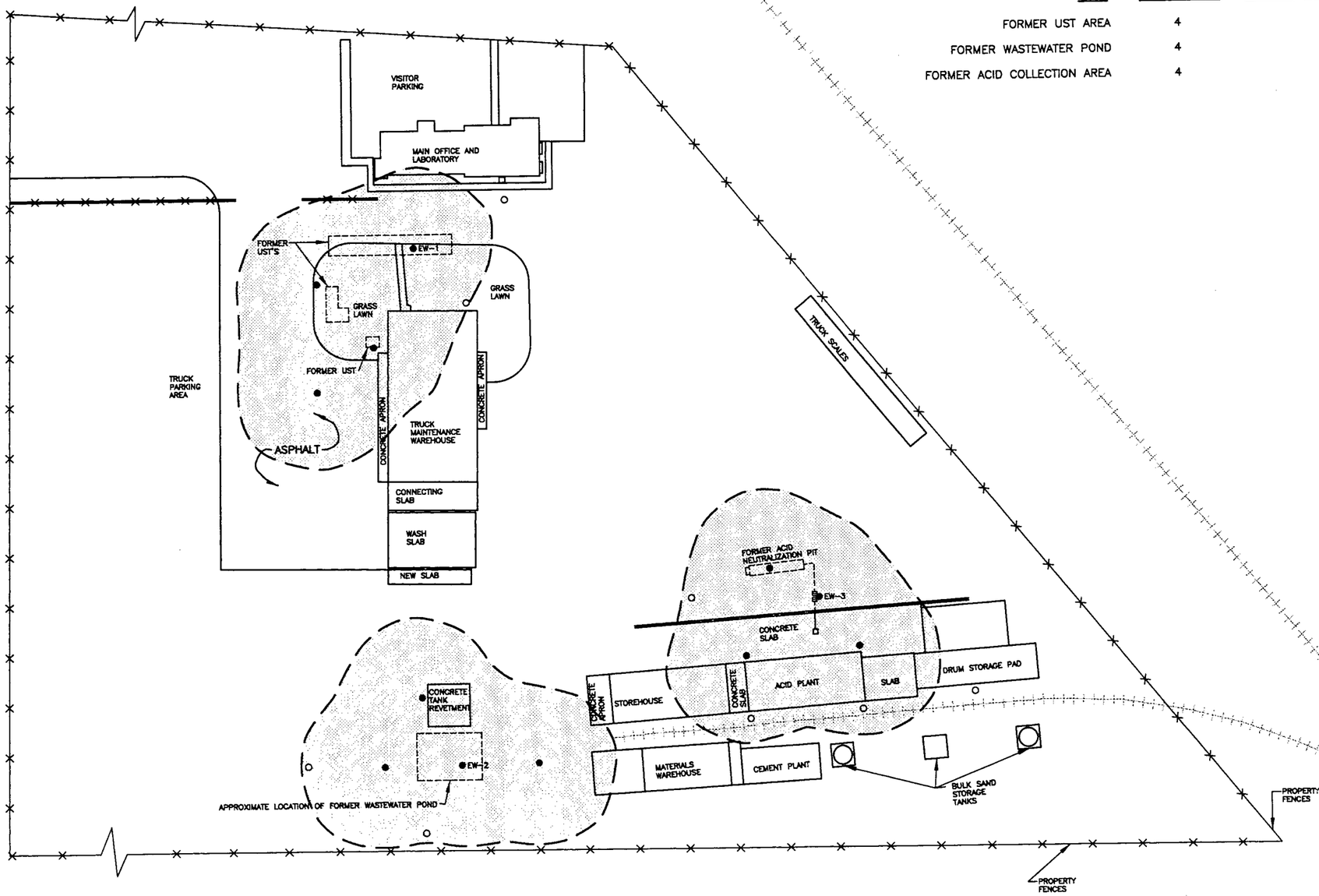
SITE	# OF SVE WELLS	# OF SOIL INVESTIGATION BOREHOLES, (minimum)
FORMER UST AREA	4	2
FORMER WASTEWATER POND	4	2
FORMER ACID COLLECTION AREA	4	4



0 30 60
APPROXIMATE SCALE

EXPLANATION

- ● PROPOSED EXTRACTION WELL
- ○ PROPOSED SOIL INVESTIGATION BOREHOLE
- AREA REMEDIATED BY PROPOSED EXTRACTION WELLS

FIGURE 3-1

LOCATION OF PROPOSED SVE WELLS AND SOIL INVESTIGATION BOREHOLES

DOWELL SCHLUMBERGER INCORPORATED
HOBBS, NEW MEXICO

Western Water Consultants, Inc.

3.2 Design of SVE Systems

3.2.1 SVE Design Approach

Based on the effectiveness of SVE pilot tests in removing contaminants at the three sites, Dowell proposes to construct permanent SVE systems at these sites as shown in Figure 3-2. The SVE systems include AcuVac Remediation, Inc. vacuum pumps driven by internal combustion engines that use the soil vapor in the combustion process.

For design, a well spacing of 50 feet is used. This spacing is conservative since the radius of influence is greater than 50 feet. This ensures complete coverage of the source area and considerable overlap in the areas of highest contamination. The extraction wells will have 5 to 15 feet of screen in the caliche and be sealed with bentonite. Well construction details are shown in Figure 3-3.

Each extraction well will have a separate PVC pipe directed to a vacuum manifold (Figure 3-2). At the manifold, each well will have a manual control valve and the ability to measure and change vacuum as shown in Figure 3-3. The arrangement allows for flexibility in that the vacuum to any well can be controlled. Wells can be taken off line or new wells can be added if necessary.

Vacuum to the manifold will be provided by an AcuVac SVE system. Details of the AcuVac system are provided in Appendix D. The AcuVac system is a complete unit that includes the blower, engine, propane fuel source, controls, and vapor treatment. Vapor treatment is provided by combustion in the internal combustion engine followed by three catalytic converters in series.

3.2.2 SVE System Operation and Maintenance

At startup all wells in each system will be put on line. It is anticipated that an initial vacuum of 25 inches of water and a flow rate of 30 cfm per well will be used. As the soils are remediated, vacuums and flow rates will be adjusted to maximize removal of contaminants.

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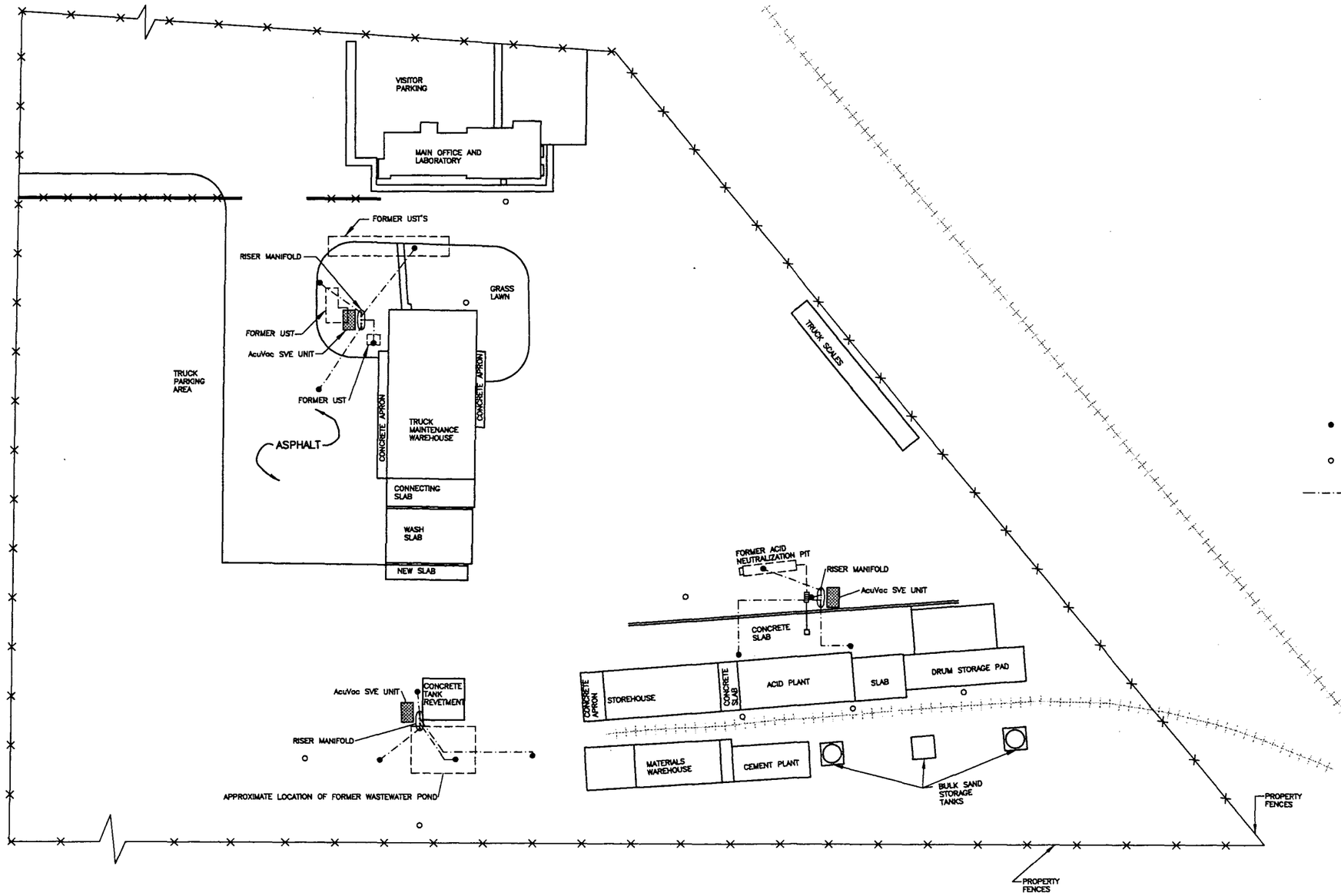


0 30 60

APPROXIMATE SCALE

EXPLANATION

- ● PROPOSED EXTRACTION WELL
- ○ PROPOSED INVESTIGATION BOREHOLE
- —·—·— VACUUM PIPING

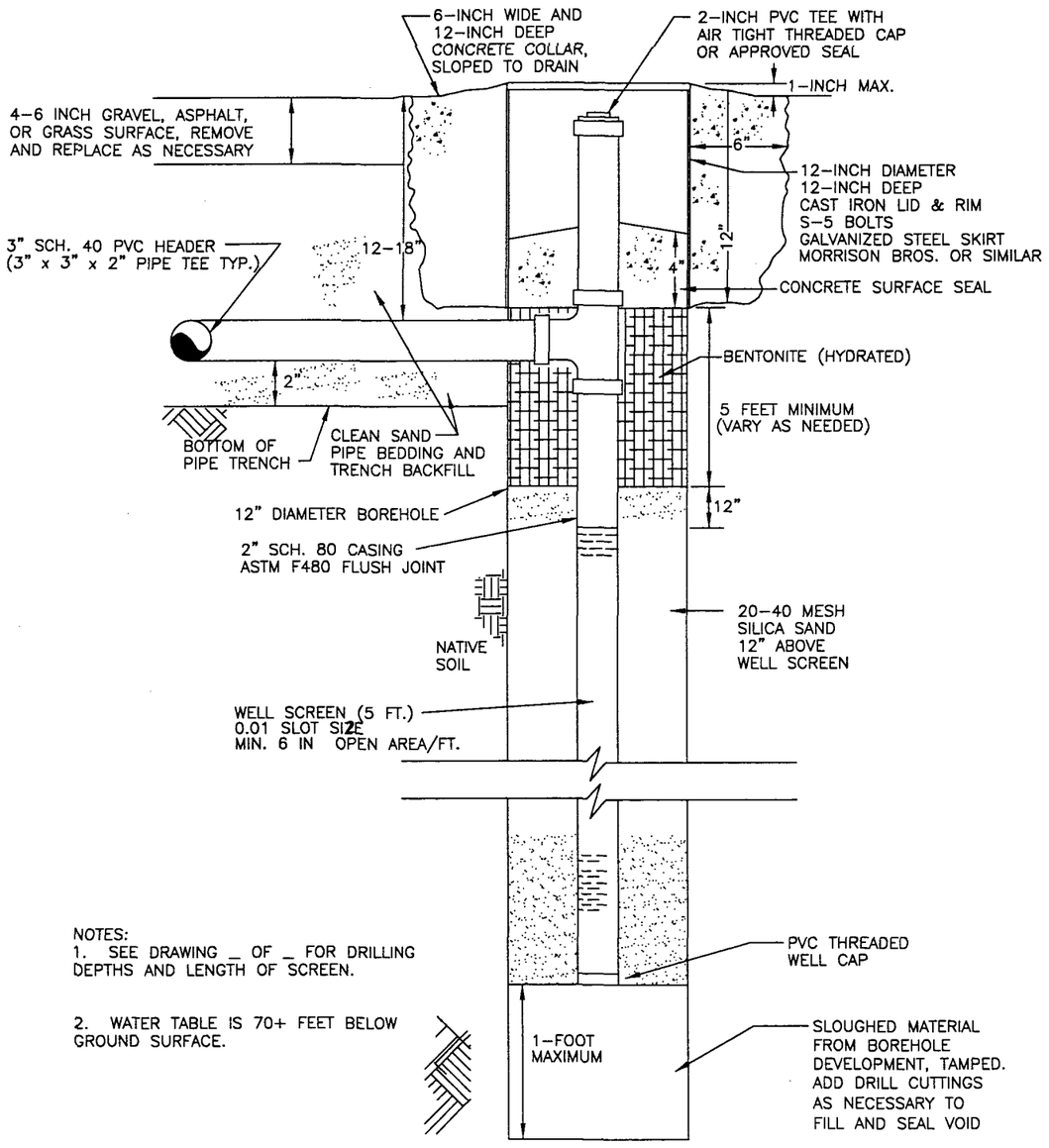
FIGURE 3-2

SVE SYSTEM DESIGN LAYOUT

DOWELL SHLUMBERGER INCORPORATED
HOBBS, NEW MEXICO

Western Water Consultants, Inc.

K:\72040\93-007L\PIPDET 01/24/95 12:26

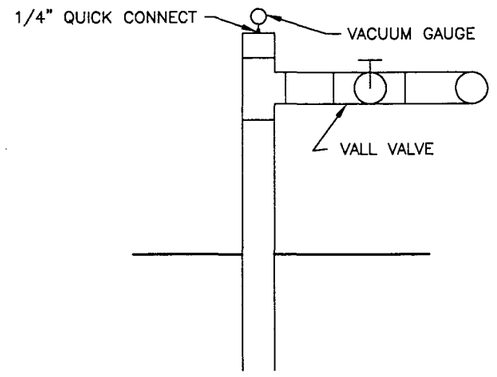


NOTES:
1. SEE DRAWING _ OF _ FOR DRILLING DEPTHS AND LENGTH OF SCREEN.

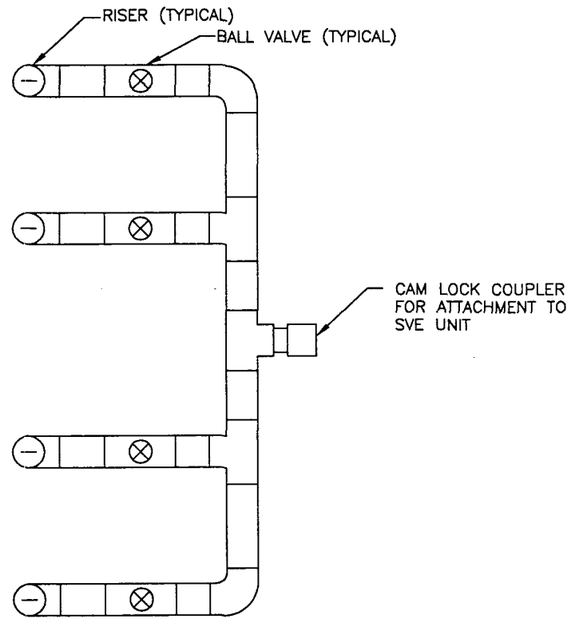
2. WATER TABLE IS 70+ FEET BELOW GROUND SURFACE.

WELL COMPLETION DETAIL
BELOW-GRADE
NO SCALE

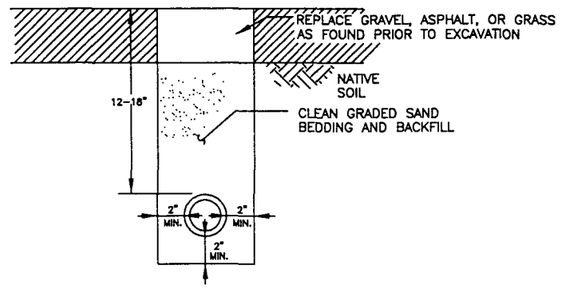
NOTE: ALL PIPING 2" SCH. 40 PVC.



SVE RISER PIPE DETAIL
NO SCALE



SVE MANIFOLD DETAIL
NO SCALE



SINGLE HEADER PIPE
TRENCH DETAIL
NO SCALE

FIGURE 3-3

SITE WORK DETAILS

DOWELL SCHLUMBERGER INCORPORATED
HOBBS, NEW MEXICO

Western Water Consultants, Inc.

During start up, the system will be inspected daily. Periodic equipment maintenance will be performed every 30 days. During this time the units will be shut down for 2-4 hours. If other than routine maintenance is required the projected down time will be evaluated and reported to the OCD. Should the projected down time be 10 days or less the repairs will be made and the system left off. If the projected down time is greater than 10 days a rental unit will be obtained for interim use.

Soil vapors will be monitored for organic compounds using a field PID and laboratory analysis. At startup the soil vapor will be measured with the PID hourly for the first day, daily for the first week and monthly thereafter. Samples will be collected for laboratory analysis at the end of the first day, at the end of the first week, and the end of the first month, and every other month thereafter. Samples will be analyzed by EPA Method 8240.

3.2.3 Air Quality

The AcuVac unit claims 99% efficiency in destruction of soil vapor contaminants. The exhaust gas will be monitored with a field PID to verify the destruction of contaminants. With 99% removal efficiency, the exhaust should have minimal contaminants and be below the action levels of the New Mexico Environment Department Air Quality Bureau. Prior to start up, concurrence with the Air Quality Bureau will be obtained.

REFERENCES

REFERENCES

Western Water Consultants, Inc., February 4, 1994, Closure Report for an Acid Collection System, Dowell Schlumberger Incorporated, Hobbs, New Mexico. Report submitted to the New Mexico Oil Conservation Division.

Western Water Consultants, Inc., July 15, 1993, Preliminary Investigation of the Former Wastewater Pond at the Dowell Schlumberger Incorporated Facility in Hobbs, New Mexico. Report submitted to the New Mexico Oil Conservation Division.

Geraghty & Miller, Inc., 1989, Underground Storage Tank Removal, Hobbs, New Mexico. Report submitted to Dowell Schlumberger, Inc.

Johnson, P.C., C.C. Stanley, M.W. Kemblowski, D.L. Byers, and J.D. Colthart, 1990, A Practical Approach to the Design, Operation, and Monitoring of In Situ Soil-Venting Systems., Ground-Water Monitoring Review, Spring 1990, pp. 159-178

APPENDIX A

WELL AND PIEZOMETER LOGS

Former Underground Storage Tank Area

EW-1 (Extraction Well)

Location: Between main office and truck maintenance warehouse

Lithology, feet

0 - 8.5 Fill, red-brown sand

8.5 - 9 Red-brown sand, soil

9 - 34 Caliche, white to buff silty sand with abundant limestone fragments, drills hard/soft

34 - 41 Sand, pinkish-tan, fine-medium grained, loose, occasional thin layer of well-cemented sand, moist, no staining

Well Completion, feet

0 - 2 Cement and flush mount well protector

2 - 31 Bentonite, hydrated

31 - 41 Washed gravel, 3/8 inch

0 - 35 2-inch Schedule 80 PVC casing

35 - 40 2-inch Schedule 80 PVC screen, 50 slot

AR1/PZ1

Location: 3 feet east of EW-1

Lithology, feet

0 - 8 Fill, brown sand and gravel

8 - 9 Red-brown sand, soil (?)

9 - 35 Caliche, white to buff silty sand and limestone, drills hard/soft

35 - 37.5 Sand, pinkish-tan, fine grained, loose, drills easy, moist, no staining

Piezometer Completion/Abandonment, feet

0 - 1 Cuttings

1 - 33 Bentonite, hydrated

33 - 37.5 Washed gravel, 3/8 inch

0 - 36.5 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

AR1/PZ2

Location: 10 feet east of EW-1

Lithology, feet

0 - 8 Fill, brown sand and gravel

8 - 9 Red-brown sand, soil (?)

9 - 35 Caliche, white to buff silty sand and limestone, drills hard/soft, slight odor and HNu reading of 4-7 ppm from cuttings at 30 - 34 feet, no staining

35 - 38 Sand, tan, fine to medium grained, loose, drills easy, moist

Piezometer Completion/Abandonment, feet

0 - 1 Cuttings
1 - 34 Bentonite, hydrated
34 - 38 Washed gravel, 3/8 inch

0 - 37 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

AR1/PZ3

Location: 35 feet east of EW-1
Lithology, feet
0 - 2 Soil, brown sand
2 - 15 Sand, tan and red-brown, fine to medium grained, occasional limestone fragments
15 - 34 Caliche, white to buff silty sand and limestone, drills hard/soft, no staining
34 - 38 Sand, tan, loose, drills easy

Piezometer Completion/Abandonment, feet
0 - 1 Cuttings
1 - 34 Bentonite, hydrated
34 - 38 Washed gravel, 3/8 inch

0 - 37 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

AR1/PZ4

Location: 73 feet east of EW-1
Lithology, feet
0 - 2 Soil, brown
2 - 15 Sand, tan to buff, fine grained, occasional limestone fragments, drills easy
15 - 34 Caliche, white to buff silty sand and limestone, drills hard/soft, no staining
34 - 38 Sand, tan, loose, drills easy

Piezometer Completion/Abandonment, feet
0 - 1 Cuttings
1 - 34 Bentonite, hydrated
34 - 38 Washed gravel, 3/8 inch

0 - 37 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

AR1/PZ5

Location: 5 feet south of EW-1

Lithology, feet

0 - 2 Soil

2 - 34 Caliche, tan silty sand and limestone, drills easy to 25 feet, drills hard/soft from 25 - 34 feet, no staining

34 - 38 Sand, tan, generally loose but occasional thin cemented layers that drill harder, moist

Piezometer Completion/Abandonment, feet

0 - 1 Cuttings

1 - 34 Bentonite, hydrated

34 - 38 Washed gravel, 3/8 inch

0 - 37 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

AR1/PZ6

Location: 20 feet south of EW-1

Lithology, feet

0 - 2 Soil, brown

2 - 35 Caliche, white to tan silty sand and limestone, drills hard/soft, no staining

35 - 38 Sand, tan, fine to medium grained, drills easy, slightly moist

Piezometer Completion/Abandonment, feet

0 - 34 Bentonite, hydrated

34 - 38 Washed gravel, 3/8 inch

0 - 37 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

Former Wastewater Pond

EW-2 (Extraction Well)

Location: Central area of former wastewater pond

Lithology, feet

0 - 15 Fill, mixture of brown sand, frac-sand, limestone chips, wood and asphalt fragments; contamination begins at 8 feet, staining and odor gets more intense with depth, borehole integrity poor due to caving in the fill

15 - 25 Caliche, silty sand and limestone, stained dark to light grey and black, strong hydrocarbon/solvent odor, limestone fragments and matrix have dissolution pits and fractures, drills hard/soft

Well Completion, feet

0 - 1.5 Cement and flush mount well protector
1.5 - 18 Bentonite, hydrated
18 - 25 Washed gravel, 3/8 inch

0 - 19 2-inch Schedule 80 PVC casing
19 - 24 2-inch Schedule 80 PVC screen, 50 slot

AR2/PZ1

Location: 5 feet west of EW-2

Lithology, feet

0 - 14 Fill, mixture of brown sand, rock fragments, and wood; loose, poor borehole integrity, solvent odor begins at 10 feet
14 - 21.5 Caliche, sand and limestone, strong hydrocarbon smell throughout interval, stained blue-grey, moderate drilling

Piezometer Completion/Abandonment, feet

0 - 0.5 Cuttings
0.5 - 18 Bentonite, hydrated
18 - 21.5 Washed gravel, 3/8 inch

0 - 21 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

AR2/PZ2

Location: 20 feet west of EW-2

Lithology, feet

0 - 12 Fill, mixture of brown sand, frac-sand, rock fragments, and wood; loose, strong hydrocarbon odor from 7.5 to 12 feet
12 - 22 Caliche, sand and limestone, stained light grey although not as intensely as EW-2 and AR2/PZ1, strong hydrocarbon odor

Piezometer Completion/Abandonment, feet

0 - 17 Bentonite, hydrated
17 - 20 Washed gravel, 3/8 inch
20 - 22 Slough from borehole

0 - 19.5 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

AR2/PZ3

Location: 40 feet west of EW-2

Lithology, feet

0 - 11 Fill, brown sand and frac-sand, sand wet with product from 4 - 5 feet, product smells like diesel, strong hydrocarbon odor from 4 to 11 feet, hole caving

11 - 21.5 Caliche, tan sand and limestone, stained light grey from 15 - 17 feet but not stained above or below this interval, strong hydrocarbon odor throughout

Piezometer Completion/Abandonment, feet
0 - 18 Bentonite, hydrated
18 - 21.5 Washed gravel, 3/8 inch

0 - 21 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

AR2/PZ4

Location: 60 feet west of EW-2
Lithology, feet
0 - 14 Fill, brown sand, frac-sand, and rock fragments; frac-sand wet with product (diesel?) from 2 - 10 feet, sand stained dark brown/black, strong hydrocarbon odor throughout
14 - 21 Caliche, tan sand and limestone, strong hydrocarbon odor, dry, drills easy

Piezometer Completion/Abandonment, feet
0 - 17.5 Bentonite, hydrated
17.5- 21 Washed gravel, 3/8 inch

0 - 20.5 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

AR2/PZ5

Location: 3 feet north of EW-2
Lithology, feet
0 - 12 Fill, mixture of brown sand, frac-sand, and rock fragments, dry, strong hydrocarbon odor at 11 feet
12 - 22 Caliche, sand and limestone, strong hydrocarbon odor throughout, stained dark grey and black from 12 - 20 feet, tan sand and limestone from 20 - 22 feet, goo-like substance (drilling gel) from core sample at 15 - 17 feet

Piezometer Completion/Abandonment, feet
0 - 18 Bentonite, hydrated
18 - 22 Washed gravel, 3/8 inch

0 - 21 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

AR2/PZ6

Location: 10 feet north of EW-2
Lithology, feet
0 - 12 Fill, brown sand and rock fragments, hydrocarbon odor begins at 7 feet
12 - 22 Caliche, sand and limestone, hydrocarbon odor throughout, stained light grey, dry, tan-buff sand and limestone (unstained) from 21 - 22 feet

Piezometer Completion/Abandonment, feet
0 - 18 Bentonite, hydrated
18 - 22 Washed gravel, 3/8 inch

0 - 22 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

<u>Former Acid Collection Area</u>

EW-3 (Extraction Well)
Location: Approximately 12 feet north of the acid dock curb
Lithology, feet
0 - 14 Fill, brown silty sand, dark grey staining and strong hydrocarbon odor begins at 9 feet and gets progressively more contaminated to 14 feet, dry, very easy drilling
14 - 22 Caliche, sand and limestone, alternating yellow (unstained) and dark grey stained material, sand and limestone highly pitted and dissolved, strong hydrocarbon odor from 14 - 17 feet, moderated odor to total depth, dry

Well Completion, feet
0 - 1 Cement and flush mount well protector
1 - 15 Bentonite, hydrated
15 - 22 Washed gravel, 3/8 inch

0 - 16 2-inch Schedule 80 PVC casing
16 - 21 2-inch Schedule 80 PVC screen, 50 slot

AR3/PZ1
Location: 3 feet northeast of EW-3
Lithology, feet
0 - 12 Fill, brown and grey sand, occasional limestone fragment, loose, hydrocarbon odor
12 - 19 Caliche, sand and limestone, stained dark grey, hydrocarbon odor, limestone pitted and dissolved

Piezometer Completion/Abandonment, feet
0 - 15 Bentonite, hydrated
15 - 19 Washed gravel, 3/8 inch

0 - 18 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

AR3/PZ2

Location: 10 feet northeast of EW-3
Lithology, feet
0 - 2 Soil, brown
2 - 19 Caliche, pink and tan-buff silty sand and limestone, no visible contamination, very faint odor at 17 feet

Piezometer Completion/Abandonment, feet
0 - 15 Bentonite, hydrated
15 - 19 Washed gravel, 3/8 inch

0 - 18 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

AR3/PZ3

Location: 20 feet northeast of EW-3
Lithology, feet
0 - 1 Soil, brown
1 - 19 Caliche, tan-buff silty sand and limestone, no visible contamination, no odor to very faint hydrocarbon odor, dry

Piezometer Completion/Abandonment, feet
0 - 15 Bentonite, hydrated
15 - 19 Washed gravel, 3/8 inch

0 - 18 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

AR3/PZ4

Location: 50 feet northeast of EW-3
Lithology, feet
0 - 2 Soil, brown
2- 19 Caliche, pink and tan-buff silty sand and limestone, no odor, no visible contamination, dry, drills easy

Piezometer Completion/Abandonment, feet
0 - 15 Bentonite, hydrated
15 - 19 Washed gravel, 3/8 inch

0 - 18 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

AR3/PZ5

Location: 5 feet northwest of EW-3

Lithology, feet

0 - 15 Fill (?), pink-tan sand with limestone and rock fragments, hydrocarbon odor from 2 to 15 feet, dry

15 - 19 Caliche, sand and limestone, limestone stained grey, hydrocarbon odor

Piezometer Completion/Abandonment, feet

0 - 15.5 Bentonite, hydrated

15.5 - 19 Washed gravel, 3/8 inch

0 - 18 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

AR3/PZ6

Location: 35 feet northwest of EW-3, area of former acid neutralization pit

Lithology, feet

0 - 0.5 Cement

0.5 - 7 Grout

7 - 8 Limestone or cement (?), very hard drilling

8 - 12 Fill (?), brown sand and rock fragments, strong hydrocarbon odor, moist

12 - 19 Caliche, tan-buff sand and limestone, strong hydrocarbon odor and grey staining from 15 - 19 feet

Piezometer Completion/Abandonment, feet

0 - 15 Bentonite, hydrated

15 - 19 Washed gravel, 3/8 inch

0 - 18 3/4 inch Schedule 80 PVC casing, open end
After SVE tests, casing filled with bentonite and hydrated

APPENDIX B

AcuVac Test Data

AcuVac Remediation, Inc.

9111 Katy Freeway
Suite 303
Houston, TX 77024
(713) 468-6688: TEL
(713) 468-6689: FAX

November 4, 1994

Mr. Rick Deuell, P.E.
Western Water Consultants, Inc.
611 Skyline Road
Laramie, WY 82071

Re: Pilot Test - Schlumberger-Dowell, Hobbs, NM

Dear Rick:

Enclosed is the report on Pilot Testing performed on November 1 - 2, 1994 at the above referenced location. The test was conducted using AcuVac's SVE I-6 System with various instrumentation including the HORIBA Analyzer. The report is divided into three separate tests.

Project Scope:

- Connect the AcuVac SVE System to wells EW-1, EW-2 and EW-3 and apply vacuum to each well; record the vacuum and well flow, all System data, including fuel flow (propane).
- The test procedure is to provide variable rates of vacuum and flow over the test periods.
- Install and observe the magnehelic gauges on the outer observation wells to determine if the selected extraction well is in vacuum communication with the outer observation wells.
- Take influent vapor samples to provide on-site Horiba Analyzer data.
- Measure the distances from the selected extraction wells to the outer wells.
- Operate the SVE System in a manner that all well vapors are passed through the engine to destruct the contaminants and exhausted to meet air emission standards.
- Complete the tests by providing a report consisting of operating and analytical data.

Fuel Use Information

The fuel requirement for the I-6 engine at 2,200 to 2,400 rpm and the h.p. requirements under test conditions is 3.26 gals/hr of propane. The measured (by weight) amount of propane used during the total test time was 40 gallons, or 2.76 gals/hr. Therefore, the well vapors provided fuel equivalent to 0.50 gals/hr or 15%. The well vapors may provide a higher percentage with an increased extraction well flow and vacuum.

Summary of Data - 3 Tests

Discussion of Data:

Test #1 was a 3.6 hour SVE test conducted from extraction well (EW) EW-2. This well is located near the rear of the property next to an existing storage area or pit. EW-2 is constructed from 2.0" PVC with a total depth of 40.0 ft and screened from 35 to 40 ft. The screened area was sand packed with bentonite from top of screened area to the surface. The E & W observation wells were constructed from 0.75" PVC pipe with a total depth of 21 - 22 ft. Each had an open end with gravel 1.0 ft below and 8.0 ft above. Above the gravel was a bentonite seal to the surface. Static data was recorded on the outer wells prior to starting the test. All SVE systems were checked and found to be normal. The magnehelic gauges were checked and set at "0". Outer wells W-3 & 4 were monitored with manometers and the data recorded by WWC. Outer wells N-1 & 2 and W-1 & 2 were monitored by AcuVac and were included in this test data.

The initial EW vacuum was 20" H_20 with a flow of 16 cfm. Instant vacuum was observed on the outer observation wells. The EW vacuum and flow was constant for 1.5 hours and the outer wells stabilized after the first 0.25 hours of testing. HORIBA data indicated the influent vapors had a hydrocarbon concentration of 1,772 ppm with a PID reading of 295 ppm. $C0_2$ was 5.36%. The influent vapors caused the IC engine to run rough which indicates the 0_2 concentration was low.

After the initial 1.5 hours, the EW vacuum was increased to 28" H_20 with a flow of 24 cfm. An immediate vacuum response was recorded on the outer wells. The EW vacuum and flow were constant for 0.9 hours with the outer wells indicating a slight increasing trend. The first part of the test was conducted for 2.1 hours and at that time the SVE System was shut off so the manometers could be moved from wells W-3 & 4 to wells N-1 and W-1. Data from wells W-3 & 4 will be included in this test data. The static data on all the outer wells was recorded and each indicated a well pressure of $\pm$ 0.20" H_20.

Upon restart, the initial EW vacuum was set at 25" H_20 and the flow was 25 cfm. An initial vacuum was recorded on the outer wells, but lower than recorded just prior to shutting off the SVE System. This is due to the necessity of the SVE vacuum to off-set

the well pressure. After 0.50 hours, the EW vacuum was increased to 28" H_20 with a flow of 30 cfm. After 1.0 hour, the outer wells were indicating a vacuum near the levels prior to shut down. As the test progressed and the EW vacuum was constant, the EW flow increased approximately 6 cfm and the IC engine was operating more smoothly. Over time, the vacuum and flow would increase with the IC engine still providing maximum contaminant destruction. The test was concluded. Sufficient data was recorded during the test period for use in the projection of an SVE radius of influence.

Test #2 was a 3.5 hour SVE test conducted from extraction well (EW) EW-3 located adjacent to the acid loading area. EW-3 is constructed from 2.0" PVC pipe with a total depth of 21 ft screened from 16 to 21 ft and sand packed with bentonite from the top of the screened area to the surface. The E and N wells have a total depth of 19 ft with an open end and are gravel packed from 1.0 ft below the open end to 4.0 ft above with bentonite to the surface. As in Test #1, all the SVE systems and magnehelic gauges were checked and calibrated prior to test time. Static well data was recorded prior to a vacuum being placed on EW-3. Each outer well recorded a pressure ranging from 0.15 to 0.20" H_20. Manometers were installed on wells E-1 and N-1 and this data was recorded by WWC. Data from outer wells E-2, 3 & 4 and N-2 was recorded by AcuVac and was included as part of the report.

At the start of the test, the initial EW vacuum was 18.5" H_20 and flow was 28 cfm and instant vacuum was recorded on the outer wells. During the first part of the test which consisted of 2.0 hours, the EW vacuum was constant at 18" H_20 and the flow varied from 28 to 30 cfm. After the initial data, the outer wells indicated a slight increasing trend. HORIBA data indicated the hydrocarbon concentration was 580 ppm with $C0_2$ of 5.80%. The PID reading was 294 ppm. The EW well vacuum was increased to 20.0" H_20 and flow to 33 cfm and the outer wells responded with a recorded vacuum increase. After 2.4 hours the SVE System was shut off so the manometers could be relocated on wells E-2 & 3. Data from wells E-1 and N-1 is included in the second part of this report. Prior to the restart, the static well data was recorded and each well indicated a well pressure of 0.10" H_20.

After restart, the initial EW vacuum was set at 20" H_20 and flow at 33 cfm. The outer wells recorded an instant vacuum with a slight increasing trend over the next 1.0 hour. At the conclusion of the test, the EW vacuum was 20.5" H_20 and the outer wells responded with a slight increase. The test provided additional data for the projection of a vacuum radius of influence.

Test #3 was a 5.0 hour SVE test conducted from extraction well (EW) EW-1 located adjacent to the front office. EW-1 is constructed from 2.0" PVC, has a total depth of 40.0 ft and is screened from 35 to 40 ft. The screened area is sand packed with bentonite from the top of the screened area to the surface. The S and E outer wells are constructed from 0.75" PVC and have a total depth of 37.5 ft with an open end. The wells are gravel packed 1.0 ft below the open end and 4.0 ft above with bentonite to the

surface. All SVE systems were checked and found to be normal and the magnehelic gauges were checked and set at "0".

When the test started, the initial EW vacuum was set at 40" H_20 with a flow of 18 cfm. An initial vacuum response was recorded on the outer wells. The EW vacuum and flow was constant for the initial 1.5 hours and the outer well vacuums continued to indicate an increase during this period. The EW vacuum was increased to 70" H_20 and a flow of 36 cfm. A significant vacuum response was indicated on each outer well. HORIBA data indicated the hydrocarbon concentration was 66 ppm and $C0_2$ was 3.26%. Two PID tests indicated the range from 194 to 498 ppm. The EW vacuum was increased to 80" H_20 and the outer wells continued to indicate an increasing trend.

After 3.1 hours the SVE system was shut off so the manometers could be installed on wells S-2 and E-2. Data from wells S-1 and E-1 was included in this test data. Prior to restart, the static well data was recorded on outer wells S-1, E-1, 3 & 4. Each indicated a well pressure of 0.25 to 0.30" H_20. Upon restart, the EW vacuum was set at 40" H_20 and flow at 30 cfm. The outer wells responded with initial vacuums. E-1 indicated a significant vacuum of 8.40" H_20. As the test continued, the EW vacuum was increased to 70" H_20 with significant vacuum response on the outer wells. HORIBA and PID data indicated the hydrocarbon concentration in the influent vapors continued to be low at 38 and 202 ppm.

The test provided excellent data to support an SVE radius of influence. The distances between each extraction well and the outer observation wells were measured to be used in the radius of influence calculation.

Additional Information (This should be read as a vital part of the report):

- Summary of Operating Data (Distances may vary from actual survey)
- Field Operating Data and Notes
- Figure 1 - Plot of Observed Vacuum versus Distance at the Facility
- Site Photographs

Conclusion:

The tests indicate that soil vacuum extraction (SVE) would be an effective method of remediation for this facility. Although the observed vacuum on some of the outer observation wells was relatively low, the duration of the pilot tests was short compared to continuous operation. Also, the test data indicated that the vacuum and flow in well EW-2 and EW-3 will increase over time and under continuous operation. However, the results give positive indication that the observed and reported wells were in vacuum communication with the selected SVE extraction wells. Figure #1 indicated that the effective radius of influence would be from 45 to

65 ft with extraction well flow of 30 - 32 cfm and extraction well vacuum in the 32 - 36" H_20 range. An approximation of the radius of influence may be obtained by determining the point at which the measured vacuum is 0.25 to 0.5" H_20. It is assumed that beyond the lower point, the pressure gradient (driving force) is negligible to effectively transport vaporized contaminants to the extraction well. Under continuous operation, vacuum and radius of influence may continue to increase 1 to 3 days. All other data must be considered in the final design for a remedial plan.

The AcuVac SVE System performed as represented and should be considered a viable technology to use for the remediation of this location. The SVE System with the 300 CID, 6 cylinder engine could initially provide total extraction well flow of approximately 120 cfm with a vacuum, if required, up to 20" Hg. The SVE System with the 140 CID, 4 cylinder engine could provide total extraction well flow of 60 cfm with a vacuum up to 20" Hg. These Systems are designed to consume heavy concentration of VOCs and meet all air emission standards. While the hydrocarbons contained in the influent well vapors are the primary fuel for the IC engine, propane or natural gas is used as the auxiliary fuel.

Once you have reviewed the report, please call me if you have any questions.

Sincerely,

James E. Sadler
Product Engineer

CC: John Miller
Schlumberger

50265.Rep

Schlumberger-Dowell/Hobbs, NM
Western Water Consultants Test #1

11/01/94	First Data Time 0830	Second Data Time 0845	Third Data Time 0900	Fourth Data Time 0930	Fifth Data Time 1000	Sixth Data Time 1030	Seventh Data Time 1100
Horiba-HC PPM	-	-	-	-	1,772	-	1,910
Extraction Well Flow-CFM Well EW-2	16	16	16	16	16	24	24
Extraction Well Vacuum "H_20 Well EW-2	20	20	20	20	20	28	28
Well N-1 Vacuum "H_20 Dist. 3.4 ft.	1.15	1.20	1.20	1.15	1.20	2.80	2.75
Well N-2 Vacuum "H_20 Dist. 10.9 ft.	.38	.45	.45	.40	.42	.60	.62
Well W-1 Vacuum "H_20 Dist. 5.2 ft.	.60	.60	.58	.58	.60	.90	.92
Well W-2 Vacuum "H_20 Dist. 16.8 ft.	.20	.23	.23	.23	.23	.31	.32
Well W-3 Vacuum "H_20 Dist. 40.0 ft.	-	-	-	-	-	-	-
Well W-4 Vacuum "H_20 Dist. 60.5 ft.	-	-	-	-	-	-	-

Schlumberger-Dowell/Hobbs, NM
Western Water Consultants Test #1

11/01/94	Eighth Data Time 1130	Ninth Data Time 1200	Tenth Data Time 1230	Average Data 3.6 Hrs.	Maximum Data
Horiba-HC PPM	-	2,060	-	1,914	2,060
Extraction Well Flow-CFM Well EW-2	25	30	30	21.3	30
Extraction Well Vacuum "H_2O Well EW-2	25	28	28	23.7	28
Well N-1 Vacuum "H_2O Dist. 3.4 ft.	-	-	-	1.64	2.8
Well N-2 Vacuum "H_2O Dist. 10.9 ft.	.50	.58	.62	.50	.62
Well W-1 Vacuum "H_2O Dist. 5.2 ft.	-	-	-	.68	.92
Well W-2 Vacuum "H_2O Dist. 16.8 ft.	.25	.26	.28	.25	.32
Well W-3 Vacuum "H_2O Dist. 40.0 ft.	.15	.16	.18	.16	.18
Well W-4 Vacuum "H_2O Dist. 60.5 ft.	.03	.04	.07	.05	.07

Schlumberger-Dowell/Hobbs, NM
Western Water Consultants Test #2

11/01/94	First Data Time 1345	Second Data Time 1400	Third Data Time 1430	Fourth Data Time 1500	Fifth Data Time 1530	Sixth Data Time 1600	Seventh Data Time 1620
Horiba-HC PPM	-	-	-	580	-	-	-
Extraction Well Flow-CFM Well EW-3	28	28	28	30	30	33	33
Extraction Well Vacuum "H_2O Well EW-3	18.5	18.0	18.0	18.0	18.0	20.0	20.0
Well E-1 Vacuum "H_2O Dist. 2.7 ft.	-	-	-	-	-	-	1.65
Well E-2 Vacuum "H_2O Dist. 8.7 ft.	.60	.68	.68	.68	.68	.80	-
Well E-3 Vacuum "H_2O Dist. 20.3 ft.	.28	.35	.36	.40	.40	.46	-
Well E-4 Vacuum "H_2O Dist. 48.6 ft.	.05	.10	.10	.12	.13	.17	.15
Well N-1 Vacuum "H_2O Dist. 4.9 ft.	-	-	-	-	-	-	1.10
Well N-2 Vacuum "H_2O Dist. 34.9 ft.	.12	.20	.20	.20	.22	.26	.24

Schlumberger-Dowell/Hobbs, NM
Western Water Consultants Test #2

11/01/94	Eighth Data Time 1700	Ninth Data Time 1730	Average Data 3.5 Hrs.	Maximum Data
Horiba-HC PPM	-	-	580	580
Extraction Well Flow-CFM Well EW-3	33	33	30.66	33
Extraction Well Vacuum "H_2O Well EW-3	20.0	20.5	19.0	20.5
Well E-1 Vacuum "H_2O Dist. 2.7 ft.	1.65	1.70	1.67	1.70
Well E-2 Vacuum "H_2O Dist. 8.7 ft.	-	-	.69	.80
Well E-3 Vacuum "H_2O Dist. 20.3 ft.	-	-	.38	.46
Well E-4 Vacuum "H_2O Dist. 48.6 ft.	.17	.22	.13	.22
Well N-1 Vacuum "H_2O Dist. 4.9 ft.	1.15	1.25	1.17	1.25
Well N-2 Vacuum "H_2O Dist. 34.9 ft.	.30	.34	.23	.34

Schlumberger-Dowell/Hobbs, NM
Western Water Consultants Test #3

11/02/94	First Data Time 0635	Second Data Time 0650	Third Data Time 0720	Fourth Data Time 0735	Fifth Data Time 0805	Sixth Data Time 0820	Seventh Data Time 0850
Horiba-HC PPM	-	30	-	-	-	-	66
Extraction Well Flow-CFM Well EW-1	18	18	18	18	18	36	36
Extraction Well Vacuum "H_2O Well EW-1	40	40	40	40	40	70	70
Well S-1 Vacuum "H_2O Dist. 5.5 ft.	-	-	-	-	-	-	-
Well S-2 Vacuum "H_2O Dist. 20.0 ft.	.98	1.40	1.50	1.65	1.80	2.40	2.60
Well E-1 Vacuum "H_2O Dist. 3.0 ft.	-	-	-	-	-	-	-
Well E-2 Vacuum "H_2O Dist. 10.0 ft.	2.90	3.40	3.55	3.70	3.80	5.95	6.10
Well E-3 Vacuum "H_2O Dist. 35.0 ft.	.72	.98	1.15	1.25	1.35	1.65	1.85
Well E-4 Vacuum "H_2O Dist. 72.5 ft.	.13	.21	.36	.44	.50	.55	.60

Schlumberger-Dowell/Hobbs, NM
Western Water Consultants Test #3

11/02/94	Eighth Data Time 0930	Ninth Data Time 0945	Tenth Data Time 1005	Eleventh Data Time 1035	Twelfth Data Time 1105	Thirteenth Data Time 1135
Horiba-HC PPM	-	-	-	38	-	-
Extraction Well Flow-CFM Well EW-1	36	39	25	25	37	37
Extraction Well Vacuum "H_20 Well EW-1	70	80	40	40	70	70
Well S-1 Vacuum "H_20 Dist. 5.5 ft.	-	-	1.0	2.20	4.40	5.80
Well S-2 Vacuum "H_20 Dist. 20.0 ft.	2.60	2.70	-	-	-	-
Well E-1 Vacuum "H_20 Dist. 3.0 ft.	-	-	8.40	8.40	14.0	14.2
Well E-2 Vacuum "H_20 Dist. 10.0 ft.	6.20	6.40	-	-	-	-
Well E-3 Vacuum "H_20 Dist. 35.0 ft.	1.80	1.85	1.00	1.15	1.55	1.60
Well E-4 Vacuum "H_20 Dist. 72.5 ft.	.68	.65	.23	.32	.46	.55

Schlumberger-Dowell/Hobbs, NM
Western Water Consultants Test #3

11/02/94	Average Data 5.0 Hrs.	Maximum Data
Horiba-HC PPM	44.67	66
Extraction Well Flow-CFM Well EW-1	27.77	39
Extraction Well Vacuum "H_20 Well EW-1	54.62	80
Well S-1 Vacuum "H_20 Dist. 5.5 ft.	3.35	5.8
Well S-2 Vacuum "H_20 Dist. 20.0 ft.	1.96	2.70
Well E-1 Vacuum "H_20 Dist. 3.0 ft.	11.25	14.20
Well E-2 Vacuum "H_20 Dist. 10.0 ft.	4.67	6.40
Well E-3 Vacuum "H_20 Dist. 35.0 ft.	1.38	1.85
Well E-4 Vacuum "H_20 Dist. 72.5 ft.	.39	.68

AcuVac Remediation

OPERATING DATA - TEST NO 1

ACUVAC SVE SYSTEM

Page 1 Location SCHLUMBERGER-DOWELL HOBBS, NM Project Engr. SADLER/LUNDGREN

	Parameter						
	Date	11/01/94					→
		Time WARM UP	Time START	Time	Time	Time	Time
		0800	0830	0845	0900	0930	1000
		Hr. Meter	Hr. Meter	Hr. Meter	Hr. Meter	Hr. Meter	Hr. Meter
		005.2	005.7	005.9	006.3	006.5	006.9
ENGINE/BLOWER	R.P.M.	2000	2300	2300	2300	2300	2300
	Oil Press P.S.I.	60	50	50	50	50	50
	Water Temp °F	160	165	170	170	170	175
	Volts	13.5	13.5	13.5	13.5	13.5	13.5
	Intake Vac Hg	15	12	12	12	12	12
FUEL/AIR	Gas Flow Fuel/Propane cfh	160	185	185	185	185	185
	Air Flow cfm	32	36	36	36	36	36
	Well Flow EW-2 cfm	-	16	16	16	16	16
	Extraction Well Vac EW-2 "H_2O	-	20	20	20	20	20
	Air Temp °F	54	56	56	64	66	67
	Barometric Pressure Hg						
MONITOR WELL VACUUM	N-1 "H_2O	0	1.15	1.20	1.20	1.15	1.20
	N-2 "H_2O	0	.38	.45	.45	.40	.42
	W-1 "H_2O	0	.60	.60	.58	.58	.60
	W-2 "H_2O	0	.20	.23	.23	.23	.23
	W-3 "H_2O	0	-	-	-	-	-
	W-4 "H_2O	0	-	-	-	-	-
	"H_2O	STATIC CONDITIONS NO VACUUM ON EXTRACTION WELL					
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
MANIFOLD	Vapor Wells On/Off	OFF	ON	→	→	→	→
	Air Injection Pressure P.S.I.	OFF	→	→	→	→	→
	Air Injection Flow cfm	OFF	→	→	→	→	→
	Samples					PID Influent Vapors	HORIBA Influent Vapors

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TEST	Instrument	PID	HORIBA				
	Time	0945	0955				
VAPOR INFLUENT	H-C ppmv	295	1772				
	CO_2 %	–	5.36				
	C-O %	–	.02				
EMISSIONS	H-C ppmv						
	CO_2 %						
	C-O %						
	Air/Fuel Ratio %						

OPERATING DATA AND NOTES

DATE 11/01/94 TEST NO. 1

0630	Arrived at location. Positioned SVE System near
	well EW-2 as extraction well (EW) Well Data- 2" PVC
	with TD = 40' and screened 35' to 40' with sand and bentomite
0700-0825	Made ready 3/4" monitoring wells to accept magnehelic gauges
	Checked and "0" all gauges - Checked SVE system-all normal
	Monitoring well data-E & W - TD = 21' to 22', open end with gravel
	up 8.0' and bentonite seal to surface - 3/4" PVC
0830	START Test # 1 - Locations is rear of property near existing pit area
	Initial EW flow 16cfm, vacuum @ 20"H_2O - Engine very rough indicating
	possible low O_2 in well vapors. Outer wells W-3 & 4 monitored by WWC
	Instant vacuum recorded on other outer wells.
0845	Recorded Data - EW flow & vacuum steady - Outer wells indicating increasing trend
0900	Recorded Data - EW flow & vacuum steady - Outer wells steady
0920	Shut down SVE system to install vacuum quick disconnect
0940	Re-start - Recorded Data - EW flow and vac. steady - Outer wells steady
0945-55	HORIBA & PID data - Influent vapor sample - HC low
1000	Recorded Data - All SVE systems normal - Increasing trend on
	outer wells - Engine running smoother

AcuVac Remediation

OPERATING DATA - TEST NO 1

ACUVAC SVE SYSTEM

Page 2 Location SCHLUMBERGER-DOWELL HOBBS, NM Project Engr. SADLER/LINDGREN

	Parameter						
	Date	11/01/94					→
		Time	Time	Time	Time Restart	Time	Time
		1030	1100	1125	1130	1200	1230
		Hr. Meter	Hr. Meter	Hr. Meter	Hr. Meter	Hr. Meter	Hr. Meter
		007.3	007.8	008.2	008.3	008.8	009.3
ENGINE/BLOWER	R.P.M.	2100	2100	2000	2200	2200	2400
	Oil Press P.S.I.	50	50	50	50	50	50
	Water Temp °F	175	175	175	175	175	175
	Volts	13.5	13.5	13.5	13.5	13.5	13.5
	Intake Vac Hg	12	12	15	11	11	10
FUEL/AIR	Gas Flow Fuel/Propane cfh	190	190	160	200	200	210
	Air Flow cfm	34	36	38	33	35	36
	Well Flow EW-2 cfm	24	24	0	25	30	30
	Extraction Well Vac EW-2 "H_2O	28	28	0	25	28	28
	Air Temp °F	73	74	77	77	78	79
	Barometric Pressure Hg						
MONITOR WELL VACUUM	N-1 "H_2O	2.80	2.75	(.23)	—	—	—
	N-2 "H_2O	.60	.62	(.23)	.50	.58	.62
	W-1 "H_2O	.90	.92	(.22)	—	—	—
	W-2 "H_2O	.31	.32	(.23)	.25	.26	.28
	W-3 "H_2O	—	—	(.17)	.15	.16	.18
	W-4 "H_2O	—	—	(.22)	.03	.04	.07
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O				( ) INDICATE WELL PRESSURE		
	"H_2O						
	"H_2O						
				STATIC CONDITIONS NO VACUUM ON WELL NO EXTRACTION			
MANIFOLD	Vapor Wells On/Off	ON	ON	OFF	ON	ON	ON
	Air Injection Pressure P.S.I.	OFF	→	→	→	→	→
	Air Injection Flow cfm	OFF	→	→	→	→	→
	Samples						

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TEST	Instrument	PID	HORIBA	HORIBA			
	Time	1050	1055	1215			
VAPOR INFLUENT	H-C ppmv	699	1910	2060			
	CO_2 %	—	6.23	6.44			
	C-O %	—	.03	.03			
EMISSIONS	H-C ppmv						
	CO_2 %						
	C-O %						
	Air/Fuel Ratio %						

OPERATING DATA AND NOTES

DATE 11/01/94 TEST NO. 1

1010	Increased EW vacuum to 28" H_2O, flow @ 29 cfm
1030	Recorded Data- Outer wells indicating substential increase
	in response to EW vacuum and flow increase.
1050-55	PID and HORIBA Data - HC @ 699 ppm on PID, 1910 ppm on HORIBA
1100	Recorded Data- All SUE systems normal - Outer wells steady
1105	Shut off SUE system to allow WWC to relocate
	manometers from wells W-3, W-4 to N-1, W-1
1125	Recorded static well data - No vacuum on EW - wells N-2,
	W-2, 3 & 4 recorded well pressure
1130	Restart Test #2 - Initial EW vacuum @ 25" H_2O, flow @ 25 cfm
	Outer wells indicating initial vacuum, although lower due to press.
1200	Recorded data - Outer wells responding to increased
	EW vacuum (28" H_2O) and flow (30 cfm)
1215	HORIBA Data- Influent vapors - HC @ 2060 ppm
1230	Recorded Data- EW vacuum @ 28" H_2O, flow @ 30 cfm
	Outer wells indicating slight increase in vacuum
	Test # 1 completed - Removed magnehelic gauges, well
	plugs and closed wells

AcuVac Remediation

OPERATING DATA - TEST NO 2

ACUVAC SVE SYSTEM

Page 1 Location SCHLUMBERGER-DOWELL HOBBS, NM Project Engr SADLER/LUNDGREN

	Parameter						
	Date	11/01/94	→	→	→	→	→
		Time 1320	Time START 1345	Time 1400	Time 1430	Time 1500	Time 1530
		Hr. Meter	Hr. Meter 010.5	Hr. Meter 010.7	Hr. Meter 011.3	Hr. Meter 011.8	Hr. Meter 012.3
ENGINE/BLOWER	R.P.M.	—	2200	2200	2300	2300	2200
	Oil Press P.S.I.	—	50	50	50	50	50
	Water Temp °F	—	180	185	185	185	185
	Volts	—	13.5	13.5	13.5	13.5	13.5
	Intake Vac Hg	—	10	10	10	10	10
FUEL/AIR	Gas Flow Fuel/Propane cfh	—	190	190	200	200	200
	Air Flow cfm	—	37	37	37	37	37
	Well Flow EW-3 cfm	0	28	28	28	30	30
	Extraction Well Vac EW-3 "H_2O	0	18.5	18.0	18.0	18.0	18.0
	Air Temp °F	81	81	81	81	80	80
	Barometric Pressure Hg						
MONITOR WELL VACUUM	E-1 "H_2O	(.15)	—	—	—	—	—
	E-2 "H_2O	(.17)	.60	.68	.68	.68	.68
	E-3 "H_2O	(.17)	.28	.35	.36	.40	.40
	E-4 "H_2O	(.15)	.05	.10	.10	.12	.13
	N-1 "H_2O	(.15)	—	—	—	—	—
	N-2 "H_2O	(.20)	.12	.20	.20	.20	.22
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O	STATIC CONDITIONS NO VACUUM ON EXTRACTION WELL	( )	INDICATES WELL PRESSURE			
	"H_2O						
	"H_2O						
MANIFOLD	Vapor Wells On/Off	OFF	ON	ON	ON	ON	ON
	Air Injection Pressure P.S.I.	OFF	—				→
	Air Injection Flow cfm	OFF	—				→
	Samples			PID Influent Sample	HORIBA Influent Sample		

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TEST	Instrument	PID	HORIBA				
	Time	1450	1455				
VAPOR INFLUENT	H-C ppmv	294	580				
	CO_2 %	–	5.80				
	C-O %	–	.02				
EMISSIONS	H-C ppmv						
	CO_2 %						
	C-O %						
	Air/Fuel Ratio %						

OPERATING DATA AND NOTES

DATE 11/01/94 TEST NO. 2

1300	Positioned SVE System near well EW-3 as extraction well (EW)
	This well is located adjacent to the acid loading area
	Well Data - EW constructed from 2.0" PVC with TD = 21', screened
	from 16' to 21', sand packed with bentonite to the surface
	E & N wells have TD = 19', open end with gravel up to 15' and
	bentonite to the surface
1320	Recorded static data on outer wells - All recorded well pressure.
	WWC installed manometers on wells E-1 and N-1; E-2,
	3 & 4 and N-2 included in this data.
1345	START Test # 2 - Initial EW vacuum @ 18.5" H_2O, flow @ 28 CFM
	Instant vacuum recorded on outer wells - Engine very rough
	probably due to low O_2 in well vapors
1400	Recorded Data - All systems steady - Outer wells have increasing trend
1430	Recorded Data - EW vac. and flow steady - Outer wells steady
1450-55	PID and HORIBA data - PID @ 294 ppm, HORIBA @ 580 ppm
1500	Recorded Data - EW vacuum and flow steady - Outer wells indicating
	increasing trend
1530	Recorded Data - All systems steady - Outer wells steady

AcuVac Remediation

OPERATING DATA - TEST NO 2

ACUVAC SVE SYSTEM

Page 2 Location SCHLUMBERGER-DOWELL HOBBS, NM Project Engr. SADLER/LUNDGREN

	Parameter						
	Date	11/01/94	→				→
		Time 1600	Time 1615	Time Re-Start 1620	Time 1700	Time 1730	Time
		Hr. Meter 012.8	Hr. Meter	Hr. Meter 012.9	Hr. Meter 013.5	Hr. Meter 014.0	Hr. Meter
ENGINE/BLOWER	R.P.M.	2100	—	2000	2100	2100	
	Oil Press P.S.I.	50	—	50	50	50	
	Water Temp °F	185	—	180	180	180	
	Volts	13.5	—	13.5	13.5	13.5	
	Intake Vac Hg	10	—	10	10	10	
FUEL/AIR	Gas Flow Fuel/Propane cfh	200	—	200	200	200	
	Air Flow cfm	37	—	37	37	37	
	Well Flow EW-3 cfm	33	0	33	33	33	
	Extraction Well Vac EW-3 "H_2O	20.0	0	20.0	20.0	20.5	
	Air Temp °F	79	76	76	70	66	
	Barometric Pressure Hg						
MONITOR WELL VACUUM	E-1 "H_2O	—	(.10)	1.65	1.65	1.70	
	E-2 "H_2O	.80	(.10)	—	—	—	
	E-3 "H_2O	.46	(.10)	—	—	—	
	E-4 "H_2O	.17	(.10)	.15	.17	.22	
	N-1 "H_2O	—	(.10)	1.10	1.15	1.25	
	N-2 "H_2O	.26	(.10)	.24	.30	.34	
	"H_2O		STATIC CONDITIONS NO VACUUM ON EXTRACTION WELL				
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O			( ) INDICATES WELL PRESSURE			
	"H_2O						
	"H_2O						
MANIFOLD	Vapor Wells On/Off	ON	OFF	ON	ON	ON	
	Air Injection Pressure P.S.I.	OFF	—			→	
	Air Injection Flow cfm	OFF	—			→	
	Samples						

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TEST	Instrument						
	Time						
VAPOR INFLUENT	H-C ppmv						
	CO_2 %						
	C-O %						
EMISSIONS	H-C ppmv						
	CO_2 %						
	C-O %						
	Air/Fuel Ratio %						

OPERATING DATA AND NOTES

DATE 11/01/94 TEST NO. 2

1535	Increased EW vacuum to 20" H_2O, flow @ 32 CFM
1600	Recorded Data - EW vacuum and flow steady - Outer wells
	indicating increased vacuum in response to EW vac. and flow increase
1605	Shut off SVE System so WWC could relocate
	manometers from wells E-1, N-1 to wells E-2 and E-3
	Well data from outer wells E-1, E-4, N-1 & 2 included in this data
1615	Recorded static well data - No vacuum on EW
1620	Restart Test #2 - Initial EW vacuum @ 20" H_2O, flow @ 33 CFM
	Instant vacuum response recorded on outer wells, although
	somewhat lower due to outer well pressure
1700	Recorded Data - All SVE systems normal and steady
	Outer wells indicating slight increase in vacuum
1730	Recorded Data - EW vacuum @ 20.5" H_2O, flow @ 33 CFM
	Outer wells responding to slightly increased EW vacuum
	Engine not as rough as initial 30 minutes.
	Test # 2 completed - Removed magnehelic gauges,
	well plugs and closed wells - Loaded equipment
	and departed site at 1830

AcuVac Remediation

OPERATING DATA - TEST NO 3

ACUVAC SVE SYSTEM

Page 1 Location SCHLUMBERGER-DOWELL HOBBS, NM Project Engr. SADLER/LUNDGREN

	Parameter						
	Date	11/02/94	→	→	→	→	→
		Time warm up 0620	Time START 0635	Time 0650	Time 0720	Time 0735	Time 0805
		Hr. Meter 014.5	Hr. Meter 014.7	Hr. Meter 015.0	Hr. Meter 015.4	Hr. Meter 015.7	Hr. Meter 016.2
ENGINE/BLOWER	R.P.M.	2000	2250	2250	2300	2300	2300
	Oil Press P.S.I.	60	60	50	50	50	50
	Water Temp °F	160	170	175	175	175	175
	Volts	14	13.5	13.5	13.5	13.5	13.5
	Intake Vac Hg	16	13	13	13	13	13
FUEL/AIR	Gas Flow Fuel/Propane cfh	160	180	195	195	195	195
	Air Flow cfm	36	20	20	20	20	20
	Well Flow EW-1 cfm	0	18	18	18	18	18
	Extraction Well Vac EW-1 "H_2O	0	40	40	40	40	40
	Air Temp °F	56	57	57	58	59	60
	Barometric Pressure Hg						
MONITOR WELL VACUUM	S-1 "H_2O	0	-	-	-	-	-
	S-2 "H_2O	.01	.98	1.40	1.50	1.65	1.80
	E-1 "H_2O	.02	-	-	-	-	-
	E-2 "H_2O	.01	2.90	3.40	3.55	3.70	3.80
	E-3 "H_2O	.04	.72	.98	1.15	1.25	1.35
	E-4 "H_2O	.03	.13	.21	.36	.44	.50
	"H_2O	STATIC CONDITIONS NO VACUUM ON EXTRACTION WELL					
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
MANIFOLD	Vapor Wells On/Off	OFF	ON	→	→	→	→
	Air Injection Pressure P.S.I.	OFF	→	→	→	→	→
	Air Injection Flow cfm	OFF	→	→	→	→	→
	Samples			HORIBA & PID Influent Sample			

(933107).eee

TEST	Instrument	HORIBA	PID				
	Time	0655	0655				
VAPOR INFLUENT	H-C ppmv	30	39				
	CO_2 %	3.28	—				
	C-O %	.01	—				
EMISSIONS	H-C ppmv						
	CO_2 %						
	C-O %						
	Air/Fuel Ratio %						

OPERATING DATA AND NOTES

DATE 11/02/94 TEST NO. 3

0600	Arrived at location - set up SUE System near well EW-1 as extraction well (EW) - Well Data: EW-1 is constructed from 2.0" PVC with TD = 40' and screened up to 35' - No groundwater - SE EW well have TD = 37.5', open end and gravel 1.0 ft below to 9.0 ft above with bentonite to the surface - System check ok - Magnehelic set at "0"
0635	START Test # 3 - Initial EW vac. @ 40" H_2O, flow @ 18 cfm Good initial vacuum response from outer wells -
0650	Recorded Data - All SUE systems normal - Outer wells indicating continued increasing trend.
0653	HORIBA Data - PID Data - HC low @ 30 - 39 ppm - CO_2 @ 3.28%
0720	Recorded Data - All systems normal - Outer wells still an increasing trend
0735	Recorded Data - EW vacuum steady @ 40" H_2O, flow @ 18 cfm Propane @ 195 cfh - Outer wells still indicating increasing trend
0805	Recorded Data - All steady
0810	Increased EW vacuum to 70" H_2O, flow @ 35 cfm, propane @ 200 cfh

AcuVac Remediation

OPERATING DATA - TEST NO 3

ACUVAC SVE SYSTEM

Page 2 Location SCHLUMBERGER-DOWELL HOBBS, NM Project Engr SADLER/LUNDGREN

	Parameter						
	Date	11/02/94	→	→	→	→	→
		Time	Time	Time	Time	Time	Time Re Start
		0820	0850	0930	0945	0955	1005
		Hr. Meter	Hr. Meter	Hr. Meter	Hr. Meter	Hr. Meter	Hr. Meter
		016.4	016.9	017.6	017.8	018.0	018.2
ENGINE/BLOWER	R.P.M.	2300	2300	2400	2500	–	2400
	Oil Press P.S.I.	50	50	50	50	–	50
	Water Temp °F	175	175	180	180	–	180
	Volts	13.5	13.5	13.5	13.5	–	13.5
	Intake Vac Hg	13	13	14	14	–	13
FUEL/AIR	Gas Flow Fuel/Propane cfh	200	200	205	210	–	185
	Air Flow cfm	15	15	15	15	–	30
	Well Flow EW-1 cfm	36	36	36	39	0	25
	Extraction Well Vac EW-1 "H_2O	70	70	70	80	0	40
	Air Temp °F	64	69	70	71	72	73
	Barometric Pressure Hg						
MONITOR WELL VACUUM	S-1 "H_2O	–	–	–	–	(.30)	1.0
	S-2 "H_2O	2.40	2.60	2.60	2.70	–	–
	E-1 "H_2O	–	–	–	–	(.30)	8.40
	E-2 "H_2O	5.95	6.10	6.20	6.40	–	–
	E-3 "H_2O	1.65	1.85	1.80	1.85	(.25)	1.00
	E-4 "H_2O	.55	.60	.68	.65	(.25)	.23
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O		( ) INDICATES WELL PRESSURE				
	"H_2O						
	"H_2O						
MANIFOLD	Vapor Wells On/Off	ON	ON	ON	ON	OFF	ON
	Air Injection Pressure P.S.I.	OFF	→	→	→	→	→
	Air Injection Flow cfm	OFF	→	→	→	→	→
	Samples		HORIBA Influent Sample	PID Influent Sample			

STATIC CONDITIONS NO VACUUM ON EXTRACTION WELL

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TEST	Instrument	HORIBA	PID #1	PID #2			
	Time	0910	0915	0915			
VAPOR INFLUENT	H-C ppmv	66	194	498			
	CO_2 %	3.26	–	–			
	C-O %	.01	–	–			
EMISSIONS	H-C ppmv						
	CO_2 %						
	C-O %						
	Air/Fuel Ratio %						

OPERATING DATA AND NOTES

DATE 11/02/94 TEST NO. 3

0820	Recorded Data - All SVE systems normal - Outer wells
	indicating good response to EW vacuum and flow increase
0850	Recorded Data - EW vacuum steady @ 70" H_2O, flow
	@ 36 cfm - Outer wells indicating increasing trend
0910-15	HORIBA & PID Data - HC varying between 66 and 498 ppm
	(Horiba was recalibrated prior to this data)
0930	Recorded Data - All SVE systems steady - Outer wells
	indicating leveling trend to slight decrease
0935	Increased EW vacuum to 80" H_2O, flow @ 38 cfm
0945	Recorded Data - Outer wells responded to EW vacuum
	and flow increase
0950	Shut off SVE system so manometers could be moved
	from wells S-1 and E-1 to wells S-2 and E-2
0955	Recorded static well data - Slight pressure 0.25 to 0.30
	indicated in S-2, E-2, 3 & 4.
1005	Restart Test # 3 - Initial EW vacuum set at 40" H_2O,
	flow @ 25 cfm - Good initial vacuum response on
	outer wells - Wells S-2 & E-2 being monitored by WWC.

AR AcuVac Remediation

OPERATING DATA - TEST NO 3

ACUVAC SVE SYSTEM

Page 3 Location SCHLUMBERGER-DOWELL HOBBS, NM Project Engr. SADLER/LUNDGREN

	Parameter						
	Date	11/02/94	→	→			
		Time 1035	Time 1105	Time 1135	Time	Time	Time
		Hr. Meter 018.7	Hr. Meter 019.2	Hr. Meter 019.7	Hr. Meter	Hr. Meter	Hr. Meter
ENGINE/BLOWER	R.P.M.	2400	2400	2450			
	Oil Press P.S.I.	50	50	50			
	Water Temp °F	175	175	180			
	Volts	13.5	13.5	13.5			
	Intake Vac Hg	13	13	12			
FUEL/AIR	Gas Flow Fuel/Propane cfh	185	200	200			
	Air Flow cfm	30	25	25			
	Well Flow EW-1 cfm	25	37	37			
	Extraction Well Vac EW-1 "H_2O	40	70	70			
	Air Temp °F	74	76	76			
	Barometric Pressure Hg						
MONITOR WELL VACUUM	S-1 "H_2O	2.20	4.40	5.80			
	S-2 "H_2O	–	–	–			
	E-1 "H_2O	8.40	14.0	14.2			
	E-2 "H_2O	–	–	–			
	E-3 "H_2O	1.15	1.55	1.60			
	E-4 "H_2O	.32	.46	.55			
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
	"H_2O						
MANIFOLD	Vapor Wells On/Off	ON	ON	ON			
	Air Injection Pressure P.S.I.	OFF	→	→			
	Air Injection Flow cfm	OFF	→	→			
	Samples	HORIBA Influent Sample	PID Influent Sample				

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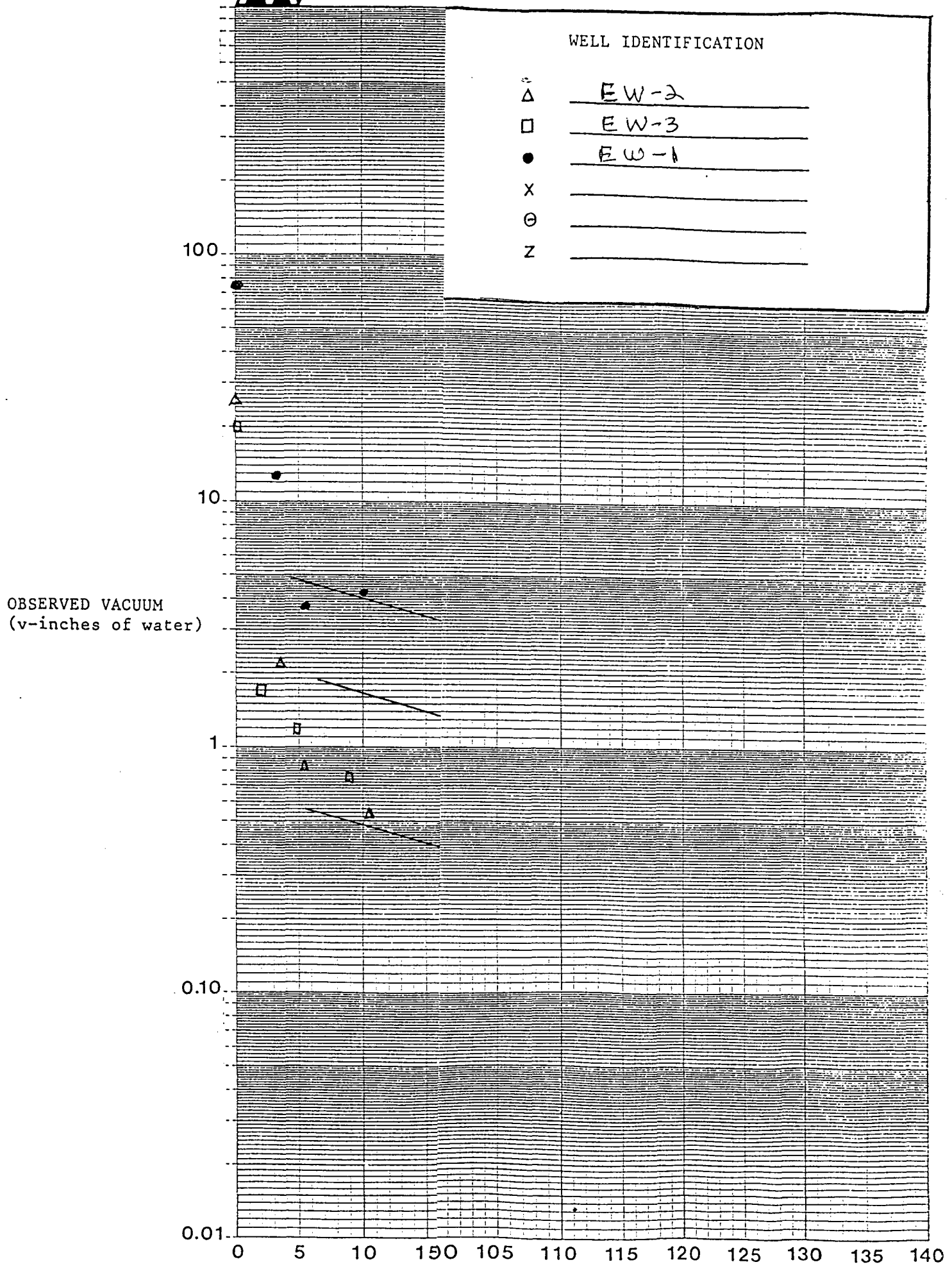
TEST	Instrument	HORIBA	PID				
	Time	1055	1058				
VAPOR INFLUENT	H-C ppmv	38	202				
	CO_2 %	3.02	—				
	C-O %	.02	—				
EMISSIONS	H-C ppmv						
	CO_2 %						
	C-O %						
	Air/Fuel Ratio %						

OPERATING DATA AND NOTES

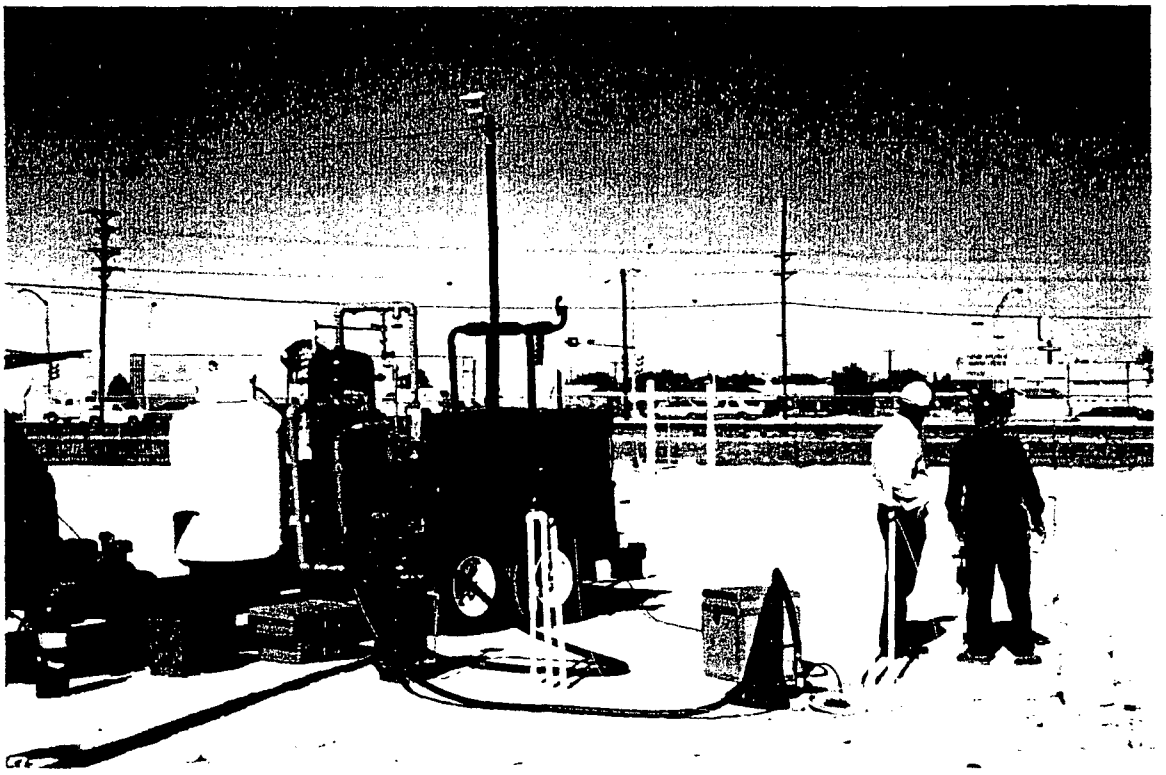
DATE 11/02/94 TEST NO. 3

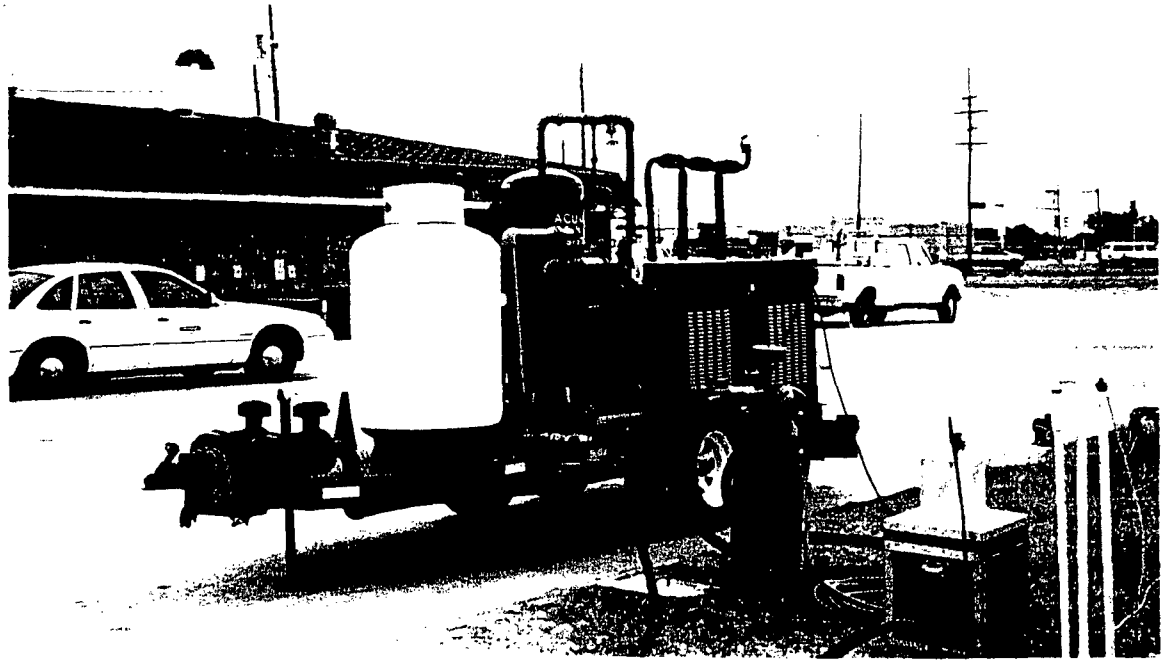
1035	Recorded Data - Outer wells indicating good increasing
	trend
1040	Increased EW vacuum to 70 "H_2O, flow @ 37 cfm
	propane e 190 cfm - All SVE systems normal
1055-58	HORIBA and PID influent vapor data - HC low -
1105	Recorded Data - All SVE systems normal - Outer wells
	indicating good response to increased EW vacuum and flow.
1135	Recorded Data - Outer wells indicating slight increase,
	but leveling trend.
1145	Test # 3 completed - All SVE systems checked normal
1215	Closed and capped all wells - Departed site

AcuVac Remediation



SCHLUMBERGER - DOWELL
HOBBS, NEW MEXICO





APPENDIX C

Soil and Soil Vapor Sample Laboratory Analysis

HYDROLOGIC LABORATORIES, INC

November 3, 1994

REPORTING:

Western Water Consultants
611 Skyline Road
Laramie, WY 82070

Attention: Chris Moody

INVOICING:

Western Water Consultants
611 Skyline Road
Laramie, WY 82070

Attention: Chris Moody

CENREF PROJECT NUMBER: PR941717

DATE COMPLETED: November 1, 1994
DATE RECEIVED: October 18, 1994

PROJECT DESCRIPTION:

11 solid samples for Western Water Consultants taken 10-13/10-16-94. Project 93-007L.7.

Enclosed is the laboratory report for the project described above. If you have any questions or if we can be of further assistance, please feel free to contact us. We appreciate your business and look forward to serving you again soon.

Respectfully,

Robert Hart

Project Manager

695 NORTH SEVENTH AVENUE BRIGHTON COLORADO 80601 303-659-0497 FAX 303-659-5064

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7347
SAMPLE IDENTIFICATION: #007-EW1.10/94
DATE SAMPLED: 10/13/94
DATE/TIME ANALYZED: 10/27/94 @ 1854

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	10	BDL
Bromomethane	74-83-9	10	BDL
Vinyl Chloride	75-01-4	10	BDL
Chloroethane	75-00-3	10	BDL
Trichlorofluoromethane	75-69-4	5	BDL
Methylene Chloride	75-09-2	5	BDL
Acetone	67-64-1	100	16 J
Carbon Disulfide	75-15-0	100	BDL
1,1-Dichloroethene	75-35-4	5	BDL
1,1-Dichloroethane	75-34-3	5	BDL
Total-1,2-Dichloroethene	540-59-0	5	BDL
Chloroform	67-66-3	5	BDL
1,2-Dichloroethane	107-06-2	5	BDL
2-Butanone	78-93-3	100	BDL
1,1,1-Trichloroethane	71-55-6	5	BDL
Carbon Tetrachloride	56-23-5	5	BDL
Vinyl Acetate	108-05-4	50	BDL
Bromodichloromethane	75-27-4	5	BDL
1,2-Dichloropropane	78-87-5	5	BDL
2-Chloroethyl vinyl ether	110-75-8	10	BDL
cis-1,3-Dichloropropene	10061-01-5	5	BDL
Trichloroethene	79-01-6	5	BDL
Dibromochloromethane	124-48-1	5	BDL
1,1,2-Trichloroethane	79-00-5	5	BDL
Benzene	71-43-2	5	BDL
trans-1,3-Dichloropropene	10061-02-6	5	BDL
Bromoform	75-25-2	5	BDL
4-Methyl-2-Pentanone	108-10-1	50	BDL
2-Hexanone	591-78-6	50	BDL
Tetrachloroethene	127-18-4	5	BDL

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7347
SAMPLE IDENTIFICATION: #007-EW1.10/94
DATE SAMPLED: 10/13/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	5	BDL
Toluene	108-88-3	5	BDL
Chlorobenzene	108-90-7	5	BDL
Ethylbenzene	100-41-4	5	BDL
Styrene	100-42-5	5	BDL
Xylenes (Total)	1330-20-7	5	BDL
1,2-Dichlorobenzene	95-50-1	10	BDL
1,3-Dichlorobenzene	541-73-1	10	BDL
1,4-Dichlorobenzene	106-46-7	10	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: J = Estimated value detected below the reporting limit.

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7351
SAMPLE IDENTIFICATION: #007-AR1/PZ2.32'
DATE SAMPLED: 10/13/94
DATE/TIME ANALYZED: 10/27/94 @ 0657

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	10	BDL
Bromomethane	74-83-9	10	BDL
Vinyl Chloride	75-01-4	10	BDL
Chloroethane	75-00-3	10	BDL
Trichlorofluoromethane	75-69-4	5	BDL
Methylene Chloride	75-09-2	5	BDL
Acetone	67-64-1	100	25 J
Carbon Disulfide	75-15-0	100	BDL
1,1-Dichloroethene	75-35-4	5	BDL
1,1-Dichloroethane	75-34-3	5	BDL
Total-1,2-Dichloroethene	540-59-0	5	BDL
Chloroform	67-66-3	5	BDL
1,2-Dichloroethane	107-06-2	5	BDL
2-Butanone	78-93-3	100	BDL
1,1,1-Trichloroethane	71-55-6	5	BDL
Carbon Tetrachloride	56-23-5	5	BDL
Vinyl Acetate	108-05-4	50	BDL
Bromodichloromethane	75-27-4	5	BDL
1,2-Dichloropropane	78-87-5	5	BDL
2-Chloroethyl vinyl ether	110-75-8	10	BDL
cis-1,3-Dichloropropene	10061-01-5	5	BDL
Trichloroethene	79-01-6	5	BDL
Dibromochloromethane	124-48-1	5	BDL
1,1,2-Trichloroethane	79-00-5	5	BDL
Benzene	71-43-2	5	BDL
trans-1,3-Dichloropropene	10061-02-6	5	BDL
Bromoform	75-25-2	5	BDL
4-Methyl-2-Pentanone	108-10-1	50	BDL
2-Hexanone	591-78-6	50	BDL
Tetrachloroethene	127-18-4	5	4 J

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7351
SAMPLE IDENTIFICATION: #007-AR1/PZ2.32'
DATE SAMPLED: 10/13/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	5	BDL
Toluene	108-88-3	5	BDL
Chlorobenzene	108-90-7	5	BDL
Ethylbenzene	100-41-4	5	BDL
Styrene	100-42-5	5	BDL
Xylenes (Total)	1330-20-7	5	2 J
1,2-Dichlorobenzene	95-50-1	10	BDL
1,3-Dichlorobenzene	541-73-1	10	BDL
1,4-Dichlorobenzene	106-46-7	10	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: J = Estimated value detected below the reporting limit.

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7348
SAMPLE IDENTIFICATION: #007-AR1/PZ2.35-37'
DATE SAMPLED: 10/13/94
DATE/TIME ANALYZED: 10/27/94 @ 0455

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	10	BDL
Bromomethane	74-83-9	10	BDL
Vinyl Chloride	75-01-4	10	BDL
Chloroethane	75-00-3	10	BDL
Trichlorofluoromethane	75-69-4	5	BDL
Methylene Chloride	75-09-2	5	BDL
Acetone	67-64-1	100	18 J
Carbon Disulfide	75-15-0	100	BDL
1,1-Dichloroethene	75-35-4	5	BDL
1,1-Dichloroethane	75-34-3	5	BDL
Total-1,2-Dichloroethene	540-59-0	5	BDL
Chloroform	67-66-3	5	BDL
1,2-Dichloroethane	107-06-2	5	BDL
2-Butanone	78-93-3	100	BDL
1,1,1-Trichloroethane	71-55-6	5	BDL
Carbon Tetrachloride	56-23-5	5	BDL
Vinyl Acetate	108-05-4	50	BDL
Bromodichloromethane	75-27-4	5	BDL
1,2-Dichloropropane	78-87-5	5	BDL
2-Chloroethyl vinyl ether	110-75-8	10	BDL
cis-1,3-Dichloropropene	10061-01-5	5	BDL
Trichloroethene	79-01-6	5	BDL
Dibromochloromethane	124-48-1	5	BDL
1,1,2-Trichloroethane	79-00-5	5	BDL
Benzene	71-43-2	5	BDL
trans-1,3-Dichloropropene	10061-02-6	5	BDL
Bromoform	75-25-2	5	BDL
4-Methyl-2-Pentanone	108-10-1	50	BDL
2-Hexanone	591-78-6	50	BDL
Tetrachloroethene	127-18-4	5	BDL

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7348
SAMPLE IDENTIFICATION: #007-AR1/PZ2.35-37'
DATE SAMPLED: 10/13/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	5	BDL
Toluene	108-88-3	5	BDL
Chlorobenzene	108-90-7	5	BDL
Ethylbenzene	100-41-4	5	BDL
Styrene	100-42-5	5	BDL
Xylenes (Total)	1330-20-7	5	BDL
1,2-Dichlorobenzene	95-50-1	10	BDL
1,3-Dichlorobenzene	541-73-1	10	BDL
1,4-Dichlorobenzene	106-46-7	10	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: J = Estimated value detected below the reporting limit.

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7346
SAMPLE IDENTIFICATION: #007-AR1/PZ5.35-36'
DATE SAMPLED: 10/14/94
DATE/TIME ANALYZED: 10/27/94 @ 0334

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	10	BDL
Bromomethane	74-83-9	10	BDL
Vinyl Chloride	75-01-4	10	BDL
Chloroethane	75-00-3	10	BDL
Trichlorofluoromethane	75-69-4	5	BDL
Methylene Chloride	75-09-2	5	BDL
Acetone	67-64-1	100	12 J
Carbon Disulfide	75-15-0	100	BDL
1,1-Dichloroethene	75-35-4	5	BDL
1,1-Dichloroethane	75-34-3	5	BDL
Total-1,2-Dichloroethene	540-59-0	5	BDL
Chloroform	67-66-3	5	BDL
1,2-Dichloroethane	107-06-2	5	BDL
2-Butanone	78-93-3	100	BDL
1,1,1-Trichloroethane	71-55-6	5	BDL
Carbon Tetrachloride	56-23-5	5	BDL
Vinyl Acetate	108-05-4	50	BDL
Bromodichloromethane	75-27-4	5	BDL
1,2-Dichloropropane	78-87-5	5	BDL
2-Chloroethyl vinyl ether	110-75-8	10	BDL
cis-1,3-Dichloropropene	10061-01-5	5	BDL
Trichloroethene	79-01-6	5	BDL
Dibromochloromethane	124-48-1	5	BDL
1,1,2-Trichloroethane	79-00-5	5	BDL
Benzene	71-43-2	5	BDL
trans-1,3-Dichloropropene	10061-02-6	5	BDL
Bromoform	75-25-2	5	BDL
4-Methyl-2-Pentanone	108-10-1	50	BDL
2-Hexanone	591-78-6	50	BDL
Tetrachloroethene	127-18-4	5	BDL

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7346
SAMPLE IDENTIFICATION: #007-AR1/PZ5.35-36'
DATE SAMPLED: 10/14/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	5	BDL
Toluene	108-88-3	5	BDL
Chlorobenzene	108-90-7	5	BDL
Ethylbenzene	100-41-4	5	BDL
Styrene	100-42-5	5	BDL
Xylenes (Total)	1330-20-7	5	BDL
1,2-Dichlorobenzene	95-50-1	10	BDL
1,3-Dichlorobenzene	541-73-1	10	BDL
1,4-Dichlorobenzene	106-46-7	10	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: J = Estimated value detected below the reporting limit.

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7346RR
SAMPLE IDENTIFICATION: #007-AR1/PZ5.35-36'
DATE SAMPLED: 10/14/94
DATE/TIME ANALYZED: 10/27/94 @ 1813

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	10	BDL
Bromomethane	74-83-9	10	BDL
Vinyl Chloride	75-01-4	10	BDL
Chloroethane	75-00-3	10	BDL
Trichlorofluoromethane	75-69-4	5	BDL
Methylene Chloride	75-09-2	5	BDL
Acetone	67-64-1	100	10 J
Carbon Disulfide	75-15-0	100	BDL
1,1-Dichloroethene	75-35-4	5	BDL
1,1-Dichloroethane	75-34-3	5	BDL
Total-1,2-Dichloroethene	540-59-0	5	BDL
Chloroform	67-66-3	5	BDL
1,2-Dichloroethane	107-06-2	5	BDL
2-Butanone	78-93-3	100	BDL
1,1,1-Trichloroethane	71-55-6	5	BDL
Carbon Tetrachloride	56-23-5	5	BDL
Vinyl Acetate	108-05-4	50	BDL
Bromodichloromethane	75-27-4	5	BDL
1,2-Dichloropropane	78-87-5	5	BDL
2-Chloroethyl vinyl ether	110-75-8	10	BDL
cis-1,3-Dichloropropene	10061-01-5	5	BDL
Trichloroethene	79-01-6	5	BDL
Dibromochloromethane	124-48-1	5	BDL
1,1,2-Trichloroethane	79-00-5	5	BDL
Benzene	71-43-2	5	BDL
trans-1,3-Dichloropropene	10061-02-6	5	BDL
Bromoform	75-25-2	5	BDL
4-Methyl-2-Pentanone	108-10-1	50	BDL
2-Hexanone	591-78-6	50	BDL
Tetrachloroethene	127-18-4	5	BDL

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7346RR
SAMPLE IDENTIFICATION: #007-AR1/PZ5.35-36'
DATE SAMPLED: 10/14/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	5	BDL
Toluene	108-88-3	5	BDL
Chlorobenzene	108-90-7	5	BDL
Ethylbenzene	100-41-4	5	BDL
Styrene	100-42-5	5	BDL
Xylenes (Total)	1330-20-7	5	BDL
1,2-Dichlorobenzene	95-50-1	10	BDL
1,3-Dichlorobenzene	541-73-1	10	BDL
1,4-Dichlorobenzene	106-46-7	10	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: J = Estimated value detected below the reporting limit.

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7353
SAMPLE IDENTIFICATION: #007-AR2/EW2.21-23'
DATE SAMPLED: 10/14/94
DATE/TIME ANALYZED: 10/27/94 @ 0818

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	50	BDL
Bromomethane	74-83-9	50	BDL
Vinyl Chloride	75-01-4	50	BDL
Chloroethane	75-00-3	50	BDL
Trichlorofluoromethane	75-69-4	25	BDL
Methylene Chloride	75-09-2	25	BDL
Acetone	67-64-1	100	(E)
Carbon Disulfide	75-15-0	100	BDL
1,1-Dichloroethene	75-35-4	25	BDL
1,1-Dichloroethane	75-34-3	25	BDL
Total-1,2-Dichloroethene	540-59-0	25	BDL
Chloroform	67-66-3	25	BDL
1,2-Dichloroethane	107-06-2	25	BDL
2-Butanone	78-93-3	100	BDL
1,1,1-Trichloroethane	71-55-6	25	BDL
Carbon Tetrachloride	56-23-5	25	BDL
Vinyl Acetate	108-05-4	50	BDL
Bromodichloromethane	75-27-4	25	BDL
1,2-Dichloropropane	78-87-5	25	BDL
2-Chloroethyl vinyl ether	110-75-8	50	BDL
cis-1,3-Dichloropropene	10061-01-5	25	BDL
Trichloroethene	79-01-6	25	BDL
Dibromochloromethane	124-48-1	25	BDL
1,1,2-Trichloroethane	79-00-5	25	BDL
Benzene	71-43-2	25	BDL
trans-1,3-Dichloropropene	10061-02-6	25	BDL
Bromoform	75-25-2	25	BDL
4-Methyl-2-Pentanone	108-10-1	50	BDL
2-Hexanone	591-78-6	50	BDL
Tetrachloroethene	127-18-4	25	BDL

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7353
SAMPLE IDENTIFICATION: #007-AR2/EW2.21-23'
DATE SAMPLED: 10/14/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	25	BDL
Toluene	108-88-3	25	BDL
Chlorobenzene	108-90-7	25	BDL
Ethylbenzene	100-41-4	25	12 J
Styrene	100-42-5	25	BDL
Xylenes (Total)	1330-20-7	25	79
1,2-Dichlorobenzene	95-50-1	50	BDL
1,3-Dichlorobenzene	541-73-1	50	BDL
1,4-Dichlorobenzene	106-46-7	50	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: J = Estimated value detected below the reporting limit.
E = Exceeds the linear range of the instrument.

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7353DL
SAMPLE IDENTIFICATION: #007-AR2/EW2.21 23'
DATE SAMPLED: 10/14/94
DATE/TIME ANALYZED: 10/28/94 @ 2107

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	1250	BDL
Bromomethane	74-83-9	1250	BDL
Vinyl Chloride	75-01-4	1250	BDL
Chloroethane	75-00-3	1250	BDL
Trichlorofluoromethane	75-69-4	625	BDL
Methylene Chloride	75-09-2	625	BDL
Acetone	67-64-1	1250	1300
Carbon Disulfide	75-15-0	1250	BDL
1,1-Dichloroethene	75-35-4	625	BDL
1,1-Dichloroethane	75-34-3	625	BDL
Total-1,2-Dichloroethene	540-59-0	625	BDL
Chloroform	67-66-3	625	BDL
1,2-Dichloroethane	107-06-2	625	BDL
2-Butanone	78-93-3	1250	BDL
1,1,1-Trichloroethane	71-55-6	625	BDL
Carbon Tetrachloride	56-23-5	625	BDL
Vinyl Acetate	108-05-4	1250	BDL
Bromodichloromethane	75-27-4	625	BDL
1,2-Dichloropropane	78-87-5	625	BDL
2-Chloroethyl vinyl ether	110-75-8	1250	BDL
cis-1,3-Dichloropropene	10061-01-5	625	BDL
Trichloroethene	79-01-6	625	BDL
Dibromochloromethane	124-48-1	625	BDL
1,1,2-Trichloroethane	79-00-5	625	BDL
Benzene	71-43-2	625	BDL
trans-1,3-Dichloropropene	10061-02-6	625	BDL
Bromoform	75-25-2	625	BDL
4-Methyl-2-Pentanone	108-10-1	1250	BDL
2-Hexanone	591-78-6	1250	BDL
Tetrachloroethene	127-18-4	625	BDL

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7353DL
SAMPLE IDENTIFICATION: #007-AR2/EW2.21.23'
DATE SAMPLED: 10/14/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	625	BDL
Toluene	108-88-3	625	BDL
Chlorobenzene	108-90-7	625	BDL
Ethylbenzene	100-41-4	625	BDL
Styrene	100-42-5	625	BDL
Xylenes (Total)	1330-20-7	625	BDL
1,2-Dichlorobenzene	95-50-1	1250	BDL
1,3-Dichlorobenzene	541-73-1	1250	BDL
1,4-Dichlorobenzene	106-46-7	1250	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: _____

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7355
SAMPLE IDENTIFICATION: #007-AR2/PZ3.20'
DATE SAMPLED: 10/15/94
DATE/TIME ANALYZED: 10/27/94 @ 0940

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	50	BDL
Bromomethane	74-83-9	50	BDL
Vinyl Chloride	75-01-4	50	BDL
Chloroethane	75-00-3	50	BDL
Trichlorofluoromethane	75-69-4	25	BDL
Methylene Chloride	75-09-2	25	BDL
Acetone	67-64-1	100	820
Carbon Disulfide	75-15-0	100	BDL
1,1-Dichloroethene	75-35-4	25	BDL
1,1-Dichloroethane	75-34-3	25	BDL
Total-1,2-Dichloroethene	540-59-0	25	BDL
Chloroform	67-66-3	25	BDL
1,2-Dichloroethane	107-06-2	25	BDL
2-Butanone	78-93-3	100	92 J
1,1,1-Trichloroethane	71-55-6	25	BDL
Carbon Tetrachloride	56-23-5	25	BDL
Vinyl Acetate	108-05-4	50	BDL
Bromodichloromethane	75-27-4	25	BDL
1,2-Dichloropropane	78-87-5	25	BDL
2-Chloroethyl vinyl ether	110-75-8	50	BDL
cis-1,3-Dichloropropene	10061-01-5	25	BDL
Trichloroethene	79-01-6	25	BDL
Dibromochloromethane	124-48-1	25	BDL
1,1,2-Trichloroethane	79-00-5	25	BDL
Benzene	71-43-2	25	BDL
trans-1,3-Dichloropropene	10061-02-6	25	BDL
Bromoform	75-25-2	25	BDL
4-Methyl-2-Pentanone	108-10-1	50	BDL
2-Hexanone	591-78-6	50	BDL
Tetrachloroethene	127-18-4	25	520

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7355
SAMPLE IDENTIFICATION: #007-AR2/PZ3.20'
DATE SAMPLED: 10/15/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	25	BDL
Toluene	108-88-3	25	700
Chlorobenzene	108-90-7	25	BDL
Ethylbenzene	100-41-4	25	720
Styrene	100-42-5	25	BDL
Xylenes (Total)	1330-20-7	25	(E)
1,2-Dichlorobenzene	95-50-1	50	BDL
1,3-Dichlorobenzene	541-73-1	50	BDL
1,4-Dichlorobenzene	106-46-7	50	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: J = Estimated value detected below the reporting limit.
E = Exceeds the linear range of the instrument.

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7355DL
SAMPLE IDENTIFICATION: #007-AR2/PZ3.20'
DATE SAMPLED: 10/15/94
DATE/TIME ANALYZED: 11/3/94 @ 1353

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	200	BDL
Bromomethane	74-83-9	200	BDL
Vinyl Chloride	75-01-4	200	BDL
Chloroethane	75-00-3	200	BDL
Trichlorofluoromethane	75-69-4	100	BDL
Methylene Chloride	75-09-2	100	BDL
Acetone	67-64-1	200	740
Carbon Disulfide	75-15-0	200	BDL
1,1-Dichloroethene	75-35-4	100	BDL
1,1-Dichloroethane	75-34-3	100	BDL
Total-1,2-Dichloroethene	540-59-0	100	BDL
Chloroform	67-66-3	100	BDL
1,2-Dichloroethane	107-06-2	100	BDL
2-Butanone	78-93-3	200	59 J
1,1,1-Trichloroethane	71-55-6	100	BDL
Carbon Tetrachloride	56-23-5	100	BDL
Vinyl Acetate	108-05-4	200	BDL
Bromodichloromethane	75-27-4	100	BDL
1,2-Dichloropropane	78-87-5	100	BDL
2-Chloroethyl vinyl ether	110-75-8	200	BDL
cis-1,3-Dichloropropene	10061-01-5	100	BDL
Trichloroethene	79-01-6	100	BDL
Dibromochloromethane	124-48-1	100	BDL
1,1,2-Trichloroethane	79-00-5	100	BDL
Benzene	71-43-2	100	BDL
trans-1,3-Dichloropropene	10061-02-6	100	BDL
Bromoform	75-25-2	100	BDL
4-Methyl-2-Pentanone	108-10-1	200	BDL
2-Hexanone	591-78-6	200	BDL
Tetrachloroethene	127-18-4	100	480

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7355DL
SAMPLE IDENTIFICATION: #007-AR2/PZ3.20'
DATE SAMPLED: 10/15/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	100	BDL
Toluene	108-88-3	100	480
Chlorobenzene	108-90-7	100	BDL
Ethylbenzene	100-41-4	100	900
Styrene	100-42-5	100	BDL
Xylenes (Total)	1330-20-7	100	8000
1,2-Dichlorobenzene	95-50-1	200	BDL
1,3-Dichlorobenzene	541-73-1	200	BDL
1,4-Dichlorobenzene	106-46-7	200	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: J = Estimated value detected below the reporting limit.

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7349
SAMPLE IDENTIFICATION: #007-AR2/PZ5.16
DATE SAMPLED: 10/15/94
DATE/TIME ANALYZED: 10/28/94 @ 2146

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	1250	BDL
Bromomethane	74-83-9	1250	BDL
Vinyl Chloride	75-01-4	1250	BDL
Chloroethane	75-00-3	1250	BDL
Trichlorofluoromethane	75-69-4	625	BDL
Methylene Chloride	75-09-2	625	BDL
Acetone	67-64-1	1250	810 J
Carbon Disulfide	75-15-0	1250	BDL
1,1-Dichloroethene	75-35-4	625	BDL
1,1-Dichloroethane	75-34-3	625	BDL
Total-1,2-Dichloroethene	540-59-0	625	BDL
Chloroform	67-66-3	625	BDL
1,2-Dichloroethane	107-06-2	625	BDL
2-Butanone	78-93-3	1250	BDL
1,1,1-Trichloroethane	71-55-6	625	BDL
Carbon Tetrachloride	56-23-5	625	BDL
Vinyl Acetate	108-05-4	1250	BDL
Bromodichloromethane	75-27-4	625	BDL
1,2-Dichloropropane	78-87-5	625	BDL
2-Chloroethyl vinyl ether	110-75-8	1250	BDL
cis-1,3-Dichloropropene	10061-01-5	625	BDL
Trichloroethene	79-01-6	625	BDL
Dibromochloromethane	124-48-1	625	BDL
1,1,2-Trichloroethane	79-00-5	625	BDL
Benzene	71-43-2	625	BDL
trans-1,3-Dichloropropene	10061-02-6	625	BDL
Bromoform	75-25-2	625	BDL
4-Methyl-2-Pentanone	108-10-1	1250	BDL
2-Hexanone	591-78-6	1250	BDL
Tetrachloroethene	127-18-4	625	12000

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7349
SAMPLE IDENTIFICATION: #007-AR2/PZ5.16
DATE SAMPLED: 10/15/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	625	BDL
Toluene	108-88-3	625	840
Chlorobenzene	108-90-7	625	BDL
Ethylbenzene	100-41-4	625	2700
Styrene	100-42-5	625	BDL
Xylenes (Total)	1330-20-7	625	22000
1,2-Dichlorobenzene	95-50-1	1250	BDL
1,3-Dichlorobenzene	541-73-1	1250	BDL
1,4-Dichlorobenzene	106-46-7	1250	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: J = Estimated value detected below the reporting limit.

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7349RR
SAMPLE IDENTIFICATION: #007-AR2/PZ5.16
DATE SAMPLED: 10/15/94
DATE/TIME ANALYZED: 10/30/94 @ 2119

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	1250	BDL
Bromomethane	74-83-9	1250	BDL
Vinyl Chloride	75-01-4	1250	BDL
Chloroethane	75-00-3	1250	BDL
Trichlorofluoromethane	75-69-4	625	BDL
Methylene Chloride	75-09-2	625	BDL
Acetone	67-64-1	1250	910 J
Carbon Disulfide	75-15-0	1250	BDL
1,1-Dichloroethene	75-35-4	625	BDL
1,1-Dichloroethane	75-34-3	625	BDL
Total-1,2-Dichloroethene	540-59-0	625	BDL
Chloroform	67-66-3	625	BDL
1,2-Dichloroethane	107-06-2	625	BDL
2-Butanone	78-93-3	1250	BDL
1,1,1-Trichloroethane	71-55-6	625	BDL
Carbon Tetrachloride	56-23-5	625	BDL
Vinyl Acetate	108-05-4	1250	BDL
Bromodichloromethane	75-27-4	625	BDL
1,2-Dichloropropane	78-87-5	625	BDL
2-Chloroethyl vinyl ether	110-75-8	1250	BDL
cis-1,3-Dichloropropene	10061-01-5	625	BDL
Trichloroethene	79-01-6	625	BDL
Dibromochloromethane	124-48-1	625	BDL
1,1,2-Trichloroethane	79-00-5	625	BDL
Benzene	71-43-2	625	BDL
trans-1,3-Dichloropropene	10061-02-6	625	BDL
Bromoform	75-25-2	625	BDL
4-Methyl-2-Pentanone	108-10-1	1250	BDL
2-Hexanone	591-78-6	1250	BDL
Tetrachloroethene	127-18-4	625	13000

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7349RR
SAMPLE IDENTIFICATION: #007-AR2/PZ5.16
DATE SAMPLED: 10/15/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	625	BDL
Toluene	108-88-3	625	1000
Chlorobenzene	108-90-7	625	BDL
Ethylbenzene	100-41-4	625	3200
Styrene	100-42-5	625	BDL
Xylenes (Total)	1330-20-7	625	26000
1,2-Dichlorobenzene	95-50-1	1250	BDL
1,3-Dichlorobenzene	541-73-1	1250	BDL
1,4-Dichlorobenzene	106-46-7	1250	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: J = Estimated value detected below the reporting limit.

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7350
SAMPLE IDENTIFICATION: #007-AR3/EW3.19-20'
DATE SAMPLED: 10/15/94
DATE/TIME ANALYZED: 10/27/94 @ 0616

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	50	BDL
Bromomethane	74-83-9	50	BDL
Vinyl Chloride	75-01-4	50	BDL
Chloroethane	75-00-3	50	BDL
Trichlorofluoromethane	75-69-4	25	BDL
Methylene Chloride	75-09-2	25	BDL
Acetone	67-64-1	100	(E)
Carbon Disulfide	75-15-0	100	BDL
1,1-Dichloroethene	75-35-4	25	BDL
1,1-Dichloroethane	75-34-3	25	BDL
Total-1,2-Dichloroethene	540-59-0	25	BDL
Chloroform	67-66-3	25	BDL
1,2-Dichloroethane	107-06-2	25	BDL
2-Butanone	78-93-3	100	BDL
1,1,1-Trichloroethane	71-55-6	25	BDL
Carbon Tetrachloride	56-23-5	25	BDL
Vinyl Acetate	108-05-4	50	BDL
Bromodichloromethane	75-27-4	25	BDL
1,2-Dichloropropane	78-87-5	25	BDL
2-Chloroethyl vinyl ether	110-75-8	50	BDL
cis-1,3-Dichloropropene	10061-01-5	25	BDL
Trichloroethene	79-01-6	25	BDL
Dibromochloromethane	124-48-1	25	BDL
1,1,2-Trichloroethane	79-00-5	25	BDL
Benzene	71-43-2	25	BDL
trans-1,3-Dichloropropene	10061-02-6	25	BDL
Bromoform	75-25-2	25	BDL
4-Methyl-2-Pentanone	108-10-1	50	BDL
2-Hexanone	591-78-6	50	BDL
Tetrachloroethene	127-18-4	25	29

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7350
SAMPLE IDENTIFICATION: #007-AR3/EW3.19-20'
DATE SAMPLED: 10/15/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	25	BDL
Toluene	108-88-3	25	BDL
Chlorobenzene	108-90-7	25	BDL
Ethylbenzene	100-41-4	25	7 J
Styrene	100-42-5	25	BDL
Xylenes (Total)	1330-20-7	25	68
1,2-Dichlorobenzene	95-50-1	50	BDL
1,3-Dichlorobenzene	541-73-1	50	BDL
1,4-Dichlorobenzene	106-46-7	50	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: J = Estimated value detected below the reporting limit.
E = Exceeds the linear range of the instrument.

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7350DL
SAMPLE IDENTIFICATION: #007-AR3/EW3.19-20'
DATE SAMPLED: 10/15/94
DATE/TIME ANALYZED: 10/27/94 @ 1935

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	100	BDL
Bromomethane	74-83-9	100	BDL
Vinyl Chloride	75-01-4	100	BDL
Chloroethane	75-00-3	100	BDL
Trichlorofluoromethane	75-69-4	50	BDL
Methylene Chloride	75-09-2	50	BDL
Acetone	67-64-1	100	890
Carbon Disulfide	75-15-0	100	BDL
1,1-Dichloroethene	75-35-4	50	BDL
1,1-Dichloroethane	75-34-3	50	BDL
Total-1,2-Dichloroethene	540-59-0	50	BDL
Chloroform	67-66-3	50	BDL
1,2-Dichloroethane	107-06-2	50	BDL
2-Butanone	78-93-3	100	BDL
1,1,1-Trichloroethane	71-55-6	50	BDL
Carbon Tetrachloride	56-23-5	50	BDL
Vinyl Acetate	108-05-4	100	BDL
Bromodichloromethane	75-27-4	50	BDL
1,2-Dichloropropane	78-87-5	50	BDL
2-Chloroethyl vinyl ether	110-75-8	100	BDL
cis-1,3-Dichloropropene	10061-01-5	50	BDL
Trichloroethene	79-01-6	50	BDL
Dibromochloromethane	124-48-1	50	BDL
1,1,2-Trichloroethane	79-00-5	50	BDL
Benzene	71-43-2	50	BDL
trans-1,3-Dichloropropene	10061-02-6	50	BDL
Bromoform	75-25-2	50	BDL
4-Methyl-2-Pentanone	108-10-1	100	BDL
2-Hexanone	591-78-6	100	BDL
Tetrachloroethene	127-18-4	50	BDL

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7350DL
SAMPLE IDENTIFICATION: #007-AR3/EW3.19-20'
DATE SAMPLED: 10/15/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	50	BDL
Toluene	108-88-3	50	BDL
Chlorobenzene	108-90-7	50	BDL
Ethylbenzene	100-41-4	50	BDL
Styrene	100-42-5	50	BDL
Xylenes (Total)	1330-20-7	50	BDL
1,2-Dichlorobenzene	95-50-1	100	BDL
1,3-Dichlorobenzene	541-73-1	100	BDL
1,4-Dichlorobenzene	106-46-7	100	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: _____

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7356
SAMPLE IDENTIFICATION: #007-AR3/PZ2.17'
DATE SAMPLED: 10/15/94
DATE/TIME ANALYZED: 10/27/94 @ 2056

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	10	BDL
Bromomethane	74-83-9	10	BDL
Vinyl Chloride	75-01-4	10	BDL
Chloroethane	75-00-3	10	BDL
Trichlorofluoromethane	75-69-4	5	BDL
Methylene Chloride	75-09-2	5	BDL
Acetone	67-64-1	100	12 J
Carbon Disulfide	75-15-0	100	BDL
1,1-Dichloroethene	75-35-4	5	BDL
1,1-Dichloroethane	75-34-3	5	BDL
Total-1,2-Dichloroethene	540-59-0	5	BDL
Chloroform	67-66-3	5	BDL
1,2-Dichloroethane	107-06-2	5	BDL
2-Butanone	78-93-3	100	BDL
1,1,1-Trichloroethane	71-55-6	5	BDL
Carbon Tetrachloride	56-23-5	5	BDL
Vinyl Acetate	108-05-4	50	BDL
Bromodichloromethane	75-27-4	5	BDL
1,2-Dichloropropane	78-87-5	5	BDL
2-Chloroethyl vinyl ether	110-75-8	10	BDL
cis-1,3-Dichloropropene	10061-01-5	5	BDL
Trichloroethene	79-01-6	5	BDL
Dibromochloromethane	124-48-1	5	BDL
1,1,2-Trichloroethane	79-00-5	5	BDL
Benzene	71-43-2	5	BDL
trans-1,3-Dichloropropene	10061-02-6	5	BDL
Bromoform	75-25-2	5	BDL
4-Methyl-2-Pentanone	108-10-1	50	BDL
2-Hexanone	591-78-6	50	BDL
Tetrachloroethene	127-18-4	5	1 J

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7356
SAMPLE IDENTIFICATION: #007-AR3/PZ2.17'
DATE SAMPLED: 10/15/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	5	BDL
Toluene	108-88-3	5	BDL
Chlorobenzene	108-90-7	5	BDL
Ethylbenzene	100-41-4	5	3 J
Styrene	100-42-5	5	BDL
Xylenes (Total)	1330-20-7	5	21
1,2-Dichlorobenzene	95-50-1	10	BDL
1,3-Dichlorobenzene	541-73-1	10	BDL
1,4-Dichlorobenzene	106-46-7	10	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: J = Estimated value detected below the reporting limit.

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7354
SAMPLE IDENTIFICATION: #007-AR3/PZ5.15-16'
DATE SAMPLED: 10/16/94
DATE/TIME ANALYZED: 10/27/94 @ 0900

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	10	BDL
Bromomethane	74-83-9	10	BDL
Vinyl Chloride	75-01-4	10	BDL
Chloroethane	75-00-3	10	BDL
Trichlorofluoromethane	75-69-4	5	BDL
Methylene Chloride	75-09-2	5	BDL
Acetone	67-64-1	100	75 J
Carbon Disulfide	75-15-0	100	BDL
1,1-Dichloroethene	75-35-4	5	BDL
1,1-Dichloroethane	75-34-3	5	BDL
Total-1,2-Dichloroethene	540-59-0	5	BDL
Chloroform	67-66-3	5	BDL
1,2-Dichloroethane	107-06-2	5	BDL
2-Butanone	78-93-3	100	22 J
1,1,1-Trichloroethane	71-55-6	5	BDL
Carbon Tetrachloride	56-23-5	5	BDL
Vinyl Acetate	108-05-4	50	BDL
Bromodichloromethane	75-27-4	5	BDL
1,2-Dichloropropane	78-87-5	5	BDL
2-Chloroethyl vinyl ether	110-75-8	10	BDL
cis-1,3-Dichloropropene	10061-01-5	5	BDL
Trichloroethene	79-01-6	5	BDL
Dibromochloromethane	124-48-1	5	BDL
1,1,2-Trichloroethane	79-00-5	5	BDL
Benzene	71-43-2	5	BDL
trans-1,3-Dichloropropene	10061-02-6	5	BDL
Bromoform	75-25-2	5	BDL
4-Methyl-2-Pentanone	108-10-1	50	BDL
2-Hexanone	591-78-6	50	BDL
Tetrachloroethene	127-18-4	5	BDL

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7354
SAMPLE IDENTIFICATION: #007-AR3/PZ5.15-16'
DATE SAMPLED: 10/16/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	5	BDL
Toluene	108-88-3	5	BDL
Chlorobenzene	108-90-7	5	BDL
Ethylbenzene	100-41-4	5	BDL
Styrene	100-42-5	5	BDL
Xylenes (Total)	1330-20-7	5	BDL
1,2-Dichlorobenzene	95-50-1	10	BDL
1,3-Dichlorobenzene	541-73-1	10	BDL
1,4-Dichlorobenzene	106-46-7	10	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: J = Estimated value detected below the reporting limit.

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7352
SAMPLE IDENTIFICATION: #007-AR3/PZ6.15'
DATE SAMPLED: 10/16/94
DATE/TIME ANALYZED: 10/30/94 @ 2200

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	1250	BDL
Bromomethane	74-83-9	1250	BDL
Vinyl Chloride	75-01-4	1250	BDL
Chloroethane	75-00-3	1250	BDL
Trichlorofluoromethane	75-69-4	625	BDL
Methylene Chloride	75-09-2	625	BDL
Acetone	67-64-1	1250	BDL
Carbon Disulfide	75-15-0	1250	BDL
1,1-Dichloroethene	75-35-4	625	BDL
1,1-Dichloroethane	75-34-3	625	BDL
Total-1,2-Dichloroethene	540-59-0	625	BDL
Chloroform	67-66-3	625	BDL
1,2-Dichloroethane	107-06-2	625	BDL
2-Butanone	78-93-3	1250	BDL
1,1,1-Trichloroethane	71-55-6	625	BDL
Carbon Tetrachloride	56-23-5	625	BDL
Vinyl Acetate	108-05-4	1250	BDL
Bromodichloromethane	75-27-4	625	BDL
1,2-Dichloropropane	78-87-5	625	BDL
2-Chloroethyl vinyl ether	110-75-8	1250	BDL
cis-1,3-Dichloropropene	10061-01-5	625	BDL
Trichloroethene	79-01-6	625	BDL
Dibromochloromethane	124-48-1	625	BDL
1,1,2-Trichloroethane	79-00-5	625	BDL
Benzene	71-43-2	625	BDL
trans-1,3-Dichloropropene	10061-02-6	625	BDL
Bromoform	75-25-2	625	BDL
4-Methyl-2-Pentanone	108-10-1	1250	BDL
2-Hexanone	591-78-6	1250	BDL
Tetrachloroethene	127-18-4	625	BDL

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7352
SAMPLE IDENTIFICATION: #007-AR3/PZ6.15'
DATE SAMPLED: 10/16/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	625	BDL
Toluene	108-88-3	625	170 J
Chlorobenzene	108-90-7	625	830
Ethylbenzene	100-41-4	625	6600
Styrene	100-42-5	625	BDL
Xylenes (Total)	1330-20-7	625	41000
1,2-Dichlorobenzene	95-50-1	1250	BDL
1,3-Dichlorobenzene	541-73-1	1250	BDL
1,4-Dichlorobenzene	106-46-7	1250	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: J = Estimated value detected below the reporting limit.

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7352DL
SAMPLE IDENTIFICATION: #007-AR3/PZ6.15'
DATE SAMPLED: 10/16/94
DATE/TIME ANALYZED: 10/31/94 @ 0124

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
Chloromethane	74-87-3	12500	BDL
Bromomethane	74-83-9	12500	BDL
Vinyl Chloride	75-01-4	12500	BDL
Chloroethane	75-00-3	12500	BDL
Trichlorofluoromethane	75-69-4	6250	BDL
Methylene Chloride	75-09-2	6250	BDL
Acetone	67-64-1	12500	BDL
Carbon Disulfide	75-15-0	12500	BDL
1,1-Dichloroethene	75-35-4	6250	BDL
1,1-Dichloroethane	75-34-3	6250	BDL
Total-1,2-Dichloroethene	540-59-0	6250	BDL
Chloroform	67-66-3	6250	BDL
1,2-Dichloroethane	107-06-2	6250	BDL
2-Butanone	78-93-3	12500	BDL
1,1,1-Trichloroethane	71-55-6	6250	BDL
Carbon Tetrachloride	56-23-5	6250	BDL
Vinyl Acetate	108-05-4	12500	BDL
Bromodichloromethane	75-27-4	6250	BDL
1,2-Dichloropropane	78-87-5	6250	BDL
2-Chloroethyl vinyl ether	110-75-8	12500	BDL
cis-1,3-Dichloropropene	10061-01-5	6250	BDL
Trichloroethene	79-01-6	6250	BDL
Dibromochloromethane	124-48-1	6250	BDL
1,1,2-Trichloroethane	79-00-5	6250	BDL
Benzene	71-43-2	6250	BDL
trans-1,3-Dichloropropene	10061-02-6	6250	BDL
Bromoform	75-25-2	6250	BDL
4-Methyl-2-Pentanone	108-10-1	12500	BDL
2-Hexanone	591-78-6	12500	BDL
Tetrachloroethene	127-18-4	6250	BDL

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR941717
CENREF SAMPLE NUMBER: 7352DL
SAMPLE IDENTIFICATION: #007-AR3/PZ6.15'
DATE SAMPLED: 10/16/94

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/kg)	RESULT (ug/kg)
1,1,2,2-Tetrachloroethane	79-34-5	6250	BDL
Toluene	108-88-3	6250	BDL
Chlorobenzene	108-90-7	6250	BDL
Ethylbenzene	100-41-4	6250	430 J
Styrene	100-42-5	6250	BDL
Xylenes (Total)	1330-20-7	6250	32000
1,2-Dichlorobenzene	95-50-1	12500	BDL
1,3-Dichlorobenzene	541-73-1	12500	BDL
1,4-Dichlorobenzene	106-46-7	12500	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: J = Estimated value detected below the reporting limit.

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240
PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
BOX 4128
LARAMIE, WY 82071

Receiving Date: 11/02/94
Reporting Date: 11/14/94
Project Number: 94-007L.5
Project Name: WESTERN WATER CONSULTANTS, INC.
Project Location: DOWELL SCHLUMBERGER
Lab Number: H1845-3
Sample ID: 007-AREA 1 EW-1 FORMER UST AREA

Analysis Date: 11/14/94
Sampling Date: ~~NONE GIVEN~~ 11/2/94
Sample Type: ~~LIQUID~~ VAPOR
Sample Condition: COOL & INTACT
Sample Received By: JH
Analyzed By: SL

VOLATILE ORGANIC 8260

	(mg/m³)	Detection Limit	Sample Result H1845-3	Method Blank	QC	True Value %IA	True Value QC
1	1,1-Dichloroethene	0.100	29.900	<.100	48	96	50
2	Acetone	0.100	9.470	<.100	48	96	50
3	Methylene chloride	0.100	<.100	<.100	50	100	50
4	trans-1,2-Dichloroethene	0.100	<.100	<.100	49	98	50
5	1,1-Dichloroethane	0.100	0.487	<.100	49	98	50
6	cis-1,2-dichloroemthene	0.100	<.100	<.100	46	92	50
7	2-butanone	0.100	<.100	<.100	51	102	50
8	chloroform	0.100	<.100	<.100	49	98	50
9	1,1,1-trichloroethane	0.100	20.700	<.100	49	98	50
10	carbon tetrachloride	0.100	2.720	<.100	49	98	50
11	benzene	0.100	0.127	<.100	50	100	50
12	1,2-dichloroethane	0.100	<.100	<.100	49	98	50
13	trichloroethene	0.100	0.125	<.100	50	100	50
14	1,2-dichloropropane	0.100	<.100	<.100	50	100	50
15	bromodichloromethane	0.100	<.100	<.100	51	102	50
16	dibromochloromethane	0.100	<.100	<.100	49	98	50
17	trans-1,3-dichloropropene	0.100	<.100	<.100	50	100	50
18	toluene	0.100	1.010	<.100	46	92	50
19	cis-1,3-dichloropropene	0.100	<.100	<.100	45	90	50
20	1,1,2-trichloroethane	0.100	1.220	<.100	44	88	50
21	tetrachloroethene	0.100	36.500	<.100	49	98	50
22	chlorobenzene	0.100	<.100	<.100	46	92	50
23	ethylbenzene	0.100	0.348	<.100	52	104	50
24	m,p-xylene	0.100	0.676	<.100	49	98	50
25	o-xylene	0.100	0.652	<.100	49	98	50
26	styrene	0.100	<.100	<.100	49	98	50

CARDINAL LABORATORIES

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PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240
PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
BOX 4128
LARAMIE, WY 82071

Receiving Date: 11/02/94
Reporting Date: 11/14/94
Project Number: 94-007L.5
Project Name: WESTERN WATER CONSULTANTS, INC.
Project Location: DOWELL SCHLUMBERGER
Lab Number: H1845-3
Sample ID: 007-AREA 1 EW-1 FORMER UST AREA

Analysis Date: 11/14/94
Sampling Date: ~~NONE GIVEN~~ 11/2/94
Sample Type: ~~LIQUID~~ VAPOR
Sample Condition: COOL & INTACT
Sample Received By: JH
Analyzed By: SL

VOLATILE ORGANIC 8260

(mg/m³)	Detection Limit	Sample Result H1845-3	Method Blank	QC	%IA	True Value QC
27 bromoform	0.100	<.100	<.100	49	98	50
28 1,1,2,2-tetrachloroethane	0.100	<.100	<.100	52	104	50

	% Recovery	Relative Percent Difference
29 Dibromofluoromethane	99	3
30 Toluene-D8	96	1
31 4-Bromofluorobenzene	94	2

METHOD: EPA 846-8260

Scott A. Latimer, Chemist

11-14-94
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240
PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
BOX 4128
LARAMIE, WY 82071

Receiving Date: 11/02/94
Reporting Date: 11/14/94
Project Number: 94-007L.5
Project Name: WESTERN WATER CONSULTANTS, INC.
Project Location: DOWELL SCHLUMBERGER
Lab Number: H1845-1
Sample ID: 007-AREA 2 EW-2 FORMER WASTEWATER POND

Analysis Date: 11/14/94
Sampling Date: ~~NONE GIVEN~~ 11/1/94
Sample Type: ~~LIQUID~~ VAPOR
Sample Condition: COOL & INTACT
Sample Received By: JH
Analyzed By: SL

VOLATILE ORGANIC 8260

	(mg/m³)	Detection Limit	Sample Result H1845-1	Method Blank	QC	%IA	True Value QC
1	1,1-Dichloroethene	0.100	4.440	<0.100	48	96	50
2	Acetone	0.100	16.500	<0.100	48	96	50
3	Methylene chloride	0.100	<0.100	<0.100	50	100	50
4	trans-1,2-Dichloroethene	0.100	<0.100	<0.100	49	98	50
5	1,1-Dichloroethane	0.100	12.200	<0.100	49	98	50
6	cis-1,2-dichloroethene	0.100	1.730	<0.100	46	92	50
7	2-butanone	0.100	<0.100	<0.100	51	102	50
8	chloroform	0.100	<0.100	<0.100	49	98	50
9	1,1,1-trichloroethane	0.100	88.500	<0.100	49	98	50
10	carbon tetrachloride	0.100	9.300	<0.100	49	98	50
11	benzene	0.100	4.470	<0.100	50	100	50
12	1,2-dichloroethane	0.100	<0.100	<0.100	49	98	50
13	trichloroethene	0.100	<0.100	<0.100	50	100	50
14	1,2-dichloropropane	0.100	<0.100	<0.100	50	100	50
15	bromodichloromethane	0.100	<0.100	<0.100	51	102	50
16	dibromochloromethane	0.100	<0.100	<0.100	49	98	50
17	trans-1,3-dichloropropene	0.100	<0.100	<0.100	50	100	50
18	toluene	0.100	23.200	<0.100	46	92	50
19	cis-1,3-dichloropropene	0.100	<0.100	<0.100	45	90	50
20	1,1,2-trichloroethane	0.100	<0.100	<0.100	44	88	50
21	tetrachloroethene	0.100	30.600	<0.100	49	98	50
22	chlorobenzene	0.100	<0.100	<0.100	46	92	50
23	ethylbenzene	0.100	11.400	<0.100	52	104	50
24	m,p-xylene	0.100	13.100	<0.100	49	98	50
25	o-xylene	0.100	19.900	<0.100	49	98	50

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240
PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
BOX 4128
LARAMIE, WY 82071

Receiving Date: 11/02/94
Reporting Date: 11/14/94
Project Number: 94-007L.5
Project Name: WESTERN WATER CONSULTANTS, INC.
Project Location: DOWELL SCHLUMBERGER
Lab Number: H1845-1
Sample ID: 007-AREA 2 EW-2 FORMER WASTEWATER POND

Analysis Date: 11/14/94
Sampling Date: ~~NONE GIVEN~~ 11/1/94
Sample Type: ~~LIQUID~~ VAPOR
Sample Condition: COOL & INTACT
Sample Received By: JH
Analyzed By: SL

VOLATILE ORGANIC 8260

(mg/m³)	Detection Limit	Sample Result H1845-1	Method Blank	QC	%IA	True Value QC
26 styrene	0.100	<0.100	<0.100	49	98	50
27 bromoform	0.100	<0.100	<0.100	49	98	50
28 1,1,2,2-tetrachloroethane	0.100	<0.100	<0.100	52	104	50

	% Recovery	Relative Percent Difference
29 Dibromofluoromethane	86	3
30 Toluene-D8	106	1
31 4-Bromofluorobenzene	107	2

METHOD: EPA 846-8260

Scott A. Latimer, Chemist

11-14-94
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240
PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYTICAL RESULTS FOR
WESTERN WATER CONSULTANTS, INC.
ATTN: KEVIN MATTSON
BOX 4128
LARAMIE, WY 82071

Receiving Date: 11/02/94
Reporting Date: 11/14/94
Project Number: 94-007L.5
Project Name: WESTERN WATER CONSULTANTS, INC.
Project Location: DOWELL SCHLUMBERGER
Lab Number: H1845-2
Sample ID: 007-AREA 3 EW-3 FORMER ACID COLLECTION AREA

Analysis Date: 11/14/94
Sampling Date: ~~NONE GIVEN~~ 11/1/94
Sample Type: ~~LIQUID~~ VAPOR
Sample Condition: COOL & INTACT
Sample Received By: JH
Analyzed By: SL

VOLATILE ORGANIC 8260

	(mg/m³)	Detection Limit	Sample Result H1845-2	Method Blank	QC	%IA	True Value QC
1	1,1-Dichloroethene	0.100	<0.100	<0.100	48	96	50
2	Acetone	0.100	<0.100	<0.100	48	96	50
3	Methylene chloride	0.100	<0.100	<0.100	50	100	50
4	trans-1,2-Dichloroethene	0.100	<0.100	<0.100	49	98	50
5	1,1-Dichloroethane	0.100	<0.100	<0.100	49	98	50
6	cis-1,2-dichloroemthene	0.100	<0.100	<0.100	46	92	50
7	2-butanone	0.100	<0.100	<0.100	51	102	50
8	chloroform	0.100	<0.100	<0.100	49	98	50
9	1,1,1-trichloroethane	0.100	<0.100	<0.100	49	98	50
10	carbon tetrachloride	0.100	<0.100	<0.100	49	98	50
11	benzene	0.100	1.280	<0.100	50	100	50
12	1,2-dichloroethane	0.100	<0.100	<0.100	49	98	50
13	trichloroethene	0.100	<0.100	<0.100	50	100	50
14	1,2-dichloropropane	0.100	<0.100	<0.100	50	100	50
15	bromodichloromethane	0.100	<0.100	<0.100	51	102	50
16	dibromochloromethane	0.100	<0.100	<0.100	49	98	50
17	trans-1,3-dichloropropene	0.100	<0.100	<0.100	50	100	50
18	toluene	0.100	5.690	<0.100	46	92	50
19	cis-1,3-dichloropropene	0.100	<0.100	<0.100	45	90	50
20	1,1,2-trichloroethane	0.100	<0.100	<0.100	44	88	50
21	tetrachloroethene	0.100	0.485	<0.100	49	98	50
22	chlorobenzene	0.100	<0.100	<0.100	46	92	50
23	ethylbenzene	0.100	5.480	<0.100	52	104	50
24	m,p-xylene	0.100	8.120	<0.100	49	98	50
25	o-xylene	0.100	5.100	<0.100	49	98	50

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Analyzed By: SL

VOLATILE ORGANIC 8260

(mg/m³)	Detection Limit	Sample Result H1845-2	Method Blank	QC	%IA	True Value QC
26 styrene	0.100	<0.100	<0.100	49	98	50
27 bromoform	0.100	<0.100	<0.100	49	98	50
28 1,1,2,2-tetrachloroethane	0.100	<0.100	<0.100	52	104	50

	% Recovery	Relative Percent Difference
29 Dibromofluoromethane	MI	3
30 Toluene-D8	94	1
31 4-Bromofluorobenzene	86	2

METHOD: EPA 846-8260
MI - Matrix Interference

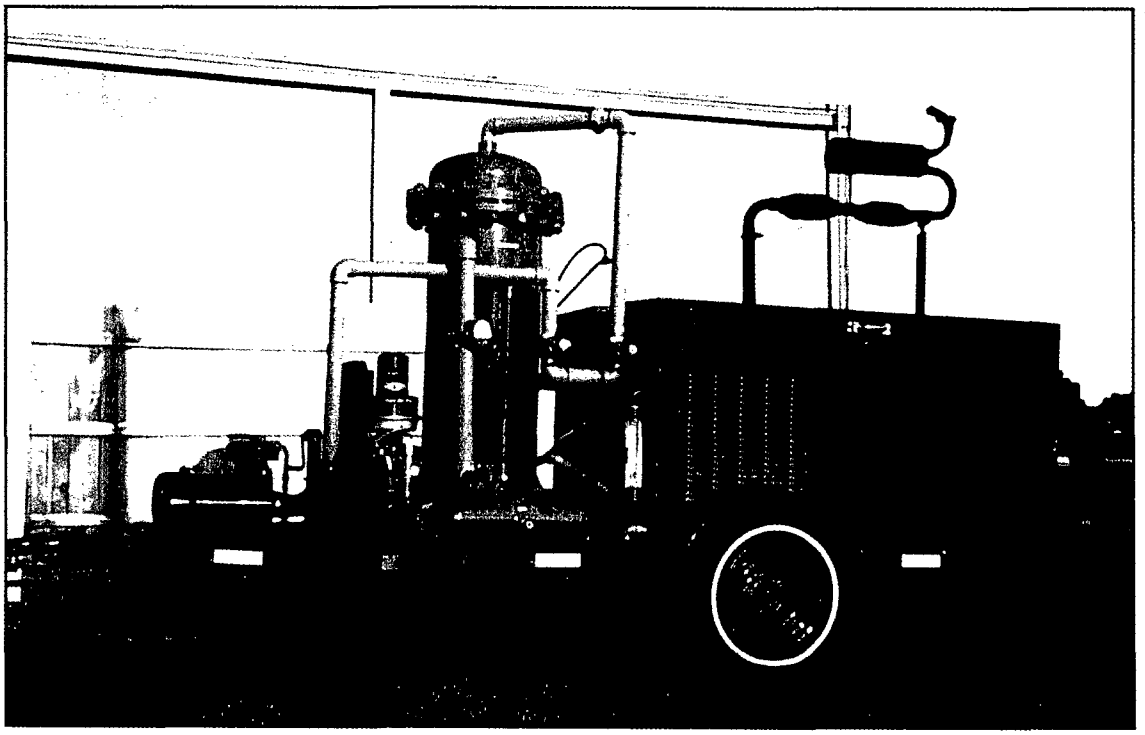
Scott A. Latimer, Chemist

11-14-94
Date

APPENDIX D

AcuVac SVE System

AcuVac Remediation, Inc.



SOIL VENTING

•

AIR INJECTION

•

EMISSION CONTROL

9111 Katy Fwy, #303 • Houston, TX 77024

(713) 468-6688 • Fax (713) 468-6689

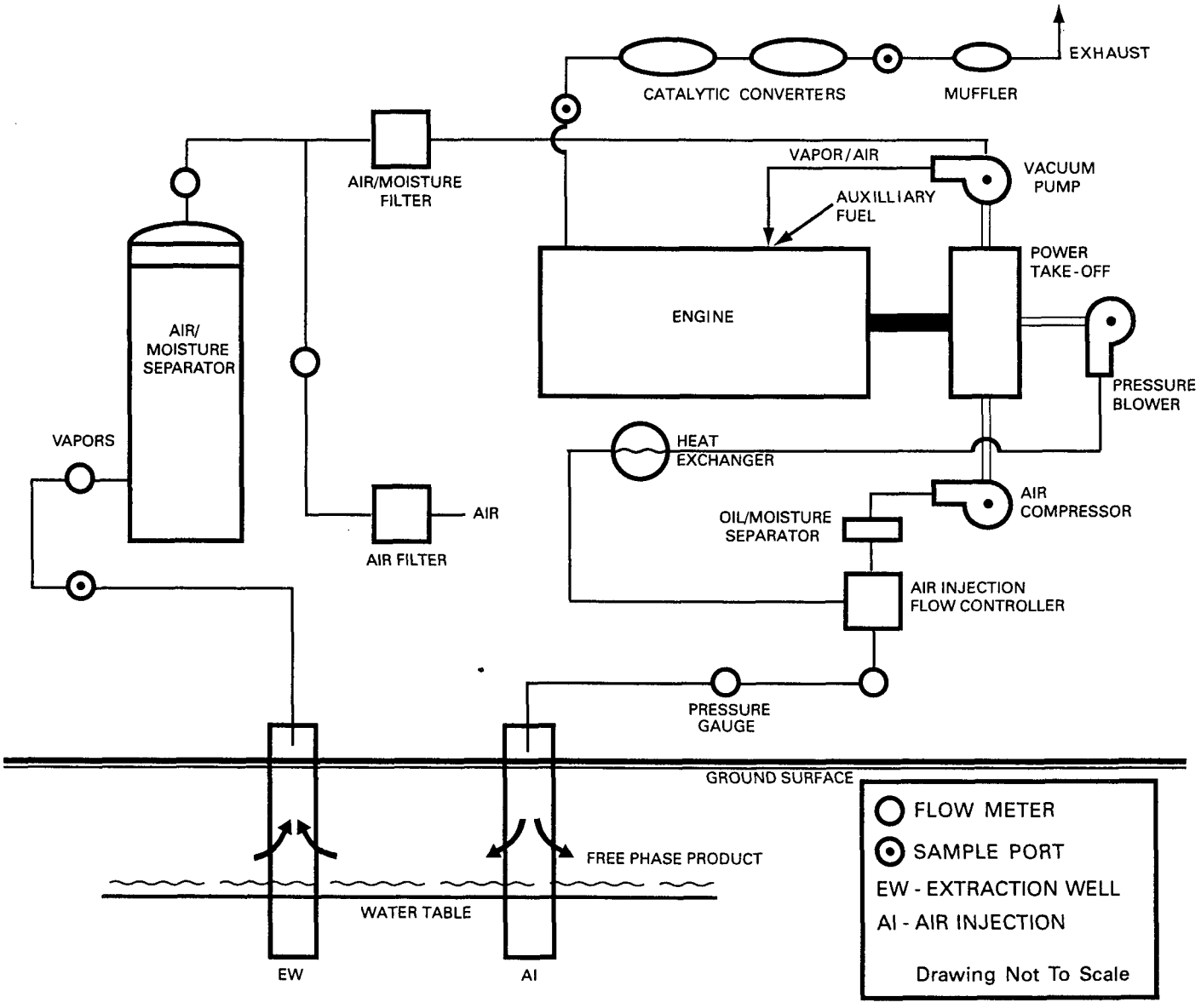
SOIL VENTING / AIR INJECTION / EMISSION CONTROL

The soil vacuum extraction (SVE) system consists of a vacuum pump driven by an internal combustion engine. The vacuum created by the vacuum pump combined with the engine manifold vacuum, can produce well vacuum over 275 inches of water. The vacuum on the extraction well causes hydrocarbons to volitalize and flow through the air/moisture separator and filter up to the vacuum pump. Vapors drawn by well vacuum are then combined with air and directed to the engine intake where they are burned at temperatures over 3,500° F as part of the combustion process (compressive thermal oxidation). If the well vapors cannot provide the required engine fuel (BTU's), an auxilliary fuel (propane or natural gas) is added. Emissions from the engine combustion are passed through catalytic converters to ensure maximum hydrocarbon destruction.

The air injection system is supplied from an engine driven air compressor (up to 17 cfm) or a pressure blower (20 to 50 cfm). Only filtered and dry air is directed to the injection well.

Free phase liquid hydrocarbons floating on the groundwater become more volatile under vacuum. The recovery rates increase because most of the product is contained in the capilliary fringe and under force of a capilliary vacuum. Air injection enhances the free phase volatilization as the vacuum draws more liquid hydrocarbons into the well.

As a safety measure, the engine is the power source for all systems. When the engine stops, all systems stop thus eliminating any uncontrolled release of hydrocarbons to the atmosphere. The engine features various safety shut off devices.



AcuVac Remediation, Inc.

PILOT TESTS

SOIL VAPOR EXTRACTION

•

AIR INJECTION

•

GROUNDWATER PROCESSING

•

EMISSION CONTROL

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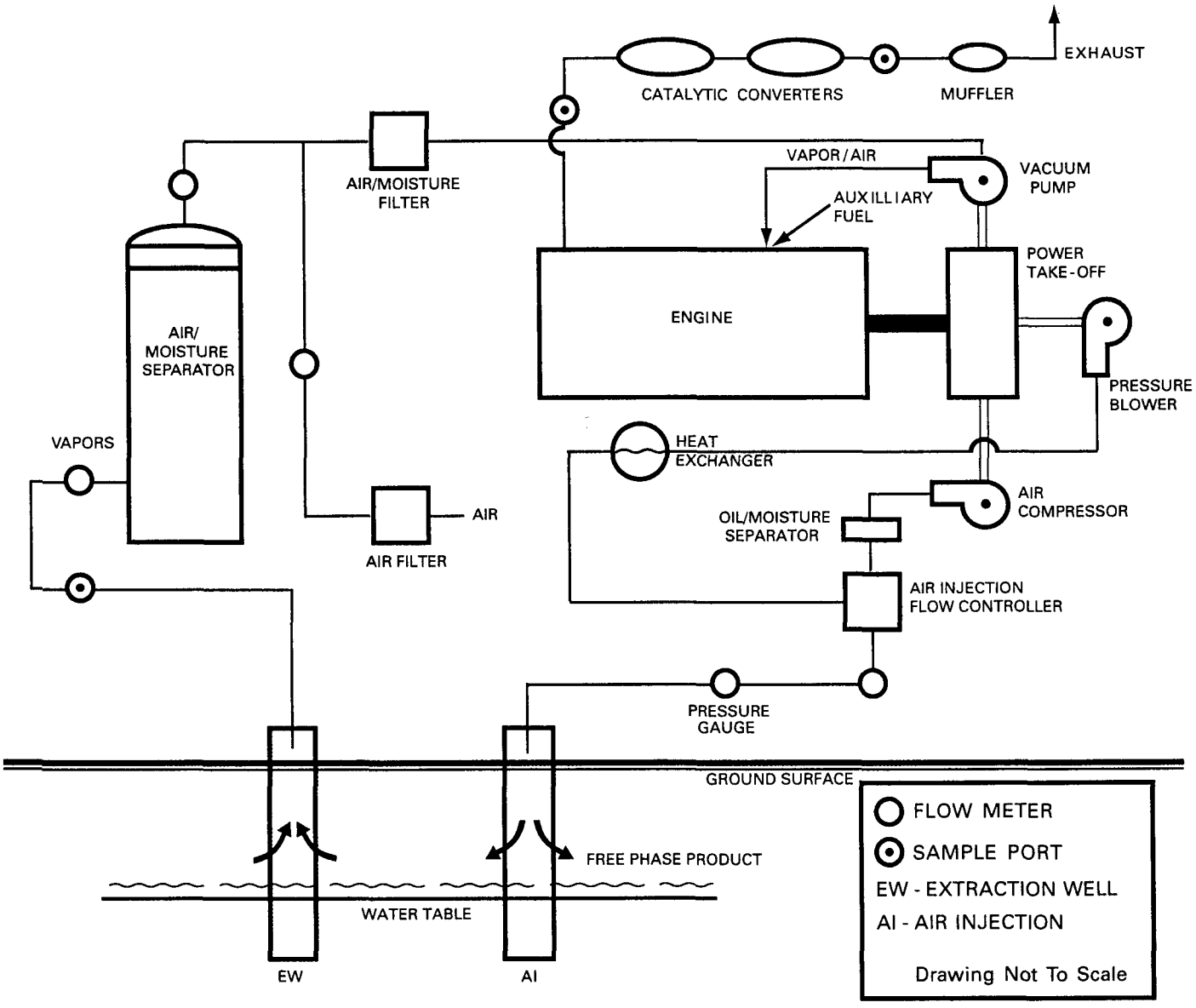

ACUVAC SYSTEM - SVE I-6

OPERATING SPECIFICATIONS
300 Cubic Inch/4.9 Liter/6 Cylinder IC Engine

Electrical Requirements	None
Engine RPM	1,800 RPM to 2,500 RPM/site specific. Calculations below based upon 2,200 RPM
Fuel Source	Well flow/contamination (or) natural gas (or) propane (or) combination well flow and alternate fuel
Fuel Consumption/Propane	1. Maximum usage 4.8 gallons/hour Actual usage 3.0 gallons/hour
Fuel Consumption/Natural Gas	1. Maximum usage 4.39 therms/hr Actual usage 2.74 therms/hr
Fuel Consumption/Well Flow	Site specific, 0 to 4.5 gal/hr projected
Fuel Consumption/BTUs	1. Maximum usage 432,000 BTUs/hour Actual usage 274,000 BTUs/hour
Total Fresh Air/Fuel Flow	Maximum usage 160 cfm Actual usage 90 - 120 cfm
Well Flow	0 to 120/site specific
Fresh Air Flow	0 to 80/site specific
Combustion Efficiency	2. 87%
with Catalytic Converters	2. 99.9% (less than .9 lbs VOC/day)
Vacuum/Well Manifold	0" to 15" HG/site specific Actual 0.25" to 3.00" HG
Noise Level	Less than 50 db at 20 feet
Ambient Temperature	-20°F to + 120°F

1. Maximum usage and actual usage differ because of the load factor on the engine. Actual information has been obtained from field data. Fuel usage stated for propane and natural gas assumes no BTU value from well flow.

2. This efficiency rating assumes the engine is maintained and tuned and the catalysts are in good working order.

ACUVAC SYSTEM - SVE I-4

OPERATING SPECIFICATIONS
140 Cubic Inch/2.3 Liter/4 Cylinder IC Engine

Electrical Requirements	None
Engine RPM	1,800 RPM to 2,500 RPM/site specific. Calculations below based upon 2,200 RPM
Fuel Source	Well flow/contamination (or) natural gas (or) propane (or) combination well flow and alternate fuel
Fuel Consumption/Propane	1. Maximum usage 2.2 gallons/hour Actual usage 1.3 gallons/hour
Fuel Consumption/Natural Gas	1. Maximum usage 2.01 therms/hr Actual usage 1.4 therms/hr
Fuel Consumption/Well Flow	Site specific, 0 to 1.7 gal/hr projected
Fuel Consumption/BTUs	1. Maximum usage 202,000 BTUs/hour Actual usage 128,000 BTUs/hour
Total Fresh Air/Fuel Flow	Maximum usage 85 cfm Actual usage 40 - 60 cfm
Well Flow	0 to 70/site specific
Fresh Air Flow	0 to 60/site specific
Combustion Efficiency	2. 87%
with Catalytic Converters	2. 99.9% (less than 0.9 lbs VOC/day)
Vacuum/Well Manifold	0" to 15" HG/site specific Actual 0.25" to 3.00" HG
Noise Level	Less than 50 db at 20 feet
Ambient Temperature	-20°F to + 120°F

1. Maximum usage and actual usage differ because of the load factor on the engine. Actual information has been obtained from field data. Fuel usage stated for propane and natural gas assumes no BTU value from well flow.

2. This efficiency rating assumes the engine is maintained and tuned and the catalysts are in good working order.