DATA SUMMARY EVALUATION REPORT FOR SITE INVESTIGATIONS OF OPEN BURN/OPEN DETONATION AREA, CUSTER HILL WASTEWATER PONDS, AND BUILDING 1301 AREA AT FORT RILEY, KANSAS

17 December 1993

Prepared for
United States Army Engineer District, Kansas City
CEMRK-ED-TP
601 East 12th Street
Kansas City, Missouri 64106-2896

Prepared by
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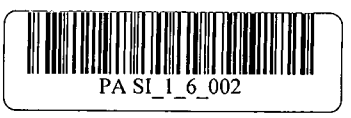

Table 3
Data Summary Organic Matrix

Free Product Sampling, Custer Hill Waste Water Pond

Laboratory Continental Analytical Services, Inc. Report ID 19634/20003

Client Army Corps of Engineers, Kansas City District

Project Fort Riley, Kansas Sampling Date November 3, 1993

Fraction: Volatiles, Semivolatile Petroleum Hydrocarbons, Total Organic Halogen.

Results are reported for TCL-VOC as ug/l, mg/kg all others.

Analyte	Lab Blank
TPH-OA2	ND
TCL VOAs	ND
TOX	ND

ND Not Detected

Table 4
Analytical Results
Report ID 19634/20003
Free Product Analysis, Custer Hill Waste Water Pond-Samples collected 11/3/93
All results are mg/l, unless indicated

Analyte	EPMW-PRO
TPH-OA2	1,100,000 (mg/kg)
TOX	840 (mg/kg)
Ethylbenzene	600[H]
m,p-xylene	2200[H]
o-xylene	910[H]
Toluene	1100[H]
2-Chloroethyl Vinyl Ether	ND[H,M]

(H) Recommended holding time exceeded. Result is an estimate.
(M) Reporting limit higher than normal due to matrix interferences.

LOUIS BERGER & ASSOCIATES, INC.

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16 December 1993

Ms. Joan Pamperien
U.S. Army Engineer District, Kansas City
ATTN: CEMRK-ED-TP
601 East 12th Street
Kansas City, MO 64106-2896

RE: Data Summary and Evaluation Report,
High Priority Sites
Contract No. DACA41-92-D-001

Dear Ms. Pamperien:

Enclosed are four copies of the DSER for the Highe Priority Sites, including the Open Burn/Open Detonation Area, the Custer Hill Ponds and Building 1301 Area. Copies are being forwarded to the parties to the IAG to arrive on 17 December.

Sincerely,
LOUIS BERGER & ASSOCIATES

David E. Egan, CPG
Principal Scientist

Enclosures

cc: Katie Watson, Fort Riley DEH (5 copies)
Scott Marquess, EPA Region VII (2 copies)
Randy Brown, KDHE (2 copies)
Doug Taggert, MRD (1 copy)
Joe King, AEC (2 copies)

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TABLES

FIGURES

1.0 OVERVIEW

This Data Summary and Evaluation Report (DSER) presents a summary of the major findings from the field investigations conducted as part of the Site Investigations (SI) of the High Priority Sites at Fort Riley, Kansas. The SIs included the open burn/open detonation area, the former fire training pit at Marshall Army Airfield, the Custer Hill wastewater ponds and Building 1301 area. The SI data for the former fire training pit has been presented in a separate DSER, dated 17 December 1993, and is not presented here. This DSER contains data on the remaining three high priority sites.

To provide a context for the data reported in this DSER, a brief overview of each site and the SI activities are presented. More complete information on the sites and the SI activities is located in the following documents:

- Draft Final Installation Wide Site Assessment for Fort Riley, Kansas, as revised 16 February 1993.
- Draft Final Sampling and Analysis Plan for Site Investigations of High Priority Sites at Fort Riley, Kansas, 20 August 1993.
- Comprehensive Basic Documents for the Site Investigations at Fort Riley, Kansas (version dated 20 August 1993).

This DSER is organized by site as follows: Section 2.0 - Open Burn/Open Detonation Area, Section 3.0 - Custer Hill Wastewater Ponds, and Section 4.0 - Building 1301 Area. Within each section, a summary of analytical data from the SI is presented. The complete analytical data package for environmental samples analyzed at an off-site laboratory is contained in the following document:

- Quality Control Summary Report for Site Investigations of High Priority Sites at Fort Riley, 17 December 1993.

In addition, this DSER includes two attachments. Attachment A presents the complete data package for the chemical analyses for soil gas and groundwater screening samples performed in the field. Attachment B provides soil boring logs and data sheets providing information on groundwater monitor well construction and development.

Within each of the sections, the analytical results for the SI are compared against regulatory standards and guidelines. For groundwater samples, the regulatory standards include Maximum Contaminant Levels (MCLs) established by the U.S. Environmental Protection Agency (EPA) and Kansas Action Levels (KAL) and Kansas Notification

Levels (KNL) established by the Kansas Department of Health and Environment (KDHE). These same standards are used for surface water; however, ambient water quality criteria are also used, which represent levels published by EPA where no harmful effects on the environment are expected. In contrast, few regulatory guidelines have been established by EPA or KDHE for contaminant levels in soils and sediments. Therefore, the soil and sediment tables also present risk-based concentrations for contaminants in soils that are published and distributed by EPA Region III. The risk-based concentrations are based on fixed levels of risk (e.g., a hazard quotient of 1 for non-carcinogenic substances and a lifetime cancer risk of 10^{-6} for carcinogenic substances) and are used by EPA as a quick screen for contaminant concentrations. The risk-based tables present concentrations for contaminants in soil for both commercial/industrial and residential soils. The soil and sediment concentrations at all three sites discussed in this DSER are compared against the commercial/industrial risk-based concentrations.

The data presented in this DSER are presented in the following units:

- micrograms per liter (ug/l) and milligrams per liter (mg/l) for aqueous samples.
- micrograms per kilogram (ug/kg) and milligrams per kilogram (mg/kg) for soil and sediment samples.

The units ug/l and ug/kg are approximately equivalent to parts per billion, and the units mg/l and mg/kg are approximately equivalent to parts per million.

2.0 OPEN BURN/OPEN DETONATION AREA

The explosive ordnance disposal (EOD) unit at Fort Riley recovers ordnance materials from Fort Riley and from a multi-state area for the Department of Defense and other state and federal agencies. Effective August 1991, the mission of the 74th EOD at Fort Riley, Kansas has been to provide routine and emergency EOD support to military installations, operations, and exercises, and to civilian and Federal authorities within its assigned geographical area of operation. This area of operation includes the State of Kansas, State of Nebraska, parts of Missouri, and parts of South of Dakota.

The 74th EOD performs ordnance disposal via open burning and open detonation (OB/OD) at Range 16 within the Impact Area of Fort Riley. Figure 2-1 provides the general location of the EOD range, which is synonymous with the OB/OD area. The currently used area at the OB/OD area is approximately 1,000 feet by 350 feet and has been used for this purpose since 1941 (although, as explained below, some former site features are outside the boundaries of the area currently used).

Open detonation of waste ordnance is generally conducted on a quarterly basis; however, detonation events are scheduled and conducted based on need. Detonation is conducted on the open ground which creates crater-like pits in the natural soil of the OB/OD area. These pits are the result of the detonations and increase in size with use. These pits generally reach a maximum size of 10 to 20 feet deep and 25 feet in diameter. Open detonation pits are filled in approximately once per year by back filling the excavated soil surrounding the pits.

Open burning is performed at a specific, dedicated location within the OB/OD Area. This area is characterized by a small pit dug into the soil on which a metal grating rests. The pit measures approximately 3 feet wide by 7 feet and is surrounded by a horse-shoe shaped embankment approximately 9 feet above the surrounding ground surface. The open burn pit is primarily used to dispose of black powder and phosphorous based munitions. Materials are disposed of by dousing them with petroleum hydrocarbons (typically diesel fuel) and igniting them.

In December of 1990, one 105 millimeter depleted uranium (DU) round was inadvertently included in ordnance disposal activities. The round contained an eight pound DU penetrator, described by the Army as a cylindrical object with a diameter of approximately one-inch and length of approximately one foot. The detonation of the DU round was accidental; the round had been mistakenly classified and labelled. Upon discovery of its detonation, the site was visually searched, and in June 1993 the surface of the detonation area was surveyed for radioactivity using a Radiac meter. No trace of the DU penetrator was uncovered as a result of either search effort.

At the time of the site inspection, five active and former detonation pits were present. Also, in addition to the active burn pit, a former burn pit was identified approximately

200 feet to the south. The areas outside and between the detonation pits and burn pits is covered with tall grasses and shrubs. A mesic (wet) area is located to the west of the site between the site and an intermittent stream.

As stated above, the OB/OD area is located within the Impact Area used by Fort Riley for numerous active ranges. An environmental investigation was conducted of the Impact Areas as a whole in 1992. The investigation consisted of the installation and sampling of ten groundwater monitor wells around the perimeter of the Impact Area and the collection of stream sediment and aqueous samples along intermittent tributaries draining the Impact Area. A summary of the environmental sampling data from the Impact Area investigation is used in this DSER as a comparison with the results of this SI.

Additional information on the site and surrounding area can be found in the following two documents:

- Final Subpart X Portion of RCRA Part B Application - Open Burning/Open Detonation Area for Fort Riley, Kansas, 21 May 1993.
- Draft Final Impact Area Site Assessment for Fort Riley, Kansas, 11 March 1993.

2.1 Overview of SI Activities

Sampling at the site was conducted according to the Sampling and Analysis Plan (SAP) for Site Investigations of High Priority Sites (20 August 1993). The SI was designed such that samples would be collected from within active pits used for burning and detonation of ordnance. These sampling locations are those likely to produce the highest concentrations of explosive residues, if any are present. In addition, soil samples were collected from the surface and subsurface at locations throughout the OB/OD Area to assess whether residual contamination is present from formerly used pits. Lastly, potential contaminant migration pathways were sampled and included surface water and groundwater pathways. Surface water pathways were assessed by sampling Threemile Creek and by sampling it's tributary. Groundwater was assessed by installation and sampling of monitoring wells. The SI sampling locations are shown in Figure 2-2.

Due to the presence of unexploded ordnance (UXO), the SI included surface reconnaissance for UXO with geophysical equipment and downhole clearance of soil borings. A variety of small caliber shells were identified during the SI and isolated for Fort Riley EOD. Also, radiation surveys were performed over the area using a Multi-Channel Analyzer (MCA) at the site prior to field activities. In addition, specific sample collection locations, samples, access ways, drill cuttings, and boots, hands, and clothing of field personnel were screened using a Geiger Mueller instrument. No readings above background were registered during the radiation survey or screenings.

As shown on Figure 2-2, the SI included collection of the following samples:

- eight surface soil samples (SS1 through SS8) were collected from within pits and across the OB/OD area;
- 23 subsurface soil samples were collected from eight deep soil borings (SB1 through SB8); one of the deep borings (SB1) was used to continue installation of groundwater monitoring well OB-93-04 and is not shown separately on Figure 2-2; three samples were collected from each boring except SB8 where only two samples were collected because of shallow auger refusal;
- three shallow soil borings were installed near the opening to the active open burn pit (SB10 a, b and c); two samples were retained for chemical analyses (one from SB10a and one from SB10b); these shallow soil borings were not included in the SAP but were added because the high amount of UXO debris near the open burn pit prevented the UXO clearance specialists from identifying an acceptable location to install a deep boring by the burn pit with the drilling rig, as originally planned;
- three sediment samples were collected along the intermittent tributary to Three-mile Creek (one upstream from the site, one due west of the site and one downstream from the site); the stream was flowing at the time of the SI and two aqueous samples were collected (at the sediment sampling locations due west and downstream of the site); and
- four groundwater monitor wells were installed and sampled -- one upgradient from the site to the northeast and three downgradient of the site to the southeast and south.

A summary of the chemical analyses performed on the environmental samples is presented below. All of the samples (with the exception of those added in the shallow ~~borings)~~ were analyzed for explosives and metals, including uranium. In addition, the surface soil sample from the open burn pit, shallow and deep soil boring samples from the locations nearest the open burn pit, and the groundwater well downgradient of the open burn pit were analyzed for volatile and semi-volatile organic compounds. In addition, the soil samples from within the open burn pit and at the mouth of the open burn pit were analyzed for total petroleum hydrocarbons. Groundwater was also analyzed for select anions (nitrate, nitrite, sulfate and phosphate).

collected from 3 shallow borings

As shown in Table 2-1 and as outlined in the SAP for the OB/OD area, four soil samples (two surface and two subsurface) were selected for metals analyses using the Toxicity Characteristic Leaching Procedure. The samples selected are as follows:

- the surface soil samples from SS1 and SS6;

- ☐ the shallowest sample from soil boring SB3; and
- ☐ the deepest sample from soil boring SB7.

The results of the TCLP analyses are not available for this DSER but will be presented in the SI report.

look at - it doesn't match up w/ the text

Table 2-1 - Overview of Chemical Analyses for SI Samples

	Surface Soil	Shallow Soil Borings	Deep Soil Borings	Ground-water	Surface Water	Sediment
Explosives-EPA Method 8330	X		X	X	X	X
Priority Pollutant Metals- EPA Method 7000 Series/6010	X		X	X	X	X
TCLP Metals-EPA Methods 1311 & 7000 Series/6010*	X		X			
Uranium-EPA Method 6020 (ICP)	X		X	X	X	X
Anions-EPA Methods 335.2, 345.1, 406C and 9036				X		
Volatiles-EPA Method 8240	X	X	X	X		
Semi-Volatiles-EPA Method 8270	X	X	X	X		
Total Petroleum Hydrocarbons-EPA Method 8015 Modified		X	X			

* Analytical results pending.

Surface soil 8 total sample locations

1 sample ROX 2500 ppb Risk based 26 ppb

7 sample Berryllium

Shallow soil

1 sample din-nitrotoluene ~~@~~ 4900 RB 2000

all samples Berrylium

GW

		MCL	KNL
MW-4 TCE	29	5	0.5
MW 3 TCE	1.3		

2.2 Summary of SI Results

A summary of the positive analytical detections for the OB/OD area are presented in Tables 2-2 through 2-6, which are organized by sample media. The results are compared with regulatory standards, as discussed in Section 1.0. In addition, the results for the groundwater and stream sampling are compared with the findings for the Impact Area. [There are no comparable results for soils in the Impact Area investigation.]

Table 2-2 presents the positive detections for the eight surface soil samples. Explosive compounds (RDX and Di-nitrotoluene) were detected at two locations - SS1 and SS3. SS1 was collected from within the open burn pit and SS3 was collected from within a detonation pit. Di-n-butyl-phthalate was also detected in SS1. Metals, including uranium, were detected in all samples. The concentration of RDX at SS3 (2,500 ug/kg) exceeds the EPA risk-based concentration of 26 ug/kg for industrial/commercial soils. Beryllium concentrations at locations SS2 through SS8 (ranging from 0.8 to 1.1 mg/kg) also exceed the EPA risk-based concentration of 0.67 mg/kg for industrial/commercial soils . No other concentrations exceed regulatory standards.

Table 2-3 presents the positive detections for the 8 deep (23 samples) and the two shallow (two samples) soil borings. Of the deep soil borings, seven of the eight borings were drilled to depths of 18 to 20 feet. At SB8, auger refusal was encountered at less than 10 feet. In general, undisturbed soils were encountered at depths of two to four feet beneath the surface. For borings SB1 through SB7, the shallowest sample includes disturbed soils, the middle sample is from undisturbed soils immediately beneath the disturbed soils, and the deep sample is from undisturbed soils at greater depth. At boring SB8, only the disturbed soils and the immediately underlying soils were sampled. As shown in Table 2-3, the explosive di-nitrotoluene was detected in only one sample, the shallow sample from SB8. The detected concentration of 4,900 ug/kg exceeds the risk-based concentration of 2,000 ug/kg for commercial/industrial soils. Metals, including uranium, were detected in all samples. Beryllium concentrations ranged from 0.6 to 1.3 mg/kg. The beryllium concentrations exceed the risk-based level of 0.67 for industrial/commercial soils in all samples except the deep sample from SB6. No other metals exceed risk-based levels. No other contaminants were detected.

Table 2-4 presents the results of the stream aqueous samples. Uranium was detected in both samples. The concentrations are below regulatory standards and are below the highest level reported in the Impact Area investigation. No other contaminants were detected.

Table 2-5 presents the results of the stream sediment sampling. A variety of metals, including uranium, were detected in all samples. The concentrations in SD-1, the upstream sediment sample, are the same (and sometimes higher) than the concentrations in the downstream sediment samples. With the exception of beryllium, the detected

concentrations were below the highest reported concentration for the Impact Area investigation.

Table 2-6 presents the results of the groundwater sampling. Following the discussion of the groundwater analytical data, an overview of the groundwater setting and well placement is provided. The positive detections in groundwater include uranium, sulfate, nitrate and trichloroethylene (TCE). The highest concentration was reported for OB-93-01 (.0043 to .0057 mg/l) whereas the upgradient well, OB-93-02 had a reported concentration of .0023 mg/l. The highest concentration for groundwater in the Impact Area investigation is .0048 mg/l. The detected uranium concentrations do not exceed regulatory standards. Similarly, the detections of nitrate and sulfate do not exceed regulatory standards. The detections of TCE range from 1.3 ug/l in OB-93-03 to 29 ug/l in OB-93-04. The concentration in OB-93-04 exceeds the MCL and KAL of 5.0 ug/l.

The total depths of the ground water monitoring wells range between 51 feet and 77 feet below the ground surface. Lithologic logs and well completion records for the wells are provided in Attachment 2. The depth of the well was determined based on the depth at which the first sustainable water-bearing zone was encountered. The depth to bedrock beneath the site ranged from approximately 10 to 20 feet. In some of the borings, small amounts of water (up to 1.5 feet) were present in the boreholes at the interface between overburden and bedrock. However, upon bailing of the boreholes, the groundwater did not noticeably recharge at any boring. Thus, all wells were advanced into bedrock and completed in the first water-bearing zone. Upon encountering the first water-bearing zone at each well, the groundwater levels rose in the borehole, indicating that confining conditions exist.

Figure 2-3 presents an east-west geologic cross-section for the site. Data from the Impact Area investigation was used to identify specific geologic formations at the OB/OD area. In constructing these cross-sections, the Shroyer Limestone and underlying Havensville Shale provide the principle correlative units. Presence of these units are also found in many of the groundwater monitoring wells installed during the 1992 Impact Zone investigations and therefore can be used to tie the OB/OD Area geology to the overall subsurface geology (Impact Area Draft Final Report, March 1993). The Havensville Shale in particular provides a distinct marker bed of very dark grey to black shale found in all four of the OB/OD Area wells as well as in two 1992 Impact Area wells located along Vinton School Road (i.e., MW-IZ92-010 and MW-IZ92-011).

As is shown in the geologic cross-section, the first water-bearing zone was encountered in the Schroyer limestone at OB-93-02. Although not shown, the first water-bearing zone at OB-93-02 is also the Schroyer limestone. However, the first water-bearing zone was encountered in an underlying formation in wells OB-93-03 and OB-93-04 -- the Threemile limestone formation of the Wreford limestone. The two waterbearing limestones are separated stratigraphically by less than 10 feet of shale.

Since no three monitoring wells intercept the same water bearing zone, no ground water gradient map can be developed. However, as indicated in the Impact Area report (Draft Final, March 1993) the flow of groundwater within the bedrock is moving downdip toward the west. Groundwater in wells OBOD-93-02 through 04 is under significant pressure as indicated by static water level above the saturated zone in these wells. In OBOD-93-01, the shallowest of the four wells, groundwater is only under slight pressure. This may indicate that the weathered shale and clay units above the water bearing zones provides an effective seal (i.e., aquitard). It may also indicate that the recharge area is updip of the OB/OD Area.

2.3 Discussion of SI Results

A detailed discussion of the results of the SI will be presented in an SI report to be completed at a later date. This section presents several observations regarding the data presented in Section 2.0.

- Explosive residues were not widespread across the site; rather, they were found in only three soil samples, all from the surface or shallow disturbed materials.

- The concentrations of beryllium are fairly uniform across all samples. The data has not yet been compared to local and regional data to assess whether they are significantly different from naturally-occurring, background concentrations.

- The Fort Riley area was subjected to massive regional flooding as a result of high amounts of rainfall in July 1993. Remnants of high water from the flood were evident throughout the area during the SI field work in the fall of 1993. If sustainable groundwater was not encountered in the overburden materials at the site during the SI, it is considered unlikely that sustainable groundwater will be present in the overburden in the future.

whats concetration? Noted in text.

Look up Beryllium in chemical Dictionary

TABLE 2-2 - OB/OD AREA SURFACE SOIL RESULTS

Analyte (µg/kg organics) (mg/kg inorganics)	Sample Location Sample ID #									Risked-Based Concentrations Commercial/ Industrial Soil
	Burn pit SS-1 OBOD SS1001	SS-2 OBOD SS2001	SS-3 OBOD SS3001	Detn. pit SS-3 OBOD SS9001[A]	SS-4 OBOD SS4001	SS-5 OBOD SS5001	SS-6 OBOD SS6001	SS-7 OBOD SS7001	SS-8 OBOD SS8001	
Total Solids %	73	78	80	79	80	76	69	78	83	
Explosives										
2,4-di Nitrotoluene	1.0		.001		ND	ND	ND	ND	ND	
RDX [B]	ND[H]	ND[H]	ND[H]	2500[H]	ND	ND	ND	ND	ND	26
Metals										
Arsenic	3	4	4	2	4	3	3	3	6	310
Beryllium	ND	0.8	0.9	0.9	1.0	1.1	1.0	0.9	1.0	0.67
Cadmium	1.0	0.9	1.3	1.6	0.9	0.8	0.9	1.0	0.7	510
Chromium	15	15	24	18	23	22	26	23	25	5100 [C]
Copper	93	19	100	95	280	210	320	59	20	38000
Nickel	22	15	20	18	18	17	19	17	22	20000
Lead	140	30	50	50	50	110	180	45	60	500-1000 [D]
Zinc	320	60	190	250	180	140	230	100	61	310000
Uranium	1.8	1.9	0.97	1.1	1.2	1.2	1.2	1.1	1.5	3100 [E]
Volatiles	ND	NA	NA	NA	NA	NA	NA	NA	NA	
Semi-Volatiles										
Di-n-butyl phthalate	3700[M]	NA	NA	NA	NA	NA	NA	NA	NA	100,000

Note: All results in dry weight.
NA: Not Analyzed
ND: Not Detected
H: Recommended holding time exceeded. Result is an estimate.
M: Reporting limit higher than normal due to matrix interference.

A: Duplicate of OBODSB6001
B: RDX - Cyclotrimethylenetrinitramine or Hexa-1,3,5-trinitro-1,3,5-triazine
C: Value for Chromium VI
D: EPA Guideline for Lead
E: Soluble Salts

TABLE 2-3 - OB/OD AREA SOIL BORING RESULTS

Analyte (μg/kg organics) (mg/kg inorganics)	Sample Location / Sample ID # / Sample Footage Interval									Risked Based Concentrations; Commercial/ Industrial Soil
	SB-1 OBOD SB 1001 1-2	SB-1 OBOD SB 1002 7-9	SB-1 OBOD SB 1003 11.5-12.5	SB-2 OBOD SB 2001 3-5	SB-2 0BOD SB 2002 7-8.5	SB-2 0BOD SB 2003 10-11	SB-3 OBOD SB 3001 1-3.5	SB-3 OBOD SB 9001[A] 1-3.5	SB-3 0B0D SB 3002 4.5-6	
Total Solids %	84	83	80	82	84	81	80	82	84	
Explosives	ND[H]	ND[H]	ND[H]	ND	ND	ND	ND	ND	ND	
Metals Arsenic	4	5	3	5	3	3	5	6	4	310
Beryllium	0.8	1.1	1.0	1.0	0.8	0.9	1.1	1.0	1.0	0.67
Cadmium	0.7	0.8	ND	0.7	ND	ND	0.6	0.7	0.6	510
Chromium	17	23	23	21	19	16	23	21	17	5100 [C]
Copper	11	14	14	15	10	9	19	28	11	38000
Nickel	13	18	16	18	15	14	19	17	15	20000
Lead	18	18	15	15	19	20	22	30	14	500-1000 [D]
Zinc	44	61	54	52	40	38	63	62	44	310000
Uranium	1.0	1.9	1.0	1.4	2.2	0.92	1.3	1.5	2.7	3100 [E]
Volatiles	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Semi-Volatiles	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Total Petroleum Hydrocarbons	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Note: All results in dry weight.
NA: Not Analyzed
ND: Not Detected
H: Recommended holding time exceeded. Result is an estimate.
M: Reporting limit higher than normal due to matrix interference.

A: Duplicate of OBODSB6001
C: Value for Chromium VI
D: EPA Guideline for Lead
E: Soluble Salts

TABLE 2-3 - SOIL BORING RESULTS (continued)

Analyte (µg/kg organics) (mg/kg inorganics)	Sample Location / Sample ID # / Sample Footage Interval									Risked Based Concentrations; Commercial/ Industrial Soil
	SB-3 OBOD SB 3003 12-13.5	SB-4 OBOD SB 4001 2-3	SB-4 OBOD SB 4002 5-6	SB-4 OBOD SB 4003 11.5-13.5	SB-5 OBOD SB 5001 0-4	SB-5 OBOD SB 5002 5-6	SB-5 OBOD SB 5003 9-10	SB-6 OBOD SB 6001 4.5-8	SB-6 OBOD SB 10001[A] 4.5-8	
Total Solids %	81	83	83	81	80	81	79	81	81	
Explosives	ND	ND	ND	ND	ND	ND	ND	ND[H]	ND[H]	
Metals Arsenics	3	5	3	3	5	4	4	3	3	310
Beryllium	1.0	1.0	1.0	0.9	1.0	1.0	1.0	1.0	1.1	0.67
Cadmium	ND	0.7	ND	ND	0.8	ND	ND	0.9	ND	510
Chromium	14	18	22	17	19	19	14	20	20	5100 [C]
Copper	10	12	10	10	13	12	11	12	12	38000
Nickel	19	14	17	19	16	23	19	16	21	20000
Lead	13	14	9	10	17	16	11	15	15	500-1000 [D]
Zinc	42	43	49	69	50	73	59	48	53	310000
Uranium	0.87	1.1	1.1	0.97	1.5	1.3	0.77	1.2	1.3	3100 [E]
Volatiles	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Semi-Volatiles	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Total Petroleum Hydrocarbons	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Note: All results in dry weight.
NA: Not Applicable ND: Not Detected
H: Recommended holding time exceeded. Result is an estimate.
A: Duplicate of OBODSB6001
B: RDX - Cyclotrimethylenetrinitramine or Hexahydro-1,3,5-trinitro -1,3,5-triazine
C: Value for Chromium VI
D: EPA Guideline for Lead
E: Soluble Salts

TABLE 2-3 - SOIL BORING RESULTS (concluded)

Analyte (μg/kg organics) (mg/kg inorganics)	Sample Location Sample ID # Sample Footage Interval)								
	SB-6 OBOD SB 6002 11.5-12.5	SB-7 OBOD SB 7001 1-3	SB-7 OBOD SB 7002 4.5-5.5	SB-7 OBOD SB 7003 7.5-8.5	SB-8 OBOD SB 8001 1.8-2.8	SB-8 OBOD SB 8002 3-4	SB-10A OBODSB 10A-001 1.3-1.6	SB-10B OBODSB 10B-001 2.3-2.8	Risked Based Concentrations; Commercial/ Industrial Soil
Total Solids %	83	75	83	79	76	81	85	85	
Explosives									
2,4-di Nitrotoluene	ND[H]	ND	ND	ND	4900	ND	NA	NA	2000
RDX [B]	ND[H]	ND	ND	ND	ND	ND	NA	NA	--
Metals Arsenic	3	5	6	8	3	ND	NA	NA	310
Beryllium	0.6	1.5	0.7	1.0	1.3	0.9	NA	NA	0.67
Cadmium	ND	1.2	0.7	1.0	0.9	ND	NA	NA	510
Chromium	16	29	16	33	25	16	NA	NA	5100 [C]
Copper	16	17	12	16	14	10	NA	NA	38000
Nickel	20	29	17	28	26	15	NA	NA	20000
Lead	12	20	16	24	17	9	NA	NA	500-1000 [D]
Zinc	30	71	52	41	59	41	NA	NA	310000
Uranium	0.91	0.76	1.1	2.7	0.98	1.3	NA	NA	3100 [E]
Volatiles	NA	NA	NA	NA	ND	ND	ND	ND	
Semi-Volatiles	NA	NA	NA	NA	ND	ND	ND	ND	
Total Petroleum Hydrocarbons	NA	NA	NA	NA	ND	ND	ND	ND	

Note: All results in dry weight.
NA: Not Applicable ND: Not Detected
H: Recommended holding time exceeded. Result is an estimate.
A: Duplicate of OBODSB6001

B: RDX - Cyclotrimethylenetrinitramine or Hexahydro-1,3,5-trinitro -1,3,5-triazine
C: Value for Chromium VI
D: EPA Guideline for Lead
E: Soluble Salts

TABLE 2-4 - OB/OD AREA
SURFACE WATER ANALYTICAL RESULTS

Analyte (μg/l organics) (mg/l inorganics)	Sample Location Sample ID #						
	SW-1 OBOD SW-1-001	SW-2 OBOD SW-2-001	Regulatory Comparison Values			1992 Impact Area Surface Water Comparison Values	
			KAL	KNL	MCL	Low Value	High Value
Explosives	ND	ND	*	*	*	*	*
Metals	ND	ND	*	*	*	*	*
Uranium	.0024	.0021	- C	- C	.02	ND	.0057

ND: Not Detected
C: No value referenced
* Data values are not relevant to OB/OD area and are not provided.

KAL - Kansas Action Level
KNL - Kansas Notification Level
MCL - Maximum Contaminant Level

TABLE 2-5 - OB/OD AREA SEDIMENT SAMPLE RESULTS

Analyte (μg/kg organics) (mg/kg inorganics)	Sample Location Sample ID #					1992 Impact Area Sediment Concentrations	
	SD-1 OBOD SD1001	SD-1 OBOD SD9001 [A]	SD-2 OBOD SD2001	SD-3 OBOD SD3001	Risked Based Concentrations Industrial/ Commercial Soils	Low Values	High Values
Total Solids %	75	74	77	65	*	*	*
Explosives	ND	ND	ND	ND	*	ND	ND
Metals Arsenic	4	4	4	3	310	ND	14
Beryllium	0.8	0.9	0.9	0.7	0.67	ND	ND
Cadmium	1.1	0.9	1.0	0.9	510	1.0	1.6
Chromium	17	19	21	14	5100[C]	19	26
Copper	13	16	14	13	38,000	NA	NA
Nickel	16	19	18	18	20,000	NA	NA
Lead	15	15	15	20	500-1,000[D]	12	36
Selenium	ND	ND	ND	ND [M]	5100	ND	ND
Zinc	67	73	57	46	310000	NA	NA
Uranium	0.49	0.66	0.49	0.84	3100 [E]	0.26	1.51

Note: All results in dry weight.
ND: Not Detected
M: Reporting limit higher than normal due to matrix interference.
A: Duplicate of OBODSD1001
NA: Not Analyzed.

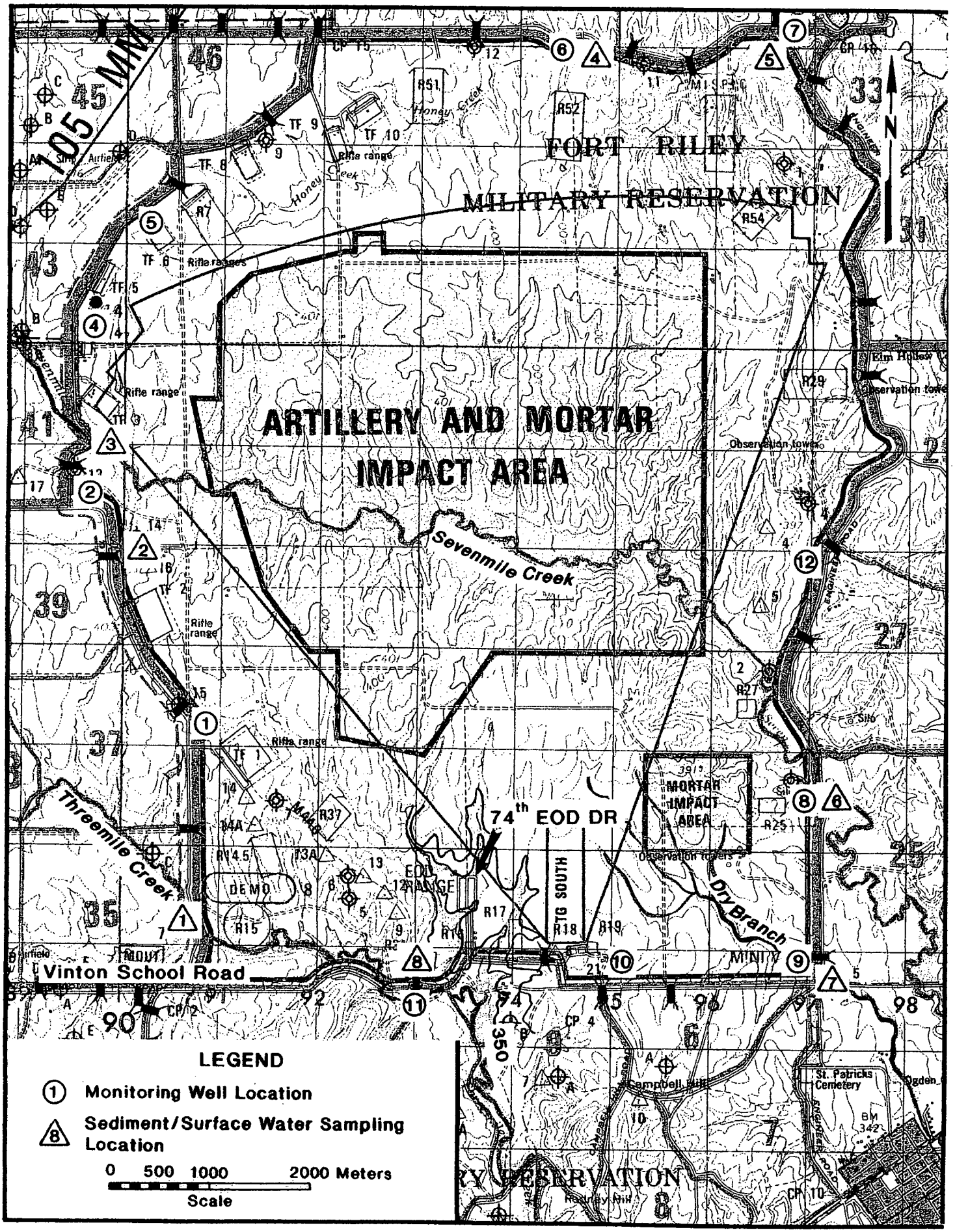
C: Value for Chromium VI
D: EPA Guideline for Lead
E: Soluble Salts
* Data are not applicable and are not provided.

TABLE 2-6 - OB/OD AREA GROUNDWATER RESULTS

Analyte (μg/l organics) (mg/l inorganics)	Sample Location Sample ID #					Regulatory Comparison Values			1992 Impact Area Groundwater Comparison Values	
	MW-1 OBOD MW-1-001	MW-1 OBOD MW-9[A]	MW-2 OBOD MW-2-001	MW-3 OBOD MW-3-001	MW-4 OBOD MW-4-001	KAL	KNL	MCL	Low Value	High Value
Explosives	ND	ND	ND	ND	ND				ND	ND
Metals	ND	ND	ND	ND	ND				*	*
Uranium	.0057	.0043	.0023	ND	.0029	- [C]	- [C]	.02	ND	.0048
Anions Sulfate [B]	52	33	26	97	87	250	- [C]	- [C]	14	2240
Nitrate	ND	ND	1.0	ND	ND	10	- [C]	10 [D]	ND	2.8
Volatiles										
Trichloroethylene	ND	ND	ND	1.3	29	5	0.5	5.0	ND	ND
Semi-Volatiles	ND	ND	ND	ND	ND	*	*	*	ND	ND

ND: Not Detected
KAL - Kansas Action Level
KNL - Kansas Notification Level
MCL - Maximum Contaminant Level
* Data are not relevant and are not provided.

A: Duplicate of OBOD-MW-1-001.
B: Field blank OBOD-FB-11 contained 19 mg/l sufate.
C: No value referenced.
D: Total Nitrate and Nitrite.



Contour Interval 10 Meters

Figure 2-1 -- General Site Location of OB/OD Area

ANTICIPATED SHALLOW GROUNDWATER FLOW DIRECTION

Approximate Boundaries of Active Area

Large Burial

Small Pit

Northwest Demo Pit

East Demo Pit

West Demo Pit

Active Burn Pit

TPH SAMPLES

10A 10B 10C

Former Burn Pit

OB-93-02

OB-93-01

OB-93-03

OB -93-04

DETAIL OF EAST DEMO PIT

Sed 001

Sed 002
Strm 001

Sed 002
Strm 001

MESIC AREA

12' GRAVEL ROAD

12' GRAVEL ROAD

12' GRAVEL ROAD

BENCHMARK

DRAINAGE TO 3 MILE CREEK

1158.9 1225 1183.9 1174.8 1175 1150 1177.5 1171.8 1170.8 1172.4 1166.3 1152.5 1200 1225 1144.8 1150

GRAPHIC SCAE
100 0 50 100 200 400
(IN FEET)

LEGEND

- MW-2 ⊗ GROUNWATER MONITORING WELL
- ● BORING LOCATION
- ▲ SEDIMENT & WATER SAMPLE
- ■ SURFACE SOIL SAMPLES
- △ SEDIMENT SAMPLE

NOTE:
Soil Boring 1 (● 1)was installed as part of OB-93-04

MONITOR WELL OB-93-02 1282.14' FROM BENCHMARK

MONITOR WELL NO.	ANGLES TURNED TO THE RIGHT FROM BASE LINE AT MW #2	DISTANCE FROM MW #2
1	202°09'48"	478.95'
3	24°49'16"	617.87'
4	31°57'17"	995.57'

BENCHMARK: RR Spike in Power Pole (FR-7A)
Elev = 1146.299

Figure 2-2 Sample Location Map OB-OD Area

December, 1993 | File 1a2.dwg

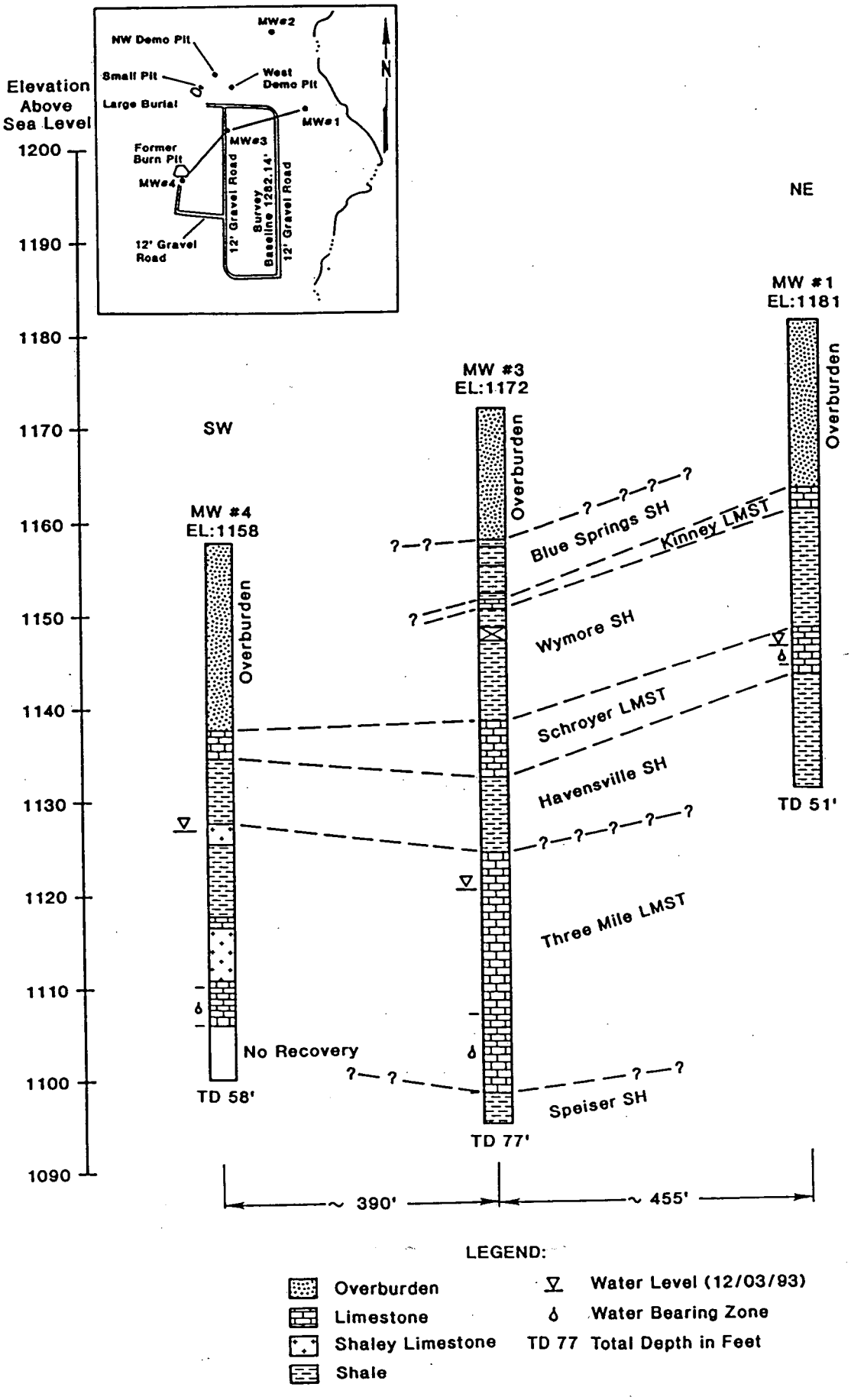


Figure 2-3 - East/West Geologic Cross Section of OB/OD Area

3.0 CUSTER HILL WASTEWATER PONDS

The Custer Hill industrial wastewater system consists of the old wash rack reservoir and two wastewater retention ponds. Together, these three ponds collect runoff and wastewater throughout Custer Hill Troop Complex. Water from east and west ponds is then pumped to the old wash rack reservoir; thus, the old wash rack reservoir eventually receives all the wastewater collected in the three ponds. The old wash rack reservoir is connected to a series of four cells that receives water from the central vehicle wash facility. Specifically, the old wash rack reservoir discharges to Cell 2. The locations of the ponds and cells included in the SI is provided in Figure 3-1.

The central vehicle wash facility serves to remove exterior dirt and grime from vehicles. None of the processes at the central vehicle wash facility use hazardous substances, and the wash process does not generate hazardous waste. Thus, as explained in the Installation Wide Site Assessment, the central vehicle wash facility is not included in this SI. However, the east pond, west pond and old wash rack reservoir were included in the SI for the following reasons:

- All three ponds are known to receive petroleum hydrocarbons;
- None of the ponds are lined;
- The east pond receives water from Building 8100, which represents a consolidation of activities at Fort Riley that generate hazardous waste;
- Previous testing of the old wash rack reservoir by KDHE indicated that chlorinated solvent were present in sediments at low concentrations; and
- There is the potential for small quantities of hazardous substances to be inadvertently picked up by wastewaters and facility runoff from the tactical equipment shops on Custer Hill.

In addition, because the old wash rack reservoir is connected to Cell 2, which in turn is connected to the other cells, Cells 1 through 4 are also included in the SI.

The east pond, located on First Division Road, is across from the petroleum storage facility. The pond is rectangular in shape (approximately 200 feet by 100 feet). The west pond is located on the tracked vehicle road north of the sub-caliber range. It is circular with a diameter of about 100 feet. Each of these ponds receives storm drain and floor drain water from the automotive and industrial shops on Custer Hill. There is floating petroleum product on these ponds and booms were installed to prevent surface spreading. The central vehicle wash facility is located on the northwest fringe of the Custer Hill area; the old wash rack reservoir and cells 1 through 4 are located adjacent to a tributary of Three Mile Creek. The old wash rack reservoir has an irregular outline and surface area of several acres. cells 1 through 4 range in size from

3 to 5 acres. As noted above, water from the old wash rack reservoir is discharged into cell 2. In turn, cell 2 overflows into cell 3 which overflows to cell 4. Water from cell 4 is pumped to the central vehicle wash facility where it is used and eventually returned to cell 1, which empties into cell 3. Water from Cell 4 can be diverted into the headwaters of Threemile Creek; however, routinely the cell network is run as a closed-loop system with no releases to the nearby streams. If necessary, water can also be diverted from Cells 2 and 3 directly into intermittent tributaries to Threemile Creek.

The ponds were evaluated by collecting samples of water and sediments from within each pond and cell to assess whether hazardous substances are present. The pond sediment and aqueous samples were analyzed for priority pollutant metals using EPA Method 7000 Series/6010, volatile organic compounds using EPA Method 8240, semi-volatile organic compounds using EPA Method 8270, and Total Petroleum Hydrocarbons (TPH) using EPA Method 8015 modified. TPH analyses includes two fractions -- the volatile fraction (gasoline recoverable organics - GRO) and the semi-volatile fraction (diesel recoverable organics - DRO).

To evaluate whether the ponds had released contaminants to soils and/or groundwater, soil gas surveys were conducted around each pond. Soil gas samples were analyzed for both petroleum hydrocarbons and chlorinated organic compounds using modified EPA Methods 8010 and 8020. For each site, an initial grid of soil gas sampling locations was established. Then, additional soil gas samples were collected if warranted based on positive findings from Phase I (additional samples were collected when specific compounds were detected above 10 ug/l or when the total volatile organic concentrations exceeded 10 ug/l). Also, because the east pond was considered to have a high potential for receiving hazardous substances and KDHE sampling data indicated that the old wash rack reservoir had received some chlorinated solvents, the SI included the installation and sampling of groundwater monitoring wells around each pond. Lastly, intermittent tributaries to Threemile Creek are adjacent to the east pond as well as the old wash rack reservoir and cells 1 through 4. Thus, the SI included the collection of stream aqueous and sediment samples around both areas. The groundwater samples and stream aqueous and sediment samples were analyzed for priority metals, volatiles, semi-volatiles and TPH, as described above for the pond samples. The following subsections provide more detail on the SI sampling conducted at each pond or area.

3.1 East Pond

Sampling at the east pond included the following:

- three aqueous samples from the pond,
- two sediment samples from the pond,
- thirteen soil gas points in Phase I and 14 soil gas points in Phase 2,

- installation and sampling of three groundwater monitor wells, and
- stream samples (aqueous and sediment) at three locations.

The sampling locations are shown in Figure 3-2.

During the SI, petroleum hydrocarbons were visible on the surface of the pond. A surface boom lies across the pond approximately 25 feet south of the pond inlet. The boom is present as a passive barrier preventing the spread of petroleum on the surface. Within the perimeter of the boom is the greatest accumulation of petroleum. An oil water separator is in operation at this pond, and the oil/water separator is periodically maintained. Black staining is observed along the northwestern banks of the pond near the pond inlet. This may be due to either minor spills and drips as the waste petroleum is transferred to a tanker truck for final disposition or as a result of the flooding (and elevated pond levels) that occurred during the summer of 1993. A slight petroleum odor was occasionally observed near the inlet side of the pond. At the time of the SI, a layer of petroleum was present behind the boom. Qualitatively, the petroleum was thick and had characteristics (e.g., apparent viscosity) of heavy end oils.

3.1.1 Summary of SI Results

The field investigation continued at the East Pond. The impact to the pond from adjacent site activities is present as a thick layer of petroleum on the pond surface. However, similar to the West Pond, no levels above background (0-1 ppm) were detected by the on-site organic vapor meter.

The positive detections during the soil gas survey are presented in Table 3-1. During the Phase I survey, elevated levels of petroleum hydrocarbons were detected to the east of the pond, between the pond and First Division Road. Also, low levels of 1,2-dichloroethene (DCE) and 1,1-dichloroethane (DCA) were detected (samples EP-C4 and EP-H3). As a result, fourteen additional locations were sampled during the Phase 2 soil gas survey; the phase 2 samples can be identified as follows: EP-A__. During the Phase 2 survey, petroleum hydrocarbons were encountered at concentrations exceeding 5,000 ug/l, and detections of petroleum hydrocarbons were found on the opposite side of First Division Road, adjacent to the petroleum storage facility for Fort Riley. The soil gas data for total FID concentrations (representing the sum of all petroleum hydrocarbons detected on the gas chromatograph - flame ionization detector) was used to prepare an isoconcentration map of the hydrocarbon contamination. The results are shown on Figure 3-3 and show that the highest concentrations are separated from the area of the east pond by areas of no detections.

The analytical results for the pond aqueous samples are shown in Table 3-2. The results for the pond sediment sampling are shown in Table 3-3. The pond samples contained components of petroleum hydrocarbons, bis-2-ethylhexyl phthalate, lead and zinc. However, although petroleum is visible on the surface

of the East Pond, the analytical results for the pond aqueous samples show no analytes detected above regulatory standards or guidelines. Similarly, the pond sediment samples contained components of petroleum hydrocarbons, phenanthrene, and a variety of metals. As shown, only the concentrations of beryllium and lead exceed risk-based standards for soils. During the SI, the thickness of the pond sludge was measured at multiple locations; the results of this sludge thickness

Three monitor wells, EP-93-01, EP-93-02, and EP-93-03, were installed and sampled. The depth to bedrock varied from approximately 5 to 11 feet. The uppermost bedrock consisted of weathered shale and shale. All three wells were installed in the first water-bearing units, which consisted of thin (less than two feet at some locations) limestone layers. Because of the low permeable shales overlying the limestone formations, groundwater was under confining conditions in the limestone layers and rose 5 to 10 feet inside the boreholes and completed wells. Figure 3-5 presents a groundwater gradient map for the site; it shows that the groundwater levels in all three wells are below the level of the pond, and that groundwater levels drop to the east. As described below, the column of petroleum hydrocarbons in EP-93-03 may depress the measured groundwater elevation; thus, the groundwater gradient may differ from that shown in Figure 3-5. A geologic cross-section for the site showing the shale bedrock and limestone stringers is presented in Figure 3-6.

Monitor Well EP-93-01 exhibited chemical concentrations below levels of detection for all analytes except for two volatile organic compounds: 1,1,1 trichloroethane and 1,1 dichloroethane. These chemical constituents were detected at concentrations of .0051 mg/l and .001 mg/l, which fall below MCLs and KALs.. Monitor Well EP-93-02 exhibited chemical concentrations below levels of detection for all analytes measured. Monitor Well EP-93-03 was moved from its original location, as approved in the sampling and analysis plan (SAP), prior to installation. This well location was moved (approximately 100 feet to the south and east) to coincide with high readings obtained from the soil gas survey that was performed at the East Pond. During well installation at this location, the drill bit encountered significant contamination in the form of floating product. The well is screened across a limestone layer beginning at a depth of 29 feet. Periodic measurements of product thickness were made, and levels varied from 5 to 9 feet of product in the well. Approximately 15 gallons of free product was bailed from the well and containerized. The results of chemical analysis for Monitor Well EP-93-03 found the following chemical constituents and their concentrations in the groundwater: Total ~~Purgeable~~ Petroleum Hydrocarbons (GRO fraction of TPH) (6.3 mg/l), Semi-Volatile Petroleum Hydrocarbons (2.0 mg/l), 2-methyl Naphthalene (.18 mg/l), Naphthalene (.15 mg/l), Phenanthrene (.011 mg/l), Benzene (.28 mg/l), Ethylbenzene (.17 mg/l), m-p-o-Xylene (.72 mg/l), Toluene (.36 mg/l), and Arsenic (.04mg/l). A sample of product from the well was sent to the laboratory for petroleum

fingerprinting; the product was identified as diesel fuel. These values as detected in the groundwater from Monitor Well EP-93-03 do not represent chemical migration from the East Pond. These values document the presence of contamination as a result of the spill at the tank farm.

Unless you have docu. that proves this, then this can't go in fact-based documents

The analytical results for the aqueous stream samples collected at the East Pond are shown in Table 3-4. The results for the sediment stream samples collected at the East Pond are shown in Table 3-5. The only positive detection in the aqueous samples was for the DRO fraction of TPH in the downstream sample at a concentration of 0.22 mg/l. The DRO fraction of TPH was also detected in the upstream sediment sample. Also, numerous metals were detected. Beryllium was above the risk-based standards for soils in all three sediment samples, and was at the highest concentration of 4.2 mg/kg in the downstream sample. Lead was also above the risk-based standards for soils in all three samples. No other detections exceeded risk-based guidelines.

3.1.2 Discussion of SI Results

The most significant finding during the SI was the presence of free petroleum product in EP-93-03. This well is located near a manhole to a sewer pipeline that runs by the petroleum storage facility. According to Fort Riley DEH personnel, several large spills (several thousands gallons each) have occurred at the storage facility. When spills occur, product has been known to run into the sewer drains and overflow at the manhole near EP-93-03.

3.2 West Pond – No Further Action

The sampling of the West Pond included eight soil gas sampling points around the perimeter of the pond to determine the extent of contamination that may exist in the unsaturated zone. Also, two aqueous samples and two sediment samples were collected from the pond. During the SI, a petroleum layer characteristic of heavy end oils (e.g., high relative viscosity) was present on the surface of the west pond. Petroleum odors were present; however, the on-site organic vapor monitor did not detect any odors above background (i.e., 0-1 ppm). Black staining was observed on the bank of the pond. The staining likely occurred as a result of fluctuations in the water level of the pond due to the high water levels associated with regional flooding that took place over the summer of 1993. An oil boom has been placed across the inlet side of the pond surface to inhibit the spreading of the petroleum layer. Inside the perimeter of the boom is observed the greatest accumulation of the surface petroleum layer.

3.2.1 Summary of SI Results

The locations of the samples collected at the west pond are shown in Figure 3-7. The Phase 1 soil gas survey for the site included eight sampling locations.

There were no detections in any of the soil gas samples (from depths of 4 and 12 feet at each location), and Phase 2 soil gas sampling was not conducted.

The analytical results for the pond aqueous samples are shown in Table 3-6. The results for the pond sediment sampling are shown in Table 3-7. Both tables tabulate only the positive detections. The aqueous samples from the pond contained a variety of components of petroleum hydrocarbons (e.g., benzene, ethylbenzene, toluene and xylene) and some chlorinated organic compounds (1,1,1-trichloroethane, DCE, methylene chloride and chloroform). Also, the DRO fraction of TPH and cadmium, lead and zinc were detected. None of the detections exceed MCLs or KALs. The detections for chloroform and lead exceed ambient water quality criteria.

The pond sediment results show that a variety of components of petroleum hydrocarbons were present, including both volatile and semi-volatile compounds. Other semi-volatile compounds detected were phenanthrene, bis-2-ethylhexyl phthalate, fluorene and dibenzofuran. A variety of metals were also detected. None of the organic compounds were detected at concentrations above risk-based standards. Of the metals, only lead was detected above the risk-based level for soils. Sludge thickness measurements were made at multiple locations during the SI; the results are shown in Figure 3-8.

3.2.2 Discussion of SI Results

The soil gas results indicate that the west pond has not released contaminants to the environment. The pond sampling indicates that some volatile, semi-volatile and metal contaminants are present in the pond; however, the detected concentrations are low relative to regulatory standards and guidelines.

3.3 Old Wash Rack Reservoir and Cells 1 through 4

Sampling activities were conducted for the Old Wash Rack Reservoir and Cells 1 through 4 as a whole because of their nearness to one another. The general location of these ponds is shown in Figure 3-9. The field investigation included a soil gas survey around the perimeter of all the cells to evaluate whether releases had occurred to soils and/or groundwater. This soil gas survey included an initial test of 20 locations. However, along the east and north sides of the cells, the elevation drops sharply from the top of the berm surrounding the ponds towards natural elevations. Therefore, an additional eight soil gas sample locations were placed on the east and north so that samples could be collected from both the top of the pond berm and the base of the pond berm. Two aqueous and three sediment samples were collected from each pond for a total of 10 aqueous and 15 sediment samples. As shown on Figure 3-9, there are two primary intermittent streams -- they flow along the eastern and western sides of the cells and join into a common intermittent stream north of cell 4.

Potential migration from the site along these intermittent streams was evaluated by collecting three stream aqueous and six stream sediment samples. The locations of the SI samples are shown in Figure 3-10. During the SI, the thickness of the sludge in each of the ponds was measured at multiple locations. The results of these measurements are shown in Figures 3-11 through 3-13.

The following observations were made during the pond sampling events. The old wash rack reservoir did not have visual petroleum hydrocarbons like the east and west ponds. Plant life flourishes on the banks of the reservoir (i.e., cat-tails etc.) and algal blooms grow abundantly within the reservoir itself. A very thin sheen of petroleum is perceptible at the outlet location where a sediment sample was collected. This sheen could be a result of naturally occurring organic by-products from the plants and algae and not from man-made impacts like waste oils or diesel fuels. Overall, the reservoir appeared clean. No odors were detected by the sense of smell or from the on-site organic vapor meter. Similarly, cells 1 through 4 were free of petroleum odors and visible petroleum product. In cell 1, two beaver/muskrat dens, two muskrats hundreds of frogs, and a family of ducks were found.. In addition, the cell was covered with plant life that included cat tails over the entire surface of cell 1.

3.3.1 Summary of SI Results

Of the 28 soil gas sampling locations, there were positive detections in only three samples. Specifically, toluene was detected at 1.6 and 1.1 ug/l in the 12 foot soil gas samples at locations WR-F0 and WR-H2. These locations are at the northeast and southeast corners of cell 4, respectively. Also, there was a Total FID detection of 12 ug/l at location WR-C2, which is to the west of cell 4. All three of these detections are just above the detection limits of 1.0 ug/l for toluene and 10 ug/l for Total FID.

The results of the aqueous pond samples are shown in Table 3-8. The only substances detected were the DRO fraction of TPH (in 7 samples up to 0.720 mg/l), bis-2-ethylhexyl phthalate (at .023 mg/l in one sample), lead in one sample at .004 mg/l, and silver in two samples (.01 and .03 mg/l). None of the detections exceed MCLs or KALs although the one detection of lead exceeds the ambient water quality criteria.

The results of the pond sediment samples are shown in Table 3-9. Organic compounds detected include both the DRO and GRO fractions of TPH. The DRO fraction is detected with greater frequency and at higher concentrations and is present at 13 of the 15 locations. The maximum concentration is 32,000 mg/kg from the outlet of the old wash rack reservoir. Other organic compounds detected include methylene chloride (0.24 mg/kg in one sample), toluene (.220 mg/kg in one sample), and bid-2-ethylhexyl phthalate (from 25 to 51 mg/kg in three samples -- all from the old wash rack reservoir. None of these detections exceed risk-based concentrations for soils. A variety of metals

were detected. Beryllium was detected in five samples (from four ponds) at concentrations ranging from 0.7 to 0.9 mg/kg; these concentrations exceed the risk-based guidelines of 0.67 mg/kg for soils. Lead was detected at concentrations above the risk-based guideline at all locations. The maximum lead concentration was 290 mg/kg which is well below EPA's cleanup guideline for lead of 500 to 1,000 mg/kg. this is actually zinc - 75ppm was high lead concentration

The results of the stream aqueous samples are shown in Table 3-10. The only substances detected are lead and zinc, both detected at only one location. The concentrations do not exceed MCLs, KALs or ambient water quality criteria. The results of the stream sediment samples are shown in Table 3-11. The DRO fraction of TPH was detected at two locations. The highest concentration (1,100 mg/kg) was off the northwest corner of cell 4. No other organic compounds were detected. A variety of metals was also detected. Beryllium ranged from 0.6 to 1.1 mg/kg with three samples exceeding the risk-based guideline for soils of 0.67 mg/kg. Lead was detected at concentrations ranging from 8 to 22 mg/kg. Although these levels exceed the risk-based guideline for soils, they are well below EPA's cleanup guideline of 500 to 1,000 mg/kg for soils. No other metals exceeded risk-based guidelines for soils.

Three monitor wells, WR-93-01, WR-93-02, and WR-93-03, were installed at the old wash rack reservoir. The wells were completed in unconsolidated clays and weathered shales. The groundwater gradient map for the site is presented in Figure 3-14 and shows that the groundwater levels in the wells are below the level of the pond, producing a radial gradient outward from the pond. A geologic cross-section for the site is shown in Figure 3-15. Monitor Well WR-93-01 exhibited chemical concentration values below levels of detection for all analytes measured except for the metal Arsenic. Arsenic appeared in the groundwater at this well location at a concentration of .02 mg/l, which falls below all regulatory standards. Monitor Wells WR-93-02 and WR-93-03 exhibited chemical concentrations values below levels of detection for all analytes measured.

3.3.2 Discussion of SI Results

The soil gas data and the groundwater monitoring data indicate that the old wash rack reservoir are not releasing contaminants to groundwater. The soil gas data also indicate that cells 1 through 4 are not releasing contaminants to the environment.

The aqueous samples from the ponds indicate that few contaminants are present. The most common contaminant in the pond sediments is the DRO fraction of TPH, with the highest concentrations in the old wash rack reservoir. The metals data for the pond sediments has not been compared to local and regional data to determine whether detected concentrations differ significantly from naturally-occurring, background concentrations.

TABLE 3-1 - EAST POND SOIL GAS DATA

ANALYTE CONCENTRATIONS VIA GC/FID (ug/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID *	t12DCE	11DCA
REPORTING LIMITS		1.0	1.0	1.0	1.0	10	1.0	1.0
SOIL GAS SAMPLES								
EP-A3-10	10	<1.0	<1.0	<1.0	<1.0	20	<1.0	<1.0
EP-A5	4	<1.0	<1.0	<1.0	<1.0	11	<1.0	<1.0
EP-A10	4	1.4	5.8	1.2	2.7	993	<1.0	<1.0
EP-A10-8	8	1.1	8.2	1.9	4.5	1,476	<1.0	<1.0
EP-A11	4	9	30	7.9	21	5,373	<1.0	<1.0
EP-A12-4	4	<1.0	<1.0	<1.0	<1.0	19	<1.0	<1.0
EP-A13-4	4	<1.0	2.2	<1.0	1.4	136	<1.0	<1.0
EP-A14-4	4	<1.0	3.1	<1.0	1.4	357	<1.0	<1.0
EP-A14-8	8	<1.0	3.1	1	<1.0	261	<1.0	<1.0
EP-C2-8	8	<1.0	<1.0	<1.0	<1.0	11	<1.0	<1.0
EP-C4	4	<1.0	1.2	<1.0	<1.0	<10	1.4	<1.0
EP-H3	4	<1.0	<1.0	<1.0	<1.0	<10	<1.0	1.8

11DCA = 1,1-dichloroethane
Total FID = sum of hydrocarbons detected on flame ionization detector
t12DCE = trans-1,2-dichloroethene

Table 3-2 - Pond Aqueous Samples for East Pond, Ft. Riley, Kansas

	AQUEOUS (mg/L)				REGULATORY STANDARDS (mg/L)			
	EP-CH-S1	EP-CH-S2	EP-CH-S4	EP-CH-B01	MCL	KAL	KNL	Ambient Water Quality - Chronic
Volatiles								
Toluene	.001	.0011	.0012	.0014	1	2	0.2	---
Xylene (O/M/P)	.0009	.0017	.0016	.0026	10	.44	0.044	---
Purgeable Hydrocarbon	ND	ND	ND	ND	---	---	---	---
Semi-volatiles								
Semi-purgeable Hydrocarbon	68	2.6	2.6	2.6	---	---	---	---
Bis (2-EH) Phthalate	.030	ND	ND	ND	---	---	---	---
Metals								
Lead	0.007	0.004	0.005	0.005	0.015	0.05	---	.0032
Zinc	0.05	0.02	0.03	0.03	---	5.0	---	.110

[a] Lowest Observed Effect Criteria. Insufficient Data to develop criteria.
[p] Proposed Criterion.
ND: Not Detected. MCL = Maximum Contaminant Level KAL = Kansas Action Level KNL = Kansas Notification Level
---: Standard Not Available.

Table 3-3 - Pond Sediment Samples for East Pond, Ft. Riley, Kansas

	SEDIMENT (mg/kg)					REGULATORY STANDARDS (mg/kg)
	EP-CH Sed Outlet	EP-CH S001	EP-CH Sed Inlet	EP-CH-205*	EP-CH-Sed Inlet 2**	EPA Risk Based Commercial/Industrial Soil
Toluene	ND	ND	ND	ND	1.8	200,000
Ethylbenzene	ND	ND	ND	ND	.440	100,000
Xylene (O/M/P)	ND	ND	ND	ND	1.64	2,000,000
Purgeable Hydrocarbon	ND	ND	ND	42 H	240 H	---
Semi-Volatiles						
Semi-purgeable Hydrocarbon	14,000	4,800	6,100	ND	ND	---
Naphthalene	ND	ND	13	NA	NA	41,000
Methyl-naphthalene	12	14	34	NA	NA	---
Phenanthrene	ND	ND	16	NA	NA	---
Bis (2-EH) Phthalate	11	14	ND	NA	NA	---
Metals						
Arsenic	6	6	4	NA	NA	310
Beryllium	0.8	0.8	ND	NA	NA	0.67
Cadmium	10	12	9.4	NA	NA	510
Chromium	28	28	15	NA	NA	5,100
Copper	41	47	32	NA	NA	38,000
Lead	57	80	60	NA	NA	0.1
Nickel	17	19	10	NA	NA	100,000
Zinc	200	230	250	NA	NA	310,000

* Re-sampled sediment outlet location. ** Re-sampled sediment inlet location.
NA: Not Applicable. Analyses included VOA, SVOA GRO only. ND: Not Detected.
H: Result is an estimated value. Recommended holding time was exceeded. ---: Standard Not Available.

Table 3-4: Aqueous Stream Sampling for East Pond, Ft. Riley, Kansas

	AQUEOUS (mg/L)				STANDARDS (mg/L)				
	EP-CH-Stream AQ-1	EP-CH Stream AQ-2	EP-CH-Stream AQ-3	Field Blank	Federal Maximum Contaminant Level (MCL)	Kansas Action Level (KAL)	Kansas Notification Level (KNL)	Ambient Water Quality - Chronic	Risk based Concentration - Tap Water
Purgeable Hydrocarbon	ND	ND	ND	ND	---	---	---	---	---
Semi-purgeable Hydrocarbon	.130	ND	.220	ND	---	---	---	---	---

ND: Not Detected.
---: Standard Not Available.

Table 3-5: Sediment Stream Sampling for East Pond, Ft. Riley, Kansas

	SEDIMENT (mg/kg)			STANDARDS (mg/kg)
	EP-CH-Stream Sed 1	EP-CH-Stream Sed 2	EP-CH-Stream Sed 3	Commercial/Industrial Soil
Purgeable Hydrocarbon	ND	ND	ND	---
Semi-purgeable Hydrocarbon	54 H	ND	ND H	---
Arsenic	3	4	7	310
Beryllium	0.7	0.7	4.2	0.67
Cadmium	1	0.8	5.1	510
Chromium	24	16	96	5,100
Copper	12	10	60	38,000
Lead	13	16	22	0.1
Nickel	18	13	72	100,000
Zinc	51	34	220	310,000

ND: Not detected.
---: Standard Not Available.
H: Result is an estimated value. Recommended holding time was exceeded.

Table 3-6: Pond Aqueous Samples for West Pond, Ft. Riley, Kansas

	AQUEOUS (mg/L)		REGULATORY STANDARDS (mg/L)			
	WP-CH-S	WP-CH-B	MCL	KAL	KNL	Ambient Water Quality - Chronic
Volatiles						
Benzene	.0006	.0007	0.005	0.005	0.0005	---
Toluene	.0047	.0043	1	2	0.2	---
Ethylbenzene	.0010	.0011	0.7	.68	0.068	---
Xylene (O/M/P)	.0037	.0039	10	.44	0.044	---
1,1,1 Trichloroethane	.0034	.0037	0.2	0.2	.020	---
1,1 Dichloroethene	ND	.0019	---	0.005	0.0005	---
Methylene Chloride	.0017	ND	---	---	---	---
Chloroform	.0009	ND	0.1	---	---	.00124[a]
Purgeable Hydrocarbon	ND	ND	---	---	---	---
Semi-Volatiles						
Semi-purgeable Hydrocarbon	10	6	---	---	---	---
Metals						
Cadmium	ND	0.005	0.005	0.005	---	.0011
Lead	0.004	ND	0.015	0.05	---	.0032
Zinc	0.09	0.10	---	5.0	---	.110

ND: Not detected. [a] Lowest Observed Effect Criteria. MCL = Maximum Contaminant Level KAL = Kansas Action Level
KNL = Kansas Notification Level ---: Standard Not Available.

Table 3-7 - Pond Sediment Samples Collected for West Pond, Ft. Riley, Kansas

	SEDIMENT (mg/kg)				REGULATORY STANDARDS (mg/kg)
	WP-CH-Sed. Outlet	WP-CH-Sed. Inlet	WP-CH-Outlet 1*	WP-CH-Inlet 1*	EPA Risk-Based Commercial/Industrial Soil
Volatiles					
Toluene	ND	ND	1.2	1.2	200,000
Xylene (O/M/P)	ND	ND	ND	.90	2,000,000
Purgeable Hydrocarbon	ND	ND	220	110	---
Semi-Volatiles					
Semi-purgeable TPH	24,000	18,000	ND	ND	---
Naphthalene	ND	13	NA	NA	41,000
Methyl-naphthalene	20	34	NA	NA	---
Phenanthrene	19	19	NA	NA	---
Bis (2-EH) Phthalate	18	16	NA	NA	---
Fluorene	ND	6.3	NA	NA	---
Dibenzofuran	ND	5.3	NA	NA	---
Metals					
Arsenic	5	4	NA	NA	310
Cadmium	11	10	NA	NA	510
Chromium	17	11	NA	NA	5,100
Copper	20	16	NA	NA	38,000
Lead	40	20	NA	NA	0.1
Nickel	11	7	NA	NA	100,000
Zinc	140	98	NA	NA	310,000

* Re-sampled location. NA: Not Applicable. Analyses included VOA, SVOA GRO only. ND: Not Detected.
Shaded areas represent those concentrations exceeding risk-based levels for soils (human risk) or sediment (based on potential harm to fish)

Table 3-8 - Analytical Results for the Pond Aqueous Samples Collected at the Wash Rack Reservoir, Ft. Riley, Kansas

	AQUEOUS (mg/L)												STANDARDS (mg/L)			
	Old Wash Rack Reservoir			Cell 1		Cell 2		Cell 3			Cell 4		MCL	KAL	KNL	Ambient Water Quality - Chronic
	CVWF-CH-S1-R	CVWF-CH-B-R	CVWF-CH-001-R	CVWF-CH-C13	CVWF-CH-C14	CVWF-CH-C22	CVWF-CH-C23	CVWF-CH-C31	CVWF-CH-C32	CVWF-CH-009-C3-	CVWF-CH-42-C4	CVWF-CH-43-C4				
Semi-Volatiles																
Semi-purgeable Hydrocarbon	.330	.670	.550	ND	.720	.280	ND	.250	ND	.440	ND	ND	—	—	—	—
Bis (2-EH) Phthalate	ND	.023	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—	—	—
Metals																
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.004	0.015	0.05	—	.0032
Silver	ND	ND	ND	ND	ND	0.03	ND	0.01	ND	ND	ND	ND	—	0.05	—	.0041

ND: Not Detected. —: Standard Not Available. Shaded areas represent concentratoins exceeding regulatory standards or guidelines. MCL = Maximum Contaminant Level KAL = Kansas Action Level KNL = Kansas Notification Level

Table 3-9 - Analytical Results for the Pond Sediment Samples Collected at the Wash Rack Reservoir, Ft. Riley, Kansas

	SEDIMENT (mg/kg)																	
	Old Wash Rack Reservoir					Cell 1			Cell 2			Cell 3			Cell 4				EPA Risk-Based
	CVWF-CH-SED-CR	CVWF-CH-Sed CR1*	CVWF-CH-005-R	CVWF-CH-Sed-Outlet-R	CVWF-CH-Sed-Inlet-R (Duplicate)	CVWF-CH-Sed Outlet-C10	CVWF-CH-Sed C11	CVWF-CH-Sed Inlet-C12	CVWF-CH-Sed Outlet C20	CVWF-CH-Sed-Inlet C21	CVWF-CH-Sed C24	CVWF-CH-Sed Outlet C30	CVWF-CH-C34	CVWF-CH-C33	CVWF-CH-Sed Outlet-C40-	CVWF-CH-041-C4	CVWF-CH-44-C4	CVWF-CH-45-C4	Commercial/ Industrial Soil
Volatiles																			
Methylene Chloride	ND	ND	ND	ND	ND	ND	0.24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	380
Toluene	ND	ND	ND	ND	ND	ND	ND	.220	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	200,000
Purgeable Hydrocarbon	ND	130	ND H	ND H	ND H	ND H	ND H	1.2 H	ND H	3.7 H	ND H	ND H	ND	ND	ND	ND	ND	ND	—
Semi-Volatiles																			
Semi-purgeable Hydrocarbon	4,400	ND	32,000	8,800	18,000	210	180	570	322	3,100	ND	87	17 H	31 H	14 H	20 H	15 H	10 H	—
Bis (2-EH) Phthalate	ND	ND	25	27	51	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Metals																			
Arsenic	6	NA	6	6	3	3	2	6	3	5	3	3	2	18	4	3	4	3	310
Beryllium	0.8	NA	0.9	ND	0.5	ND	0.8	ND	ND	ND	0.9	0.5	0.5	0.5	0.7	0.6	0.6	0.7	0.67
Cadmium	4.7	NA	8.4	7.5	4.7	0.8	1.0	4	0.8	4.3	1.0	1.1	0.8	1.5	0.8	0.7	0.7	0.7	510
Chromium	25	NA	33	26	21	14	20	5	12	32	23	19	15	19	21	18	17	16	5,100
Copper	23	NA	36	31	22	9	11	6	11	27	13	12	10	15	12	10	12	10	38,000
Lead	30	NA	40	40	30	11	10	64	5	20	15	10	12	75	11	11	14	13	0.1
Nickel	19	NA	21	18	14	12	15	4	12	25	21	16	13	17	18	15	16	13	100,000
Zinc	130	NA	290	260	110	35	45	35	50	200	56	51	36	54	49	45	38	37	310,000

* Re-sampled location.NA: Not Applicable. Analyses included VOA, TPH GRO only.ND: Not Detected.
H: Result is an estimated value. Recommended holding time was exceeded.
---: Standard Not Available.

Table 3-10: Aqueous Stream Sampling for Cells 1-4, Ft. Riley, Kansas

	AQUEOUS (mg/L)			STANDARDS (mg/L)			
	CVWF-CH-Stream AQ-1	CVWF-CH-Stream AQ-5	CVWF-CH-Stream AQ 6	Federal Maximum Contaminant Level (MCL)	Kansas Action Level (KAL)	Kansas Notification Level (KNL)	Ambient Water Quality - Chronic
Lead	ND	0.008	ND	0.015	0.05	---	.0032
Zinc	ND	0.04	ND	---	5.0	---	.110

ND: Not Detected.
---: Standard Not Available.

Table 3-11: Sediment Stream Sampling for Cells 1-4, Ft. Riley, Kansas

	SEDIMENT (mg/kg)						STANDARDS (mg/kg)
	CVWF-CH-Stream Sed 1	CVWF-CH Stream Sed 2	CVWF-CH Stream Sed 3	CVWF-CH Stream Sed 4	CVWF-CH-Stream Sed 5	CVWF-CH-Stream Sed 6	Commercial/Industrial Soil
Semi-purgeable Hydrocarbon	1,100 H	ND H	ND	ND H	38 H	ND H	---
Arsenic	9	4	10	8	4	3	310
Beryllium	**1.1**	**0.7**	ND	ND	0.6	**0.7**	0.67
Cadmium	1.3	0.8	1.1	1.0	0.8	0.7	510
Chromium	31	17	25	24	15	16	5,100
Copper	20	13	17	14	10	11	38,000
Lead	**15**	**8**	**18**	**22**	**16**	**12**	0.1
Nickel	27	16	22	21	13	18	100,000
Zinc	68	41	57	50	43	40	310,000

ND: Not Detected.

---: Standard Not Available.

H: Result is an estimated value. Recommended holding time was exceeded.

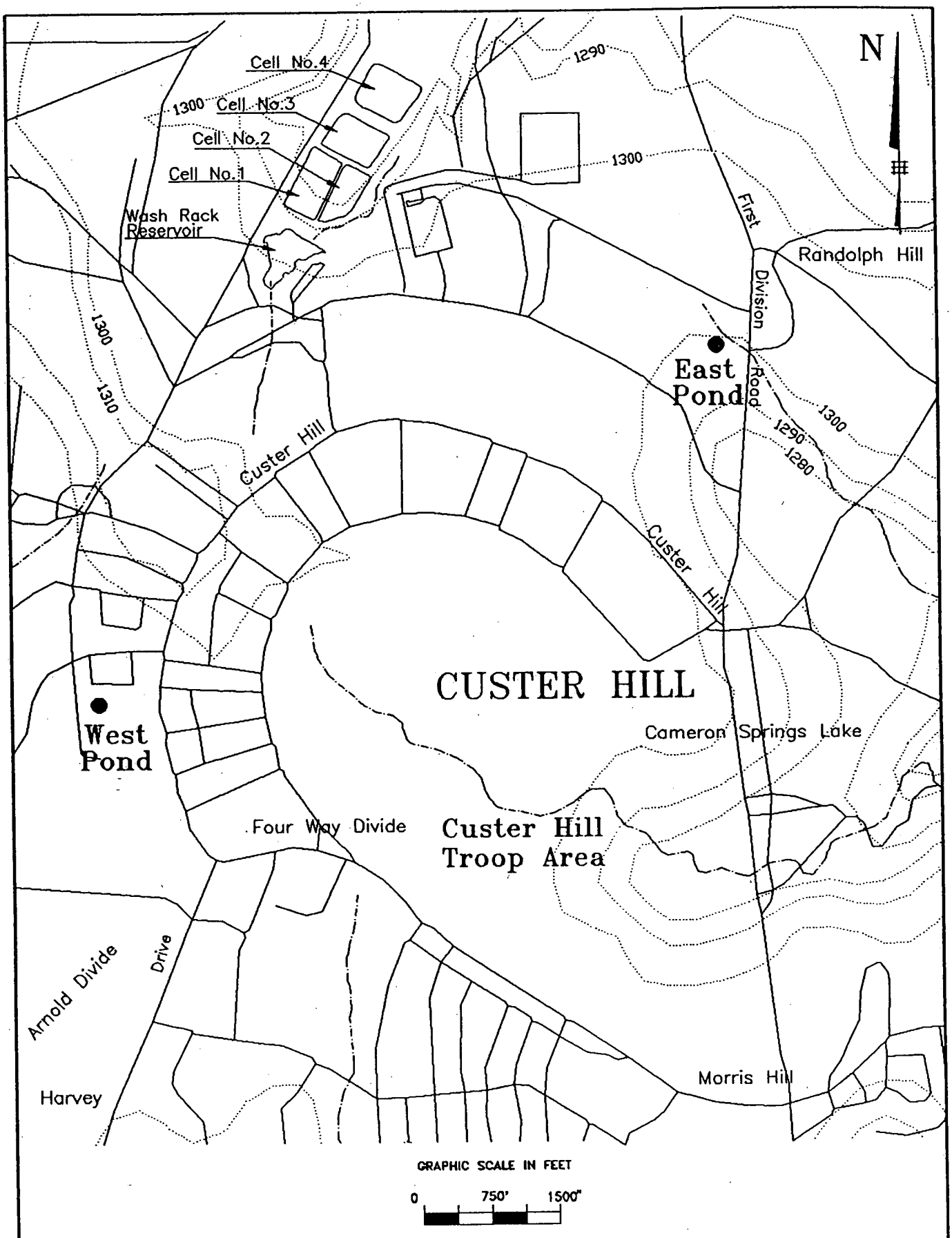


FIGURE 3-1 – OVERVIEW OF CUSTER HILL INDUSTRIAL SEWER SYSTEM	File: custswr.dwg	DATE: December, 1993

ANTICIPATED GROUNDWATER FLOW DIRECTION

WATER RETENTION BASIN

E0

EP-93-01

EP-CH Stream Sed. 1
EP-CH Stream Aq. 1

IN

EPCH Sed.Inlet Sample

F1

Boom

EP-CHS1 Aqueous Sample

C1

D1

B1

EP93-01 Pond Sed. Sample
EP-CH001 QA Duplicate (S001)

OUT

F2

EP-CH Stream Sed. 2
EP-CH Stream Aq. 2

EP-CHS2 Pond SurfaCe (S)&
EP-CHB01 Bottom (B) Aqueous Samples &
EP-CHS4 QA Duplicate(S4)

D2

A1

C2

E3

B2

F4

C4

E4

EP-93-02

INTERMITTENT STREAM

EP-CH Stream Sed. 3
EP-CH Stream Aq. 3

H2

A6

A7

A2

A3

A8

H3

A12

A4

A9

EP-93-03

A5

A13

A10

A11

A14

ROAD

1 ST DIVISION

1300
1296.3
1299.0
1290
1280
1276.4
1289.1
1287.2
1287.1
1286.6
1283.3
1270
1265.5
1264.2
1286.5
1284.4
1271.2

GRAPHIC SCALE IN FEET
0 50' 100'

N

LEGEND

- SOIL GAS SAMPLING LOCATIONS
- SEDIMENT SAMPLING LOCATIONS
- AQUEOUS SAMPLE LOCATIONS
- GROUNDWATER MONITOR WELL
- ELEVATION CONTOUR
- ROAD
- FENCE LINES

Figure 3-2 East Pond Sampling Locations

File: epsmpl.dwg | REF: 62e1.DWG

December, 1993

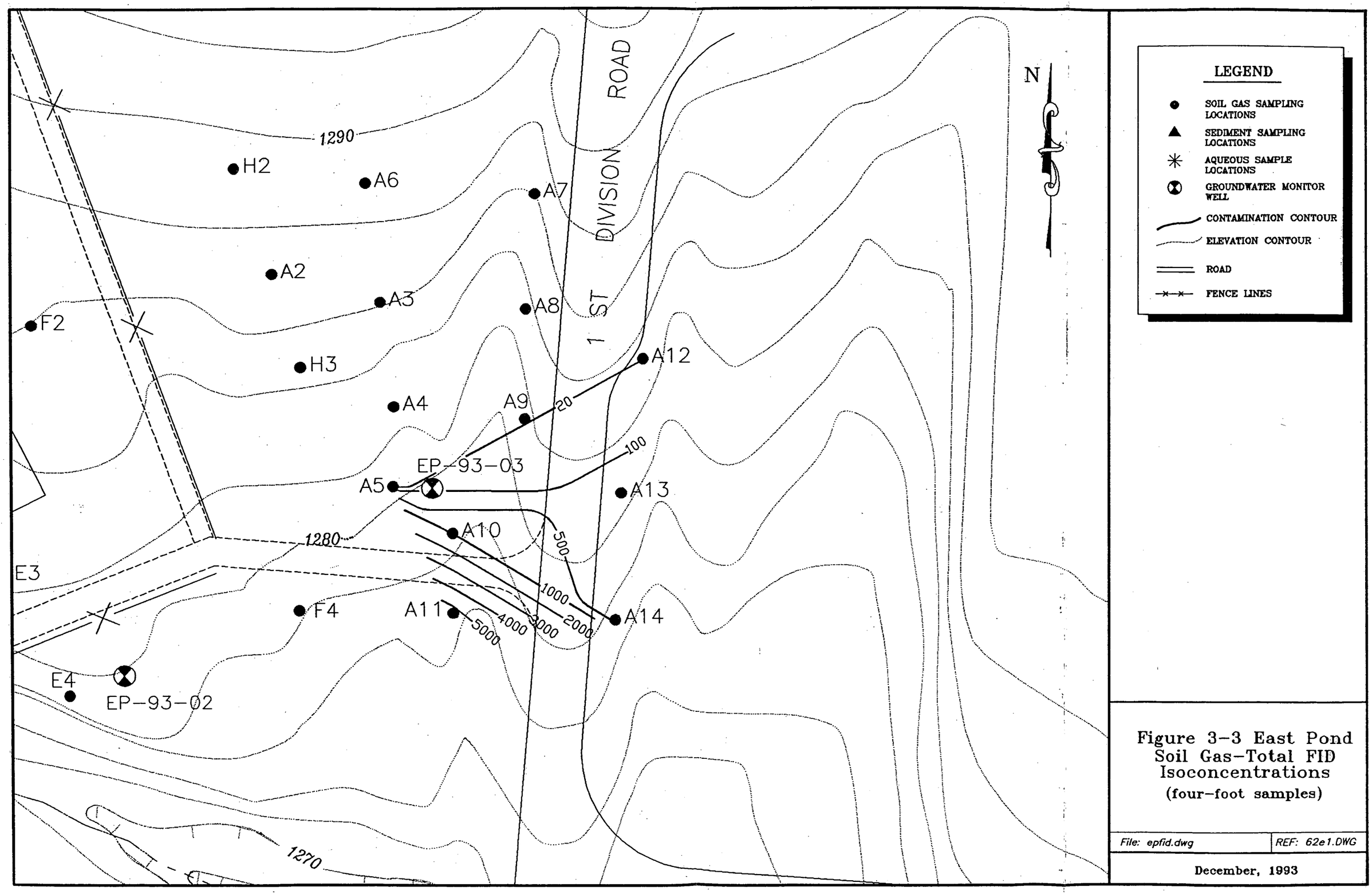
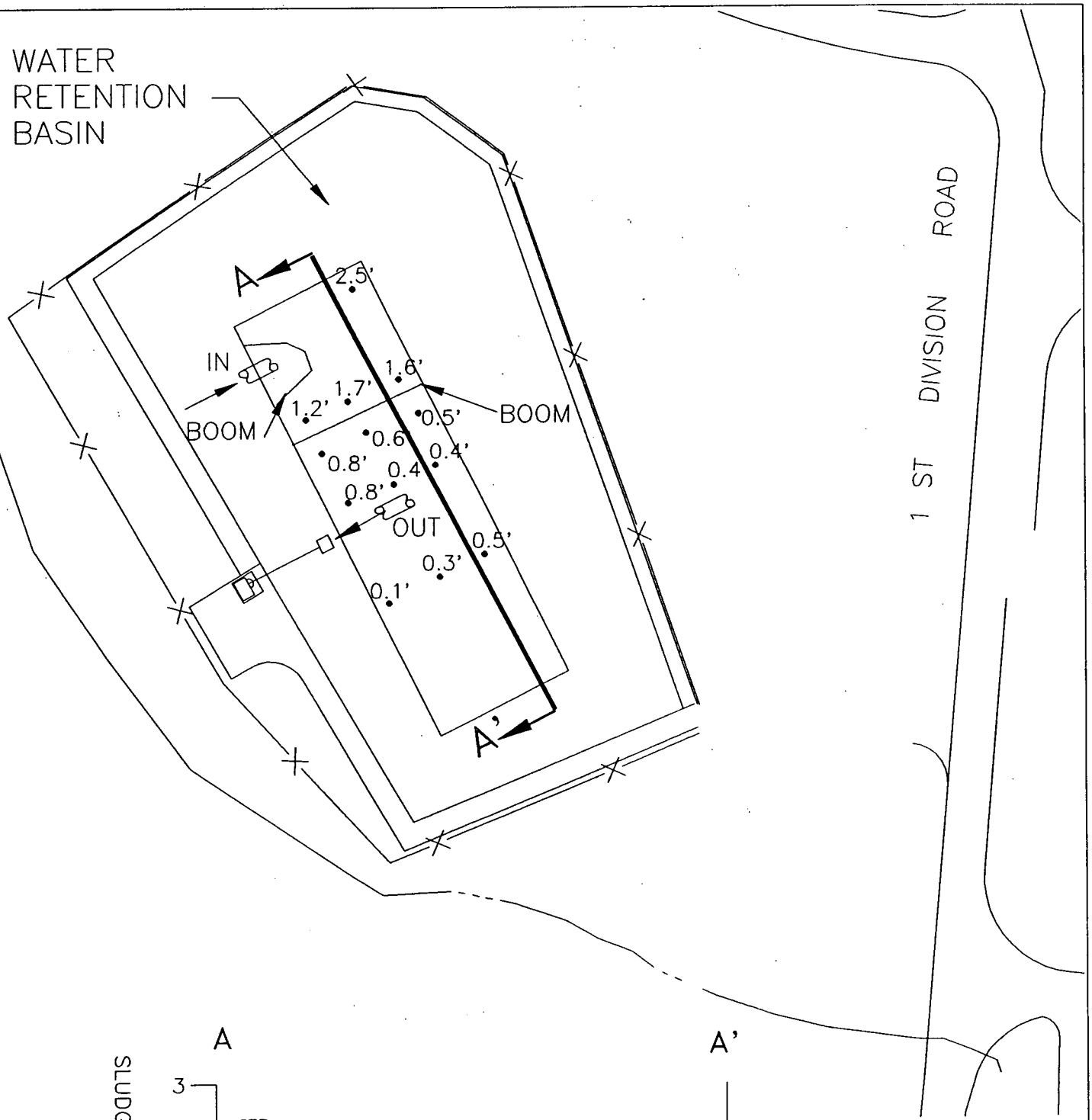
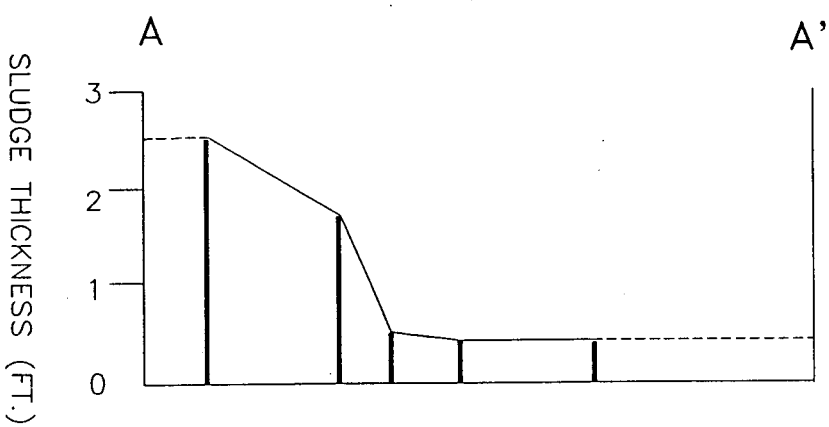


Figure 3-3 East Pond Soil Gas-Total FID Isoconcentrations
(four-foot samples)

File: epfid.dwg | REF: 62e1.DWG

December, 1993





GRAPHIC SCALE IN FEET

0 50 100

LEGEND:
● 1.8' SEDIMENT THICKNESS SAMPLING LOCATION

FIGURE 3.4–EAST POND SLUDGE THICKNESS	FILE: FIG3–4.DWG	DATE: DEC. 1993

ANTICIPATED GROUNDWATER FLOW DIRECTION

WATER RETENTION BASIN

ELEVATIONS (feet)	
PVC	1291.21
Depth to GW	18.19
GW	1273.02

EP-93-01

IN

Boom

OUT

1272

1271

1270

1269

1268

1267

1265

1264

1263

EP-93-03

ELEVATIONS (feet)	
PVC	1284.78
Depth to GW	22.38
GW	1262.40

EP-93-02

ELEVATIONS (feet)	
PVC	1280.12
Depth to GW	9.82
GW	1270.20

INTERMITTENT STREAM

1 ST DIVISION ROAD

N

GRAPHIC SCALE IN FEET

0 50' 100'

Parkin

LEGEND

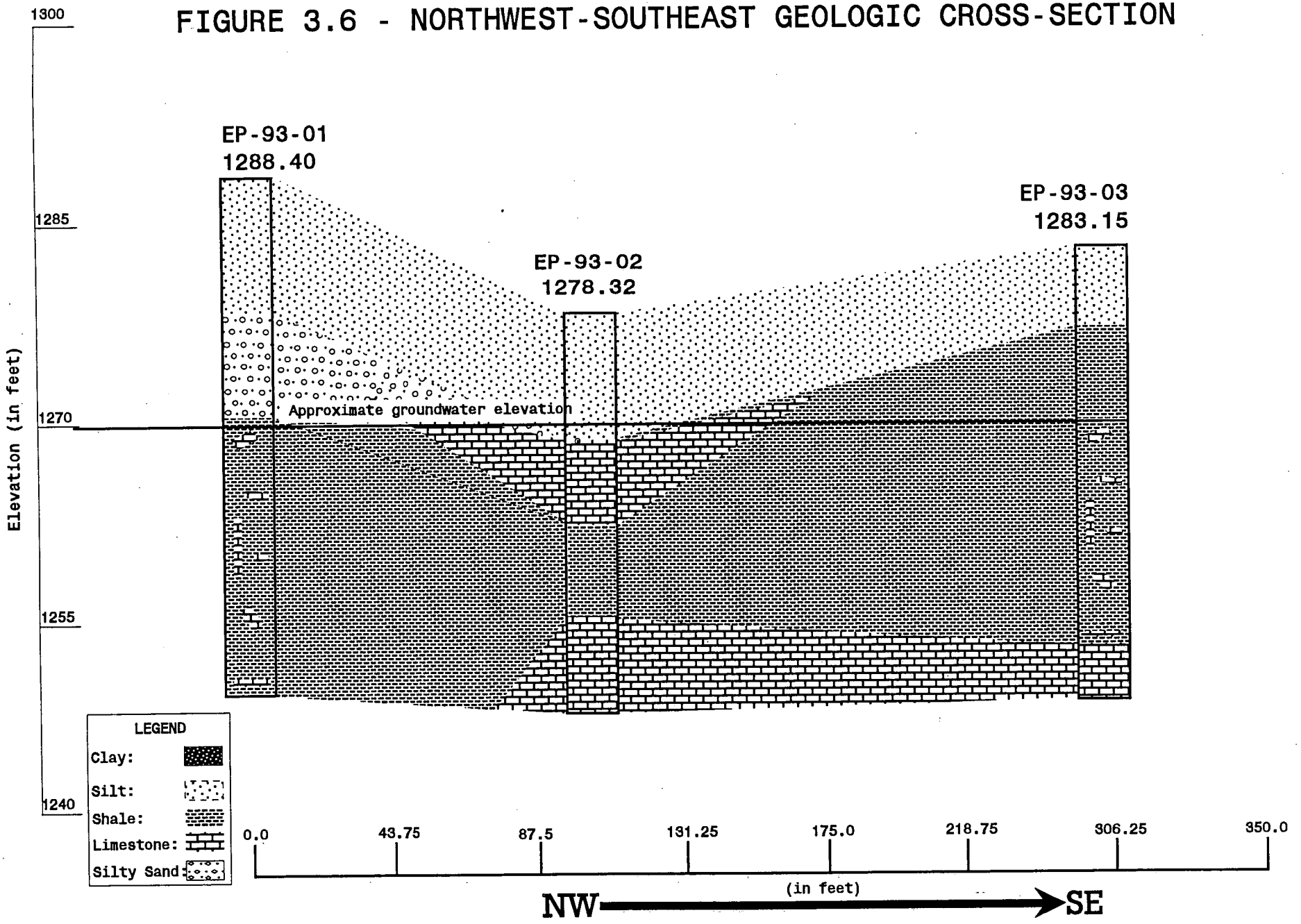
- INTERMITTENT STREAM
- GRAVEL ROAD
- GROUNDWATER CONTOUR
- GROUNDWATER MONITOR WELL
- ROAD
- FENCE LINES

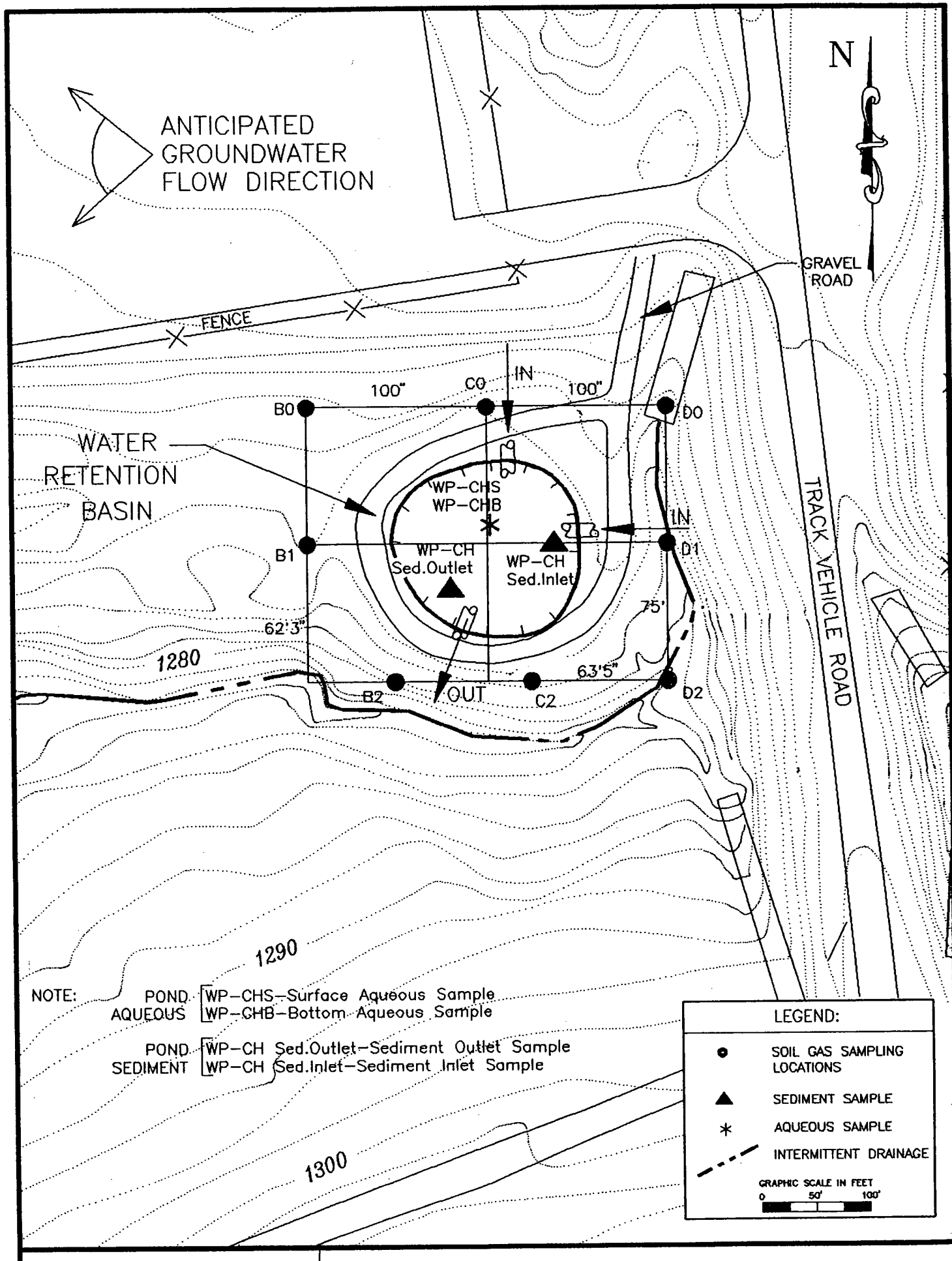
Figure 3-5 East Pond Groundwater Flow Gradient

File: epgwcon.dwg | REF: 62e1.DWG

December, 1993

FIGURE 3.6 - NORTHWEST-SOUTHEAST GEOLOGIC CROSS-SECTION

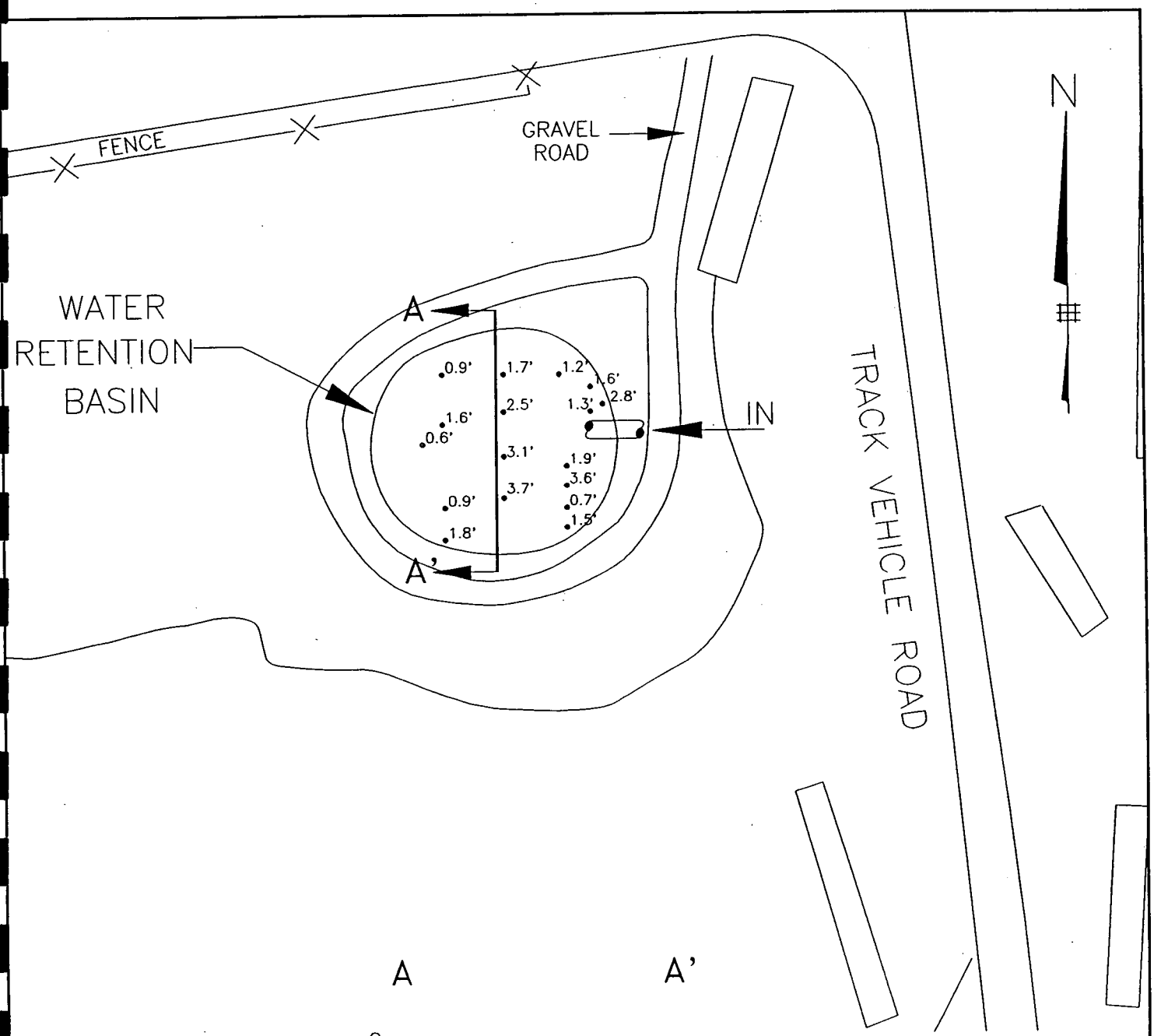


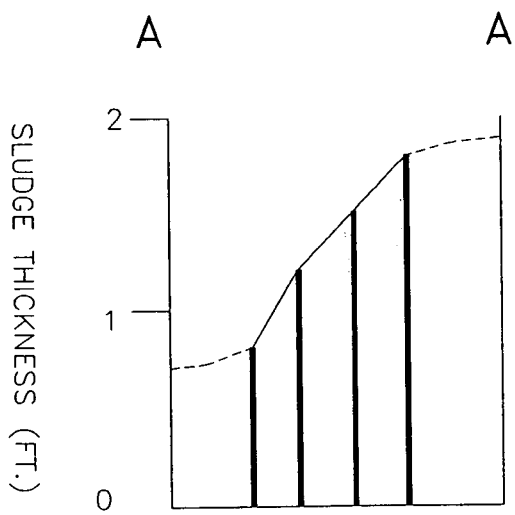


File:54e1.dwg

Date: December, 1993

Figure 3-7-West Pond Sampling Locations





GRAPHIC SCALE IN FEET

0 50' 100'

LEGEND:
● 1.8' SEDIMENT THICKNESS SAMPLING LOCATION

FIGURE 3.8–WEST POND SLUDGE THICKNESS	FILE: FIG3–8.DWG	DATE: DEC. 1993

These are not sampling locations.

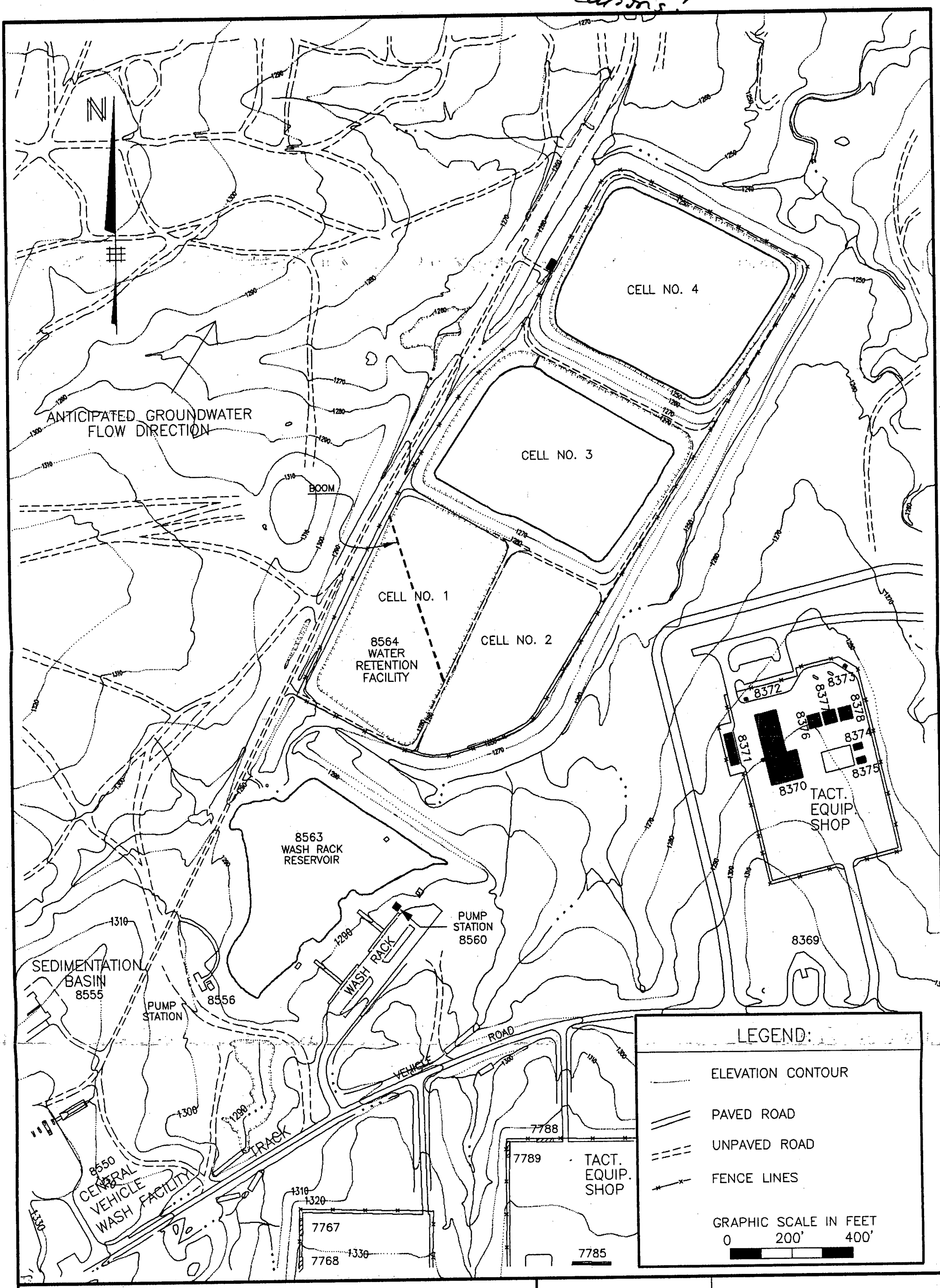


Figure 3-9-Sampling Locations at Old Wassh Rack Reservoir and Sells 1 though 4

File: fig3-9.dwg

DATE: December, 1993

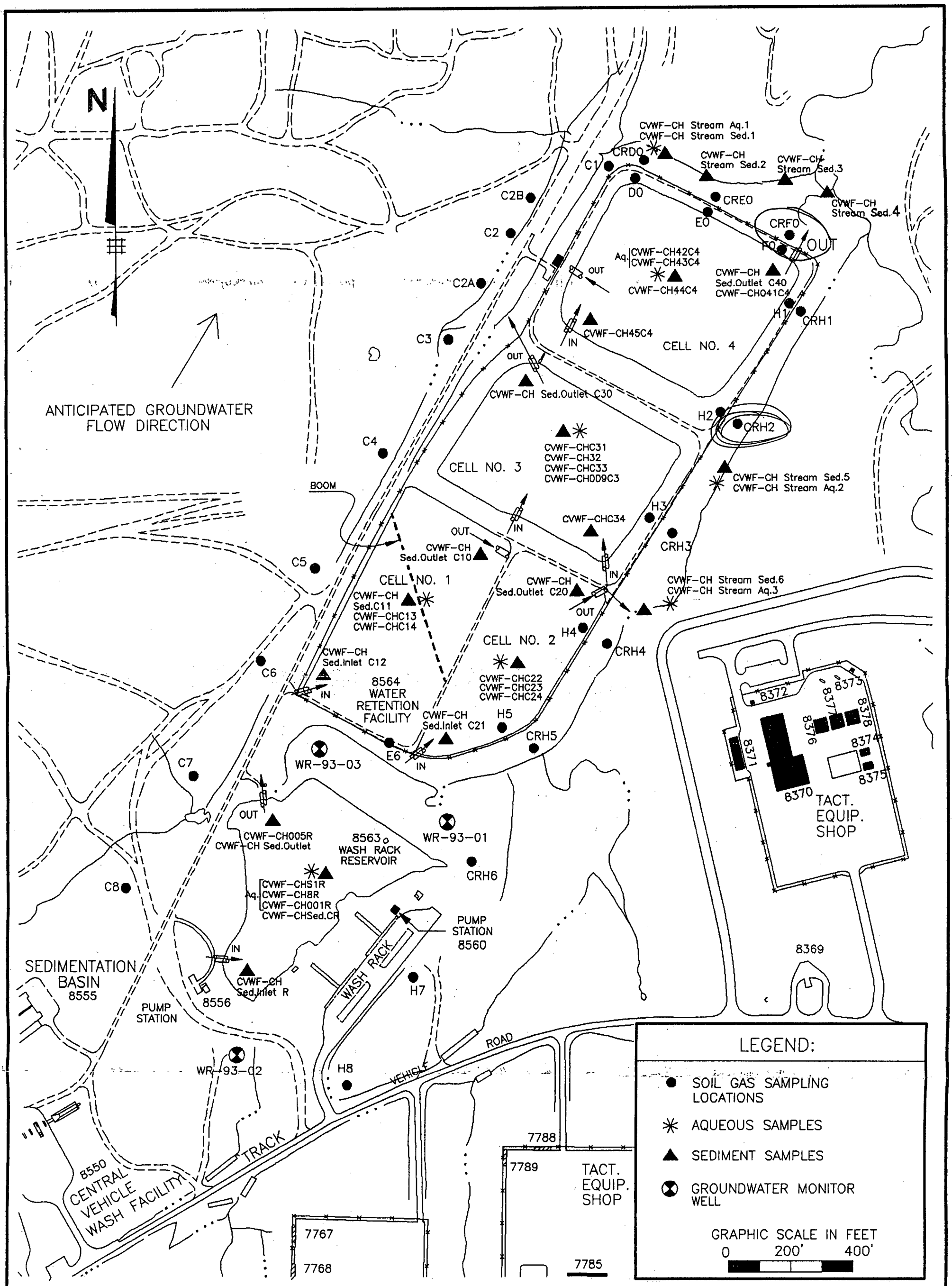
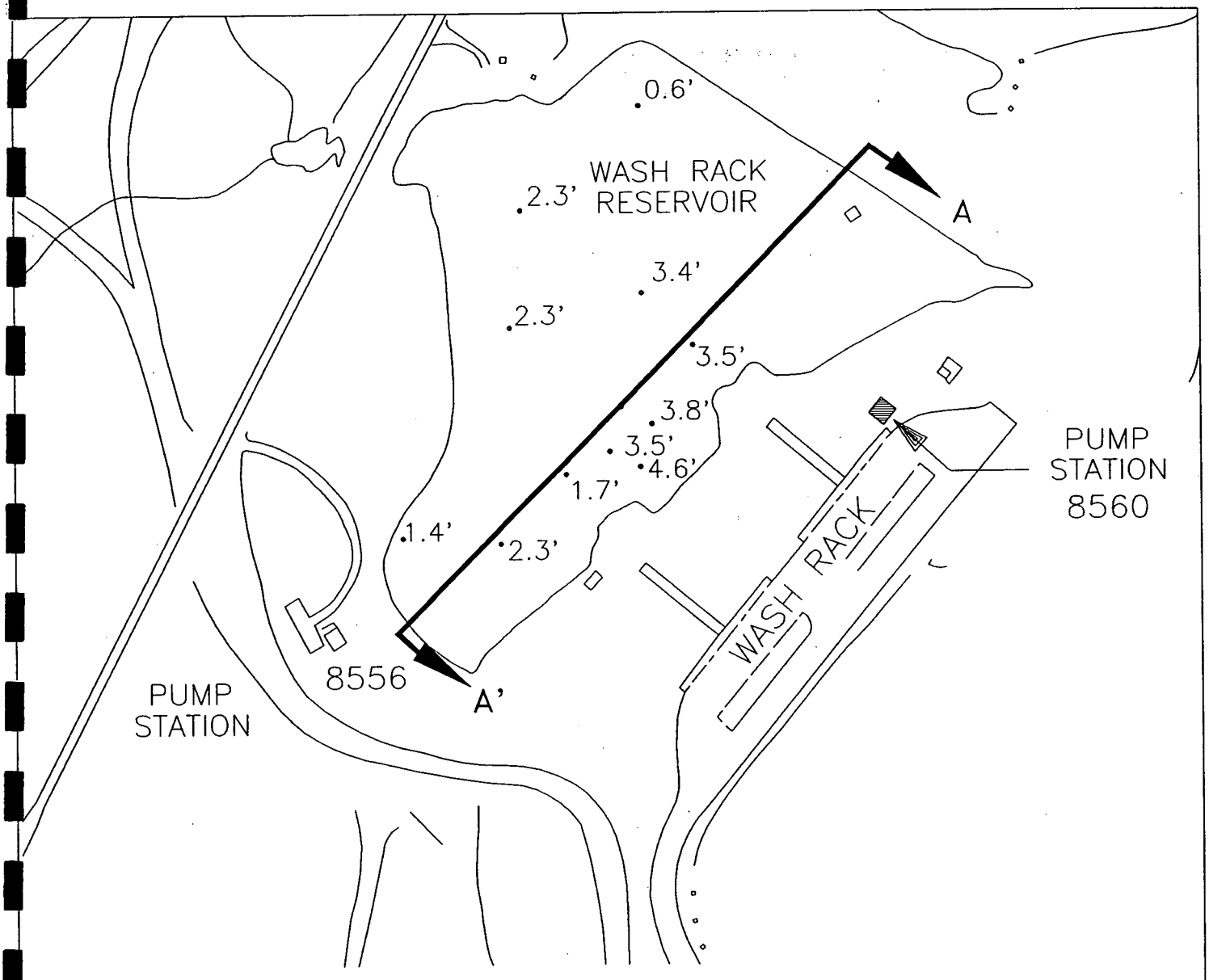
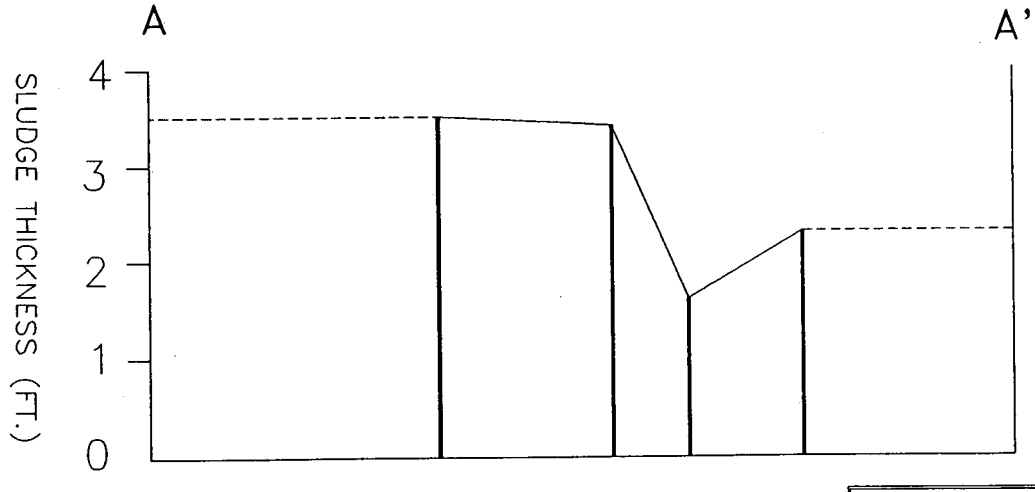


Figure 3-10-Sampling Locations at Old Wassh Rack Reservoir and ~~Sells~~ Cells 1 though 4

File: fig3-10.dwg

DATE: December, 1993





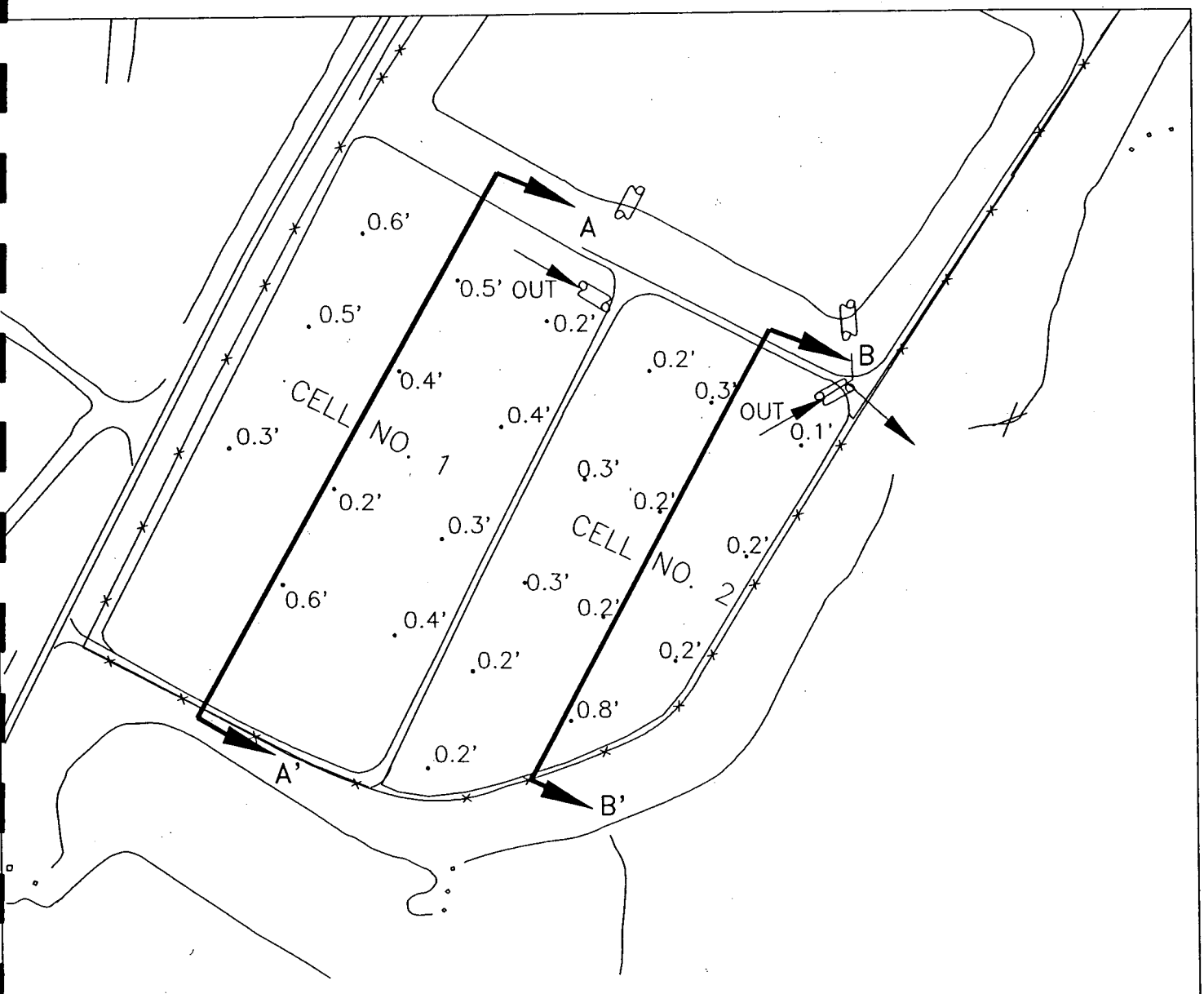
GRAPHIC SCALE IN FEET

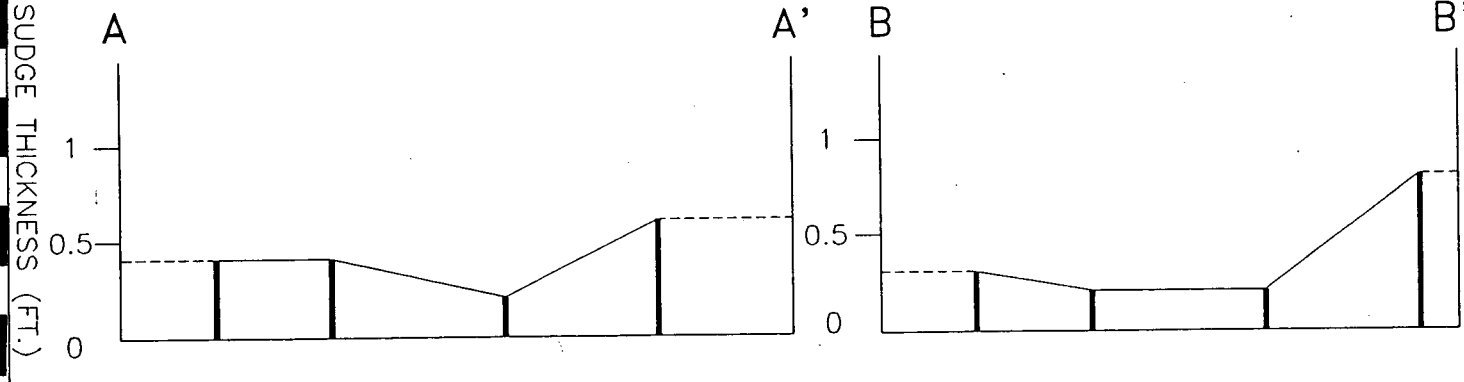
0 200' 400'

LEGEND:

1.8' SEDIMENT THICKNESS SAMPLING LOCATION

FIGURE 3.11–WASH RACK RESERVOIR SLUDGE THICKNESS	FIG3–11.DWG	DATE: DEC. 1993



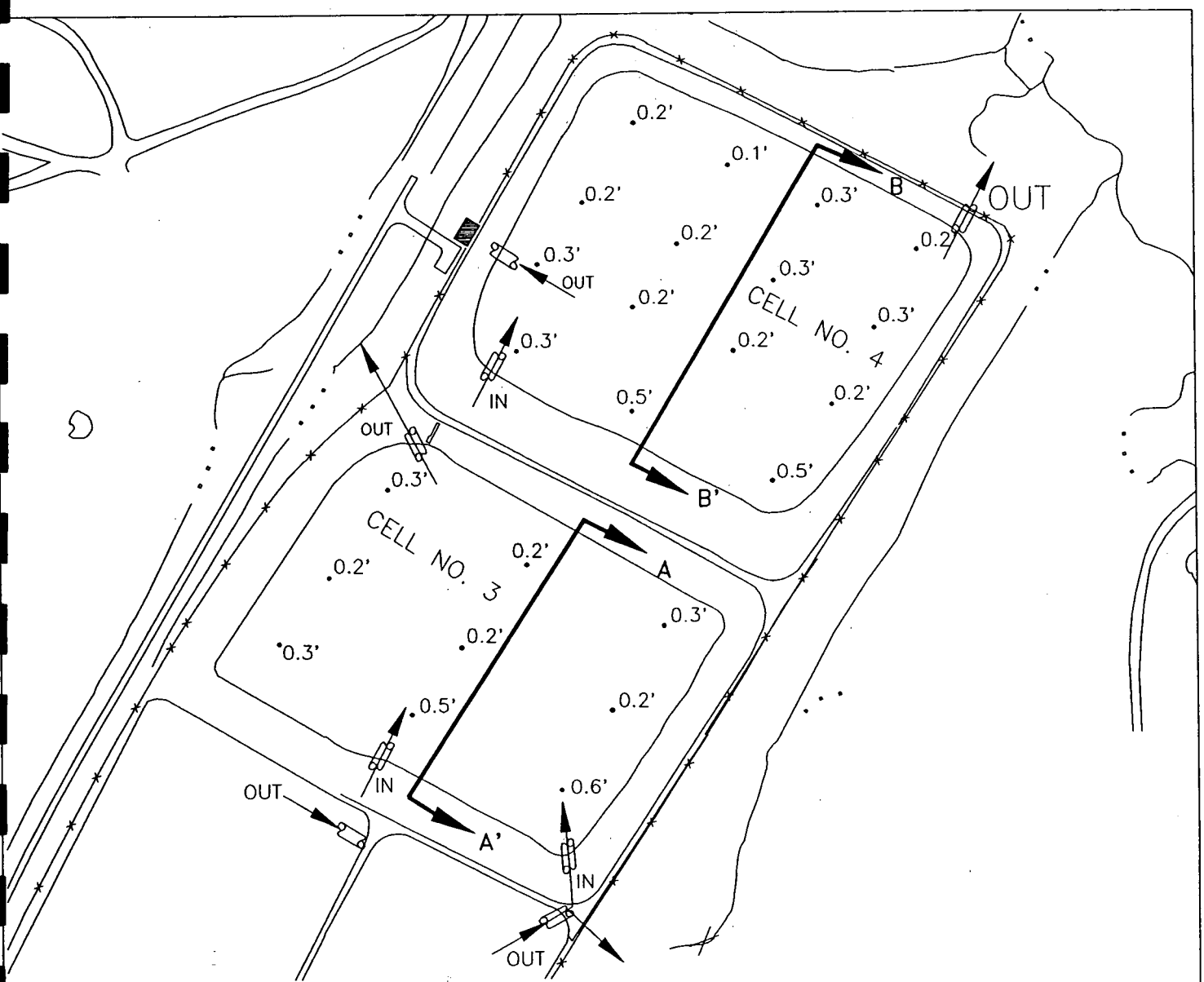


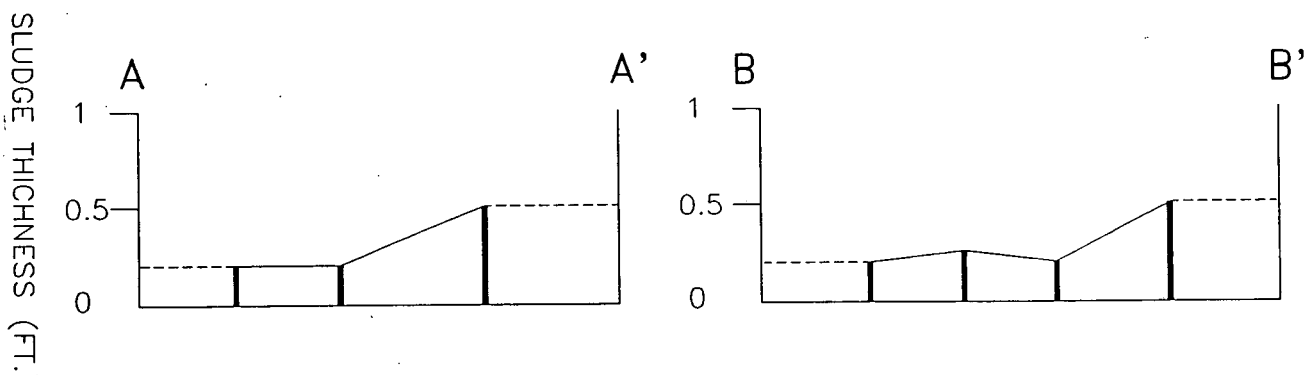
GRAPHIC SCALE IN FEET

0 200' 400'

LEGEND:
● 1.8' SEDIMENT THICKNESS SAMPLING LOCATION

FIGURE 3.12–CELLS 1&2 SLUDGE THICKNESS	FILE: FIG3–12.DWG	DATE: DEC. 1993



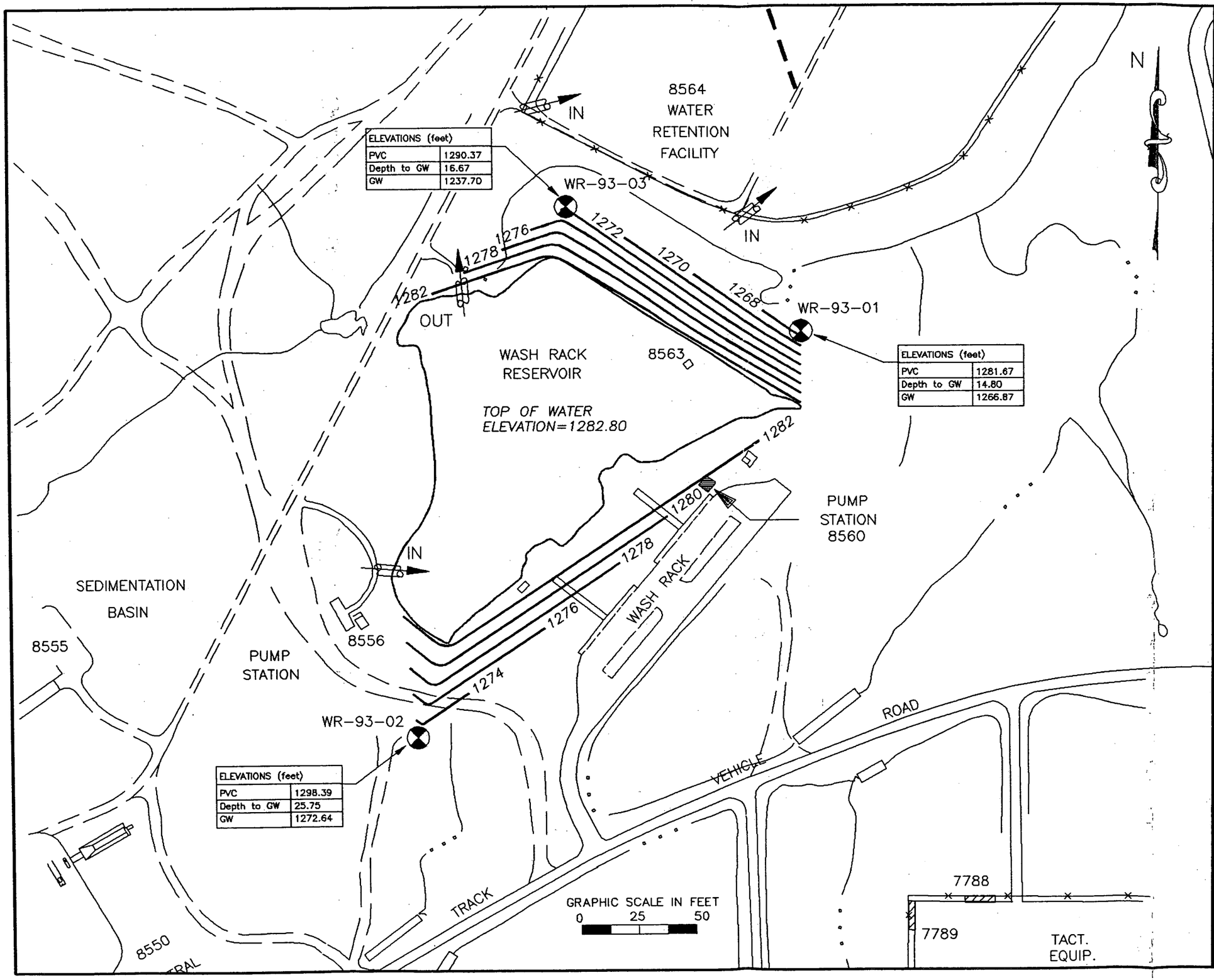


GRAPHIC SCALE IN FEET

0 200' 400'

LEGEND:
● 1.8' SEDIMENT THICKNESS SAMPLING LOCATION

FIGURE 3.13–CELLS 3&4 SLUDGE THICKNESS	FILE: FIG3–13.DWG	DATE: DEC. 1993



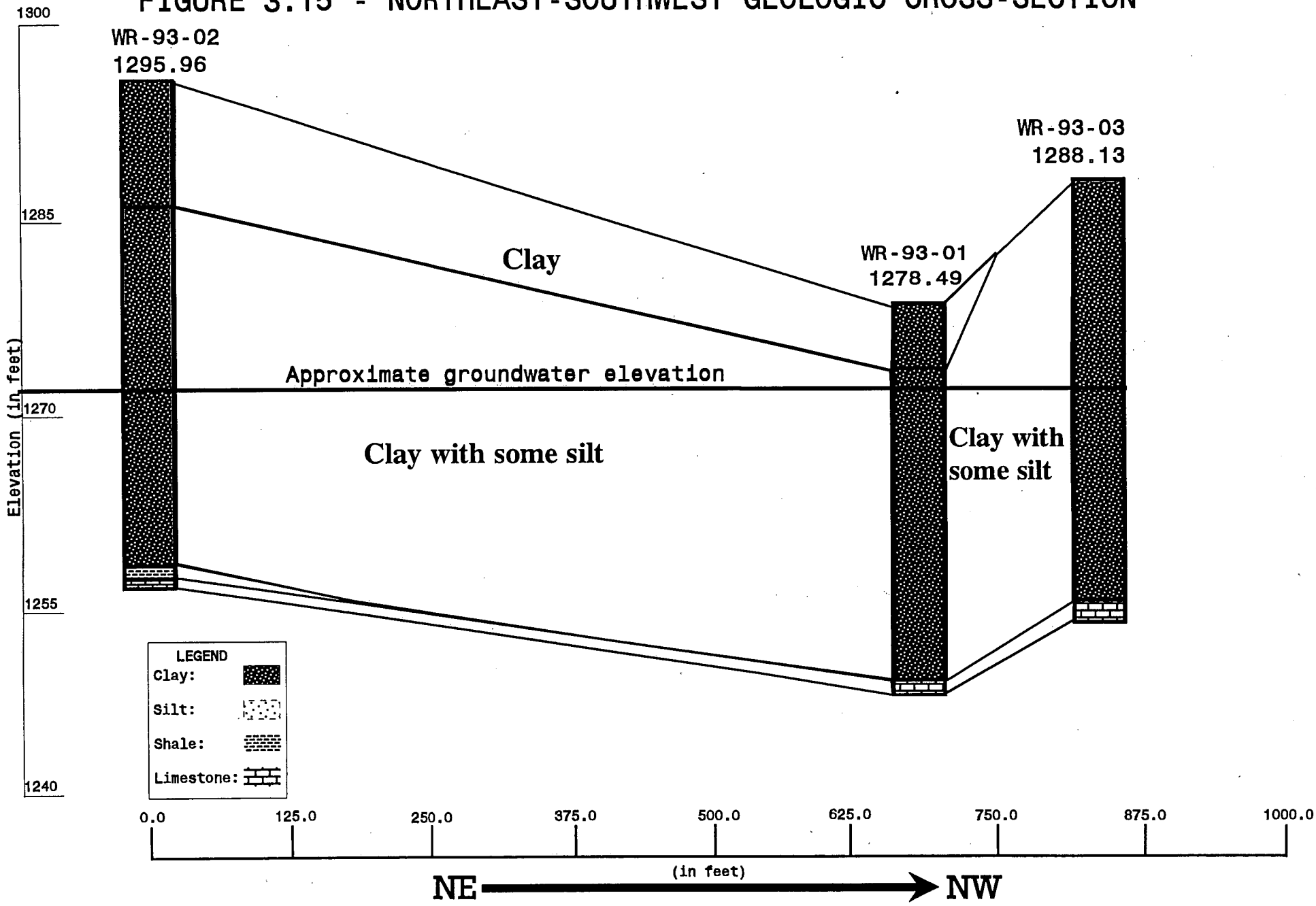
DRAFT

Figure 3-14 Groundwater Flow Gradient Wash Rack Reservoir

File: wrgwcon.dwg	REF: 62e1.DWG

December, 1993

FIGURE 3.15 - NORTHEAST-SOUTHWEST GEOLOGIC CROSS-SECTION



4.0 BUILDING 1301 AREA

The Building 1301 Area is located between Fifth and Seventh Streets, between H and G Streets in Camp Funston. The general location is shown in Figure 4-1. The area was included in the high priority SI because building 1301 was scheduled for demolition. The purpose of the SI was to investigate environmental conditions around building 1301 and former building 1605.

Building 1301 was former used for furniture repair and paint stripping, between 1988 and 1992. One room in the northwest corner has five, one-inch diameter holes drilled in the floor for ventilation during the stripping operation. The SI consisted of a soil gas survey within and around the northwest corner of building 1301 to determine whether volatile organic compounds had been released to the environment.

Former building 1605 was used for similar furniture repair and stripping operations circa 1984 to 1988 when it burned down. The SI consisted of a soil gas survey over the area of former building 1605. The former building is now a vacant lot covered with soil and used as a vehicle parking area.

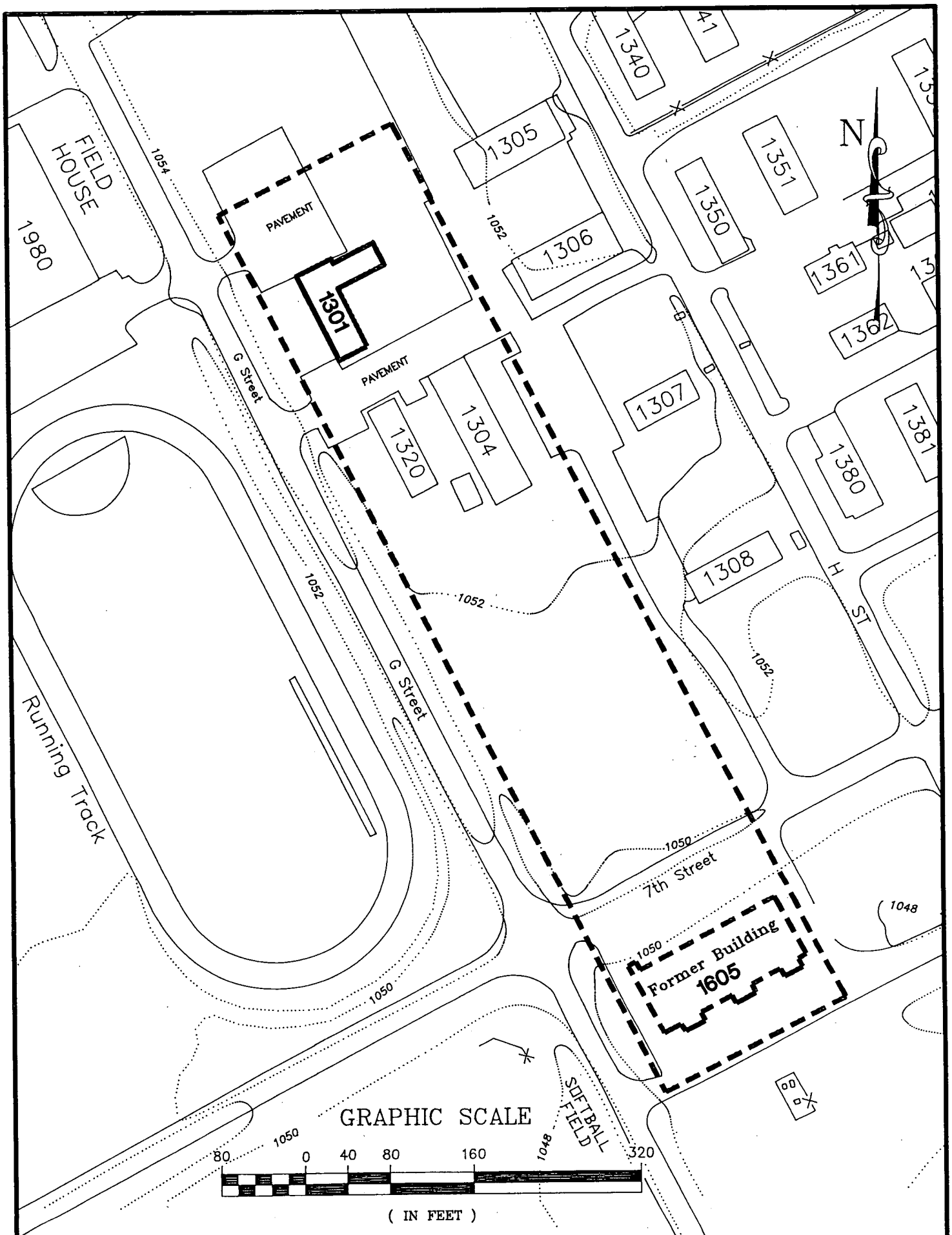
4.1 Summary of SI Results

The phase 1 soil gas survey of building 1301 included collection of four-foot soil gas samples at 10 locations, as shown in Figure 4-2. The soil gas samples were analyzed for petroleum hydrocarbons and chlorinated organic compounds using modified EPA Method 8010 and 8020. There were no detections at any of the ten sampling locations. No further sampling was conducted.

The phase 1 soil gas survey of former building 1605 included collection of soil gas samples at 10 locations; the samples were collected and analyzed as described above for building 1301. There were no detections at 9 of the sample locations. However, at one location -- R9 -- Total FID concentrations were 660 ug/l. Consequently, a phase 2 soil gas survey was conducted. The phase 2 survey included collection of a groundwater screening sample from a depth of 10 feet below sample location R9 as well as the collection of soil gas samples at five new locations around R9. There were no detections in any of the phase 2 soil gas or groundwater screening samples. In addition, two soil samples were collected at R9 at depths of 18 inches and 3 to 4 feet. The soil samples were analyzed in the laboratory for volatile organic compounds and TPH. There were no detections in either of the soil samples. No further investigations were conducted.

4.2 Discussion of SI Results

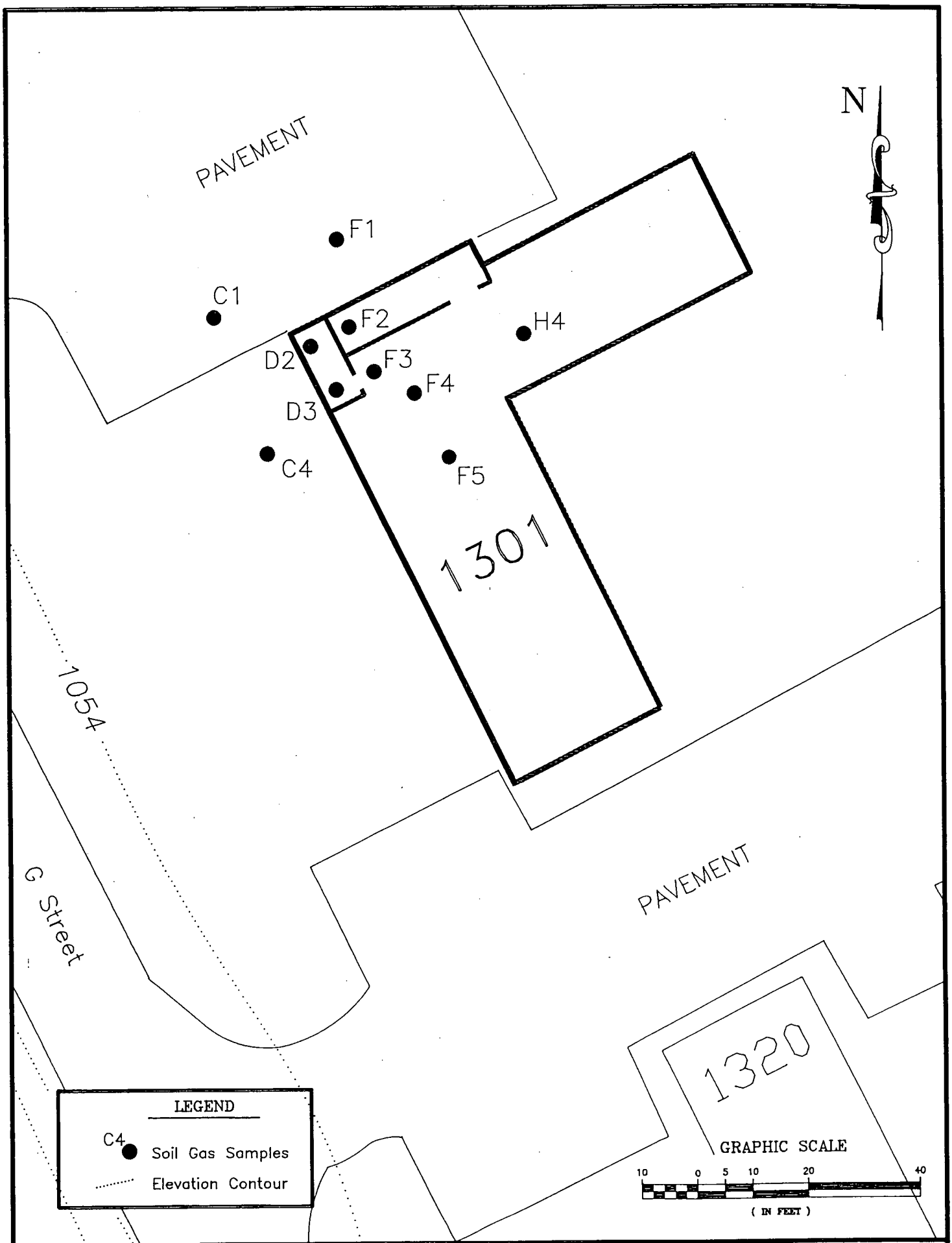
The SI results indicate that there are no releases to the environment from building 1301. Further, the SI results indicate that there are no significant releases from former building 1605. The detection of petroleum hydrocarbons at one location is more likely attributable to the use of the area for vehicle parking than to the activities at the former building. Since the time of the SI sampling, Fort Riley, in consultation with KDHE, has conducted a soil removal from the area of sample R9 at former building 1605. The details of this removal will be presented in the SI report for this site.



File:16051301.dwg

Date: December, 1993

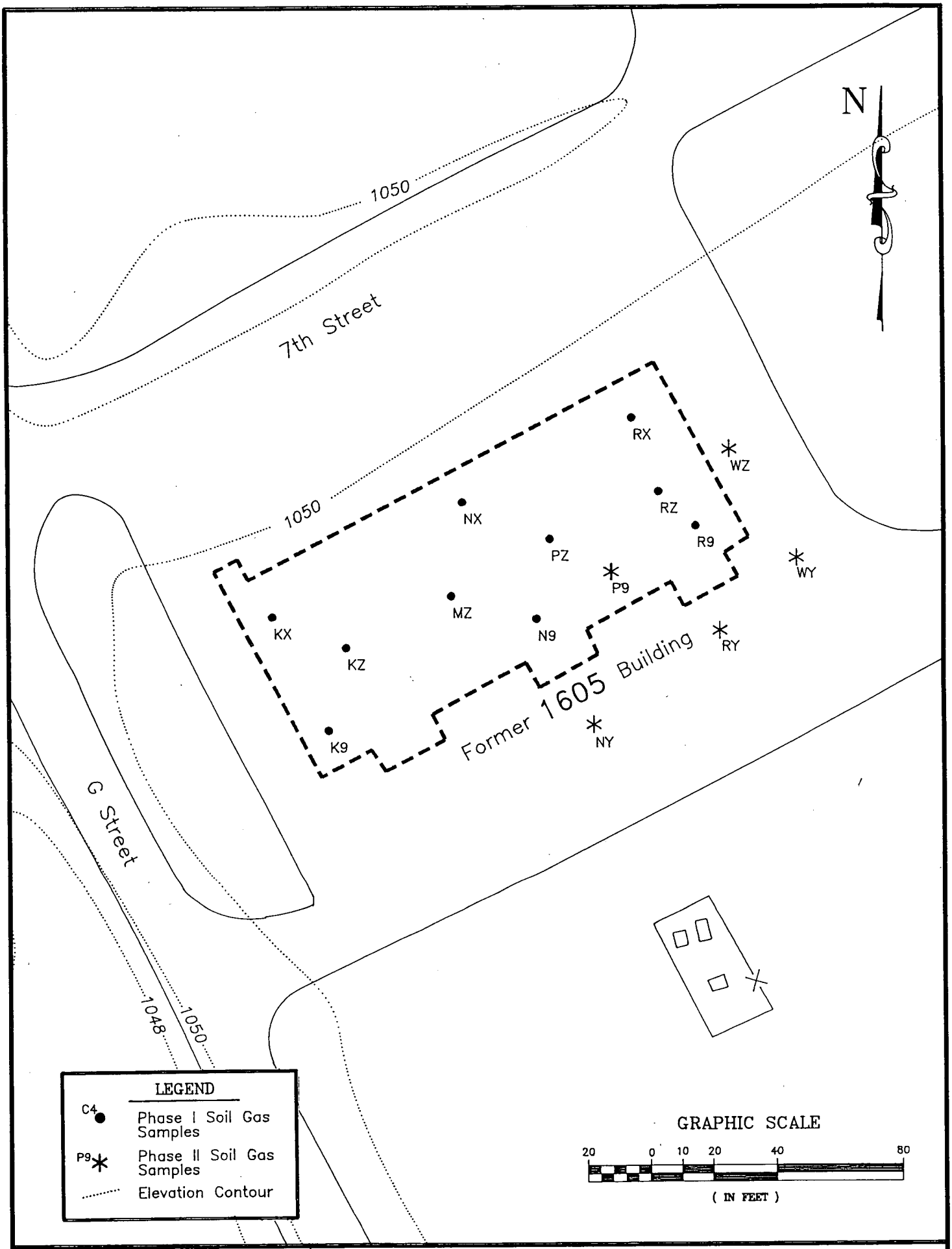
Figure 4-1-Location of Building 1301 and Former Building 1605



File:bldg1301.dwg

Date: December, 1993

Figure 4-2-Sampling Locations at Building 1301



File:bldg1605.dwg

Date: December, 1993

Figure 4-3-Sampling Locations at Former Building 1605

ATTACHMENT A

SOIL GAS AND FIELD GROUNDWATER SCREENING ANALYTICAL DATA PACKAGE

SAMPLE COLLECTION AND ANALYSIS

From September 20 to October 1, 1993, **TARGET Environmental Services, Inc. (TARGET)** conducted a site screening survey at **Fort Riley, Kansas** near Junction City. A total of 199 soil gas samples and 77 ground water samples were collected at the various sites on base. All sampling depths and locations were chosen on site by **Louis Berger Associates (LBA)**. The sampling locations are shown on the accompanying copies of the field maps.

Two sampling procedures were employed to collect **soil gas** samples. For both methods, the entire sampling system was first purged with ambient air drawn through an organic vapor filter cartridge. In general, deep (> 4 feet) samples were collected using a van-mounted hydraulic probe to advance connected 3-foot sections of 1-inch diameter threaded steel casing down to the sampling depth. A teflon line was inserted into the casing to the bottom of the hole, and the bottom-hole line perforations were isolated from the up-hole annulus by an inflatable packer. Shallow samples (4 feet or less) were collected manually using a drive rod to produce a 1/2-inch hole. A stainless steel probe was inserted to the full depth of the hole and sealed off from the atmosphere. Where pavement was present, a rotary hammer was employed for penetration prior to using the drive rod.

Following isolation of the sampling zone, a sample of in-situ soil gas was then withdrawn through the probe or line and used to purge atmospheric air from the sampling system. A second sample of soil gas was withdrawn through the probe and encapsulated in a pre-evacuated glass vial at two atmospheres of pressure (15 psig). The self-sealing vial was detached from the sampling system, packaged, labeled, and stored for laboratory analysis.

To collect the **ground water** samples, a van-mounted hydraulic probe was used to advance connected 3-foot sections of 1-inch diameter threaded steel casing down to the sampling depth.

The steel casing was removed and a 5-foot section of 1-inch diameter slotted PVC pipe connected to one or more 5-foot sections of PVC riser pipe was inserted to the full depth of the hole. The pipe was allowed to sit for a period of time to allow the water to fill the pipe. A 21" long by 7/16" O.D. stainless steel bailer was then used to collect 40 ml of ground water. Samples were placed in glass vials, acidified to pH < 2 using a 50% hydrochloric solution, sealed, labeled and stored on ice pending laboratory analysis.

Prior to the day's field activities all sampling equipment, slide hammer rods and probes were decontaminated by washing with soapy water and rinsing thoroughly. Internal surfaces were flushed dry using pre-purified nitrogen or filtered ambient air, and external surfaces were wiped clean using clean paper towels.

All of the samples collected during the field phase of the survey were subjected to dual analyses. One analysis was conducted according to EPA Method 8010 (modified) on a gas chromatograph equipped with an electron capture detector (ECD), and using direct injection. Specific analytes standardized for this analysis were:

1,1-dichloroethene (11DCE)
methylene chloride (CH_2Cl_2)
trans-1,2-dichloroethene (t12DCE)
1,1-dichloroethane (11DCA)
cis-1,2-dichloroethene (c12DCE)
chloroform ($CHCl_3$)
1,1,1-trichloroethane (111TCA)
carbon tetrachloride (CCl_4)
trichloroethene (TCE)
1,1,2-trichloroethane (112TCA)
tetrachloroethene (PCE)

The chlorinated hydrocarbons in this suite were chosen because of their common usage in industrial solvents, and/or their degradational relationship to commonly used compounds.

The second analysis was conducted according to EPA Method 8020 (modified) on a gas chromatograph equipped with a flame ionization detector (FID), and using direct injection. The analytes selected for standardization in this analysis were:

benzene
toluene
ethylbenzene
meta- and para- xylene
ortho- xylene

These compounds were chosen because of their utility in evaluating the presence of fuel products, or petroleum based solvents.

The tabulated results of the laboratory analyses of the soil gas samples are reported in micrograms per liter (µg/l) in Tables 1 and 2. Although "micrograms per liter" is equivalent to "parts per billion (v/v)" in water analyses, they are not equivalent in gas analyses, due to the difference in the mass of equal volumes of water and gas matrices. The xylenes concentrations reported in Table 1 are the sum of the m- and p-xylene and the o-xylene concentrations for each sample.

The analytical equipment was calibrated using a 3-point instrument response curve and injection of known concentrations of the target analytes. Retention times of the standards were used to identify the peaks in the chromatograms of the field samples, and their response factors were used to calculate the analyte concentrations. The ground water samples were prepared for analysis by pouring 15 ml of sample into a 30 ml EPA clean vial and sealing with a teflon-faced butyl rubber septum. The vial was heated for 10 minutes in a 90°C heating block to volatilize hydrocarbons from the water. The headspace of the sample was then directly injected into a gas chromatograph.

Total FID Volatiles values were generated by summing the areas of all integrated chromatogram peaks and calculated using the instrument response factor for toluene. Injection peaks, which also contain the light hydrocarbon methane, were excluded to avoid the skewing of Total FID Volatiles values due to injection disturbances and biogenic methane. For samples with low hydrocarbon concentrations, the calculated Total FID Volatiles concentration is occasionally lower than the sum of the individual analytes. This is because the response factor used for the Total FID Volatiles calculation is a constant, whereas the individual analyte response factors are compound specific. It is important to understand that the Total FID Volatiles levels reported are relative, not absolute, values.

Quality Assurance/Quality Control (QA/QC) Evaluation

Field QA/QC Samples

Soil gas **field control samples** were collected at the beginning and end of each day's soil gas sampling activities, after every tenth sample and between individual sites. These QA/QC samples were obtained by filtering ambient air through a dust and organic vapor filter cartridge and encapsulating as described above. **Equipment rinseate blanks** were collected at the beginning and end of each day's ground water sampling activities, after every tenth sample and between individual sites. These QA/QC samples were obtained by rinsing distilled water through the decontaminated bailer and into a sample vial. Duplicate samples were also collected after every tenth field sample. The laboratory results of the analysis of these samples are reported in Tables 1 and 2.

Laboratory QA/QC Samples

To document analytical repeatability, a duplicate analysis was performed on every tenth field sample. Laboratory blanks of nitrogen gas were also analyzed after every tenth field sample. The results of these analyses are reported in Tables 1 and 2.

Discussion of Results

The disparity in the results for ground water samples collected at the same locations on different days may be due to several natural phenomena including; ground water flow, water table fluctuations, or the influx of meteoric waters and atmospheric changes.

The chromatograms of several samples were selected by **LBA** for discussion. Copies of these chromatograms are included in Appendix A. The ECD chromatogram of Sample CF1301-R9 reveals only a few small background peaks, however, none of the standardized chlorinated analytes were present above the reporting limit. The FID chromatogram of Sample CF1301-R9 depicts peaks representative of a petroleum hydrocarbon mixture of relatively low volatility. The ECD chromatogram of Sample MAAF-M8W exhibits a few prominent peaks representing c-1,2-DCE, TCE and PCE. The FID chromatogram of Sample MAAF-M8W reveals a few smaller peaks which represent the FID response to the chlorinated compounds present in the sample. The ECD chromatograms of Samples MAAF-H7 and MAAF-H7W show peaks representing c-1,2-DCE and non-reportable levels of PCE. The FID chromatogram signatures of Samples MAAF-H7 and MAAF-H7W are suggestive of weathered gasoline. However, the abundance of late eluting peaks also suggests the possibility that these signatures may represent a mixture of gasoline and diesel fuel. The ECD and FID chromatograms of Samples MAAF-V8W and MAAF-E5W do not reveal the presence of any standardized analytes above the reporting limit.

TABLE 1

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
WASH RACK RESERVOIR AND CELLS AREA						
SOIL GAS SAMPLES						
CR-C2-A	4	<1.0	<1.0	<1.0	<1.0	<10
CR-C2B	4	<1.0	<1.0	<1.0	<1.0	<10
CR-C2A-12	12	<1.0	<1.0	<1.0	<1.0	<10
CR-C2B12	12	<1.0	<1.0	<1.0	<1.0	<10
CR-D0	4	<1.0	<1.0	<1.0	<1.0	<10
CR-D0-12	12	<1.0	<1.0	<1.0	<1.0	<10
CR-E0	4	<1.0	<1.0	<1.0	<1.0	<10
CR-E0-12	12	<1.0	<1.0	<1.0	<1.0	<10
CR-F0	4	<1.0	<1.0	<1.0	<1.0	<10
CR-H1	4	<1.0	<1.0	<1.0	<1.0	<10
CR-H2	4	<1.0	<1.0	<1.0	<1.0	<10
CR-H3	4	<1.0	<1.0	<1.0	<1.0	<10
CR-H4	4	<1.0	<1.0	<1.0	<1.0	<10
CR-H5	4	<1.0	<1.0	<1.0	<1.0	<10
WR-C1	4	<1.0	<1.0	<1.0	1.3	<10
WR-C2	4	<1.0	<1.0	<1.0	<1.0	<10
WR-C2-9	9	<1.0	<1.0	<1.0	<1.0	12
WR-C3	4	<1.0	<1.0	<1.0	<1.0	<10
WR-C3-12	12	<1.0	<1.0	<1.0	<1.0	<10
WR-C4	4	<1.0	<1.0	<1.0	<1.0	<10
WR-C4-12	12	<1.0	<1.0	<1.0	<1.0	<10
WR-C5	4	<1.0	<1.0	<1.0	<1.0	<10
WR-C5-11	11	<1.0	<1.0	<1.0	<1.0	<10
WR-C6	4	<1.0	<1.0	<1.0	<1.0	<10
WR-C6-12	12	<1.0	<1.0	<1.0	<1.0	<10
WR-C7	4	<1.0	<1.0	<1.0	<1.0	<10
WR-C7-12	12	<1.0	<1.0	<1.0	<1.0	<10
WR-C8	4	<1.0	<1.0	<1.0	<1.0	<10
WR-C8-12	12	<1.0	<1.0	<1.0	<1.0	<10
WR-DQ	4	<1.0	<1.0	<1.0	<1.0	<10
WR-E6	4	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
SOIL GAS SAMPLES (cont.)						
WR-E6-12	12	<1.0	<1.0	<1.0	<1.0	<10
WR-EQ	4	<1.0	<1.0	<1.0	<1.0	<10
WR-EQ-12	12	<1.0	<1.0	<1.0	<1.0	<10
WR-FQ	4	<1.0	<1.0	<1.0	<1.0	<10
WR-FQ-12	12	<1.0	1.6	<1.0	<1.0	<10
WR-H1	4	<1.0	<1.0	<1.0	<1.0	<10
WR-H1-12	12	<1.0	<1.0	<1.0	<1.0	<10
WR-H2	4	<1.0	<1.0	<1.0	<1.0	<10
WR-H2-12	12	<1.0	1.1	<1.0	<1.0	<10
WR-H3	4	<1.0	<1.0	<1.0	<1.0	<10
WR-H3-12	12	<1.0	<1.0	<1.0	<1.0	<10
WR-H4	4	<1.0	<1.0	<1.0	<1.0	<10
WR-H4-12	12	<1.0	<1.0	<1.0	<1.0	<10
WR-H5	4	<1.0	<1.0	<1.0	<1.0	<10
WR-H5-12	12	<1.0	<1.0	<1.0	<1.0	<10
WR-H6-4	4	<1.0	<1.0	<1.0	<1.0	<10
WR-H6-12	12	<1.0	<1.0	<1.0	<1.0	<10
WR-H7	4	<1.0	<1.0	<1.0	<1.0	<10
WR-H8	4	<1.0	<1.0	<1.0	<1.0	<10
WATER SAMPLES						
WR-C1W	7	<1.0	<1.0	<1.0	<1.0	<10
WR-DQW	12	<1.0	<1.0	<1.0	<1.0	<10
FIELD CONTROL SAMPLES						
CR-1B	N/A	<1.0	<1.0	<1.0	<1.0	<10
CR-2B	N/A	<1.0	<1.0	<1.0	<1.0	<10
CR-3B	N/A	<1.0	<1.0	<1.0	<1.0	<10
CR-4B	N/A	<1.0	<1.0	<1.0	<1.0	<10
WR-1	N/A	<1.0	<1.0	<1.0	<1.0	<10
WR-2	N/A	<1.0	<1.0	<1.0	<1.0	<10
WR-3	N/A	<1.0	<1.0	<1.0	<1.0	<10
WR-4	N/A	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
FIELD CONTROL SAMPLES (cont.)						
WR-5	N/A	<1.0	<1.0	<1.0	<1.0	<10
EQUIPMENT RINSEATE BLANKS						
WR-1W	N/A	<1.0	<1.0	<1.0	<1.0	<10
LABORATORY DUPLICATE ANALYSIS						
CR-C2B12	12	<1.0	<1.0	<1.0	<1.0	<10
CR-C2B12R	12	<1.0	<1.0	<1.0	<1.0	<10
CR-H5	4	<1.0	<1.0	<1.0	<1.0	<10
CR-H5R	4	<1.0	<1.0	<1.0	<1.0	<10
WR-C2-9	9	<1.0	<1.0	<1.0	<1.0	12
WR-C2-9R	9	<1.0	<1.0	<1.0	<1.0	12
WR-C6	4	<1.0	<1.0	<1.0	<1.0	<10
WR-C6R	4	<1.0	<1.0	<1.0	<1.0	<10
WR-H3-12	12	<1.0	<1.0	<1.0	<1.0	<10
WR-H3-12R	12	<1.0	<1.0	<1.0	<1.0	<10
WR-H4-12	12	<1.0	<1.0	<1.0	<1.0	<10
WR-H4-12R	12	<1.0	<1.0	<1.0	<1.0	<10
FIELD DUPLICATE ANALYSIS						
WR-C4-12	12	<1.0	<1.0	<1.0	<1.0	<10
WR-C4-12D	12	<1.0	<1.0	<1.0	<1.0	<10
WR-FQ-12	12	<1.0	1.6	<1.0	<1.0	<10
WR-FQ-12D	12	<1.0	1.5	<1.0	<1.0	<10
WR-H8	4	<1.0	<1.0	<1.0	<1.0	<10
WR-H8D	4	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
LABORATORY BLANKS						
CR-C2B12B	N/A	<1.0	<1.0	<1.0	<1.0	<10
CR-H5B	N/A	<1.0	<1.0	<1.0	<1.0	<10
WR-3B	N/A	<1.0	<1.0	<1.0	<1.0	<10
WR-C2-9B	N/A	<1.0	<1.0	<1.0	<1.0	<10
WR-C6B	N/A	<1.0	<1.0	<1.0	<1.0	<10
WR-H3-12B	N/A	<1.0	<1.0	<1.0	<1.0	<10
WR-H4-12B	N/A	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
EAST POND AREA						
SOIL GAS SAMPLES						
EP-A1	4	<1.0	<1.0	<1.0	<1.0	<10
EP-A1-10	10	<1.0	<1.0	<1.0	<1.0	<10
EP-A2	4	<1.0	<1.0	<1.0	<1.0	<10
EP-A2-9	9	<1.0	<1.0	<1.0	<1.0	<10
EP-A3	4	<1.0	<1.0	<1.0	<1.0	<10
EP-A3-10	10	<1.0	<1.0	<1.0	<1.0	20
EP-A4	4	<1.0	<1.0	<1.0	<1.0	<10
EP-A4-9	9	<1.0	<1.0	<1.0	<1.0	<10
EP-A5	4	<1.0	<1.0	<1.0	<1.0	11
EP-A6-4	4	<1.0	<1.0	<1.0	<1.0	<10
EP-A6-12	12	<1.0	<1.0	<1.0	<1.0	<10
EP-A7-4	4	<1.0	<1.0	<1.0	<1.0	<10
EP-A7-12	12	<1.0	<1.0	<1.0	<1.0	<10
EP-A8	4	<1.0	<1.0	<1.0	<1.0	<10
EP-A8-12	4	<1.0	<1.0	<1.0	<1.0	<10
EP-A9	4	<1.0	<1.0	<1.0	<1.0	<10
EP-A9-9	9.5	<1.0	<1.0	<1.0	<1.0	<10
EP-A10	4	1.4	5.8	1.2	2.7	993
EP-A10-8	8	1.1	8.2	1.9	4.5	1,476
EP-A11	4	9.0	30	7.9	21	5,373
EP-A12-4	4	<1.0	<1.0	<1.0	<1.0	19
EP-A12-11	11	<1.0	<1.0	<1.0	<1.0	<10
EP-A13-4	4	<1.0	2.2	<1.0	1.4	136
EP-A14-4	4	<1.0	3.1	<1.0	1.4	357
EP-A14-8	8	<1.0	3.1	1.0	<1.0	261
EP-B1	4	<1.0	<1.0	<1.0	<1.0	<10
EP-B2	4	<1.0	<1.0	<1.0	<1.0	<10
EP-C1	4	<1.0	<1.0	<1.0	<1.0	<10
EP-C1-12	12	<1.0	<1.0	<1.0	<1.0	<10
EP-C2	4	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
SOIL GAS SAMPLES (cont.)						
EP-C2-8	8	<1.0	<1.0	<1.0	<1.0	11
EP-C4	4	<1.0	1.2	<1.0	<1.0	<10
EP-C4-9	9	<1.0	<1.0	<1.0	<1.0	<10
EP-D1	4	<1.0	<1.0	<1.0	<1.0	<10
EP-D1-11	11	<1.0	<1.0	<1.0	<1.0	<10
EP-D2	4	<1.0	<1.0	<1.0	<1.0	<10
EP-D2-12	12	<1.0	<1.0	<1.0	<1.0	<10
EP-E3	4	<1.0	<1.0	<1.0	<1.0	<10
EP-E3-8	8	<1.0	<1.0	<1.0	<1.0	<10
EP-E4	4	<1.0	<1.0	<1.0	<1.0	<10
EP-E4-8	8	<1.0	<1.0	<1.0	<1.0	<10
EP-EQ	4	<1.0	<1.0	<1.0	<1.0	<10
EP-EQ-12	12	<1.0	<1.0	<1.0	<1.0	<10
EP-F1	4	<1.0	<1.0	<1.0	<1.0	<10
EP-F2	4	<1.0	<1.0	<1.0	<1.0	<10
EP-F4	4	<1.0	<1.0	<1.0	<1.0	<10
EP-H2	4	<1.0	<1.0	<1.0	<1.0	<10
EP-H2-12	12	<1.0	<1.0	<1.0	<1.0	<10
EP-H3	4	<1.0	<1.0	<1.0	<1.0	<10
EP-H3-8	8	<1.0	<1.0	<1.0	<1.0	<10
FIELD CONTROL SAMPLES						
EP-1	N/A	<1.0	<1.0	<1.0	<1.0	<10
EP-2	N/A	<1.0	<1.0	<1.0	<1.0	<10
EP-3	N/A	<1.0	<1.0	<1.0	<1.0	<10
EP-4	N/A	<1.0	<1.0	<1.0	<1.0	<10
EP-5	N/A	<1.0	<1.0	<1.0	<1.0	<10
EP-6	N/A	<1.0	<1.0	<1.0	<1.0	<10
EP-7	N/A	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
LABORATORY DUPLICATE ANALYSIS						
EP-A4-9	9	<1.0	<1.0	<1.0	<1.0	<10
EP-A4-9R	9	<1.0	<1.0	<1.0	<1.0	<10
EP-A6-12	12	<1.0	<1.0	<1.0	<1.0	<10
EP-A6-12R	12	<1.0	<1.0	<1.0	<1.0	<10
EP-A13-4	4	<1.0	2.2	<1.0	1.4	136
EP-A13-4R	4	<1.0	1.3	1.4	<1.0	152
EP-B2	4	<1.0	<1.0	<1.0	<1.0	<10
EP-B2R	4	<1.0	<1.0	<1.0	<1.0	<10
EP-C2	4	<1.0	<1.0	<1.0	<1.0	<10
EP-C2R	4	<1.0	<1.0	<1.0	<1.0	<10
EP-E3	4	<1.0	<1.0	<1.0	<1.0	<10
EP-E3R	4	<1.0	<1.0	<1.0	<1.0	<10
EP-E4-8	8	<1.0	<1.0	<1.0	<1.0	<10
EP-E4-8R	8	<1.0	<1.0	<1.0	<1.0	<10
FIELD DUPLICATE ANALYSIS						
EP-A9-9	9.5	<1.0	<1.0	<1.0	<1.0	<10
EP-A9-9D	9.5	<1.0	<1.0	<1.0	<1.0	<10
EP-C4	4	<1.0	1.2	<1.0	<1.0	<10
EP-C4D	4	<1.0	<1.0	<1.0	<1.0	<10
LABORATORY BLANKS						
EP-A4-9B	N/A	<1.0	<1.0	<1.0	<1.0	<10
EP-A6-12B	N/A	<1.0	<1.0	<1.0	<1.0	<10
EP-A13-4B	N/A	<1.0	<1.0	<1.0	<1.0	<10
EP-B2B	N/A	<1.0	<1.0	<1.0	<1.0	<10
EP-C2B	N/A	<1.0	<1.0	<1.0	<1.0	<10
EP-E3B	N/A	<1.0	<1.0	<1.0	<1.0	<10
EP-E4-8B	N/A	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
WEST POND AREA						
SOIL GAS SAMPLES						
WP-B1	4	<1.0	<1.0	<1.0	<1.0	<10
WP-B1-12	12	<1.0	<1.0	<1.0	<1.0	<10
WP-B2	4	<1.0	<1.0	<1.0	<1.0	<10
WP-B2-12	12	<1.0	<1.0	<1.0	<1.0	<10
WP-BQ	4	<1.0	<1.0	<1.0	<1.0	<10
WP-BQ-12	12	<1.0	<1.0	<1.0	<1.0	<10
WP-C2	4	<1.0	<1.0	<1.0	<1.0	<10
WP-C2-12	12	<1.0	<1.0	<1.0	<1.0	<10
WP-CQ	4	<1.0	<1.0	<1.0	<1.0	<10
WP-CQ-10	10	<1.0	<1.0	<1.0	<1.0	<10
WP-D1	4	<1.0	<1.0	<1.0	<1.0	<10
WP-D1-12	12	<1.0	<1.0	<1.0	<1.0	<10
WP-D2	4	<1.0	<1.0	<1.0	<1.0	<10
WP-D2-12	12	<1.0	<1.0	<1.0	<1.0	<10
WP-DQ	4	<1.0	<1.0	<1.0	<1.0	<10
WP-DQ-12	12	<1.0	<1.0	<1.0	<1.0	<10
FIELD CONTROL SAMPLES						
WP-5	N/A	<1.0	<1.0	<1.0	<1.0	<10
LABORATORY DUPLICATE ANALYSIS						
WP-5	N/A	<1.0	<1.0	<1.0	<1.0	<10
WP-5R	N/A	<1.0	<1.0	<1.0	<1.0	<10
WP-C2	4	<1.0	<1.0	<1.0	<1.0	<10
WP-C2R	4	<1.0	<1.0	<1.0	<1.0	<10
FIELD DUPLICATE ANALYSIS						
WP-CQ-10	10	<1.0	<1.0	<1.0	<1.0	<10
WP-CQ-10D	10	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
FIELD DUPLICATE ANALYSIS (cont.)						
WP-D2-12	12	<1.0	<1.0	<1.0	<1.0	<10
WP-D2-12D	12	<1.0	<1.0	<1.0	<1.0	<10
LABORATORY BLANKS						
WP-5B	N/A	<1.0	<1.0	<1.0	<1.0	<10
WP-C2B	N/A	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
BUILDING 1301 AREA						
SOIL GAS SAMPLES						
CF1301-C1	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-C4	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-D2	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-D3	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-E2	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-E3	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-F1	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-F4	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-F5	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-H4	4	<1.0	<1.0	<1.0	<1.0	<10
FIELD CONTROL SAMPLES						
CF1301-1	N/A	<1.0	<1.0	<1.0	<1.0	<10
CF1301-2	N/A	<1.0	<1.0	<1.0	<1.0	<10
LABORATORY DUPLICATE ANALYSIS						
CF1301-C1	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-C1R	4	<1.0	<1.0	<1.0	<1.0	<10
FIELD DUPLICATE ANALYSIS						
CF1301-C4	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-C4D	4	<1.0	<1.0	<1.0	<1.0	<10
LABORATORY BL;ANKS						
CF1301-C1B	N/A	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
BUILDING 1605 AREA						
SOIL GAS SAMPLES						
1605-NY	4	<1.0	<1.0	<1.0	<1.0	<10
1605-P9	4	<1.0	<1.0	<1.0	<1.0	<10
1605-RY	4	<1.0	<1.0	<1.0	<1.0	<10
1605-WY	4	<1.0	<1.0	<1.0	<1.0	<10
1605-WZ	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-K9	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-KX	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-KZ	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-MZ	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-N9	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-NX	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-PZ	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-R9	4	<1.0	<1.0	18	80	660
CF1301-RX	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-RZ	4	<1.0	<1.0	<1.0	<1.0	<10
WATER SAMPLES						
1605-NYW	9	<1.0	<1.0	<1.0	<1.0	<10
1605-P9W	12	<1.0	<1.0	<1.0	<1.0	<10
1605-R9W	10	<1.0	<1.0	<1.0	<1.0	<10
1605-RYW	10	<1.0	<1.0	<1.0	<1.0	<10
1605-WYW	10	<1.0	<1.0	<1.0	<1.0	<10
1605-WZW	9.5	<1.0	<1.0	<1.0	<1.0	<10
FIELD CONTROL SAMPLES						
1605-1	N/A	<1.0	<1.0	<1.0	<1.0	<10
1605-2	N/A	<1.0	<1.0	<1.0	<1.0	<10
CF1301-3	N/A	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
EQUIPMENT RINSEATE BLANKS						
1605-1W	N/A	<1.0	<1.0	<1.0	<1.0	<10
1605-2W	N/A	<1.0	<1.0	<1.0	<1.0	<10
1605-3W	N/A	<1.0	<1.0	<1.0	<1.0	<10
LABORATORY DUPLICATE ANALYSIS						
1605-RY	4	<1.0	<1.0	<1.0	<1.0	<10
1605-RYR	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-PZ	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-PZR	4	<1.0	<1.0	<1.0	<1.0	<10
FIELD DUPLICATE ANALYSIS						
1605-P9	4	<1.0	<1.0	<1.0	<1.0	<10
1605-P9D	4	<1.0	<1.0	<1.0	<1.0	<10
CF1301-R9	4	<1.0	<1.0	18	80	660
CF1301-R9D	4	1.1	1.9	22	77	816
LABORATORY BLANKS						
1605-RYB	N/A	<1.0	<1.0	<1.0	<1.0	<10
CF1301-PZB	N/A	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
FORMER FIRE TRAINING PIT						
SOIL GAS SAMPLES						
MAAF-B6	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-D6	4	1.0	<1.0	<1.0	<1.0	<10
MAAF-D8	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-E5	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-E7	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-E9	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-F4	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-F6	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-F7	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-F8	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-FZ	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-H5	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-H6	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-H7	4	<1.0	422	44	278	660
MAAF-H8	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-H9	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-H04	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-J4	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-J6	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-J7	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-J8	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-JZ	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-K5	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-K7	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-K9	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-M6	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-M8	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-M14	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-N2	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-N7	4	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
SOIL GAS SAMPLES (cont.)						
MAAF-NY	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-P9	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-PX	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-PZ	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-R3	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-R8	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-R9	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-V8	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-W4	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-WZ	4	<1.0	3.1	<1.0	<1.0	<10
MF-1	4	<1.0	1.1	<1.0	<1.0	<10
MF-2	4	<1.0	<1.0	<1.0	<1.0	<10
MF-3	4	<1.0	<1.0	<1.0	<1.0	11
MF-4	4	<1.0	1.3	<1.0	<1.0	<10
MF-5	4	<1.0	<1.0	<1.0	<1.0	<10
MF-6	4	<1.0	3.1	<1.0	<1.0	<10
MF-7	4	<1.0	<1.0	<1.0	<1.0	<10
MF-8	4	<1.0	1.3	<1.0	<1.0	<10
MF-9	4	<1.0	1.8	<1.0	<1.0	<10
MF-10	4	<1.0	<1.0	<1.0	<1.0	<10
MF-11	4	<1.0	<1.0	<1.0	<1.0	<10
MF-12	4	<1.0	<1.0	<1.0	<1.0	12
MF-13	4	<1.0	<1.0	<1.0	<1.0	<10
MF-14	4	<1.0	<1.0	<1.0	<1.0	<10
MF-15	4	<1.0	<1.0	<1.0	<1.0	<10
MF-16	4	<1.0	<1.0	<1.0	<1.0	<10
MF-17	4	<1.0	<1.0	<1.0	<1.0	<10
MF-18	4	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
WATER SAMPLES						
FP-E5	10	<1.0	1.5	<1.0	<1.0	11
FP-H7	7	6.7	1,522	177	888	14,510
FP-J6	8	<1.0	<1.0	<1.0	<1.0	<10
FP-M1	9	<1.0	<1.0	<1.0	<1.0	16
FP-M8	9	<1.0	1.1	<1.0	1.5	23
FP-N2	9	<1.0	<1.0	<1.0	<1.0	<10
FP-N7	8	<1.0	<1.0	<1.0	<1.0	<10
FP-PZ	8	<1.0	<1.0	<1.0	<1.0	<10
FP-V8	8	<1.0	<1.0	<1.0	<1.0	<10
FP-W4	6	<1.0	<1.0	<1.0	<1.0	<10
MAAF-B6W	6	<1.0	<1.0	<1.0	<1.0	<10
MAAF-D6W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-D8W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-E5W	9	<1.0	<1.0	<1.0	<1.0	<10
MAAF-E7W	7	<1.0	<1.0	<1.0	<1.0	<10
MAAF-E9W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-F4W	9	<1.0	<1.0	<1.0	<1.0	<10
MAAF-F6W	9	<1.0	<1.0	<1.0	<1.0	<10
MAAF-F7W	7	<1.0	<1.0	<1.0	<1.0	<10
MAAF-F8W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-FZW	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-H5W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-H6W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-H7W	7	13	3,841	356	1,586	6,421
MAAF-H8W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-H9W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-HOW	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-J4W	11	<1.0	<1.0	<1.0	<1.0	<10
MAAF-J6W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-J7W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-J8W	6	<1.0	<1.0	<1.0	<1.0	<10
MAAF-JZW	8	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
WATER SAMPLES (cont.)						
MAAF-K5W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-K7W	9	<1.0	<1.0	<1.0	<1.0	17
MAAF-K9W	9	<1.0	<1.0	<1.0	<1.0	<10
MAAF-M6W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-M8W	8	<1.0	<1.0	<1.0	<1.0	49
MAAF-MIW	8	<1.0	<1.0	<1.0	<1.0	15
MAAF-N2W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-N7W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-NYW	7	<1.0	<1.0	<1.0	<1.0	<10
MAAF-P9W	7	<1.0	<1.0	<1.0	<1.0	<10
MAAF-PXW	7	<1.0	<1.0	<1.0	<1.0	<10
MAAF-PZW	7	<1.0	<1.0	<1.0	<1.0	<10
MAAF-R3W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-R8W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-R9W	7	<1.0	<1.0	<1.0	<1.0	<10
MAAF-V8W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-W4W	6	<1.0	<1.0	<1.0	<1.0	<10
MAAF-WZW	9	<1.0	<1.0	<1.0	<1.0	<10
MF-1W	8	<1.0	<1.0	<1.0	<1.0	<10
MF-2W	8	<1.0	<1.0	<1.0	<1.0	<10
MF-3W	8	<1.0	<1.0	<1.0	<1.0	<10
MF-4W	8	<1.0	<1.0	<1.0	<1.0	<10
MF-5W	8	<1.0	<1.0	<1.0	<1.0	<10
MF-6W	8	<1.0	<1.0	<1.0	<1.0	<10
MF-7W	9	<1.0	<1.0	<1.0	<1.0	<10
MF-8W	8	<1.0	<1.0	<1.0	<1.0	<10
MF-9W	8	<1.0	<1.0	<1.0	<1.0	<10
MF-10W	8	<1.0	<1.0	<1.0	<1.0	<10
MF-11W	8	<1.0	<1.0	<1.0	<1.0	<10
MF-12W	8	<1.0	<1.0	<1.0	<1.0	<10
MF-13W	8	<1.0	<1.0	<1.0	<1.0	<10
MF-14W	9	<1.0	<1.0	<1.0	<1.0	<10
MF-15W	9	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
WATER SAMPLES (cont.)						
MF-16W	9	<1.0	<1.0	<1.0	<1.0	<10
MF-17W	8	<1.0	<1.0	<1.0	<1.0	<10
MF-18W	8	<1.0	<1.0	<1.0	<1.0	<10
MF-J6W	8	<1.0	<1.0	<1.0	<1.0	<10
FIELD CONTROL SAMPLES						
MAAF-1	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-2	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-3	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-4	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-5	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-6	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-7	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-8	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-9	N/A	<1.0	<1.0	<1.0	<1.0	<10
MF-1B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MF-2B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MF-3B	N/A	<1.0	<1.0	<1.0	<1.0	<10
EQUIPMENT RINSEATE BLANKS						
FP-1	N/A	<1.0	<1.0	<1.0	<1.0	<10
FP-4	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-1W	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-2W	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-3W	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-4W	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-5W	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-6W	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-7W	N/A	<1.0	<1.0	<1.0	<1.0	<10
MF-1WB	N/A	<1.0	<1.0	<1.0	<1.0	<10
MF-2WB	N/A	<1.0	<1.0	<1.0	<1.0	<10
MF-3BW	N/A	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
LABORATORY DUPLICATE ANALYSIS						
FP-1	N/A	<1.0	<1.0	<1.0	<1.0	<10
FP-1R	N/A	<1.0	<1.0	<1.0	<1.0	<10
FP-4	N/A	<1.0	<1.0	<1.0	<1.0	<10
FP-4R	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-2	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-2R	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-7	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-7R	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-E5	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-E5R	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-E7	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-E7R	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-H9	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-H9R	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-M6	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-M6R	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-M8	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-M8R	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-N7	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-N7R	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-PZ	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-PZR	4	<1.0	<1.0	<1.0	<1.0	<10
MF-3B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MF-3BR	N/A	<1.0	<1.0	<1.0	<1.0	<10
MF-7	4	<1.0	<1.0	<1.0	<1.0	<10
MF-7R	4	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
LABORATORY DUPLICATE ANALYSIS (cont.)						
MF-8	4	<1.0	1.3	<1.0	<1.0	<10
MF-8R	4	<1.0	1.3	<1.0	<1.0	<10
MF-13	4	<1.0	<1.0	<1.0	<1.0	<10
MF-13R	4	<1.0	<1.0	<1.0	<1.0	<10
FIELD DUPLICATE ANALYSIS						
FP-W4	6	<1.0	<1.0	<1.0	<1.0	<10
FP-W4D	6	<1.0	<1.0	<1.0	<1.0	<10
MAAF-H6W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-H6WD	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-J6	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-J6D	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-J8	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-J8D	4	<1.0	<1.0	<1.0	<1.0	<10
MAAF-J8W	6	<1.0	<1.0	<1.0	<1.0	<10
MAAF-J8WD	6	<1.0	<1.0	<1.0	<1.0	<10
MAAF-V8W	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-V8WD	8	<1.0	<1.0	<1.0	<1.0	<10
MAAF-WZ	4	<1.0	3.1	<1.0	<1.0	<10
MAAF-WZD	4	<1.0	2.0	<1.0	<1.0	<10
MF-3	4	<1.0	<1.0	<1.0	<1.0	11
MF-3D	4	<1.0	<1.0	<1.0	<1.0	12
MF-3W	8	<1.0	<1.0	<1.0	<1.0	<10
MF-3WD	8	<1.0	<1.0	<1.0	<1.0	<10
MF-17	4	<1.0	<1.0	<1.0	<1.0	<10
MF-17D	4	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

SAMPLE	DEPTH (FT.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT		1.0	1.0	1.0	1.0	10
LABORATORY BLANKS						
FP-1B	N/A	<1.0	<1.0	<1.0	<1.0	<10
FP-4B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-2B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-7B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-E5B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-E7B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-H9B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-K5B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-M6B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-M8B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-N7B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-N7WB	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-PZB	N/A	<1.0	<1.0	<1.0	<1.0	<10
MAAF-R3B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MF-3BB	N/A	<1.0	<1.0	<1.0	<1.0	<10
MF-7B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MF-8B	N/A	<1.0	<1.0	<1.0	<1.0	<10
MF-13B	N/A	<1.0	<1.0	<1.0	<1.0	<10

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

TABLE 2

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
WASH RACK RESERVOIR AND CELLS AREA											
SOIL GAS SAMPLES											
CR-C2-A	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-C2B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-C2A-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-C2B12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-D0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-D0-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-E0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-E0-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-F0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-H1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-H2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-H3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-H4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-H5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C2-9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C3-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C4-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C5-11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C6-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C7-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C8-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane
CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene
t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
WR-DQ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-E6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-E6-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-EQ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-EQ-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-FQ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-FQ-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H1-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H2-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H3-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H4-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H5-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H6-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WATER SAMPLES											
WR-C1W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-DQW	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FIELD CONTROL SAMPLES											
CR-1B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-2B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-3B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-4B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane
CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene
t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
FIELD CONTROL SAMPLES (cont.)											
WR-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EQUIPMENT RINSEATE BLANKS											
WR-1W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LABORATORY DUPLICATE ANALYSIS											
CR-C2B12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-C2B12R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-H5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-H5R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C2-9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C2-9R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C6R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H3-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H3-12R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H4-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H4-12R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane
CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene
t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
FIELD DUPLICATE ANALYSIS											
WR-C4-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C4-12D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-FQ-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-FQ-12D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H8D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LABORATORY BLANKS											
CR-C2B12B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CR-H5B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-3B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C2-9B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-C6B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H3-12B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WR-H4-12B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane
CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene
t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
EAST POND AREA											
SOIL GAS SAMPLES											
EP-A1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A1-10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A2-9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A3-10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A4-9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A6-4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A6-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A7-4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A7-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A8-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A9-9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A10-8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A12-4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A12-11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A13-4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A14-4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A14-8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-B1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-B2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-C1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-C1-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane
CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene
t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
EP-C2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-C2-8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-C4	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-C4-9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-D1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-D1-11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-D2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-D2-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-E3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-E3-8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-E4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-E4-8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-EQ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-EQ-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-F1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-F2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-F4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-H2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-H2-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-H3	<1.0	<1.0	<1.0	1.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-H3-8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FIELD CONTROL SAMPLES											
EP-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane

CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene

t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LABORATORY DUPLICATE ANALYSIS											
EP-A4-9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A4-9R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A6-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A6-12R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A13-4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A13-4R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-B2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-B2R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-C2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-C2R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-E3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-E3R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-E4-8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-E4-8R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FIELD DUPLICATE ANALYSIS											
EP-A9-9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A9-9D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-C4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-C4D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane
CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene
t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LABORATORY BLANKS											
EP-A4-9B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A6-12B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-A13-4B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-B2B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-C2B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-E3B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EP-E4-8B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane

CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene

t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
WEST POND AREA											
SOIL GAS SAMPLES											
WP-B1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-B1-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-B2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-B2-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-BQ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-BQ-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-C2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-C2-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-CQ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-CQ-10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-D1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-D1-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-D2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-D2-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-DQ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-DQ-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FIELD CONTROL SAMPLES											
WP-5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LABORATORY DUPLICATE ANALYSIS											
WP-5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-5R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-C2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-C2R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane
CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene
t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
FIELD DUPLICATE ANALYSIS											
WP-CQ-10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-CQ-10D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-D2-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-D2-12D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LABORATORY BLANKS											
WP-5B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WP-C2B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane
CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene
t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
BUILDING 1301 AREA											
SOIL GAS SAMPLES											
CF1301-C1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-C4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-D2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-D3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-E2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-E3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-F1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-F4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-F5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-H4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FIELD CONTROL SAMPLES											
CF1301-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LABORATORY DUPLICATE ANALYSIS											
CF1301-C1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-C1R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FIELD DUPLICATE ANALYSIS											
CF1301-C4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-C4D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LABORATORY BL;ANKS											
CF1301-C1B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane

CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene

t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
BUILDING 1605 AREA											
SOIL GAS SAMPLES											
1605-NY	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1605-P9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1605-RY	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1605-WY	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1605-WZ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-K9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-KX	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-KZ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-MZ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-N9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-NX	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-PZ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-R9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-RX	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-RZ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WATER SAMPLES											
1605-NYW	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1605-P9W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1605-R9W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1605-RYW	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1605-WYW	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1605-WZW	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FIELD CONTROL SAMPLES											
1605-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1605-2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane
CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene
t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
EQUIPMENT RINSEATE BLANKS											
1605-1W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1605-2W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1605-3W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LABORATORY DUPLICATE ANALYSIS											
1605-RY	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1605-RYR	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-PZ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-PZR	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FIELD DUPLICATE ANALYSIS											
1605-P9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1605-P9D	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-R9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-R9D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LABORATORY BLANKS											
1605-RYB	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CF1301-PZB	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane

CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene

t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
FORMER FIRE TRAINING PIT											
SOIL GAS SAMPLES											
MAAF-B6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-D6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-D8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-E5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-E7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-E9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-F4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-F6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-F7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-F8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-FZ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-H5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-H6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-H7	<1.0	<1.0	<1.0	<1.0	21	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-H8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.8
MAAF-H9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.6
MAAF-HQ4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-J4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-J6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-J7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.7
MAAF-J8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	29
MAAF-JZ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	9.7
MAAF-K5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-K7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	9.3
MAAF-K9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	50
MAAF-M6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2
MAAF-M8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	9.3
MAAF-M14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.0
MAAF-N2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.5

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane
CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene
t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
MAAF-N7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	16
MAAF-NY	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.5
MAAF-P9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.6
MAAF-PX	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.8
MAAF-PZ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9
MAAF-R3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-R8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-R9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-V8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-W4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-WZ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.9
MF-2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.0
MF-3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6.2	<1.0	44
MF-4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	9.4
MF-6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-18	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane

CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene

t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
WATER SAMPLES											
FP-E5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FP-H7	<1.0	<1.0	<1.0	<1.0	375	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FP-J6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FP-M1	<1.0	<1.0	<1.0	<1.0	39	<1.0	<1.0	<1.0	<1.0	<1.0	6.5
FP-M8	<1.0	<1.0	<1.0	<1.0	13	<1.0	<1.0	<1.0	1.6	<1.0	78
FP-N2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	7.3
FP-N7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FP-PZ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.4
FP-V8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FP-W4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-B6W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-D6W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-D8W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-E5W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-E7W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-E9W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-F4W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-F6W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-F7W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-F8W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-FZW	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-H5W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-H6W	<1.0	<1.0	<1.0	<1.0	4.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-H7W	<1.0	<1.0	<1.0	<1.0	725	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-H8W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.6
MAAF-H9W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.6
MAAF-HQW	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-J4W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-J6W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-J7W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.4

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane
CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene
t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
MAAF-J8W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	51
MAAF-JZW	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6.7
MAAF-K5W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-K7W	<1.0	<1.0	<1.0	<1.0	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	56
MAAF-K9W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	46
MAAF-M6W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	8.6
MAAF-M8W	<1.0	<1.0	<1.0	<1.0	32	<1.0	<1.0	<1.0	2.5	<1.0	160
MAAF-MIW	<1.0	<1.0	<1.0	<1.0	129	<1.0	<1.0	<1.0	1.3	<1.0	17
MAAF-N2W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	24
MAAF-N7W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	10
MAAF-NYW	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	13
MAAF-P9W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.8
MAAF-PXW	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.0
MAAF-PZW	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.0
MAAF-R3W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-R8W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-R9W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-V8W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-W4W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-WZW	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-1W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	41
MF-2W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.3
MF-3W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6.2
MF-4W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-5W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	7.0
MF-6W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-7W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2
MF-8W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-9W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-10W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane

CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene

t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
MF-11W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-12W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-13W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-14W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-15W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-16W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-17W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-18W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-J6W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FIELD CONTROL SAMPLES											
MAAF-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-1B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-2B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-3B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EQUIPMENT RINSEATE BLANKS											
FP-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FP-4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-1W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-2W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-3W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-4W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-5W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane
CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene
t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
EQUIPMENT RINSEATE BLANKS (cont.)											
MAAF-6W	<1.0	<1.0	2.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-7W	<1.0	<1.0	2.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-1WB	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-2WB	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-3BW	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LABORATORY DUPLICATE ANALYSIS											
FP-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FP-1R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FP-4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FP-4R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-2R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-7R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-E5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-E5R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-E7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-E7R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-H9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.6
MAAF-H9R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.3
MAAF-M6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2
MAAF-M6R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2
MAAF-M8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	9.3
MAAF-M8R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	8.9

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane
CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene
t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LABORATORY DUPLICATE ANALYSIS (cont.)											
MAAF-N7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	16
MAAF-N7R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	15
MAAF-PZ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9
MAAF-PZR	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.7
MF-3B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-3BR	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-7R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-8R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-13R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FIELD DUPLICATE ANALYSIS											
FP-W4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FP-W4D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-H6W	<1.0	<1.0	<1.0	<1.0	4.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-H6WD	<1.0	<1.0	<1.0	<1.0	5.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-J6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-J6D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-J8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	29
MAAF-J8D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	9.4
MAAF-J8W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	51
MAAF-J8WD	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	44

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane

CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene

t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
FIELD DUPLICATE ANALYSIS (cont.)											
MAAF-V8W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-V8WD	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-WZ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-WZD	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6.2	<1.0	44
MF-3D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6.2	<1.0	44
MF-3W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6.2
MF-3WD	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	8.4
MF-17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-17D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LABORATORY BLANKS											
FP-1B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FP-4B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-2B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-7B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-E5B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-E7B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-H9B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-K5B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-M6B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-M8B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-N7B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-N7WB	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-PZB	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MAAF-R3B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-3BB	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane
CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene
t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LABORATORY BLANKS (cont.)											
MF-7B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-8B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MF-13B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane

CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene

t12DCE = trans-1,2-dichloroethene
CHCl3 = chloroform
TCE = trichloroethene

APPENDIX A

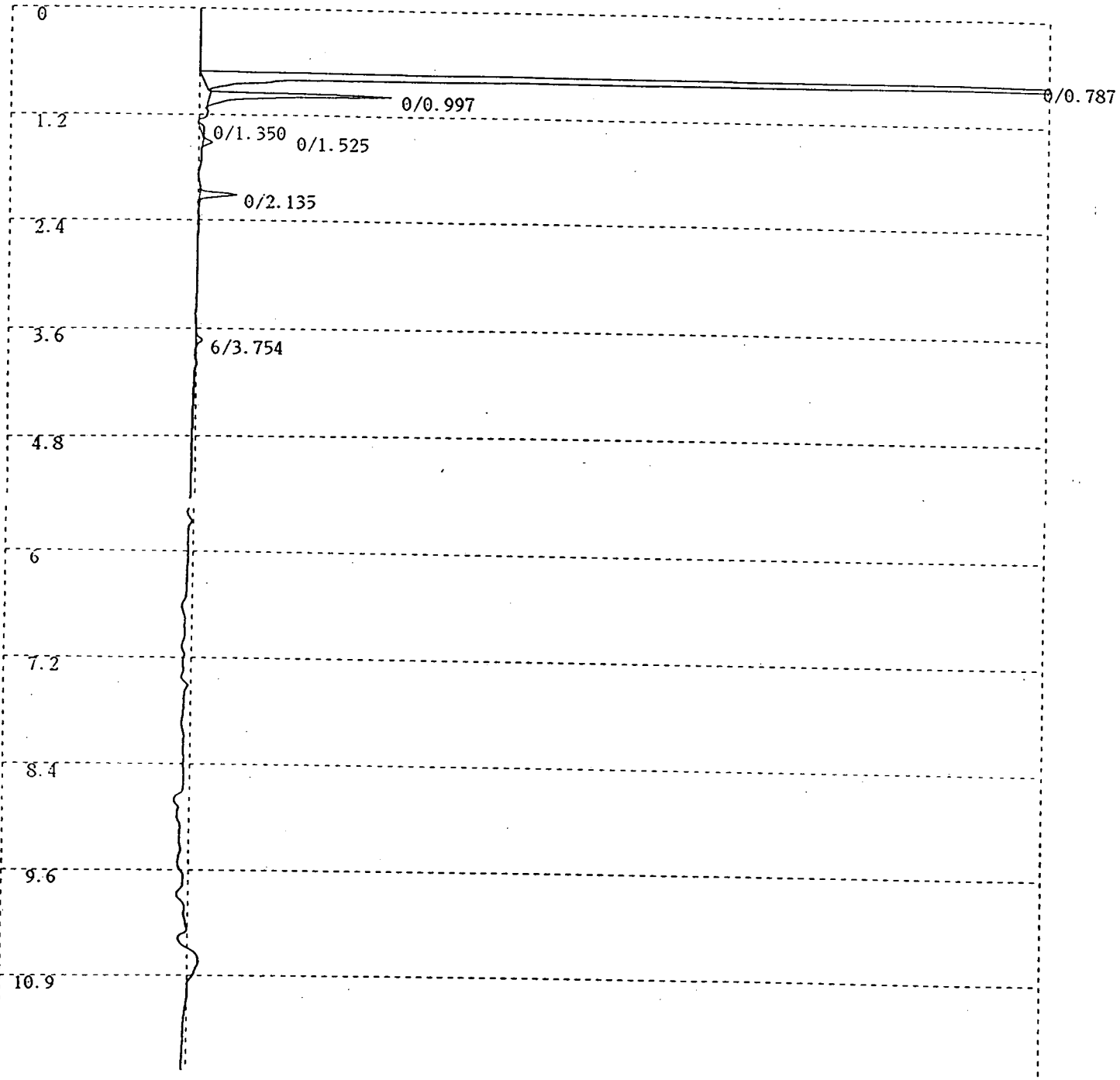
SOIL GAS AND GROUNDWATER SCREENING CHROMATOGRAPHS

C-R4A CHROMATOPAC CH=2 REPORT No.=54 CHROMATOGRAM=1:LBR2AE.C3( ) 93/09/20 14:16:54

Analysis File : 1:@FILE2

(ECD) SLBR2-A CF1301 - R9

ATTN: 6 (ECD RANGE=0, 800 UL)



053

** CALCULATION

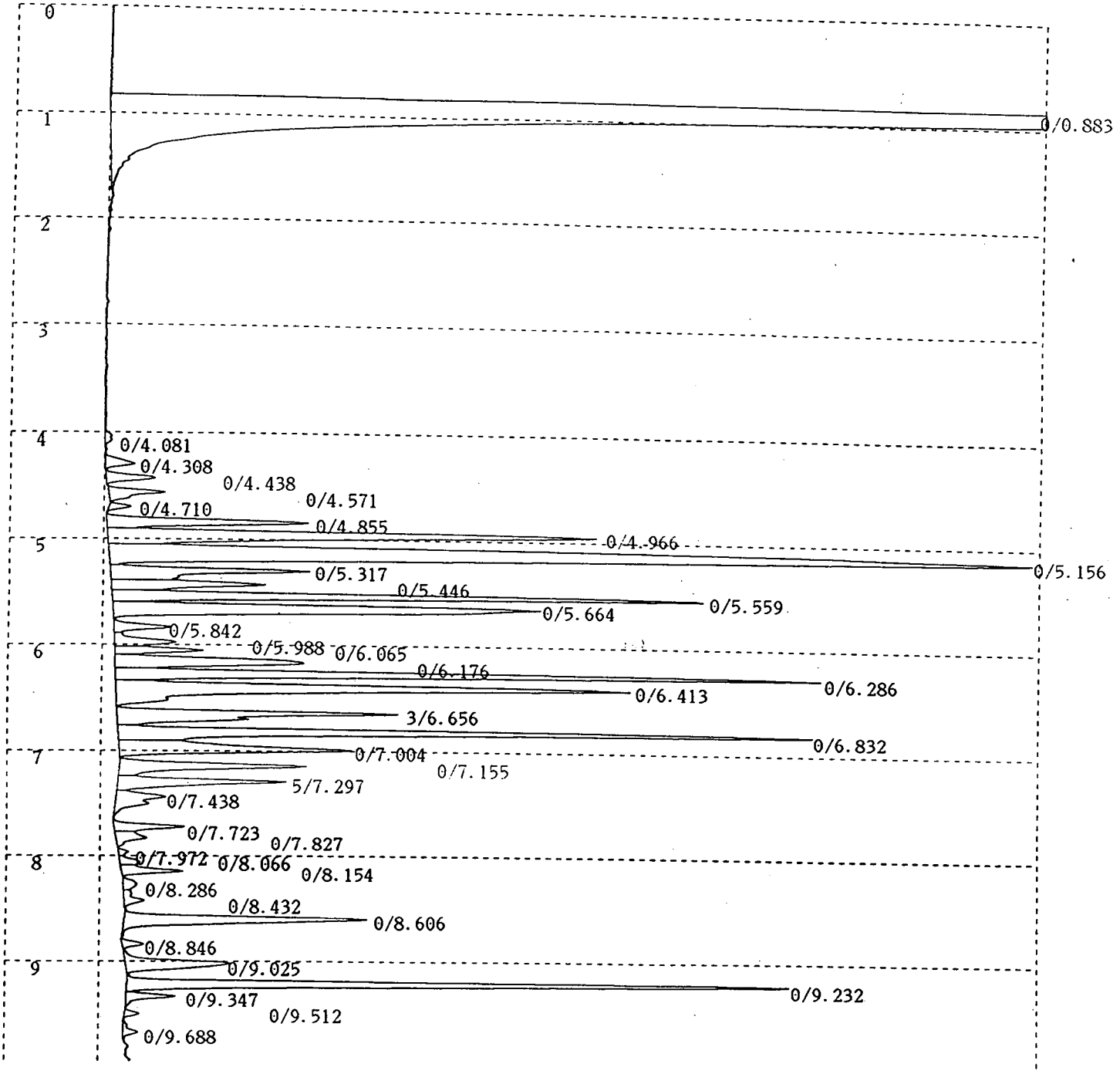
TOTAL 718510 308978 -1.3649

C-R4A CHROMATOPAC CH=1 REPORT No.=53 CHROMATOGRAM=1:LBR2AF.C34 93/09/20 14:16:52

Analysis File : FILE-1

(FID) SLBR2-A CF1301-R9

ATTN: 1 (RANGE=1, 800uL)



052

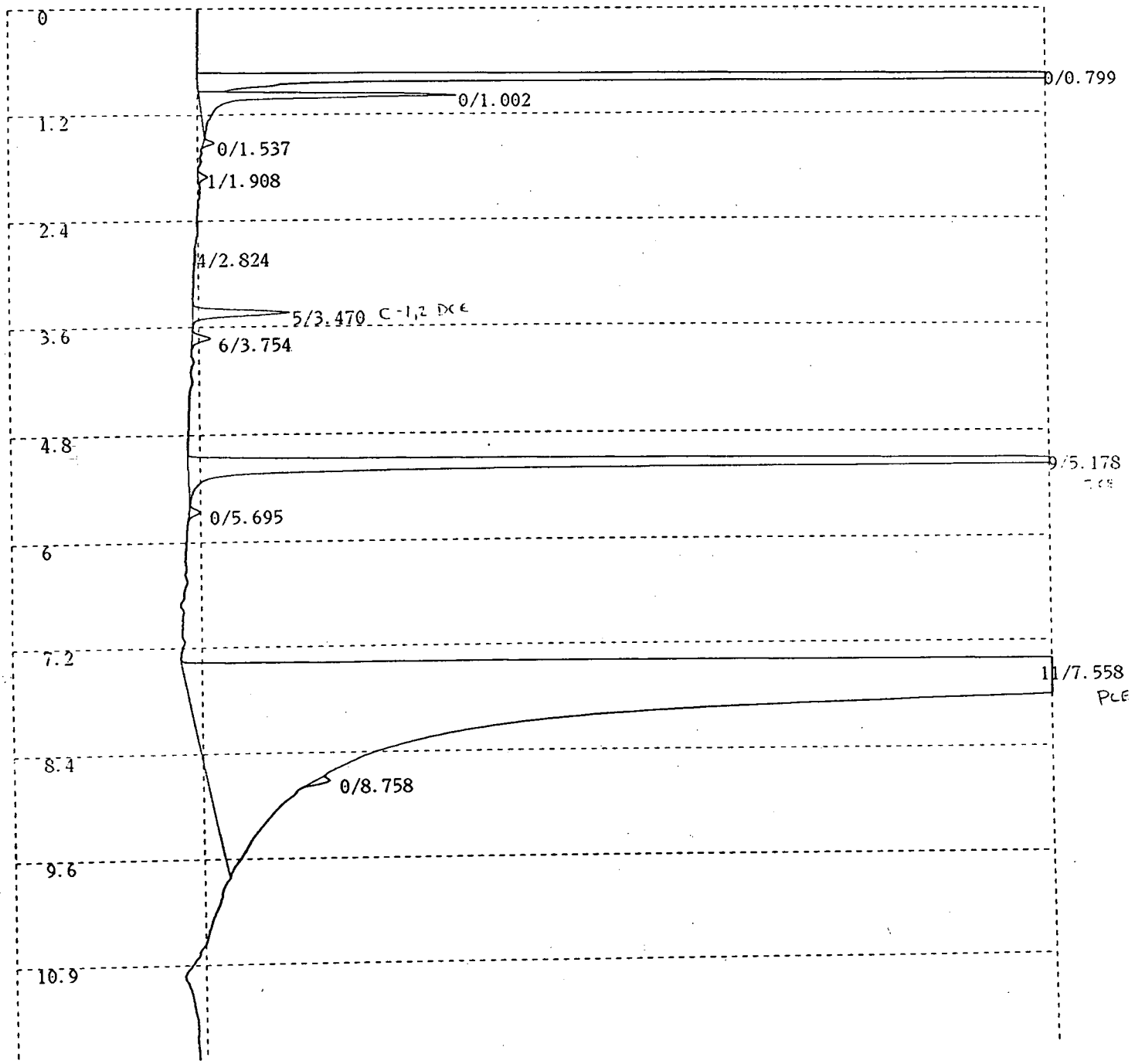
TOTAL 5097 2093 0

C-R4A CHROMATOPAC CH=2 REPORT No.=87 CHROMATOGRAM=2:LBR2DE.C28 93/09/23 10:56:24

Analysis File : 1:@FILE2.

(ECD) SLBR2-D MAAF-M8W

ATTN: 6 (ECD RANGE=0, 800 UL)



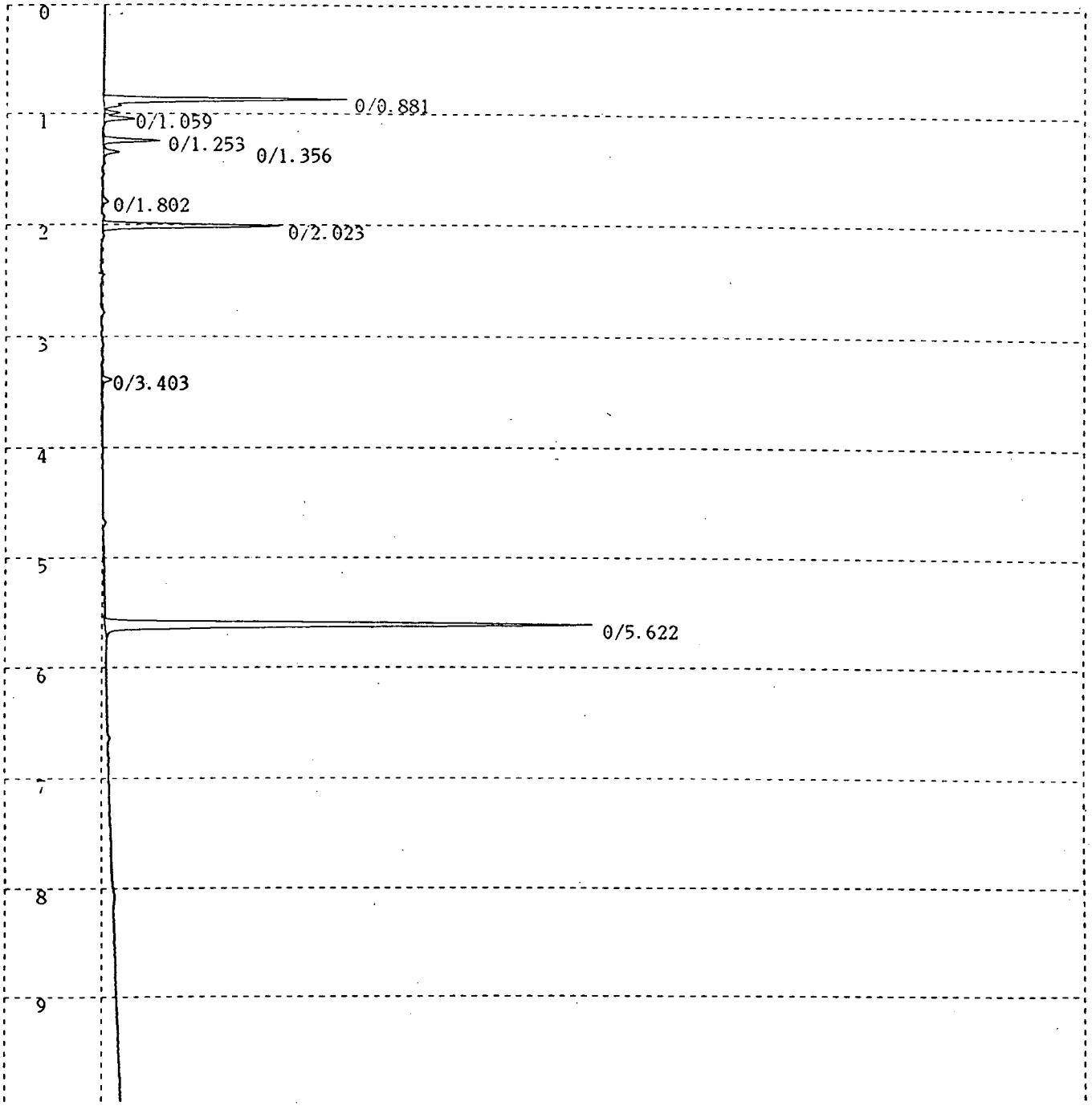
TOTAL 1091218 582272 0.3019

SAMPLE No. 18
C-R4A CHROMATOPAC CH=1 REPORT No.=81 CHROMATOGRAM=2:LBR2DF.C28 93/09/23 10:56:22

Analysis File : FILE-1

(FID) SLBR2-~~C~~ ND D - MAAF - M8W

ATTN: 1 (RANGE=1, 800uL)



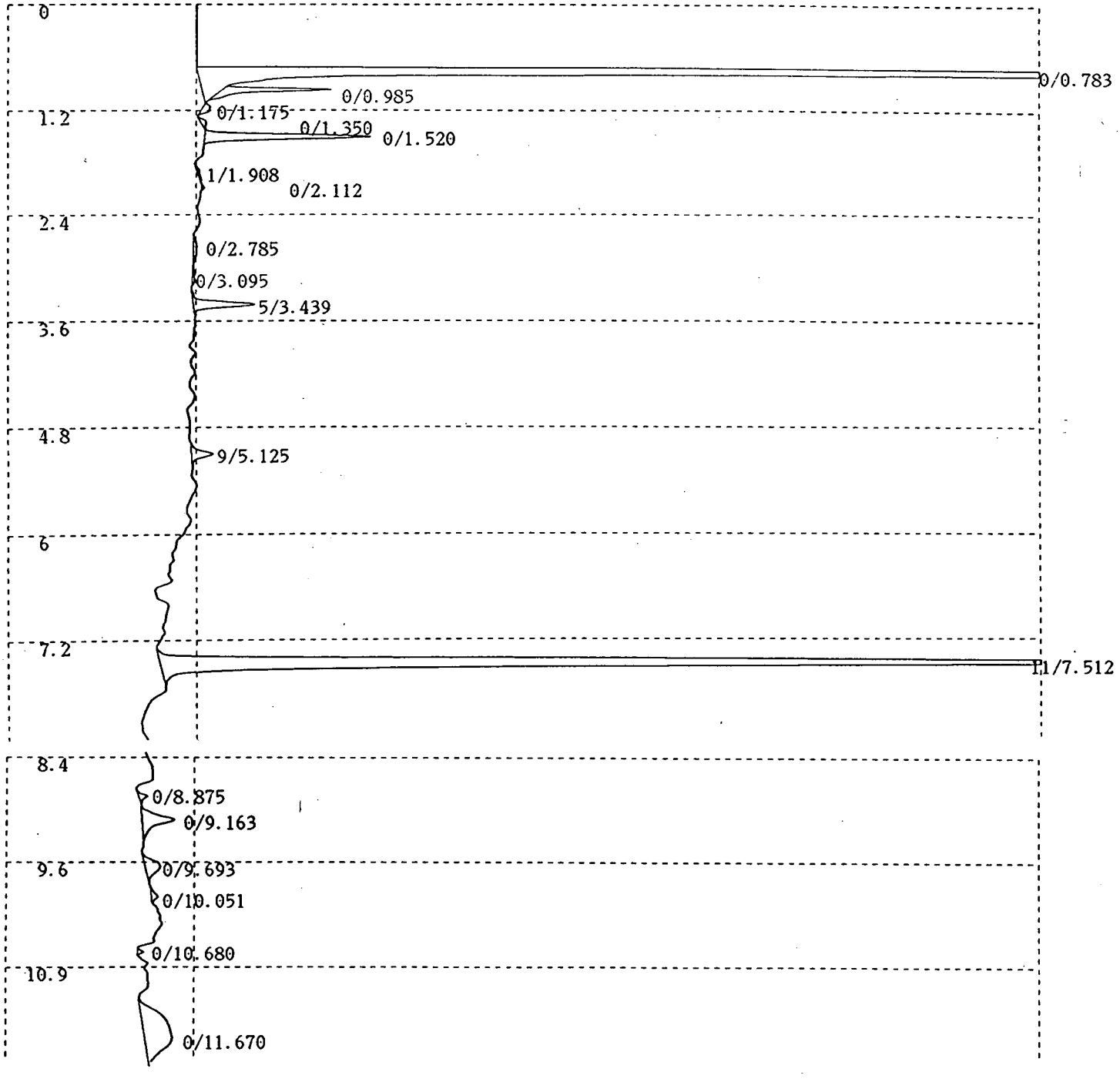
TOTAL	11538	2204	0

C-R4A CHROMATOPAC CH=2 REPORT No.=33 CHROMATOGRAM=1:LBR2CE.C37 93/09/22 13:33:29

Analysis File : 1:@FILE2.

(ECD) SLBR2-C MAAF -H7

ATTN: 6 (ECD RANGE=0, 800 UL)

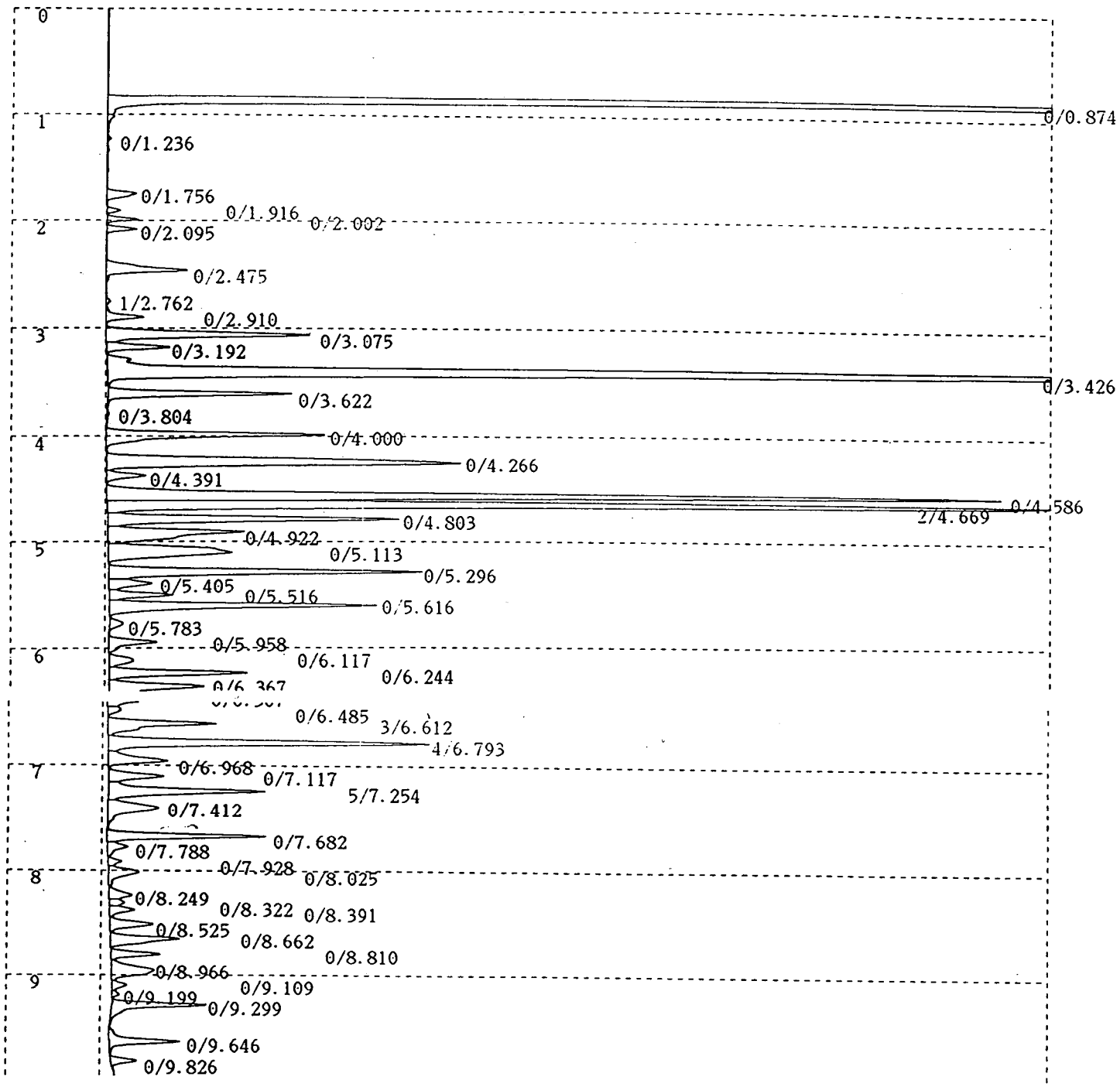


C-R4A CHROMATOPAC CH=1 REPORT No.=39 CHROMATOGRAM=2:LBR2CF.C37 93/09/22 13:33:27

Analysis File : FILE-1

(FID) SLBR2-C MAAF-H7

ATTN: 3 (RANGE=1, 800uL)

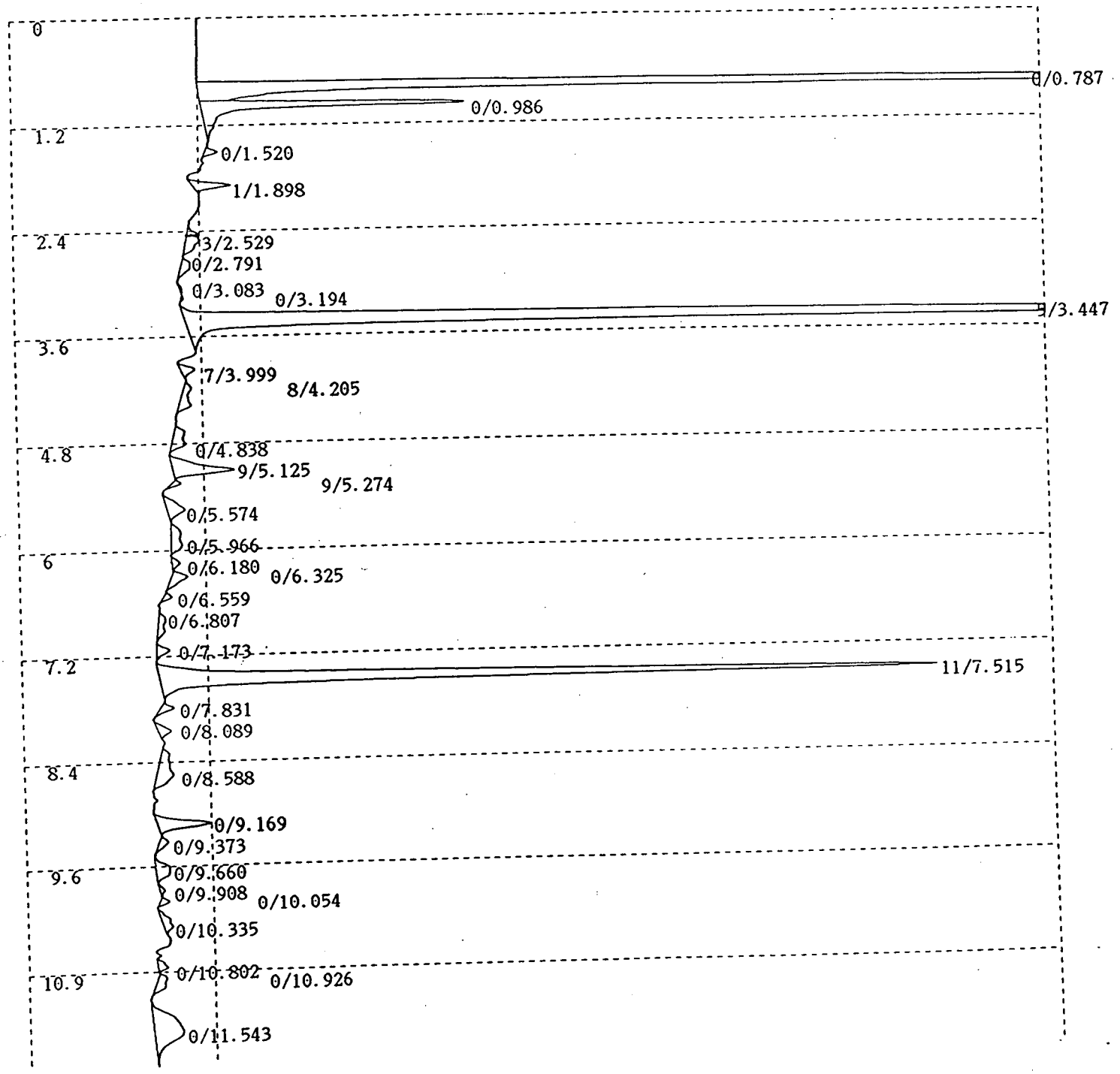


C-R4A CHROMATOPAC CH=2 REPORT No.=31 CHROMATOGRAM=1:LBR2CE 93/09/22 12:55:27

Analysis File : 1:@FILE2.

(ECD) SLBR2-C MAAF - H7W

ATTN: 6 (ECD RANGE=0, 800 UL)

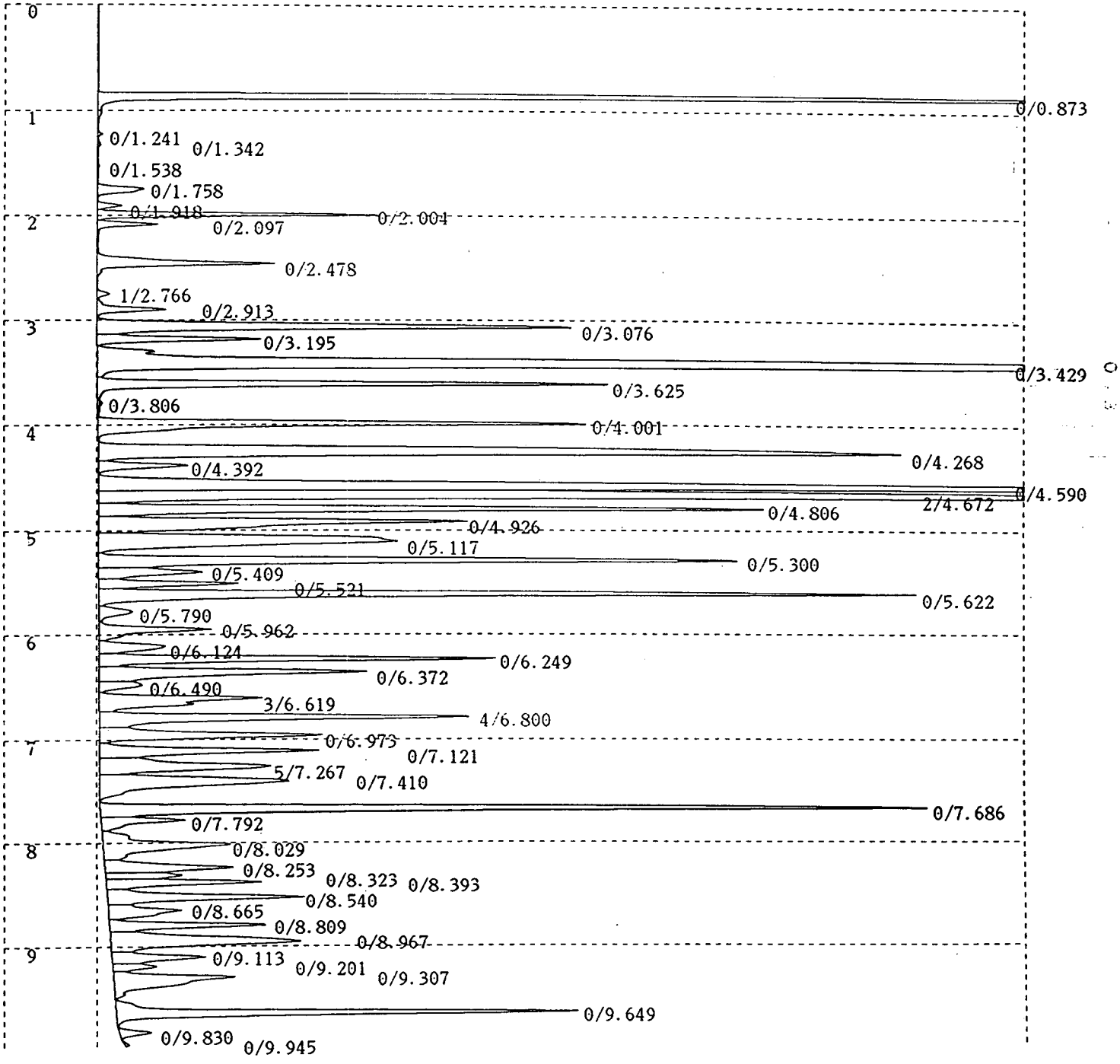


C-R4A CHROMATOPAC CH=1 REPORT No.=40 CHROMATOGRAM=2:LBR2CF.C35 93/09/22 12:55:25

Analysis File : FILE-1

(FID) SLBR2-C MAAF - H7W

ATTN: 5 (RANGE=1, 800uL)



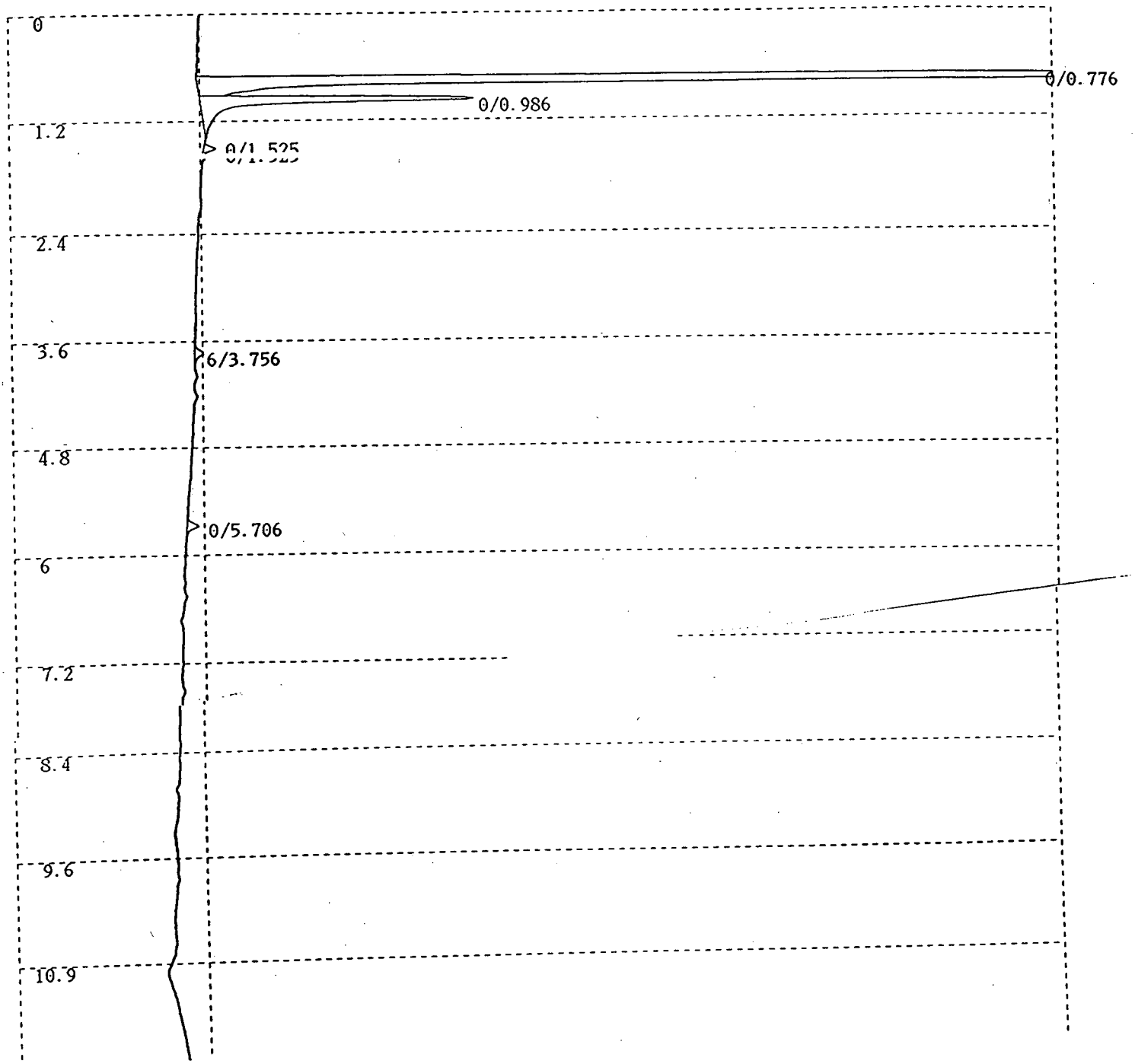
TOTAL 138 369 0

C-R4A CHROMATOPAC CH=2 RT No.=102 CHROMATOGRAM=2:LBR2BE 93/09/21 13:30:31

Analysis File : 1:@FILE2

(ECD) SLBR2-B MAAF-V8W

ATTN: 6 (ECD RANGE=0, 800 UL)

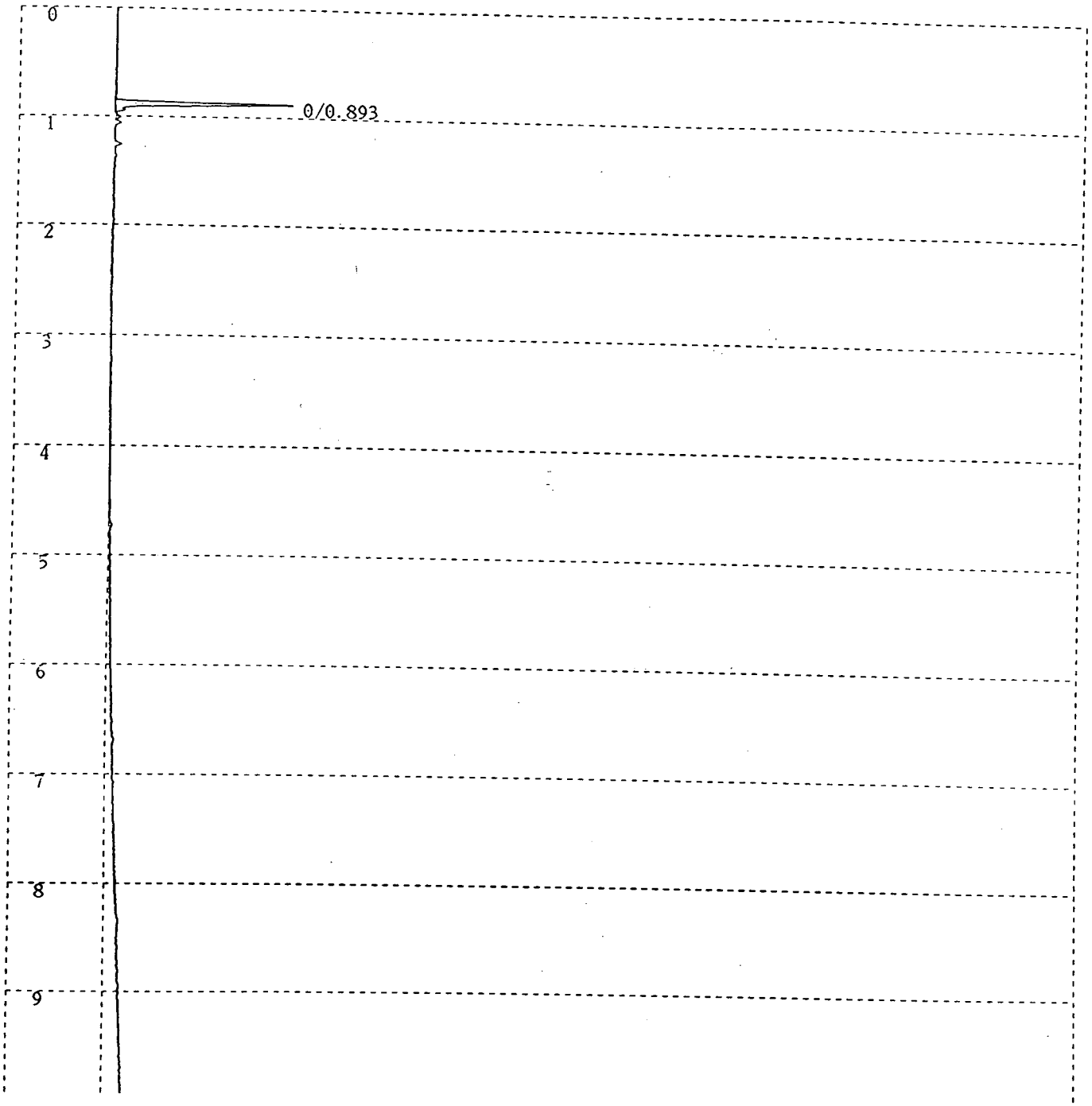


SAMPLE No. 25
C-R4A CHROMATOPAC CH=1 REPORT No.=101 CHROMATOGRAM=2:LBR2BF.C40 93/09/21 13:30:27

Analysis File : FILE-1

(FID) SLBR2-B MAAF-V8W

ATTN: 1 (RANGE=1, 800uL)



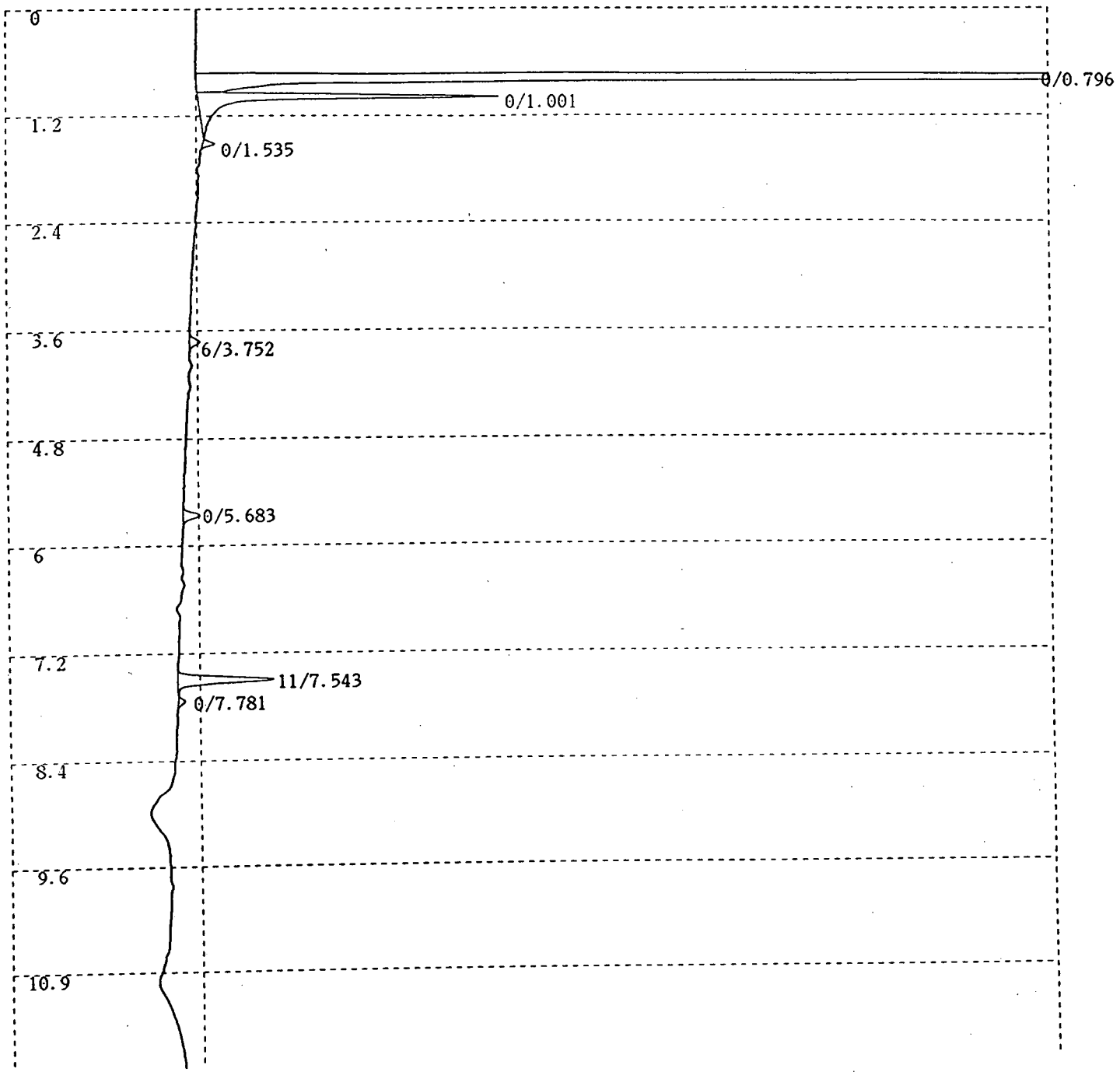
TOTAL 1473 664 0

C-R4A CHROMATOPAC CH=2 REPORT No.=83 CHROMATOGRAM=2:LBR2DE.C24 93/09/23 09:40:22

Analysis File : 1:@FILE2.

(ECD) SLBR2-D MAAF - EBW

ATTN: 6 (ECD RANGE=0, 800 UL)



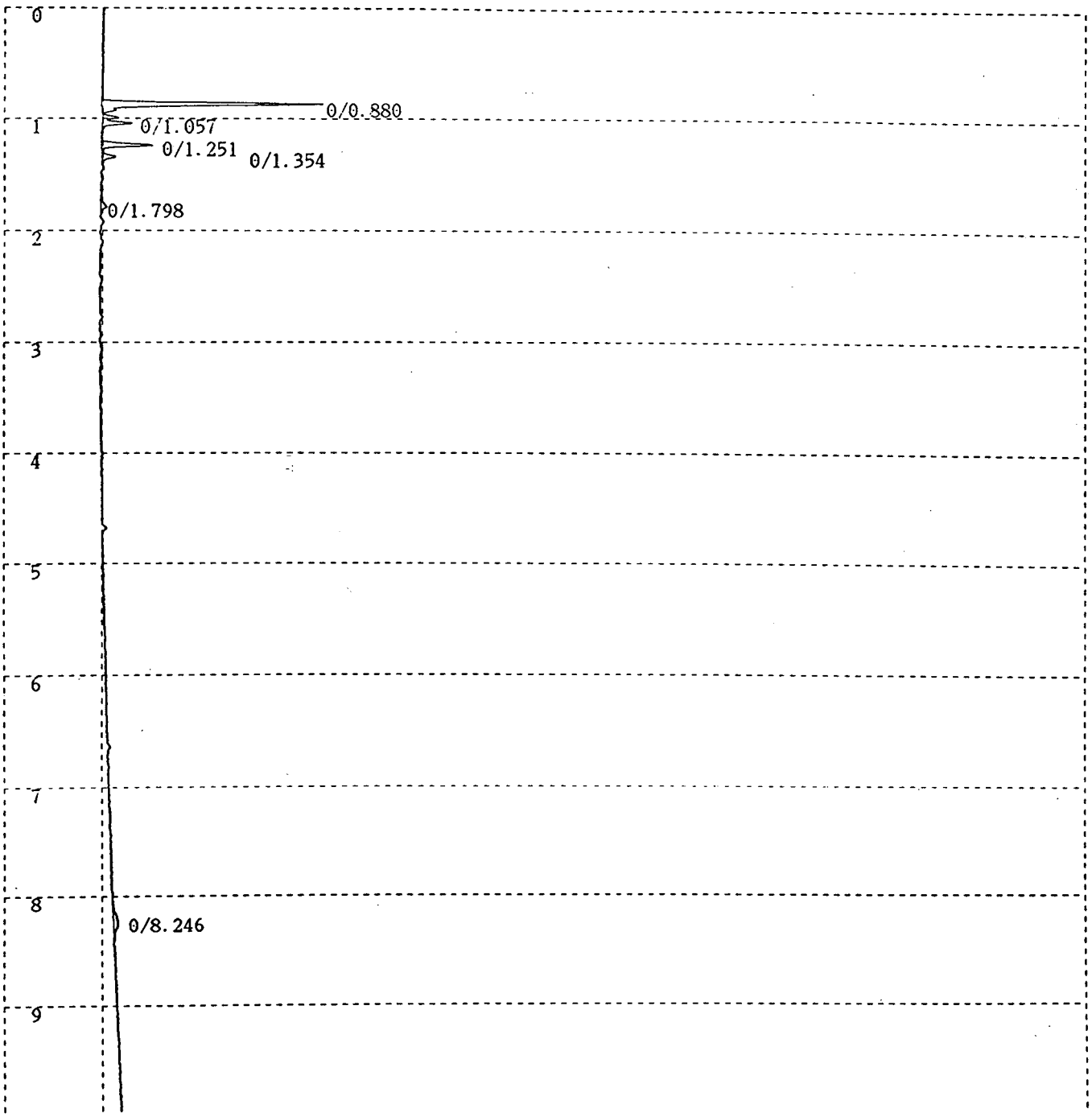
TOTAL 1356436 457733 0.5715

SAMPLE No. 14
C-R4A CHROMATOPAC CH=1 REPORT No.=77 CHROMATOGRAM=2:LBR2DF.C24 93/09/23 09:40:20

Analysis File : FILE-1

(FID) SLBR2-~~4~~ ND D- MAAF-ESW

ATTN: 1 (RANGE=1, 800uL)



ATTACHMENT B

BORING LOGS AND GROUNDWATER MONITOR WELL DATA

BORING LOG LEGEND

Clay: 

Silt: 

Shale: 

Limestone: 

Silty Sand: 

Sand: 

Gravel: 

Field Screening was performed with an HNu Meter

HTW DRILLING LOG

HOLE NO. SB2

SHEET 1 OF 3 SHEETS

1. COMPANY NAME: Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR: Layne Western -- Witchita, KS
3. PROJECT: High Priority Site Investigation , Fort Riley, KS	4. LOCATION: EOD Range, OB/OD area, Fort Riley,KS
5. NAME OF DRILLER: John Gornick	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile drill B-57
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4.25 x 8" Hollow Stem Auger; CME continuous core sampler	8. HOLE LOCATION: South of east pit
	9. SURFACE ELEVATION: 1185'(topo)
	10. DATE STARTED: 28 September 1993 / 11. DATE COMPLETED: 28 September 1993
12. OVERBURDEN THICKNESS: N.A.	15. DEPTH GROUNDWATER ENCOUNTERED: N.A.
13. DEPTH DRILLED INTO ROCK: N.A.	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMMENCED.
14. TOTAL DEPTH OF HOLE: 20.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		Priority Pollutant Metals	EPA 6020 ICP/MC EPA 8330 HPLC			

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X		Grouted	ED WIELAND

LITH	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1 2 3 4 5	Split Spoon **0 - 3'** Clay, dark yellowish brown, firm. **3 - 5'** Clay, dark yellowish brown, firm with fragments that are white, angular to subrounded.			OBOD-SB2-001 disturbed		Dry to 14.7'.

HTW DRILLING LOG

HOLE NO. SB2

SHEET 1 OF 3 SHEETS

1. COMPANY NAME Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR Layne Western – Witchita, KS
3. PROJECT High Priority Site Investigation , Fort Riley, KS	4. LOCATION EOD Range, OB/OD area, Fort Riley,KS
5. NAME OF DRILLER John Gornick	6. MANUFACTURER'S DESIGNATION OF DRILL Mobile drill B-57
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 4.25 x 8" Hollow Stem Auger CME continuous core sampler	8. HOLE LOCATION South of east pit
	9. SURFACE ELEVATION 1185'(topo)
	10. DATE STARTED 28 September 1993 / 11. DATE COMPLETED 28 September 1993
12. OVERBURDEN THICKNESS N.A.	15. DEPTH GROUNDWATER ENCOUNTERED N.A.
13. DEPTH DRILLED INTO ROCK N.A.	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMMENCED.
14. TOTAL DEPTH OF HOLE 20.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		Priority Pollutant Metals	EPA 6020 ICP/MC EPA 8330 HPLC			

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X		Grouted	ED WIELAND

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1 2 3 4 5	Split Spoon **0 - 3'** Clay, dark yellowish brown, firm. **3 - 5'** Clay, dark yellowish brown, firm with fragments that are white, angular to subrounded.			OBOD-SB2-001 disturbed		Dry to 14.7'.

HTW DRILLING LOG

HOLE NO. SB2

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Ed Wieland

SHEET 2 OF 3 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	6						
	7	Split Spoon					
	8	**5 - 8.5'** Clay, reddish brown, firm to hard.			OBOD-SB2-002 disturbed		
	9						
	10	**8.5 - 10'** Clay, yellowish red, and very hard, undisturbed.			OBOD-SB2-003 undisturbed		
	11	Split Spoon					
	12	**10 - 14.7'** Clay, yellowish red, firm to hard.					
	13						

HTW DRILLING LOG

HOLE NO. SB2

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Ed Wieland

SHEET 2 OF 3 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	6						
	7	Split Spoon			OBOD-SB2-002 disturbed		
	8	**5 - 8.5'** Clay, reddish brown, firm to hard.					
	9						
	10	**8.5 - 10'** Clay, yellowish red, and very hard, undisturbed.			OBOD-SB2-003 undisturbed		
	11						
	12	Split Spoon					
	13	**10 - 14.7'** Clay, yellowish red, firm to hard.					

HTW DRILLING LOG

HOLE NO. SB2

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Ed Wieland

SHEET 3 OF 3 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	14	Split Spoon **10 - 14.7'** (cont.) Clay, yellowish red, firm to hard.					
	15						14.7 - 20' moist.
	16						
	17	Split Spoon					
	18						
	19	**14.7 - 20'** Sand, medium-fine, with clay (5-10%), yellowish red, moist, soft. Lime-stone and shale fragments in clay, angular to subang-ular up to 2" diameter.					
	20						Stopped drilling. Total depth=20'.
	21						

HTW DRILLING LOG

HOLE NO. SB3

SHEET 1 OF 3 SHEETS

1. COMPANY NAME: Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR: Layne Western – Witchita, KS
3. PROJECT: High Priority Site Investigation , Fort Riley, KS	4. LOCATION: EOD Range, OB/OD area, Fort Riley,KS
5. NAME OF DRILLER	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile drill B-57
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4.25 x 8" Hollow Stem Auger; CME continuous core sampler	8. HOLE LOCATION: South of west pit. Approximately 125' east of SB2.
	9. SURFACE ELEVATION: 1185'(topo)
	10. DATE STARTED: 29 September 1993 — 11. DATE COMPLETED: 29 September 1993
12. OVERBURDEN THICKNESS: N.A.	15. DEPTH GROUNDWATER ENCOUNTERED: N.A.
13. DEPTH DRILLED INTO ROCK: N.A.	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMMENCED.
14. TOTAL DEPTH OF HOLE: 20.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		Priority Pollutant Metals	EPA 6020 ICP/MC EPA 8330 HPLC			

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X		Grouted	ED WIELAND Ed Wieland

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1 2 3 4 5	Split Spoon **0 - 4'** Clay, dark yellowish brown, firm, dry to slightly moist. Also scattered limestone fragments up to 0.5" diameter in the clay. **4 -7.7'** Clay, reddish brown, firm, with some gray shale streaks.	3.5 ppm 0.6 ppm		OBOD-SB3-001 disturbed OBOD-SB3-003 undisturbed (4.5 - 6.0')		0 - 20' dry.

HTW DRILLING LOG

HOLE NO. SB3

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Ed Wieland

SHEET 2 OF 3 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	6				OBOD-SB3-003 undisturbed (4.5 - 6.0')		
	7	**4 -7.7'** (cont.) Clay, reddish brown, firm, with some gray shale streaks. Split Spoon	0.6 ppm				
	8	**7.7 - 8.0'** Clay, silty, reddish brown, undisturbed.					
	9	**8.0 - 9.2'** Clay,reddish brown, firm.					
	10	**9.2 - 10'** Clay,reddish brown, firm, with small limestone granules.					
	11	Split Spoon					
	12	**10 - 15'** Clay, reddish brown, firm with small pieces of dark brown shale up to 0.5" diameter.			OBOD-SB3-003 undisturbed (12 - 13.5')		
	13		0.4 ppm				

HTW DRILLING LOG

HOLE NO. SB3

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Ed Wieland

SHEET 3 OF 3 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
		Locally fissile			OBOD-SB3-003 undisturbed (12 - 13.5')		
	14	Split Spoon **10 - 15'** (cont.) Clay, reddish brown, firm with small pieces of dark brown shale up to 0.5" diameter.	0.4 ppm				
	15						14.7 - 20' moist.
	16						
	17						
	18	Split Spoon **15 - 20'** Clay, reddish brown, firm with small pieces of dark brown shale up to 0.5" diameter. Locally contains limestone fragments, angular to subangular. 1-2" diameters.					
	19						
	20						Stopped drilling. Total depth=20'.
	21						

HTW DRILLING LOG

HOLE NO. SB4

SHEET 1 OF 3 SHEETS

1. COMPANY NAME: Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR: Layne Western – Witchita, KS
3. PROJECT: High Priority Site Investigation , Fort Riley, KS	4. LOCATION: EOD Range, OB/OD area, Fort Riley,KS
5. NAME OF DRILLER: John Gornick	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile drill B-57
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4.25 x 8" Hollow Stem Auger; CME continuous core sampler	8. HOLE LOCATION: North of East pit.
	9. SURFACE ELEVATION: 1193'(topo)
	10. DATE STARTED: 29 September 1993 — 11. DATE COMPLETED: 29 September 1993
12. OVERBURDEN THICKNESS: N.A.	15. DEPTH GROUNDWATER ENCOUNTERED: N.A.
13. DEPTH DRILLED INTO ROCK: N.A.	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMMENCED.
14. TOTAL DEPTH OF HOLE: 20.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		Priority Pollutant Metals	EPA 6020 ICP/MC EPA 8330 HPLC			

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X		Grouted	ED WIELAND Ed Wieland

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	0	**0'-1'** Clay. Dark brown organic matter, firm.					
	1	**1'-4'** Clay. Reddish brown with white fragments, dry.					0'-15'Dry.
Split Spoon	2				OBOD-SB4-001 (2'-5')		
	3						
	4	**4'-6'** Clay. Reddish brown with white fragments, dry.					
	5						

HTW DRILLING LOG

HOLE NO. SB4

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Ed Wieland

SHEET 2 OF 3 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
		4'-6' Clay. Cont.			OBOD-SB4-002 disturbed (5'-6')		
	6	**6'-8'** Clay. Reddish brown with angular white fragments, dry. At 6', 30% less fragments. Appears undisturbed below 6'.					
	7						
	8	**8'-10'** Clay. As above with less fragments, firm, dry.					
	9						
	10	**10 - 15'** Clay. Reddish brown, firm limestone fragments throughout.					Recovered 4'.
	11						
	12				OBOD-SB4-003 undisturbed (12'-13.5')		
	13						

Split Spoon

Split Spoon

HTW DRILLING LOG

HOLE NO. SB4

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Ed Wieland

SHEET 3 OF 3 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	14	**10'-15'** Clay. (cont.) Split Spoon					
	15	**15'-20'** Clay. Light yellowish brown, soft to firm, slightly moist.					15'-20' Moist.
	16	Split Spoon					
	17						
	18						
	19						
	20	**20'** Total Depth.					20' Stopped drilling.
	21						

HTW DRILLING LOG

HOLE NO. SB5

SHEET 1 OF 3 SHEETS

1. COMPANY NAME Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR Layne Western – Witchita, KS
3. PROJECT High Priority Site Investigation , Fort Riley, KS	4. LOCATION EOD Range, OB/OD area, Fort Riley,KS
5. NAME OF DRILLER John Gornick	6. MANUFACTURER'S DESIGNATION OF DRILL Mobile drill B-57
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 4.25 x 8" Hollow Stem Auger CME continuous core sampler	8. HOLE LOCATION North of West pit.
	9. SURFACE ELEVATION 1194'(topo)
	10. DATE STARTED 29 September 1993 / 11. DATE COMPLETED 29 September 1993
12. OVERBURDEN THICKNESS N.A.	15. DEPTH GROUNDWATER ENCOUNTERED N.A.
13. DEPTH DRILLED INTO ROCK N.A.	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMMENCED.
14. TOTAL DEPTH OF HOLE 18.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		Priority Pollutant Metals	EPA 6020 ICP/MC EPA 8330 HPLC			

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X		Grouted	

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1	**0'-4'** Clay. Dark brown, silty, with limestone fragments. Well consolidated. Some organics.	0.1 ppm (0'-4')				Recovery 20".
	2	Split Spoon					
	3				OBOD-SB5-001 disturbed (3'-4')		
	4	**4'-8'** Clay. Dark gray, silty, with calcarcony nodules. Grading to clay, light brown, silty, with limestone fragments below.	0.1 ppm (4'-8')				Recovery 4'.
	5						

HTW DRILLING LOG

HOLE NO. SB5

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Mike Miles

SHEET 2 OF 3 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	6	**4'-8'** Clay. Cont.	0.2 ppm		OBOD-SB5-002 (5'-6')		
	7	Split Spoon					
	8	**8'-10'** Clay. Light brown, silty with calcareous shale and limestone fragments. Consolidated and undisturbed.	0.2 ppm				Recovery 2'.
	9				OBOD-SB5-003 (9'-10')		
	10	**10 - 14'** Clay. Light brown, silty, no fragments. Well consolidated.	0.1 ppm				
	11	Split Spoon					
	12						
	13						

HTW DRILLING LOG

HOLE NO. SB5

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Mike Miles

SHEET 3 OF 3 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	14	**10'-14'** Clay. Cont.					
		Split Spoon					
		14'-15' Silt, light gray, clayey with some very fine sand.					
	15	**15'-16'** Silt, reddish brown, clayey with some very fine sand and some limestonish fragments.					
	16	Split Spoon					
		16'-18' Clay, silty, olive green. No fragments. Well consolidated.					
	17						
	18	**18'** Total Depth.					18' Stopped drilling.
	19						
	20						
	21						

HTW DRILLING LOG

HOLE NO. SB6

SHEET 1 OF 3 SHEETS

1. COMPANY NAME: Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR: Layne Western – Witchita, KS
3. PROJECT: High Priority Site Investigation , Fort Riley, KS	4. LOCATION: EOD Range, OB/OD area, Fort Riley,KS
5. NAME OF DRILLER: John Gornick	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile drill B-57
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4.25 x 8" Hollow Stem Auger; CME continuous core sampler	8. HOLE LOCATION: Northeast of pit.
	9. SURFACE ELEVATION: 1185'(topo)
	10. DATE STARTED: 1 October 1993 — 11. DATE COMPLETED: 1 October 1993
12. OVERBURDEN THICKNESS: N.A.	15. DEPTH GROUNDWATER ENCOUNTERED: N.A.
13. DEPTH DRILLED INTO ROCK: N.A.	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMMENCED.
14. TOTAL DEPTH OF HOLE: 18.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		Priority Pollutant Metals	EPA 6020 ICP/MC EPA 8330 HPLC			

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X		Grouted	Stephen M. Keller

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1	**0'-2.4'** No Recovery.	0.1 ppm				0'-18' Dry.
	2	**2.4' 3.4'** Clay. (disturbed zone) Dry, moderately consolidated, abundant gravel fragments.					
	3	**3.4'-8.4'** Clay. (disturbed zone) Gravel fragments less than or equal to 1", clay moist, dark brown.			OBOD-SB6-001 (disturbed)		
	4						
	5						

Split Spoon

HTW DRILLING LOG

HOLE NO. SB6

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Steve Keller

SHEET 2 OF 3 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	6	**3.4'-8.4'** Cont.	0.2 ppm		Cont.		
	7	Split Spoon			OBOD-SB6-001 disturbed (4.5'-8')		
	8	**8.4'-9.5'** Weathered shale. (undisturbed) Poorly indurated, semi-plastic, partings contain white powdery carbonate mineral. Dry and overall color medium yellow-green.	0.1 ppm (9.5'-13.5')				8' Undisturbed. Dy.
	9						
	10	**9.5'-10.7'** No Recovery.					
	11	**10.7'-13.5'** Silt. Medium yellow-green, well sorted, dry, poorly indurated. Grades downward to unlaminated clay with some blocky fracturing, minor orange oxidation mottles, dry.					Dry.
	12	Split Spoon			OBOD SB6-002 (11.5'-12.5')		
	13						

HTW DRILLING LOG

HOLE NO. SB6

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Steve Keller

SHEET 3 OF 3 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	14	**10.7'-13.5'** Silt Continued. Split Spoon	0.1 ppm (13.5'-18')				
	15	**13.5'-15.5'** Siltstone. Highlyindurated medium gray-green, well sorted siltstone, calcareous, one possible shell fragment. Trace coarse-grained calcite crystals. Dry, "pops" in fingers, calcareous.					
	16	**15.5'-18'** No Recovery. Split Spoon					
	17						
	18	**18'** Total Depth.					18' Stopped drilling.
	19						
	20						
	21						

HTW DRILLING LOG

HOLE NO. SB7

SHEET 1 OF 2 SHEETS

1. COMPANY NAME: Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR: Layne Western – Witchita, KS
3. PROJECT: High Priority Site Investigation , Fort Riley, KS	4. LOCATION: EOD Range, OB/OD area, Fort Riley,KS
5. NAME OF DRILLER: John Gornick	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile drill B-57
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4.25 x 8" Hollow Stem Auger; CME continuous core sampler	8. HOLE LOCATION: North of pit.
	9. SURFACE ELEVATION: 1190'(topo)
	10. DATE STARTED: 2 October 1993 — 11. DATE COMPLETED: 2 October 1993
12. OVERBURDEN THICKNESS: N.A.	15. DEPTH GROUNDWATER ENCOUNTERED: N.A.
13. DEPTH DRILLED INTO ROCK: N.A.	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMMENCED.
14. TOTAL DEPTH OF HOLE: 9.5'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		Priority Pollutant Metals	EPA 6020 ICP/MC EPA 8330 HPLC			

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X		Grouted	Stephen M. Keller

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1	**0'-0.5'** Soil black, moist, organic clayey soil.	0.2 ppm (0'-4.5')				Moist.
	2	**0.5'-3'** Clay. Medium brown, platic, moist, disturbed zone material, minor angular granules and pebbles.			OBOD SB7-001 (1'-3')		
	3	**3'-4.5'** Clay. Highly disturbed, moist, plastic, with abundant angular granules and pebbles.					
	4						Disturbed soils.
	5	**4.5'- 4.7'** Clay. (same as 0.5'-3') **4.7'-6.1'** Clay. Continued on next page.	0.2 ppm (4.5'-9.5')		OBOD-SB7-002 (4.5'-5.5')		

Split Spoon

HTW DRILLING LOG

HOLE NO. SB7

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller

SHEET 2 OF 2 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	6	**4.7'-6.1'** Clay Cont. Intercalated light brown and olive-yellow, fissile, minor silt content. Blocky, nearly dry.			(cont.) SB7-002		5' Undisturbed Soils, nearly dry.
	7	**6.1'-9.5'** Clayey Silt. Light yellow-green, highly fissile, ochre oxidation patches, dry, highly laminated, weakly indurated, with trace black fracture coatings.					6' Intercalated because horizontal color layering is not necessarily stratigraphic bedding.
	8	Split Spoon			OBOD SB7-003 (8.5'-9.5)		
	9	**9.5'** Total Depth.					9.5' Stopped Drilling.
	10						
	11						
	12						
	13						

HTW DRILLING LOG

1. COMPANY NAME Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR Layne Western -- Witchita, KS	HOLE NO. SB8 SHEET 1 OF 1 SHEETS
3. PROJECT High Priority Site Investigation , Fort Riley, KS	4. LOCATION EOD Range, OB/OD area, Fort Riley,KS	
5. NAME OF DRILLER John Gornick	6. MANUFACTURER'S DESIGNATION OF DRILL Mobile drill B-57	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 4.25 x 8" Hollow Stem Auger CME continuous core sampler	8. HOLE LOCATION Southeast of pit.	
	9. SURFACE ELEVATION 1180'(topo)	
	10. DATE STARTED 2 October 1993	11. DATE COMPLETED 2 October 1993
12. OVERBURDEN THICKNESS 4.5'	15. DEPTH GROUNDWATER ENCOUNTERED N.A.	
13. DEPTH DRILLED INTO ROCK 0.5'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMMENCED.	
14. TOTAL DEPTH OF HOLE 5'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		Priority Pollutant Metals	EPA 6020 ICP/MC EPA 8330 HPLC			

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X		Grouted	

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1	**0'-2.8'** Disturbed zone material. Medium to dark brown, moist, plastic, with minor angular limestone fragments. Sharp lower contact.	0.2 ppm (0'-4.5')				
	2	**2.8'-4.5'** Clay. (Undisturbed) Light gray-gree, moist, plastic, undisturbed, with minor silt content. Possibly weathered shale. Thin coarse-grained sand lens at approximately 4', approximately 0.5' thick. Abundant carbonaceous material 4'-4.5'.			OBOD SB8-001 (2'-3')		2' Disturbed soils. Moist.
	3				OBOD SB8-002 (3'-4')		3' Undisturbed. Moist.
	4		0.2 ppm (4.5'-9.5')				
	5	**5'** Total Depth.					5' Stopped Drilling.

Split Spoon

HTW DRILLING LOG

HOLE NO. OB-93-01

SHEET 1 OF 7 SHEETS

1. COMPANY NAME: Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR: Layne Western – Witchita, KS
3. PROJECT: High Priority Site Investigation , Fort Riley, KS	4. LOCATION: EOD Range, OB/OD area, Fort Riley,KS
5. NAME OF DRILLER: Randy Smith and Ed Roe	6. MANUFACTURER'S DESIGNATION OF DRILL: Acker Soil Max 90
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 8.25" by 12" augers O.D.; 18" spoons; Schram Rota Drill T66 OH; Dual tube drill using air and water	8. HOLE LOCATION: East Downgradient Well
	9. SURFACE ELEVATION: 1177 (topo)
	10. DATE STARTED: 25 September 1993 / 11. DATE COMPLETED: 27 September 1993
12. OVERBURDEN THICKNESS: 18'	15. DEPTH GROUNDWATER ENCOUNTERED: 35.0'
13. DEPTH DRILLED INTO ROCK: 33'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMMENCED: 21.9' at 15 minutes
14. TOTAL DEPTH OF HOLE: 51'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
N.A.						

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		ED WIELAND

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1	Split Spoon 3 - 5' Clay, silty low plasticity, reddish brown. 5YR/4/4.	0.1 ppm	N.A.	N.A.	5-5-4	First spoon -- no recovery.
	2						
	3						
	4						
	5						

HTW DRILLING LOG

HOLE NO. OB-93-01

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Ed Wieland

SHEET 2 OF 7 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	6	**5 -7'** Sand, with silt, some clay, reddish brown. Sand is fine, well-sorted, reddish brown to yellowish red. 5YR/5/8.	0.1 ppm				Slightly damp.
	7						
	8						
	9	Split Spoon					
	10	**8- 10'**		N.A.	N.A.	2-3-2	Second spoon recovered 4".
	11						
	12						
	13	**10 -13'** Sand, with silt, some clay, contains pieces of limestone, gray-white.	0.3 ppm				10-15 samples moist to wet.

HTW DRILLING LOG

HOLE NO. OB-93-01

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Ed Wieland

SHEET 3 OF 7 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	14	Split Spoon **13 -15'** Sand, fine to medium grade, yellow 10 YR/7/6 with chunks of limestone -- gray-white.		N.A.	N.A.	16-15-17	10-15 samples moist to wet. Third spoon recovered 18".
	15						
	16						15-20 samples moist to wet. Note: On 26 September 1993 at 08:35 water level 16.0' bgs -- draw down to 18 bs with bailing 6.5 gallons. At 09:20 water level was 16'.
	17	**15 -18'** Sand, fine to medium grade, yellow/white, with pebbles of limestone and other little fragments. Some clay as matrix.	0.4 ppm	N.A.	N.A.		Clay reacts with hydrochloric acid. Wet.
	18						
	19	Split Spoon **18 -20'** Limestone, weathered, olive 5Y/4/4.				50/4 refusal	Fourth spoon recovered 4". Reacts with hydrochloric acid.
	20						
		20.5' End of auger drilling. Begin dual tube drilling.					6" surface casing set to 20.5'. 78 gallons of water used in grout for setting surface casing.
	21						

HTW DRILLING LOG

HOLE NO. OB-93-01

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Ed Wieland

SHEET 4 OF 7 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	22	**22'-31'** Brownish gray shale. Interbedded clay lenses. Moderately consolidated. Not indurated.	0.1 ppm	N.A.	N.A.		Approximately 19 gallons used while dual tube drilling.
	23						
	24						
	25						
	26						
	27						
	28						
	29						

HTW DRILLING LOG

HOLE NO. OB-93-01

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Ed Wieland

SHEET 5 OF 7 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	30	Tannish gray shale. Moderately indurated.	0.1 ppm				
	31	Dark brownish gray shale with interbedded clay lenses.					
	32						
	33	Gray limestone.					Very hard to drill.
	34						
	35		0.1 ppm				Water.
	36						
	37						

HTW DRILLING LOG

HOLE NO. OB-93-01

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Ed Wieland

SHEET 6
OF 7 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	38	Black well indurated shale.	0.1 ppm				End of water. Hard to drill.
	39						
	40						
	41						
	42						
	43						
	44						
	45						

HTW DRILLING LOG

HOLE NO. OB-93-01

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Ed Wieland

SHEET 7 OF 7 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	46	Dark gray shale. Poorly indurated. Interbedded clay lenses.					Easy to drill.
	47						
	48						
	49						
	50						Total Depth = 50.8'. 108 gallons of water used in well construction. Approximately 50 gallons of water used while drilling.
		End of boring.	0.1 ppm				
	51						
	52						
	53						

LOUIS BERGER & ASSOCIATES, INC.

Client: U. S. Army Corps of Engineers Project No.: High Priority SI
Project: Ft. Riley High Priority SI Page: Page 1 of 1
Prepared by: Ed Wieland Date: 3-OCT-93
Checked by: _____ Date: _____

MONITORING WELL AS-BUILT DIAGRAM

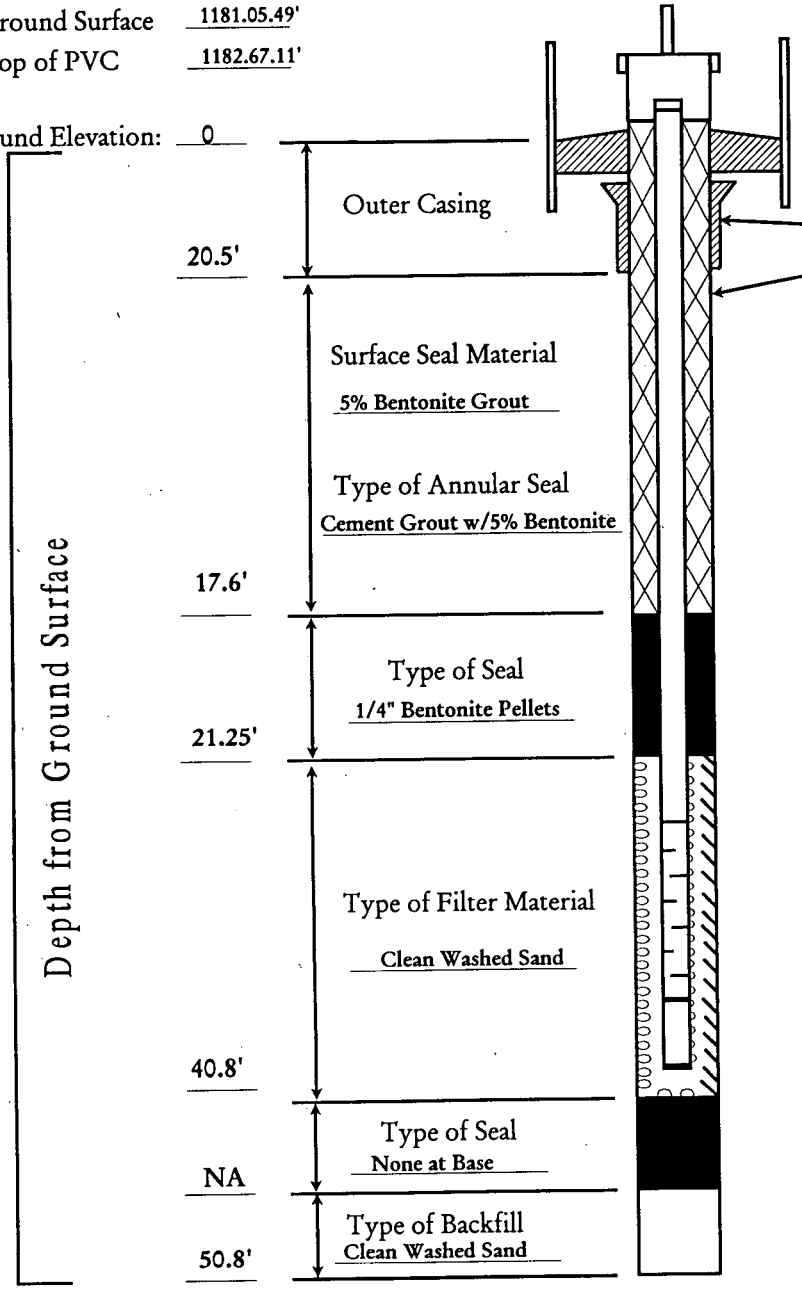
Driller: Layne Western
Drilling Method: 8.25"x8" augers, 18" spoon to refusal, air rotary dual tube to TD.

Well No.: OB-93-01
Date Installed: 28-SEP-93

Location: OB/OD Area

Elevations:
Ground Surface 1181.05.49'
Top of PVC 1182.67.11'

Ground Elevation: 0



SURFACE CASING:
Size: 6"
Material: Steel
Length: 20.5'

Drill Hole Diameter:
8" (0' - 20.5')
5.25" (20.5' - 50.8')

Riser:
Diameter: 2"
Material: PVC
Sch.: 40
Type of Joints: Flush Thread
Length: 25.8'

Screen:
Diameter: 2"
Material: PVC
Slot Size: 0.02
Length: 15'

Sump:
Length: 0.3'
Type of Cap: Threaded PVC

Centralizer: Used X
Not Used ____

Depth to Water From Top of Riser at Completion: 21.95'

Note: Not to Scale

Form: ftrly\mwdiagrm.prs

WELL SPECIFICATION FORM

CLIENT: Louis Berger & Associates, Inc.

JOB NUMBER: High Priority SI

WELL OWNER: Fort Riley & HQ 1st Division

ADDRESS:

CITY, STATE, ZIP CODE: Fort Riley, Kansas

PHONE: (913) 239-3343

WELL NUMBER OR OTHER IDENTIFICATION: OB-93-01

WELL INSTALLATION DATE: 28 September 1993

GEOLOGIST SUPERVISING INSTALLATION: Mike Miles (SAIC)

GROUND SURFACE ELEVATION (FT): 1181.05'

TOP OF CASING ELEVATION (FT): 1182.67'

WELL STICK-UP (FT): 2.0'

TOTAL BORING DEPTH (FT): 50.8'

BORING DIAMETER (IN): 0' TO 20.5' = 6", 20.5' TO 50.8' = 5.25"

TOTAL DEPTH OF OUTER CASING (FT): 20.5'

OUTER CASING MATERIAL: Steel

OUTER CASING DIAMETER (IN): 6"

TOTAL DEPTH OF INNER CASING (FT. EXCLUDING SCREEN): 25.8'

INNER CASING MATERIAL: PVC

INNER CASING DIAMETER (IN): 2"

TOTAL LENGTH OF WELL SCREEN (FT): 15'

WELL SCREEN MATERIAL: PVC

WELL SCREEN DIAMETER (FT): 0.167

SCREEN SLOT SIZE (IN): 0.020"

WELL SPECIFICATION FORM (Cont'd)

WELL NUMBER: OB-93-01

BACKFILL MATERIAL AROUND SCREEN: Clean Washed Silica Sand (10-20)

DEPTH RANGE OF BACKFILL (FT): 50.8 TO 21.25'

SEAL MATERIAL ABOVE SCREEN: 1/4" Bentonite Pellets

DEPTH RANGE OF SEAL (FT): 21.25' TO 17.6'

BACKFILL MATERIAL AROUND CASING: Cement Grout with 5% Bentonite Grout

DEPTH RANGE OF BACKFILL (FT): 17.6'

DESCRIPTION OF TOP SEAL: Cement grout topped by a 3' diameter pad and 8" of 3/4" gravel.

DESCRIPTION OF WELL COVER: 6" steel cover, embedded 2' into grout and concrete with secure locking cap.

OTHER ADDITIONAL INFORMATION: Backfilled hole with sand from 50.8' to 21.25' before setting well.

WELL DEVELOPMENT RECORD

CLIENT: Fort Riley - High Priority Sites JOB NO: High Priority SI

FIELD PERSONNEL: Mike Miles (SAIC), Ray Weakly and Randy Smith (Layne Western) SHEET: 1 OF: 1

1. WELL NUMBER: OB-93-01
2. DATE OF INSTALLATION: 27 September 1993
3. DATE OF DEVELOPMENT: 1 October 1993
4. STATIC WATER LEVEL: BEFORE DEVELOPMENT (FT): 23.4' 24 HOURS AFTER (FT):
5. QUANTITY OF WATER LOSS DURING DRILLING, IF USED (GAL): 50 gal.
6. QUANTITY OF STANDING WATER IN WELL AND ANNULUS BEFORE DEVELOPMENT (GAL): 8 gal.

7.		START	DURING		END
	PHYSICAL APPEARANCE	cloudy	clear	clear	clear
	SPECIFIC CONDUCTANCE (umhos/cm)	420	442	442	442
	TEMPERATURE (°C)	15.5	14.1	14.1	14.1
	pH (s.u.)	6.83	7.10	6.55	6.64
	TURBIDITY (NTU)	-	6.22	2.11	1.25

8. DEPTH FROM TOP OF WELL CASING TO BOTTOM OF WELL (FT): 49.4'
9. SCREEN LENGTH (FT): 15'
10. DEPTH TO TOP OF SEDIMENT: BEFORE DEVELOPMENT (FT): 42.1' AFTER DEVELOPMENT (FT):
11. TYPE AND SIZE OF WELL DEVELOPMENT EQUIPMENT: 1 7/8" Surge block, 1 1/2" x 3 ' bailer, and 2" Grundfos Pump.
12. DESCRIPTION OF SURGE TECHNIQUE, IF USED: Surge, bail, and pump.
13. HEIGHT OF WELL CASING ABOVE GROUND SURFACE (FT): 1.8
14. QUANTITY OF WATER REMOVED (GAL): 1100 gal TIME OF REMOVAL (HR:MIN): 4:05

HTW DRILLING LOG

HOLE NO. OB-93-02

SHEET 1 OF 10 SHEETS

1. COMPANY NAME: Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR: Layne Western – Witchita, KS
3. PROJECT: High Priority Site Investigation , Fort Riley, KS	4. LOCATION: EOD Range, OB/OD area, Fort Riley,KS
5. NAME OF DRILLER: John Gornick and Ed Roe	6. MANUFACTURER'S DESIGNATION OF DRILL
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Mobile B57 4.25 x 8" auger; Schram Rota Drill T66 OH; Dual tube drill using air and water	8. HOLE LOCATION: Upgradient monitoring Well
	9. SURFACE ELEVATION: approximately 1195'
	10. DATE STARTED: 26 September 1993 — 11. DATE COMPLETED: 29 September 1993
12. OVERBURDEN THICKNESS: 37.3'	15. DEPTH GROUNDWATER ENCOUNTERED: 62.0'
13. DEPTH DRILLED INTO ROCK: 34.7'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMMENCED. 49.26' at 15 minutes
14. TOTAL DEPTH OF HOLE: 72.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
N.A.						

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		

LITH	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1	**0.0 - 14.5'** Clay, medium brown, moist. Clay color grades to light tan-brown by 14.5'. **0.0 - 9.0'** Minor limestone fragments, cream-white and well indurated.					0-14.5': Moist.
	2						
	3						
	4						
Split Spoon	5	**4.5 - 9.5':**	0 ppm				

HTW DRILLING LOG

HOLE NO. OB-93-02

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller and Mike Miles

SHEET 2 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
		0.0 - 14.5' (cont.) Clay, medium brown, moist. Clay color grades to light tan-brown by 14.5'.					0-14.5': Moist.
		0.0 - 9.0' (cont.) Minor limestone fragments, cream-white and well indurated.					
	9	**9.0 - 9.5':** Abundant limestone fragments.					
		4.5 - 9.5':					
	11	**9.5 - 14.5':** Minor limestone fragments.	0 ppm				

HTW DRILLING LOG

HOLE NO. OB-93-02

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller and Mike Miles

SHEET 3 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	14	**9.5 - 14.5':** Minor limestone fragments.	0 ppm				
	15	**14.5 -16.9'** Silty clay, white-tan, weak and plastic, moist, with well-sorted silt fraction.					14.5-16.9 moist.
	16	Interval 16.8-16.9' partially saturated. Lower contact gradational.					
	17						
	18	**16.9 -19.5'** Clayey sand, dry very well sorted, minor clay content some plasticity.					
	19	**14.5 -19.5':**	0 ppm				Approximately 2' lost in run.
	20						
	21	**19.5 -22.0'**					No sample.

HTW DRILLING LOG

HOLE NO. OB-93-02

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Steve Keller and Mike Miles

SHEET 4 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	22	**19.5 -22.0'** (cont.)					
	23	**22.0-23.2'** Clay, light brown, moist, with abundant limestone fragments.					22.0-23.2 moist. At 23.2, it was the end of moisture in all samples; all below (to 62') were dry.
	24	**23.2 -31.7'** Clay. **23.2 -24.5'** Light grean gray with thin bedding or lamination, and minor angular granules. Dry, non-plastic, and weekly indurated. Possibly lacustrine as opposed to colluvial-looking clay					
	25	from 22.0 - 23.2'. **19.5 -24.5'**	0 ppm				
	26						
	27	**24.5 -27.0'**					No sample.
	28	**27.0 -29.3'** Light grean gray with thin bedding or lamination, and minor angular granules. Dry, non-plastic, and weekly indurated. Possibly lacustrine as opposed to colluvial-looking clay					
	29	from 22.0 - 23.2'.					

HTW DRILLING LOG

HOLE NO. OB-93-02

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Steve Keller and Mike Miles

SHEET 5 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	29.5	29.5' Clay. Color is light to medium olive brown, minor angular limestone fragments, dry and blocky with no laminea, moderately indurated, and becomes silty at base.					
	30						
	31						
	32						
	33						
	34	**30.5 -34.5'**	0 ppm				
	35	**31.7 -37.3'** Clay. Light green-gray, minor to no silt, minor orange-brown oxidation mottles. Laminated and slightly fissile, but less fissile and more blocky towards base.					
	36						
	37						

HTW DRILLING LOG

HOLE NO. OB-93-02

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller and Mike Miles

SHEET 6 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
		37.3': Shale, bedrock, dry.					Dual tube drilling began.
	38						
	39	**39.3':** Light grayish green, well indulated with interbedded lenses of weathered shales with oxidation stains.					
	40	**40.0':** Dark gray shale, poorly indulated. Dry.	0 ppm				
	41						
	42						
	43						
	44						
	45						

HTW DRILLING LOG

HOLE NO. OB-93-02

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller and Mike Miles

SHEET 7 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
		45.0' Light gray shale. Soft, dry.					Easy to drill.
	46						
	47						
	48						
	49						
	50						
	51						
	52						
	53						

HTW DRILLING LOG

HOLE NO. OB-93-02

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller and Mike Miles

SHEET 8 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	53	**53.0'** Gray shale. Well indurated. Interbedded lenses of stiff-very stiff clay. Dry.	0 ppm				Hard to drill.
	54						
	55						
	56						
	57						
	58						
	59						
	60	**60.0'** Gray weathered shale. Dry.					Very easy to drill.
	61						

HTW DRILLING LOG

HOLE NO. OB-93-02

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller and Mike Miles

SHEET 9 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
		61.0' Light gray limestone.	0 ppm				Very hard to drill.
	62	**62.0'**					Water.
	63						
	64						
	65	**61.0'** Grayish black shale. Hard. Dry.	0 ppm				End of water bearing unit.
	66						
	67						
	68						
	69						

HTW DRILLING LOG

HOLE NO. OB-93-02

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller and Mike Miles

SHEET 10 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	70						
	71						
		72.0' Dark gray shale with inter-bedded blackish-gray clay lenses.	0 ppm				End of boring. Total depth = 72'. Used approximately 55 gallons of water while drilling. 120 gallons of water in grout for surface casing.
	72						
	73						
	74						
	75						
	76						
	77						

LOUIS BERGER & ASSOCIATES, INC.

Client: U. S. Army Corps of Engineers Project No.: High Priority SI
Project: Ft. Riley High Priority SI Page: Page 1 of 1
Prepared by: Ed Wieland Date: 3-OCT-93
Checked by: _____ Date: _____

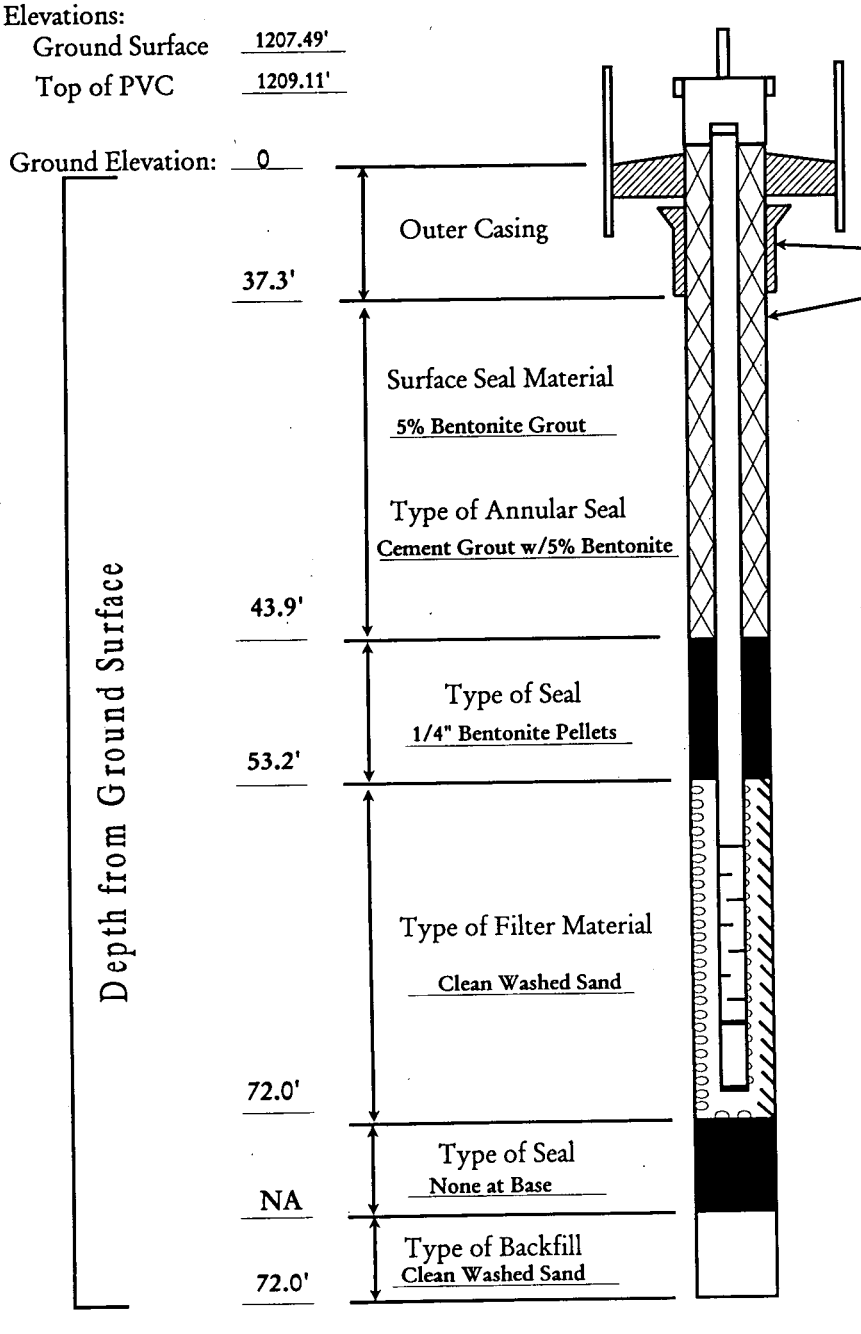
MONITORING WELL AS-BUILT DIAGRAM

Driller: Layne Western
Drilling Method: 8.25"x8" auger with CME continuous sampler to refusal, air rotary dual tube to TD.

Well No.: OB-93-02
Date Installed: 29-SEP-93

Location: OB/OD Area

Elevations:
Ground Surface 1207.49'
Top of PVC 1209.11'



SURFACE CASING:
Size: 6"
Material: Steel
Length: 37.3'

Drill Hole Diameter:
8" (0' - 37.3')
5.25" (37.3' - 72')

Riser:
Diameter: 2"
Material: PVC
Sch.: 40
Type of Joints: Flush Thread
Length: 58.2'

Screen:
Diameter: 2"
Material: PVC
Slot Size: 0.02
Length: 15'

Sump:
Length: 0.3'
Type of Cap: Threaded PVC

Centralizer: Used X
Not Used ____

Depth to Water From Top of Riser at Completion: 49.3'

Note: Not to Scale

Form: ftrly\mwdiagrm.prs

WELL SPECIFICATION FORM

CLIENT: Louis Berger & Associates, Inc.

JOB NUMBER: High Prioirty SI

WELL OWNER: Fort Riley & HQ 1st Division

ADDRESS:

CITY, STATE, ZIP CODE: Fort Riley, Kansas

PHONE: (913) 239-3343

WELL NUMBER OR OTHER IDENTIFICATION: OB-93-02

WELL INSTALLATION DATE: 29 September 1993

GEOLOGIST SUPERVISING INSTALLATION: Mike Miles (SAIC)

GROUND SURFACE ELEVATION (FT): 1207.49'

TOP OF CASING ELEVATION (FT): 1209.11'

WELL STICK-UP (FT): 2.0'

TOTAL BORING DEPTH (FT): 72'

BORING DIAMETER (IN): 0' TO 37.3' = 6", 37.3 TO 72.0' = 5.25"

TOTAL DEPTH OF OUTER CASING (FT): 37.3'

OUTER CASING MATERIAL: Steel

OUTER CASING DIAMETER (IN): 6"

TOTAL DEPTH OF INNER CASING (FT. EXCLUDING SCREEN): 56.2'

INNER CASING MATERIAL: PVC

INNER CASING DIAMETER (IN): 2"

TOTAL LENGTH OF WELL SCREEN (FT): 15'

WELL SCREEN MATERIAL: PVC

WELL SCREEN DIAMETER (FT): 0.167

SCREEN SLOT SIZE (IN): 0.020"

WELL SPECIFICATION FORM (Cont'd)

WELL NUMBER: OB-93-02

BACKFILL MATERIAL AROUND SCREEN: Clean Washed Silica Sand

DEPTH RANGE OF BACKFILL (FT): 71.2' TO 53.2'

SEAL MATERIAL ABOVE SCREEN: 1/4" Bentonite Pellets

DEPTH RANGE OF SEAL (FT): 53.2' TO 43.9'

BACKFILL MATERIAL AROUND CASING: 5% Bentonite Grout

DEPTH RANGE OF BACKFILL (FT): 41.9'

DESCRIPTION OF TOP SEAL: 5% Bentonite grout capped by 8" of 3/4" gravel and 6" of concrete.

DESCRIPTION OF WELL COVER: 6" Steel Casing with locking cap, embedded 2' into the concrete.

OTHER ADDITIONAL INFORMATION:

WELL DEVELOPMENT RECORD

CLIENT: Fort Riley - High Priority Sites JOB NO: High Priority SI

FIELD PERSONNEL: Ed Wieland (SAIC), Brian Meier (Layne Western) SHEET: 1 OF: 1

1. WELL NUMBER: OB-93-02
2. DATE OF INSTALLATION: 29 September 1993
3. DATE OF DEVELOPMENT: 2 October 1993
4. STATIC WATER LEVEL: BEFORE DEVELOPMENT (FT): 50.11' 24 HOURS AFTER (FT): -
5. QUANTITY OF WATER LOSS DURING DRILLING, IF USED (GAL): 55 gal.
6. QUANTITY OF STANDING WATER IN WELL AND ANNULUS BEFORE DEVELOPMENT (GAL): 8.5 gal.

7.		START	DURING		END
	PHYSICAL APPEARANCE	cloudy (milky)	clear	clear	clear
	SPECIFIC CONDUCTANCE (umhos/cm)	448	448	445	445
	TEMPERATURE (°C)	15.2	15.9	15.9	15.9
	pH (s.u.)	7.02	6.63	6.72	6.73
	TURBIDITY (NTU)	-	34.9	9.08	5.31

8. DEPTH FROM TOP OF WELL CASING TO BOTTOM OF WELL (FT): 73.2'
9. SCREEN LENGTH (FT): 15'
10. DEPTH TO TOP OF SEDIMENT: BEFORE DEVELOPMENT (FT): 74' AFTER DEVELOPMENT (FT): _____
11. TYPE AND SIZE OF WELL DEVELOPMENT EQUIPMENT: 1 7/8" Surge block, 1 1/2" x 3 ' bailer, and 2" Grundfos Pump.
12. DESCRIPTION OF SURGE TECHNIQUE, IF USED: Surge, bail, and pump.
13. HEIGHT OF WELL CASING ABOVE GROUND SURFACE (FT): 2.0'
14. QUANTITY OF WATER REMOVED (GAL): 360 gal TIME OF REMOVAL (HR:MIN): 4:18

HTW DRILLING LOG

HOLE NO. OBOD-93-03

SHEET 1 OF 10 SHEETS

1. COMPANY NAME Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR Layne Western – Witchita, KS
3. PROJECT High Priority Site Investigation , Fort Riley, KS	4. LOCATION EOD Range, OB/OD area, Fort Riley,KS
5. NAME OF DRILLER John Gornick and Ed Roe	6. MANUFACTURER'S DESIGNATION OF DRILL Mobile drill B-57
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 4.25 x 8" Hollow Stem Auger CME continuous core sampler Schram dual tube rota drill T66OH	8. HOLE LOCATION Central downgradient well
	9. SURFACE ELEVATION 1170'(topo)
	10. DATE STARTED 26 September 1993 11. DATE COMPLETED 28 September 1993
12. OVERBURDEN THICKNESS 28.5'	15. DEPTH GROUNDWATER ENCOUNTERED 67.0'
13. DEPTH DRILLED INTO ROCK 48.5'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMMENCED. 49.2' at 15 minutes
14. TOTAL DEPTH OF HOLE 77.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
N.A.						

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		ED WIELAND Ed Wieland

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1 2 3 4 5	Split Spoon 0 - 5' Clay, silty grayish brown.	0.4 ppm	N.A.	N.A.		0 - 10' dry.

PROJECT
Fort Riley High Priority Site Investigations

HOLE NO.
OBOD-93-02

ftrly\drillog.prs

HTW DRILLING LOG

HOLE NO. OBOD-93-03

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Ed Wieland

SHEET 2 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	6						
	7	Split Spoon					
	8						
	9						
	10	**5 - 10'** Clay, silty, soft,brown.	0.4 ppm	N.A.	N.A.		0 -10' dry.
	11	Split Spoon					
	12						
	13	**10 - 15'** Clay: brown, soft, moist, with limestone fragments (white).	0.4 ppm	N.A.	N.A.		10 -15' moist.

HTW DRILLING LOG

HOLE NO. OBOD-93-03

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Ed Wieland

SHEET 3 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	14	**10 - 15'** (cont.) Clay: brown, soft, moist, with limestone fragments (white). Split Spoon	0.4 ppm	N.A.	N.A.		10 -15' moist.
	15	**14.5** Clay: gray to light olive brown, fissilish. **15 - 17'** Shale, grayish brown.					
	16						
	17	**17 - 20'** Shale, dark reddish brown and dark olive brown. Split Spoon					
	18						
	19						
	20	**15 - 20'** **20 - 20.5'** Shale, gray. Split Spoon	0.2 ppm	N.A.	N.A.		Shale is soft, clayer and fissle, not weathered. Recovered 4' in the 15 -20' interval.
	21	**20.5 - 21.5'** Limestone lense, wet, gray. **20 - 25'**					Recovered 3.5' in the 20 -25' interval.

HTW DRILLING LOG

HOLE NO. OBOD-93-03

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Ed Wieland

SHEET 4 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	22	**20.5 - 21.5'** Limestone lense, wet, gray.					From 20.5 - 21.5' -- wet. Water came up to 14.6' bgs at 16:55. Bailed at a rate of approximately 1 gallon per minute with slight drawdown.
	23	**21.5 - 22.5'** Shale, reddish brown.					
	24	**22.5 - 23.5'** Shale, dark greenish gray, mottled red.					
	25	**23.5 - 25'**					Lost cure.
		20 - 25'					Recovered 3.5' in the 20 -25' interval.
	26						
	27						
	28	**25 - 28.5'** Shale, dark gray, fissle, hard, becomes olive with depth.	0.1 ppm	N.A.	N.A.		Becoming difficult to auger. Stopped augers. Begin dual tube drilling after setting surface casing. Surface casing set to 28.4'. Used 100 gallons of water in grout for setting surface casing.
	29						

Split Spoon

Split Spoon

HTW DRILLING LOG

HOLE NO. OB-93-03

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Ed Wieland

SHEET 5 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	30						
	31						
	32						
	33						
	34	Dark gray limestone with interbedded clay and shale. Shale is well indurated.	0.1 ppm	N.A.	N.A.		Very hard to drill.
	35						
	36						
	37						

HTW DRILLING LOG

HOLE NO. OB-93-03

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Ed Wieland

SHEET 6 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	38						
	39						
	40	Light gray shale with interbedded clays. Shale is well indurated.	0.1 ppm	N.A.	N.A.		Begin to see an organic material in the cuttings.
	41						
	42						
	43						
	44	Yellowish gray clayey shale.					
	45						

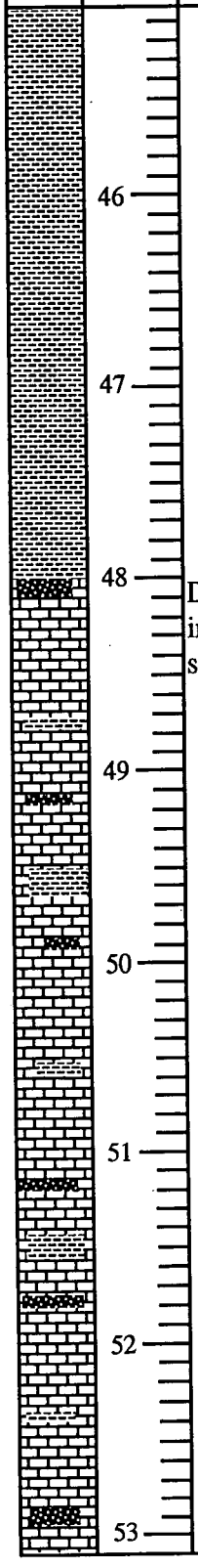
HTW DRILLING LOG

HOLE NO. OB-93-03

PROJECT
High Priority Site Investigation , Fort Riley, KS

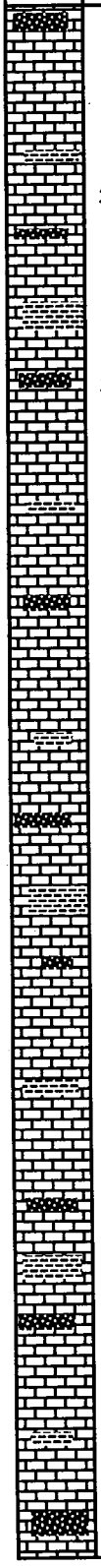
INSPECTOR
Ed Wieland

SHEET 7 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	46 47 48 49 50 51 52 53	Dark gray limestones with interbedded clays and shales.	0.1 ppm	N.A.	N.A.		Very hard. Started to drill with water injection.

HTW DRILLING LOG

PROJECT High Priority Site Investigation , Fort Riley, KS	INSPECTOR Ed Wieland	HOLE NO. OB-93-03 SHEET 8 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	54 55 56 57 58 59 60 61						

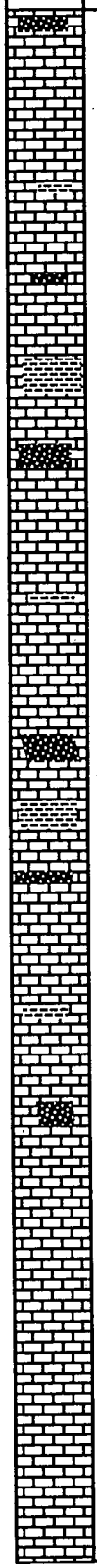
HTW DRILLING LOG

HOLE NO. OB-93-03

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Ed Wieland

SHEET 9 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	62 63 64 65 66 67 68 69	Gray limestone.	0.1 ppm	N.A.	N.A.		Becoming very hard to drill. Water.

HTW DRILLING LOG

HOLE NO. OB-93-03

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Ed Wieland

SHEET 10 OF 10 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	70						
	71		0.1 ppm	N.A.	N.A.		
	72						
	73						
	74	Reddish brown shales and clays.	0.1 ppm	N.A.	N.A.		End of water bearing unit.
	75						
	76						Stopped drilling. Total depth = 77'. Used 100 gallons of water in setting surface casing (grout). Used 140 gallons of water in well construciton. Used approximately 60 gallons of water in dual tube drilling.
	77						

LOUIS BERGER & ASSOCIATES, INC.

Client: U. S. Army Corps of Engineers | Project No.: High Priority SI
Project: Ft. Riley High Priority SI | Page: Page 1 of 1
Prepared by: Ed Wieland | Date: 3-OCT-93
Checked by: _____ | Date: _____

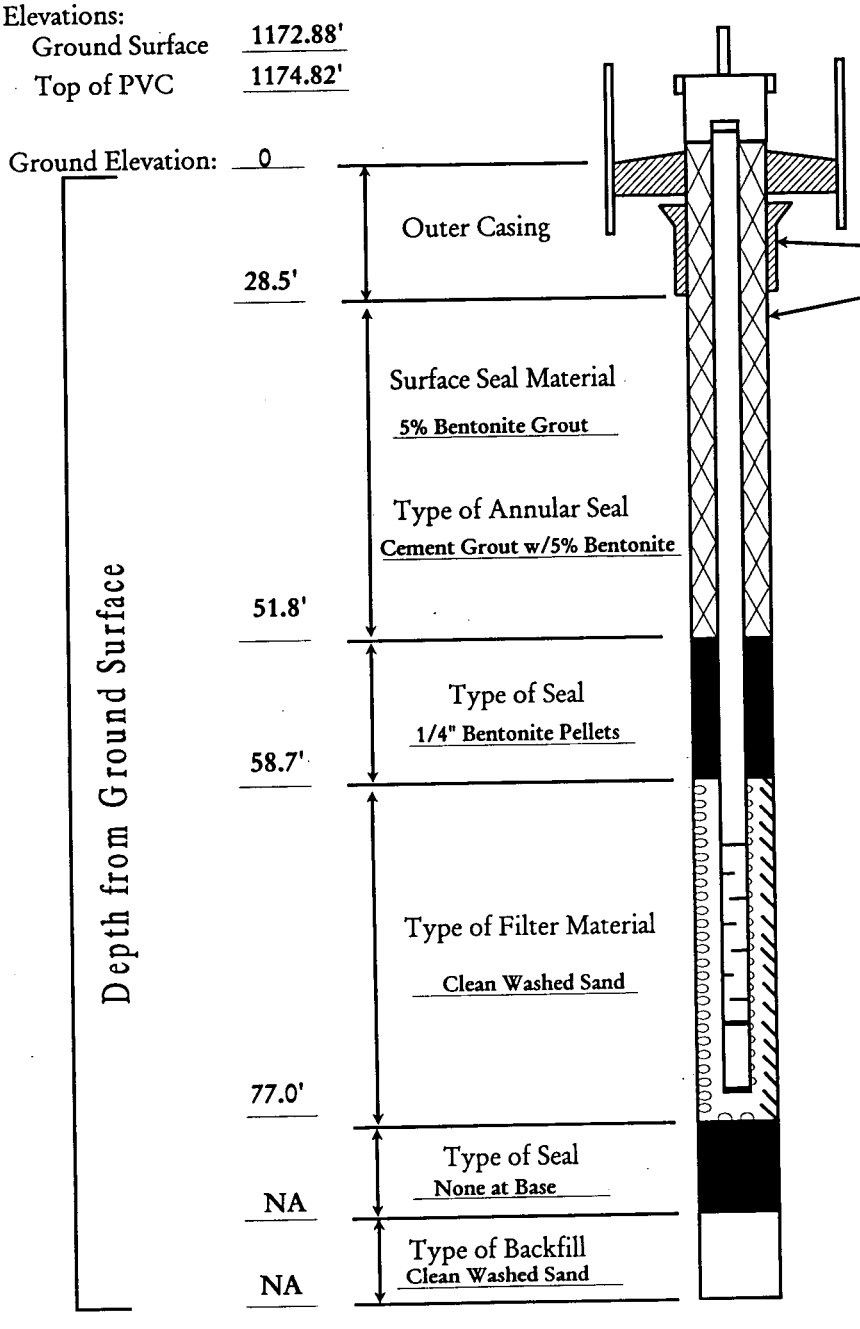
MONITORING WELL AS-BUILT DIAGRAM

Driller: Layne Western
Drilling Method: 8.25"x8" auger with CME continuous sampler to refusal, air rotary dual tube to TD.

Well No.: OB-93-03
Date Installed: 28-SEP-93

Location: OB/OD Area

Elevations:
Ground Surface 1172.88'
Top of PVC 1174.82'



SURFACE CASING:
Size: 6"
Material: Steel
Length: 28.5'

Drill Hole Diameter:
8" (0' - 28.5')
5.25" (28.5' - 77')

Riser:
Diameter: 2"
Material: PVC
Sch.: 40
Type of Joints: Flush Thread
Length: 64'

Screen:
Diameter: 2"
Material: PVC
Slot Size: 0.02
Length: 15'

Sump:
Length: 0.3'
Type of Cap: Threaded PVC

Centralizer: Used X
Not Used ____

Depth to Water From Top of Riser at Completion: 47.0'

Note: Not to Scale

Form: ftrly\mwdiagrm.prs

WELL SPECIFICATION FORM

CLIENT: Louis Berger & Associates, Inc.

JOB NUMBER: High Prioity SI

WELL OWNER: Fort Riley & HQ 1st Division

ADDRESS:

CITY, STATE, ZIP CODE: Fort Riley, Kansas

PHONE: (913) 239-3343

WELL NUMBER OR OTHER IDENTIFICATION: OB-93-03

WELL INSTALLATION DATE: 9-28-93

GEOLOGIST SUPERVISING INSTALLATION: Mike Miles (SAIC)

GROUND SURFACE ELEVATION (FT): 1172.88'

TOP OF CASING ELEVATION (FT): 1174.82'

WELL STICK-UP (FT): 2.0'

TOTAL BORING DEPTH (FT): 77.0'

BORING DIAMETER (IN): 0' TO 28' = 6", 28' TO 77' = 5.25"

TOTAL DEPTH OF OUTER CASING (FT): 28.5'

OUTER CASING MATERIAL: Steel

OUTER CASING DIAMETER (IN): 6"

TOTAL DEPTH OF INNER CASING (FT. EXCLUDING SCREEN): 62.0'

INNER CASING MATERIAL: PVC

INNER CASING DIAMETER (IN): 2"

TOTAL LENGTH OF WELL SCREEN (FT): 15'

WELL SCREEN MATERIAL: PVC

WELL SCREEN DIAMETER (FT): 0.167

SCREEN SLOT SIZE (IN): 0.020"

WELL SPECIFICATION FORM (Cont'd)

WELL NUMBER: OB-93-03

BACKFILL MATERIAL AROUND SCREEN: Clean Washed Silica Sand

DEPTH RANGE OF BACKFILL (FT): 77' TO 58.7'

SEAL MATERIAL ABOVE SCREEN: 1/4" Bentonite Pellets

DEPTH RANGE OF SEAL (FT): 58.7' TO 51.8'

BACKFILL MATERIAL AROUND CASING: 5% Bentonite Grout

DEPTH RANGE OF BACKFILL (FT): 49.8'

DESCRIPTION OF TOP SEAL: 5% Bentonite Grout capped with a concrete pad.

DESCRIPTION OF WELL COVER: 6" steel casing embedded in the concrete with a locking cap.

OTHER ADDITIONAL INFORMATION:

WELL DEVELOPMENT RECORD

CLIENT: Fort Riley - High Priority Sites JOB NO: High Priority SI

FIELD PERSONNEL: Ed Wieland (SAIC), Brian Meier (Layne Western) SHEET: 1 OF: 1

1. WELL NUMBER: OB-93-03
2. DATE OF INSTALLATION: 29 September 1993
3. DATE OF DEVELOPMENT: 2 October 1993
4. STATIC WATER LEVEL: BEFORE DEVELOPMENT (FT): 50.34' 24 HOURS AFTER (FT):
5. QUANTITY OF WATER LOSS DURING DRILLING, IF USED (GAL): 60 gal.
6. QUANTITY OF STANDING WATER IN WELL AND ANNULUS BEFORE DEVELOPMENT (GAL): 9.3 gal.

	START	DURING		END
7. PHYSICAL APPEARANCE	muddy	cloudy	clear	clear
SPECIFIC CONDUCTANCE (umhos/cm)	900	590	590	590
TEMPERATURE (°C)	15.0	15.9	16.0	16.0
pH (s.u.)	8.15	6.87	6.95	6.95
TURBIDITY (NTU)	-	42.0	11.3	11.8

8. DEPTH FROM TOP OF WELL CASING TO BOTTOM OF WELL (FT): 79'
9. SCREEN LENGTH (FT): 15'
10. DEPTH TO TOP OF SEDIMENT: BEFORE DEVELOPMENT (FT): 79.4' AFTER DEVELOPMENT (FT):
11. TYPE AND SIZE OF WELL DEVELOPMENT EQUIPMENT: 1 7/8" Surge block, 1 1/2" x 3 ' bailer, and 2" Grundfos Pump.
12. DESCRIPTION OF SURGE TECHNIQUE, IF USED: Surge, bail, and pump.
13. HEIGHT OF WELL CASING ABOVE GROUND SURFACE (FT): 1.8
14. QUANTITY OF WATER REMOVED (GAL): 553 gal TIME OF REMOVAL (HR:MIN): 4:00

HTW DRILLING LOG

HOLE NO. OB-93-04; SB1

SHEET 1 OF 8 SHEETS

1. COMPANY NAME: Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR: Layne Western -- Witchita, KS
3. PROJECT: High Priority Site Investigation , Fort Riley, KS	4. LOCATION: EOD Range, OB/OD area, Fort Riley,KS
5. NAME OF DRILLER: John Gornick	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile drill B-57, Schram Rotodrill T-660H Dual Tube
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4.25 x 8" Hollow Stem Auger; CME continuous core sampler; NX Core; 5.25 tricore-reverse circulation	8. HOLE LOCATION: South of burn pit
	9. SURFACE ELEVATION: 1160'(topo)
	10. DATE STARTED: 27 September 1993 — 11. DATE COMPLETED: 1 October 1993
12. OVERBURDEN THICKNESS: 20.5'	15. DEPTH GROUNDWATER ENCOUNTERED: 47.0 - 48.0''
13. DEPTH DRILLED INTO ROCK: 36.5'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMMENCED. 23.1 after 10 minutes
14. TOTAL DEPTH OF HOLE: 57.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES: N.A.	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES: Three

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		Priority Pollutant Metals	EPA 6020 ICP/MC EPA 8330 HPLC			

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		ED WIELAND

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1 2 3 4 5	Split Spoon 0 - 5' Clay, brown to reddish brown, firm to hard.	0.2 ppm	N.A.	OBOD-SB1-001 disturbed N.A.		0 - 5' dry. 2.5' of recovery (hard piece caught in barrel).

HTW DRILLING LOG

HOLE NO. OB-93-04; SB1

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Ed Wieland

SHEET 2 OF 8 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	6						
	7	Split Spoon					
	8				OBOD-SB1-002 undisturbed		
	9						
	10	**5 - 10'** Clay, brown to light reddish brown, firm to hard, dry to damp.	0.9 ppm	N.A.	N.A.		5 -10' dry to damp. appears undistubed.
	11	Split Spoon					
	12				OBOD-SB1-003 undisturbed		
	13	**10 - 15'** Clay, dark brown to brown, soft to hard, damp.	0.4 ppm	N.A.	N.A.		10 -15' damp.

HTW DRILLING LOG

HOLE NO. OB-93-04; SB1

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Ed Wieland

SHEET 3 OF 8 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	14	Split Spoon **10 - 15'** (cont.) Clay, dark brown to brown, soft to hard, damp.	0.4 ppm	N.A.	N.A.		10 -15' damp.
	15						
	16						
	17						
	18	Split Spoon **15 - 19'** Clay, light brown,firm, damp.	0.4 ppm	N.A.	N.A.		15 -19' damp (moist).
	19	**19 - 20'** Clay, as above, with limestone fragments, white, 0.5-1.5" diameter, cherty, light gray.					Limestone is wet, has chemical bonding.
	20	**15 - 20'**	0.2 ppm	N.A.	N.A.		
		20.5':		Core Box 1			End of auger; refusal. Start NX Core.
	21						

HTW DRILLING LOG

HOLE NO. OB-93-04; SB1

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Ed Wieland

SHEET 4 OF 8 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	22	**20.5 - 22.7'** Limestone, shaly limestone, locally cherty, also vuggy limestone at 21.8', white to gray where shaley. Chert is light gray.					Recovered 2' cut 5' in the 20.58 - 24.1' interval.
	23						
	24	**22.7 - 24.1'** Shale, light brown.					Wet shale at 22.7'.
	25	**24.1 - 25.3'** Shale, yellowish brown with white calcite vugs and calcite (5%) -- low permeability.					
	26						
	27						
	28	**25.3 - 28.3'** Shale, black.					
	29	**28.3 - 29.1'** Gradational contact limestone, gray fossiliforms.					24.1 - 29.1': 100 percent recovery.

HTW DRILLING LOG

HOLE NO. OB-93-04; SB1

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Ed Wieland

SHEET 5 OF 8 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	30	**29.1-29.7'** Limestone as above, grading to limy shale.					
	31						
	32	Massive gypsum up to 1" diameter.					
	33						
	34	**29.7 - 34.1'** Shale, limy, dark gray to olive gray.					29.1- 34.1: Recovered 4.1'.
	35						
	36						
	37						

HTW DRILLING LOG

HOLE NO. OB-93-04; SB1

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Ed Wieland

SHEET 6 OF 8 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	38						
	39	**34.1 - 39.1'** Shale, dark gray, limy.		Core Box 1			Recovered 4.1'. Used 475 gallons of water from 20.5 - 39.1'.
				Core Box 2			
	40	**39.1 - 41.1'** Shale, dark gray.					
	41	**41.1 - 41.9'** Limestone, very shaly, dark gray to light gray, wavy bedding.					
	42	**41.9 - 43.2'** Shale dark gray with gypsum. White to pinkish white, up to 2" across as massive concen- trations.					
	43						
		43.2 - 44.1' Limestone,shaly,very fosiliforms, fossil hash -- shell fragments and whole					39.1-44.1: Recovered 5', 100 percent.
	44	**44.1 - 44.8'** Limestone,shaly,very fosiliforms, fossil hash.					
	45						

HTW DRILLING LOG

HOLE NO. OB-93-04; SB1

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Ed Wieland

SHEET 7 OF 8 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	46	**44.8 - 46'** Limestone soft, yellowish brown with dark blueish gray chert blelbs.					
	47						
	48	Lost 47.8 - 48.35 in vuggy section. Vugs are present across the full cross-sect- ion of core (horizontal).					Driller reported soft zone her with hard section below.
	49	**48.8 - 49.2'** Shale, dark gray, wavy budding. **49.2'** Fossil hash. **49.4 - 49.7'** Limestone, yellowish brown, vuggy, up to 0.25" diameter.					49.1- 54.1': 100 percent recovery.
	50	**49.7 - 50.2'** Chert, light gray-outs fossils.					
	51	**50.2 - 50.9'** Limestone, yellowish brown, minor vugs, 0.0625' diameter.					
	52	**50.9' - 51.9'** Limestone, shaley, dark gray to locally black, wavy bedding with fossil hash.		Core Box 2			
	53	**51.9' - 53'** Limestone, light gray, hard, slightly fossilforms.		Core Box 3			

HTW DRILLING LOG

HOLE NO. OB-93-04; SB1

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Ed Wieland

SHEET 8 OF 8 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
		53 - 53.8' Shale, ivory, fossiliforms, dark gray.					
		53.8 - 54.2' Limestone, dark gray fossiliforms.		Core Box 3			275 gallons drilling water. End of Core.
	54	Dual tube rig.					
	55						
	56						Stopped drilling. Total depth = 57'. 750 gallons of water used for core drilling; 20 gallons of water to ream; 60 gallons tremie in well construction. 830 gallons total added to well.
		54.2 - 57' Limy shale and shaly limestone.					
	57						NOTE ON WATER PRIOR TO CORE DRILLING: On 1 October 1993 at 08:30 water level was 9.6'. Bailed approximately 3 minutes, and drew water level down 1'. After 3 additional minutes water level came up 0.25'.
	58						
	59						
	60						
	61						

LOUIS BERGER & ASSOCIATES, INC.

Client: U. S. Army Corps of Engineers Project No.: High Priority SI
Project: Ft. Riley High Priority SI Page: Page 1 of 1
Prepared by: Ed Wieland Date: 3-OCT-93
Checked by: _____ Date: _____

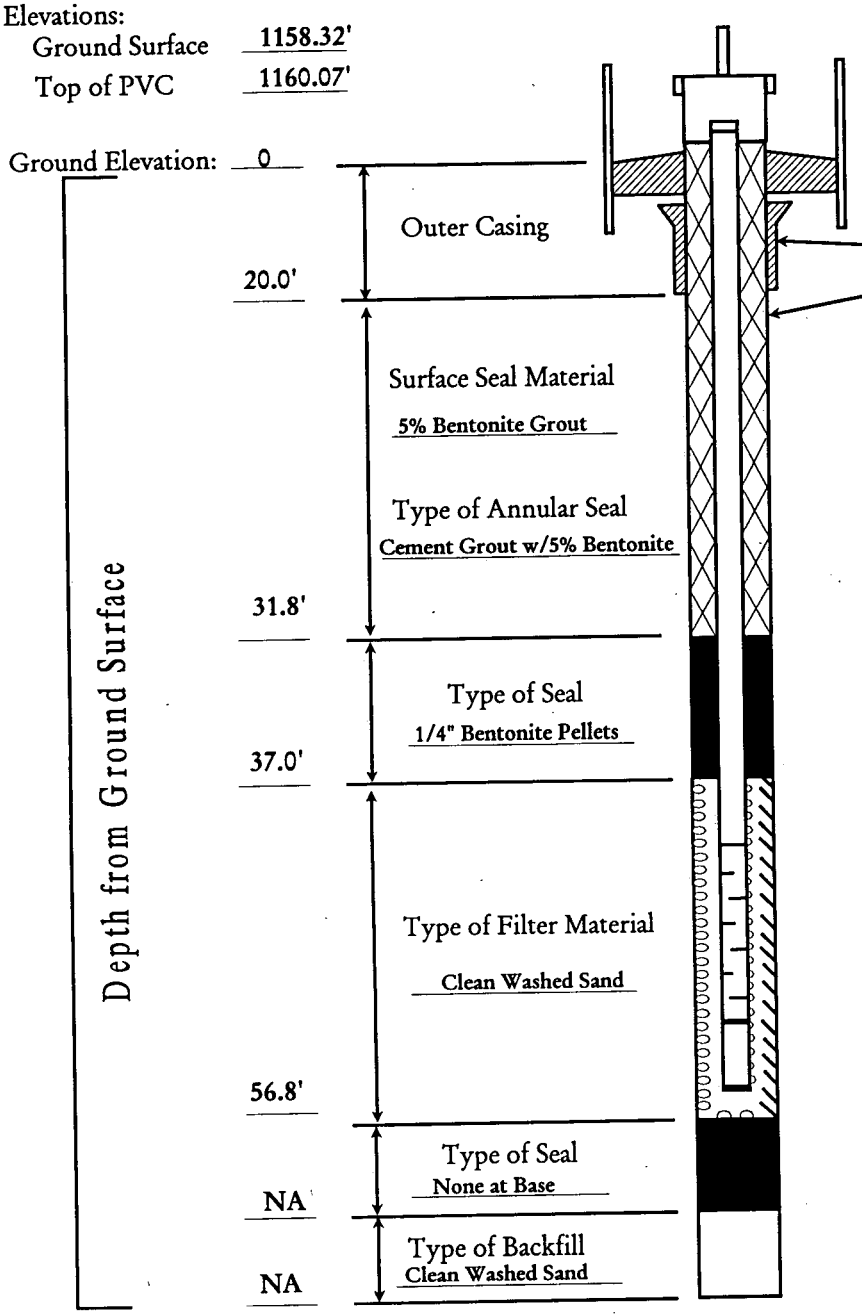
MONITORING WELL AS-BUILT DIAGRAM

Driller: Layne Western
Drilling Method: 8.25"x8" auger with CME continuous sampler to refusal, air rotary dual tube to TD.

Well No.: OB-93-04
Date Installed: 01-OCT-93

Location: OB/OD Area

Elevations:
Ground Surface 1158.32'
Top of PVC 1160.07'



SURFACE CASING:
Size: 6"
Material: Steel
Length: 20'

Drill Hole Diameter:
8" (0' - 20')
5.25" (20' - 56.8')

Riser:
Diameter: 2"
Material: PVC
Sch.: 40
Type of Joints: Flush Thread
Length: 43.8'

Screen:
Diameter: 2"
Material: PVC
Slot Size: 0.02
Length: 15'

Sump:
Length: 0.3'
Type of Cap: Threaded PVC

Centralizer: Used X
Not Used ____

Depth to Water From Top of Riser at Completion: 23.1'

Note: Not to Scale

Form: ftrly\mwdiagrm.prs

WELL SPECIFICATION FORM

CLIENT: Louis Berger & Associates, Inc.

JOB NUMBER: High Prioirity SI

WELL OWNER: Fort Riley & HQ 1st Division

ADDRESS:

CITY, STATE, ZIP CODE: Fort Riley, Kansas

PHONE: (319) 239-3343

WELL NUMBER OR OTHER IDENTIFICATION: OB-93-04

WELL INSTALLATION DATE: 1 October 1993

GEOLOGIST SUPERVISING INSTALLATION: Mike Miles (SAIC)

GROUND SURFACE ELEVATION (FT): 1158.32'

TOP OF CASING ELEVATION (FT): 1160.07'

WELL STICK-UP (FT): 2.0'

TOTAL BORING DEPTH (FT): 57.0'

BORING DIAMETER (IN): 0.0' TO 20.0' = 6", 20.0' TO 57.0' = 5.25"

TOTAL DEPTH OF OUTER CASING (FT): 20.0'

OUTER CASING MATERIAL: Steel

OUTER CASING DIAMETER (IN): 6"

TOTAL DEPTH OF INNER CASING (FT. EXCLUDING SCREEN): 41.8'

INNER CASING MATERIAL: PVC

INNER CASING DIAMETER (IN): 2"

TOTAL LENGTH OF WELL SCREEN (FT): 15'

WELL SCREEN MATERIAL: PVC

WELL SCREEN DIAMETER (FT): 0.167

SCREEN SLOT SIZE (IN): 0.020"

WELL SPECIFICATION FORM (Cont'd)

WELL NUMBER: OB-93-04

BACKFILL MATERIAL AROUND SCREEN: Clean Washed Silica Sand

DEPTH RANGE OF BACKFILL (FT): 56.8' TO 37'

SEAL MATERIAL ABOVE SCREEN: 1/4" Bentonite Pellets

DEPTH RANGE OF SEAL (FT): 37' TO 31.8'

BACKFILL MATERIAL AROUND CASING: 5% Bentonite Grout

DEPTH RANGE OF BACKFILL (FT): 31.8'

DESCRIPTION OF TOP SEAL:

DESCRIPTION OF WELL COVER: 6" steel casing with locking cap, embedded into the grout and concrete pad.

OTHER ADDITIONAL INFORMATION:

WELL DEVELOPMENT RECORD

CLIENT: Fort Riley - High Priority Sites JOB NO: High Priority SI

FIELD PERSONNEL: Steve Keller (SAIC) SHEET: 1 OF: 1

1. WELL NUMBER: OB-93-04
2. DATE OF INSTALLATION: 1 October 1993
3. DATE OF DEVELOPMENT: 9 October 1993
4. STATIC WATER LEVEL: BEFORE DEVELOPMENT (FT): 32.87' 24 HOURS AFTER (FT):
5. QUANTITY OF WATER LOSS DURING DRILLING, IF USED (GAL): 750 gal.
6. QUANTITY OF STANDING WATER IN WELL AND ANNULUS BEFORE DEVELOPMENT (GAL): 49 gal.

	START	DURING		END
7. PHYSICAL APPEARANCE	cloudy	slightly cloudy	clear	clear
SPECIFIC CONDUCTANCE (umhos/cm)	455	560	550	550
TEMPERATURE (°C)	13.0	14.1	15.4	15.6
pH (s.u.)	6.60	6.76	7.0	6.93
TURBIDITY (NTU)	-	46.2	6.2	5.4

8. DEPTH FROM TOP OF WELL CASING TO BOTTOM OF WELL (FT): 58.25'
9. SCREEN LENGTH (FT): 15'
10. DEPTH TO TOP OF SEDIMENT: BEFORE DEVELOPMENT (FT): AFTER DEVELOPMENT (FT):
11. TYPE AND SIZE OF WELL DEVELOPMENT EQUIPMENT: 1 7/8" Surge block, 1 1/2" x 3 ' bailer, and 2" Grundfos Pump.
12. DESCRIPTION OF SURGE TECHNIQUE, IF USED: Surge, bail, and pump.
13. HEIGHT OF WELL CASING ABOVE GROUND SURFACE (FT): 1.45
14. QUANTITY OF WATER REMOVED (GAL): 1025 gal TIME OF REMOVAL (HR:MIN): 3:45

HTW DRILLING LOG

HOLE NO. EP-93-01

SHEET 1 OF 6 SHEETS

1. COMPANY NAME: Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR: Layne Western – Witchita, KS
3. PROJECT: High Priority Site Investigation , Fort Riley, KS	4. LOCATION: Custer Hill East Pond, Fort Riley
5. NAME OF DRILLER: Randy Smith	6. MANUFACTURER'S DESIGNATION OF DRILL: Acker Soil Max 90, Schramm Rotadrill
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Auger, then drive 2' split spoon ahead of auger; repeat @ 5' intervals, 0-18',18' - 38' reverse - air circulation	8. HOLE LOCATION: Northwest (upgradient) Well
	9. SURFACE ELEVATION: 1288.40 (topo)
	10. DATE STARTED: 6 October 1993 / 11. DATE COMPLETED: 8 October 1993
12. OVERBURDEN THICKNESS: 18'	15. DEPTH GROUNDWATER ENCOUNTERED: 29' BLS
13. DEPTH DRILLED INTO ROCK: 20'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMMENCED. 18.1' after 50 minutes
14. TOTAL DEPTH OF HOLE: 38'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
N.A.						

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Stephen M. Keller

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1	Auger 0'-4.5'					
	2						
	3						
	4						Slight Moisture
Split Spoon	5	**4.5'-6.5'** Clay. Dark maroon-brown with light gray mottles.	0.1 ppm	N.A.	N.A.	5-7-13-4	

HTW DRILLING LOG

HOLE NO. EP-93-01

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller

SHEET 2 OF 6 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	6	**4.5'-6.5'** Continued. Slightly moist and plastic, with no sand. Split Spoon					
	7						
	8						
	9	Auger 4.5'-9.5'					
	10	**9.5'-9.9'** Clay. Slightly moist, weak, slightly plastic, with no gravel or mottles Split Spoon	Bkgd. 0.0 ppm			5-5-22-40	Slight moisture
	11	**9.9'-10.1'** Silt. Light salmon dry, friable **10.1'-10.4'** Clayey silt. Light tan-brown, saturated, well sorted, weakly consolidated **10.4'-11.5'** Silty clay. Slightly moist, friable, weakly consolidated, blocky.					
	12						
	13						

HTW DRILLING LOG

HOLE NO. EP-93-01

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Steve Keller

SHEET 3 OF 6 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	14	Auger 9.5'-14.5'					
	15	**14.5'-15.8'** Clayey Silt. Light green gray, wet, almost saturated, weakly consolidated, well sorted. Split Spoon		N.A.	N.A.	50	Cuttings moist at start of 14.5'-15.8' drive. Drive stopped because of refusal (50 blows). Slight moisture at end of drive (15.8'), however, no standing water.
	16	Auger 14.5'-18' **18'** Refusal.Silt or Siltstone. Refusal in very dry,weakly indurated buff silt or siltstone. Well sorted, "pops" under finger pressure, indicating low clay content. End Auger drilling.	Bkgd 0.0 ppm BH 0.1 ppm BS 0.1 ppm				Dry.
	17						
	18	**18'** Start Reverse-Air Drilling.					
	19	**18'-20'** Silt Light tan to white buff, weakly consolidated, dry, well sorted with only minor clay.					
	20	**20'-29'** Silt. W ith thin minor limestone stringers. Slightly moist 20'-21',rest of interval is dry.					20'-21' Slight moisture.
	21						

HTW DRILLING LOG

HOLE NO. EP-93-01

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller

SHEET 4 OF 6 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	22 23 24 25 26 27 28 29	**21'-29'** Silt.Light tan to tan-gray & weakly consolidated. Limestone stringers buff, well indurated, very-fine-grained, & resistant.					21'-29' Dry.

HTW DRILLING LOG

PROJECT High Priority Site Investigation , Fort Riley, KS	INSPECTOR Steve Keller	HOLE NO. EP-93-01 SHEET 5 OF 6 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	30 31 32 33 34 35 36 37	**29'-30'** Silt. Medium orange-brown,moist to very moist, plastic, trace of oxidation mottles, produces yellow-brown water. **30'-38'** Very dry starting at 30'. Intercolated light olive-brown, olive, medium yellow-olive. Very weakly consolidated, little or no clay, very well sorted.					NOTE: First water was at 29' evidenced by moist to very moist plastic clay in samples 29'-30'. Samples from 30'-38' are bone dry When driller raised bit up through zone 29'-30', abundant water was blown out. Zone 30'-38' remained dry.

HTW DRILLING LOG

HOLE NO. EP-93-01

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller

SHEET 6 OF 6 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	38	38' Total Depth	Bkgd 0.1 ppm BH 0.3 ppm BS 0.1 ppm				Dry. 38' Stopped Drilling.
	39						
	40						
	41						
	42						
	43						
	44						
	45						

LOUIS BERGER & ASSOCIATES, INC.

Client: U. S. Army Corps of Engineers Project No.: High Priority SI
Project: Ft. Riley High Priority SI Page: Page 1 of 1
Prepared by: Dave Stein Date: 5-OCT-93
Checked by: Julie Jaglowski Date: 15-DEC-93

MONITORING WELL AS-BUILT DIAGRAM

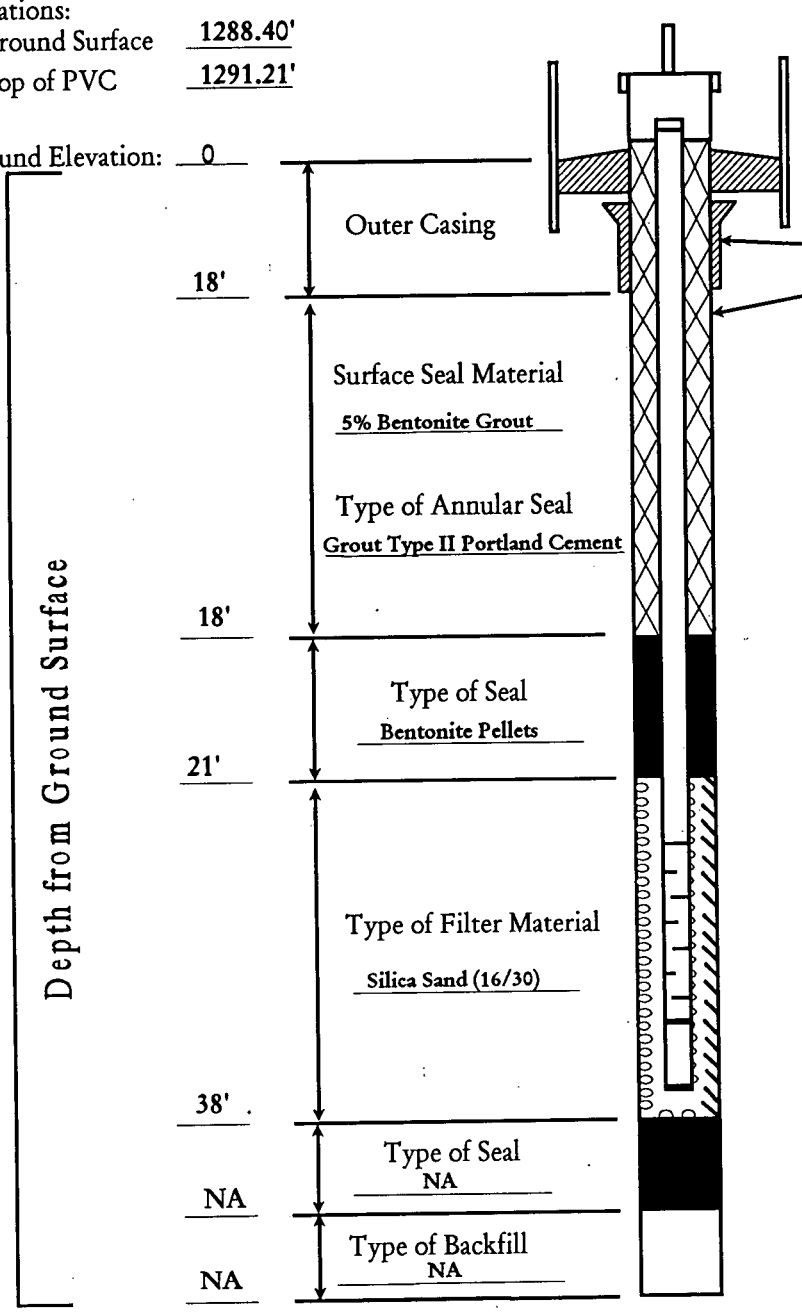
Driller: Layne Western
Drilling Method: Hollow Stem Auger, Dual/Tube Air Rotary

Well No.: EP-93-01
Date Installed: 9-OCT-93

Location: Custer Hill East Pond

Elevations:
Ground Surface 1288.40'
Top of PVC 1291.21'

Ground Elevation: 0



SURFACE CASING:
Size: 6"
Material: Steel
Length: 18'

Drill Hole Diameter:
12"
8.25" OD

Riser:
Diameter: 2"
Material: PVC
Sch.: 40
Type of Joints: Flush Thread
Length: 20.88'

Screen:
Diameter: 2"
Material: PVC
Slot Size: 0.02
Length: 15'

Sump:
Length: 4"
Type of Cap: Threaded PVC

Centralizer: Used X
Not Used ____

Depth to Water From Top of Riser at Completion: 18.18'

Note: Not to Scale

Form: ftrly\mwdiagrm.prs

WELL SPECIFICATION FORM

CLIENT: Louis Berger & Associates, Inc.

JOB NUMBER: High Priority SI

WELL OWNER: Fort Riley & HQ 1st Division

ADDRESS:

CITY, STATE, ZIP CODE: Fort Riley, Kansas

PHONE: (913) 239-3343

WELL NUMBER OR OTHER IDENTIFICATION: EP-93-01

WELL INSTALLATION DATE: 9 October 1993

GEOLOGIST SUPERVISING INSTALLATION: Dave Stein

GROUND SURFACE ELEVATION (FT): 1288.40'

TOP OF CASING ELEVATION (FT): 1291.21'

WELL STICK-UP (FT): 2.81

TOTAL BORING DEPTH (FT): 38'

BORING DIAMETER (IN): 8.25"

TOTAL DEPTH OF OUTER CASING (FT): 18.0'

OUTER CASING MATERIAL: Steel

OUTER CASING DIAMETER (IN): 4"

TOTAL DEPTH OF INNER CASING (FT. EXCLUDING SCREEN): 23'

INNER CASING MATERIAL: PVC

INNER CASING DIAMETER (IN): 2"

TOTAL LENGTH OF WELL SCREEN (FT): 15'

WELL SCREEN MATERIAL: PVC

WELL SCREEN DIAMETER (FT): 0.167

SCREEN SLOT SIZE (IN): 020

WELL SPECIFICATION FORM (Cont'd)

WELL NUMBER: EP-93-01

BACKFILL MATERIAL AROUND SCREEN: Silica Sand

DEPTH RANGE OF BACKFILL (FT): 38' TO 21'

SEAL MATERIAL ABOVE SCREEN: Bentonite Pellets

DEPTH RANGE OF SEAL (FT): 21' TO 18'

BACKFILL MATERIAL AROUND CASING: Grout (Type II Portland Cement)

DEPTH RANGE OF BACKFILL (FT): 0'

DESCRIPTION OF TOP SEAL:

DESCRIPTION OF WELL COVER:

OTHER ADDITIONAL INFORMATION:

WELL DEVELOPMENT RECORD

CLIENT: Fort Riley - High Priority Sites JOB NO: High Priority SI

FIELD PERSONNEL: Mike Miles (SAIC), Brian Meyer (Layne Western) SHEET: 1 of 1

1. WELL NUMBER: EP-93-01
2. DATE OF INSTALLATION: 8 October 1993
3. DATE OF DEVELOPMENT: 13 October 1993
4. STATIC WATER LEVEL: BEFORE DEVELOPMENT (FT): _____ 24 HOURS AFTER (FT): 17.93' (toc)
5. QUANTITY OF WATER LOSS DURING DRILLING, IF USED (GAL): 0
6. QUANTITY OF STANDING WATER IN WELL AND ANNULUS BEFORE DEVELOPMENT (GAL): 11 gal.

7.		START	DURING		END
	PHYSICAL APPEARANCE	cloudy	clear	clear	clear
	SPECIFIC CONDUCTANCE (umhos/cm)	1200	1250	1280	1280
	TEMPERATURE (°C)	15	16	16	16
	pH (s.u.)	6.38	6.48	6.42	6.43
	TURBIDITY (NTU)	323	2.4	11.7	22.6

8. DEPTH FROM TOP OF WELL CASING TO BOTTOM OF WELL (FT): 38'
9. SCREEN LENGTH (FT): 15'
10. DEPTH TO TOP OF SEDIMENT: BEFORE DEVELOPMENT (FT): _____ AFTER DEVELOPMENT (FT): 38'
11. TYPE AND SIZE OF WELL DEVELOPMENT EQUIPMENT: 1.5" diam.x3' stainless steel bailer and 1.5" diam. Grumdfos Redi-Flow submersible pump.
12. DESCRIPTION OF SURGE TECHNIQUE, IF USED: Surged with pump at successive intervals of screen.
13. HEIGHT OF WELL CASING ABOVE GROUND SURFACE (FT): 2.0'
14. QUANTITY OF WATER REMOVED (GAL): 400 gal. TIME OF REMOVAL (HR:MIN): 5:40

HTW DRILLING LOG

HOLE NO. EP-93-02

SHEET 1 OF 4 SHEETS

1. COMPANY NAME: Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR: Layne Western – Witchita, KS
3. PROJECT: High Priority Site Investigation , Fort Riley, KS	4. LOCATION: Custer Hill East Pond, Fort Riley
5. NAME OF DRILLER: Randy Smith	6. MANUFACTURER'S DESIGNATION OF DRILL: Acker Soil Max 90, Schramm Rotadrill
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Auger, then drive 2' split spoon 2' ahead of auger; repeat at 5' intervals.	8. HOLE LOCATION: South downgradient well
	9. SURFACE ELEVATION: 1278.32 (topo)
	10. DATE STARTED: 6 October 1993 / 11. DATE COMPLETED: 7 October 1993
12. OVERBURDEN THICKNESS: 7.5'	15. DEPTH GROUNDWATER ENCOUNTERED: 9.5' (On pilot bit advancing auger)
13. DEPTH DRILLED INTO ROCK: 16.4'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMMENCED.
14. TOTAL DEPTH OF HOLE: 23.9'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
N.A.						

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Stephen M. Keller

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1	Auger 0'-4.5'					
	2						
	3						
	4						
Split Spoon	5	**4.5'-6.5'** Clay. Black, organic looking, slightly moist, slightly plastic.	0.1 ppm	N.A.	N.A.	2-2-4-7	Slight Moisture

HTW DRILLING LOG

HOLE NO. EP-93-02

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Steve Keller

SHEET 2 OF 4 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	6	**4.5'-6.5'**(Cont.) **Clay.** Split Spoon					
	7						
	8	Auger 4.5'-9.5'. Auger to refusal of pilot bit at 9.5', & total depth of 8" hole was 8.5'.					
	9	**9.1'-14.9'** Limestone. Weathered. White and brown bonded. Lost zones of fractured, highly weathered limestone at 11' and 13'. The zone at 13' is highly porous. It is suspected that the lost, porous zones at 11' and 13' are considered the initial water bearing zones at EP-93-02.	0.0 ppm	Box 1 of 1			At pilot hole 9.5', approximately 0.1' to 0.2'of cuttings were wet.
	10						
	11						First water suspected at either 11' or 13' based on fractured loss zones.
	12						
	13						

HTW DRILLING LOG

HOLE NO. EP-93-02

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller/ Dave Stein

SHEET 3 OF 4 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	14						
	15	**14.9'-16.0'** Limestone. Brown highly weathered bonded limestone.	0.0 ppm				
	16	**16.0'-18.9'** Shale. Brown highly weathered. Friable.	0.0 ppm				
	17						
	18						
	19	**18.9'-19.5'** Limestone. Loss zone comprised of white weathered limestone.	0.0 ppm				
	20	**19.5'-23.3'** Shale. Brown highly weathered shale. Friable.	0.0 ppm				
	21						

HTW DRILLING LOG

HOLE NO. EP-93-02

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller

SHEET 4 OF 4 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	22						
	23	**23.3'-23.9'** Limestone. White weathered limestone.	0.0 ppm				
	24	**23.9'** Total Depth.					23.9' Stopped Drilling
	25						
	26						
	27						
	28						
	29						

LOUIS BERGER & ASSOCIATES, INC.

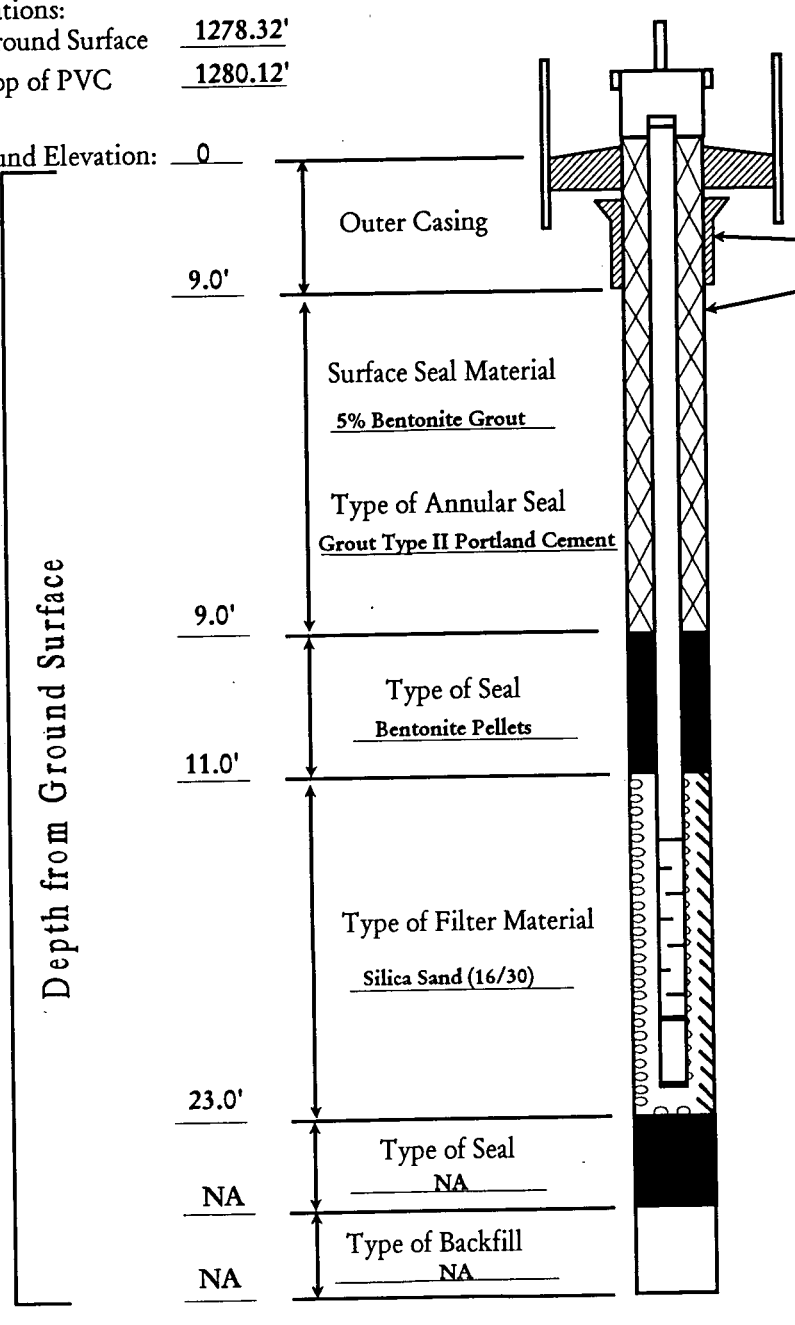
Client: U. S. Army Corps of Engineers | Project No.: High Priority SI
Project: Ft. Riley High Priority SI | Page: Page 1 of 1
Prepared by: Dave Stein | Date: 5-OCT-93
Checked by: Julie Jaglowski | Date: 15-DEC-93

MONITORING WELL AS-BUILT DIAGRAM

Driller: Layne Western
Drilling Method: Hollow Stem Auger, Dual/Tube Air Rotary
Well No.: EP-93-02
Date Installed: 9-OCT-93

Location: Custer Hill East Pond

Elevations:
Ground Surface 1278.32'
Top of PVC 1280.12'



SURFACE CASING:
Size: 6"
Material: Steel
Length: 9'

Drill Hole Diameter:
12"
8.25" OD

Riser:
Diameter: 2"
Material: PVC
Sch.: 40
Type of Joints: Flush Thread
Length: 14.8'

Screen:
Diameter: 2"
Material: PVC
Slot Size: 0.02
Length: 10'

Sump:
Length: 4"
Type of Cap: Threaded PVC

Centralizer: Used X
Not Used ____

Depth to Water From Top of Riser at Completion: 9.92'

Note: Not to Scale

Form: ftrly\mwdiagrm.prs

WELL SPECIFICATION FORM

CLIENT: Louis Berger & Associates, Inc.

JOB NUMBER: High Priority SI

WELL OWNER: Fort Riley & HQ 1st Division

ADDRESS:

CITY, STATE, ZIP CODE: Fort Riley, Kansas

PHONE: (319) 239-3343

WELL NUMBER OR OTHER IDENTIFICATION: EP-93-02

WELL INSTALLATION DATE: 9 October 1993

GEOLOGIST SUPERVISING INSTALLATION: Dave Stein

GROUND SURFACE ELEVATION (FT): 1278.32'

TOP OF CASING ELEVATION (FT): 1280.12'

WELL STICK-UP (FT): 1.8'

TOTAL BORING DEPTH (FT): 23'

BORING DIAMETER (IN): 8.25"

TOTAL DEPTH OF OUTER CASING (FT): 9'

OUTER CASING MATERIAL: Steel

OUTER CASING DIAMETER (IN): 4"

TOTAL DEPTH OF INNER CASING (FT. EXCLUDING SCREEN): 13'

INNER CASING MATERIAL: PVC

INNER CASING DIAMETER (IN): 2"

TOTAL LENGTH OF WELL SCREEN (FT): 10'

WELL SCREEN MATERIAL: PVC

WELL SCREEN DIAMETER (FT): 0.167

SCREEN SLOT SIZE (IN): 020

WELL SPECIFICATION FORM (Cont'd)

WELL NUMBER: EP-93-02

BACKFILL MATERIAL AROUND SCREEN: Silica Sand

DEPTH RANGE OF BACKFILL (FT): 23' TO 11'

SEAL MATERIAL ABOVE SCREEN: Bentonite Pellets

DEPTH RANGE OF SEAL (FT): 11' TO 9'

BACKFILL MATERIAL AROUND CASING: Grout (Type II Portland Cement)

DEPTH RANGE OF BACKFILL (FT): 9'

DESCRIPTION OF TOP SEAL:

DESCRIPTION OF WELL COVER:

OTHER ADDITIONAL INFORMATION:

WELL DEVELOPMENT RECORD

CLIENT: Fort Riley - High Priority Sites JOB NO: High Priority SI

FIELD PERSONNEL: Mike Miles (SAIC), Brian Meyer (Layne Western) SHEET: 1 of 1

1. WELL NUMBER: EP-93-02
2. DATE OF INSTALLATION: 6 October 1993
3. DATE OF DEVELOPMENT: 13 October 1993
4. STATIC WATER LEVEL: BEFORE DEVELOPMENT (FT): 7.5' 24 HOURS AFTER (FT): 9.56'
5. QUANTITY OF WATER LOSS DURING DRILLING, IF USED (GAL): 40 gal.
6. QUANTITY OF STANDING WATER IN WELL AND ANNULUS BEFORE DEVELOPMENT (GAL): 2.6 gal.

	START	DURING		END
7. PHYSICAL APPEARANCE	cloudy	cloudy	clear	clear
SPECIFIC CONDUCTANCE (umhos/cm)	900	890	820	860
TEMPERATURE (°C)	19.5	20.5	19.1	19.0
pH (s.u.)	6.64	6.53	6.32	6.41
TURBIDITY (NTU)				19.7

8. DEPTH FROM TOP OF WELL CASING TO BOTTOM OF WELL (FT): 23'
9. SCREEN LENGTH (FT): 10'
10. DEPTH TO TOP OF SEDIMENT: BEFORE DEVELOPMENT (FT): 23' AFTER DEVELOPMENT (FT): 23'
11. TYPE AND SIZE OF WELL DEVELOPMENT EQUIPMENT: 1.5" diam.x3' stainless steel bailer and 1.5" diam. Grumdfos Redi-Flow submersible pump.
12. DESCRIPTION OF SURGE TECHNIQUE, IF USED: Surged with pump at successive intervals of screen.
13. HEIGHT OF WELL CASING ABOVE GROUND SURFACE (FT): 2.0'
14. QUANTITY OF WATER REMOVED (GAL): 540 gal. TIME OF REMOVAL (HR:MIN): 6:22

HTW DRILLING LOG

HOLE NO. EP-93-03

SHEET 1 OF 5 SHEETS

1. COMPANY NAME: Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR: Layne Western -- Witchita, KS
3. PROJECT: High Priority Site Investigation , Fort Riley, KS	4. LOCATION: Custer Hill East Pond, Fort Riley
5. NAME OF DRILLER: Randy Smith	6. MANUFACTURER'S DESIGNATION OF DRILL: Acker Soil Max 90, Schramm Rotadrill
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Auger, then drive 2' split spoon 2' ahead of auger; repeat at 5' intervals.	8. HOLE LOCATION: East downgradient hole
	9. SURFACE ELEVATION: 1283.15 (topo)
	10. DATE STARTED: 7 October 1993 / 11. DATE COMPLETED: 21 October 1993
12. OVERBURDEN THICKNESS: 6.7'	15. DEPTH GROUNDWATER ENCOUNTERED: 5.6'
13. DEPTH DRILLED INTO ROCK: 26.3'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMMENCED.
14. TOTAL DEPTH OF HOLE: 33.25'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
N.A.						

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Stephen M. Keller

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1	Auger 0'-4.5'					.5'-5.6' Almost dry.
	2						
	3						
	4						
Split Spoon	5	4.5'-6.5' Silt. Light yellow-gray with minor ochre oxidation streaks,		N.A.	N.A.	7-12-12-35	

PROJECT: Fort Riley High Priority Site Investigations -- East Pond

HOLE NO. EP-93-03

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HTW DRILLING LOG

HOLE NO. EP-93-03

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller

SHEET 2 OF 5 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	6	Split Spoon **4.5'-6.5'** Silt. Cont. and mottles. Well sorted, friable, and non-plastic. Local well indurated stringers, less than or equal to .25" thick. Oxidation is in wet zone 5.6'-5.9'.					5.6'-5.9' wet and nearly saturated. 5.9'-6.5' moist.
	7	Auger 4.5'-6.7' refusal.					
		6.7' Siltstone. Dry, well indurated, equal to the siltstone at 8.5' in EP-93-02.					Dry.
	8						
	9	**9'-13'** Limestone. Gray chips mixed with shale dust (i.e. rock flour). Soft cuttings.	0.0 ppm				
	10						
	11						
	12						
	13						

HTW DRILLING LOG

PROJECT High Priority Site Investigation , Fort Riley, KS	INSPECTOR Steve Keller/ Dave Stein	HOLE NO. EP-93-03 SHEET 3 OF 5 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	13	**13'-20'** Shale. Brown to gray. Very easy drilling. Cuttings appear as rock flour. Shale was weathered based on easy drilling.	0.0 ppm				Air coring produces dust as cuttings (i.e. Shale). Chips of Limestone appear as the cuttings when drilling through limestone using air rotary.
	14						
	15						
	16						
	17						
	18						
	19						
	20	**20'-30'** Shale. Brown weathered. The drilling was very easy, smooth. Cuttings appeared as rock flour.	0.0 ppm				
	21						

HTW DRILLING LOG

PROJECT High Priority Site Investigation , Fort Riley, KS	INSPECTOR Steve Keller	HOLE NO. EP-93-03 SHEET 4 OF 5 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
		20'-30' Shale. Cont.					
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						

HTW DRILLING LOG

HOLE NO. EP-93-03

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller/Dave Stein/Mike Miles

SHEET 5 OF 5 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	30	**30'** Limestone. Encountered a competent limestone. Drilling became more difficult. Drill mast shook noticeably.	0.0 ppm				Drilling recommenced on 21 October 1993.
	31	**31'** Limestone. Gray. At 31', drilling encountered a high gasoline-like odor eminating from the borehole.	0.0 ppm				Liquid rose to approximately 16' based on wetness on the rod pipes.
	32	31'-33.25' Limestone. Revisited borehole after further investigations.					
	33	**33.3'** Total Depth					33.25' Stopped Drilling.
	34						
	35						
	36						
	37						

LOUIS BERGER & ASSOCIATES, INC.

Client: U. S. Army Corps of Engineers Project No.: High Priority SI
Project: Ft. Riley High Priority SI Page: Page 1 of 1
Prepared by: Mike Miles (SAIC) Date: 22-OCT-93
Checked by: Julie Jaglowski Date: 15-DEC-93

MONITORING WELL AS-BUILT DIAGRAM

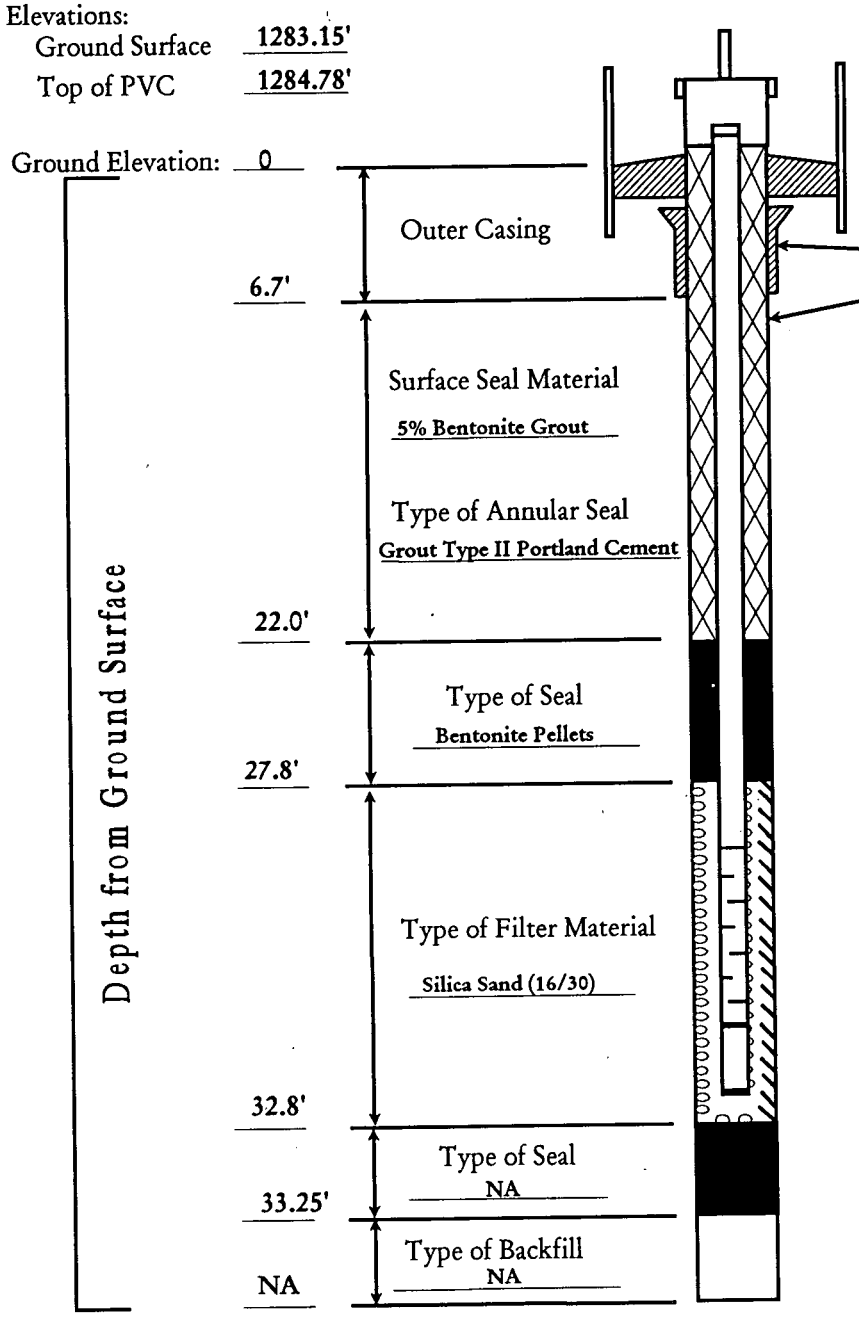
Driller: Layne Western
Drilling Method: Mud Rotary and Air Rotary

Well No.: EP-93-03
Date Installed: 21-OCT-93

Location: Custer Hill East Pond

Elevations:
Ground Surface 1283.15'
Top of PVC 1284.78'

Ground Elevation: 0



SURFACE CASING:
Size: 6"
Material: Steel
Length: 9'

Drill Hole Diameter: 5.75"

Riser:
Diameter: 2"
Material: PVC
Sch.: 40
Type of Joints: Flush Thread
Length: 29.8'

Screen:
Diameter: 2"
Material: PVC
Slot Size: 0.02
Length: 5'

Sump:
Length: 4"
Type of Cap: Threaded PVC

Centralizer: Used X
Not Used ____

Depth to Water From Top of Riser at Completion: 15.7'

Note: Not to Scale

Form: ftrly\mwdiagrm.prs

WELL SPECIFICATION FORM

CLIENT: Louis Berger & Associates, Inc.

JOB NUMBER: High Priority SI

WELL OWNER: Fort Riley & HQ 1st Division

ADDRESS:

CITY, STATE, ZIP CODE: Fort Riley, Kansas 66442-6000

PHONE: (913) 239-3343

WELL NUMBER OR OTHER IDENTIFICATION: EP-93-03

WELL INSTALLATION DATE: 12 October 1993

GEOLOGIST SUPERVISING INSTALLATION: Mike Miles (SAIC)

GROUND SURFACE ELEVATION (FT): 1283.15'

TOP OF CASING ELEVATION (FT): 1284.78'

WELL STICK-UP (FT): 2.0'

TOTAL BORING DEPTH (FT): 33.25'

BORING DIAMETER (IN): 5.25"

TOTAL DEPTH OF OUTER CASING (FT): 6.7'

OUTER CASING MATERIAL: Steel

OUTER CASING DIAMETER (IN): 4"

TOTAL DEPTH OF INNER CASING (FT. EXCLUDING SCREEN): 27.8'

INNER CASING MATERIAL: PVC

INNER CASING DIAMETER (IN): 2"

TOTAL LENGTH OF WELL SCREEN (FT): 5'

WELL SCREEN MATERIAL: PVC

WELL SCREEN DIAMETER (FT): 0.167

SCREEN SLOT SIZE (IN): 0. 020"

WELL SPECIFICATION FORM (Cont'd)

WELL NUMBER: EP-93-03

BACKFILL MATERIAL AROUND SCREEN: Clean Washed Sand (10-20)

DEPTH RANGE OF BACKFILL (FT): 33.25' TO 25.17'

SEAL MATERIAL ABOVE SCREEN: 1/4" Bentonite Pellets

DEPTH RANGE OF SEAL (FT): 25.17' TO 22.0'

BACKFILL MATERIAL AROUND CASING: Grout

DEPTH RANGE OF BACKFILL (FT): 22.0' TO 0'

DESCRIPTION OF TOP SEAL: Grout to surface with a 3' concrete pad placed around well.

DESCRIPTION OF WELL COVER: 6" steel casing with locking cap.

OTHER ADDITIONAL INFORMATION: Well had been previously drilled to 31'. Two additional feet were drilled on October 21, 1993 to a depth of 33'. 6" of sand was placed beneath the screen bottom. Limestone layer at 31' was approx. 6"-8" thick then graded back to soften shale. No additional cuttings could be found.

WELL DEVELOPMENT RECORD

CLIENT: Fort Riley - High Priority Sites JOB NO: High Priority SI

FIELD PERSONNEL: Kate Dickerson (LBA), Ed (Layne Western) SHEET: 1 of 1

1. WELL NUMBER: EP-93-03
2. DATE OF INSTALLATION: 21 October 1993
3. DATE OF DEVELOPMENT: 25 & 26 October 1993
4. STATIC WATER LEVEL: BEFORE DEVELOPMENT (FT): 14.9' (To Prod.) & 15.7' (to water) 24 HOURS AFTER (FT):
5. QUANTITY OF WATER LOSS DURING DRILLING, IF USED (GAL):
6. QUANTITY OF STANDING WATER IN WELL AND ANNULUS BEFORE DEVELOPMENT (GAL): 11 gal.

7.		START	DURING		END
	PHYSICAL APPEARANCE	muddy	silty	clear	clear
	SPECIFIC CONDUCTANCE (umhos/cm)				
	TEMPERATURE (°C)				
	pH (s.u.)				
	TURBIDITY (NTU)				14.9

8. DEPTH FROM TOP OF WELL CASING TO BOTTOM OF WELL (FT): 33'
9. SCREEN LENGTH (FT): 5'
10. DEPTH TO TOP OF SEDIMENT: BEFORE DEVELOPMENT (FT): AFTER DEVELOPMENT (FT):
11. TYPE AND SIZE OF WELL DEVELOPMENT EQUIPMENT: 1.5" diam.x3' stainless steel bailer and 1.5" diam. Grumdfos Redi-Flow submersible pump.
12. DESCRIPTION OF SURGE TECHNIQUE, IF USED: Surged with pump at successive intervals of screen.
13. HEIGHT OF WELL CASING ABOVE GROUND SURFACE (FT): 2.0'
14. QUANTITY OF WATER REMOVED (GAL): 650 gal. TIME OF REMOVAL (HR:MIN): 8:00

HTW DRILLING LOG

HOLE NO. WR-93-01

SHEET 1 OF 5 SHEETS

1. COMPANY NAME: Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR: Layne Western – Witchita, KS
3. PROJECT: High Priority Site Investigation , Fort Riley, KS	4. LOCATION: Northwest Wash Rack Reservoir, Fort Riley,KS
5. NAME OF DRILLER: John Gornick	6. MANUFACTURER'S DESIGNATION OF DRILL: Hollow stem auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 8.25" O.D. Auger; 5' continuous split spoon sampler	8. HOLE LOCATION: Northeast corner of reservoir
	9. SURFACE ELEVATION: 1295.96
	10. DATE STARTED: 5 October 1993 — 11. DATE COMPLETED: 5 October 1993
12. OVERBURDEN THICKNESS: 30'	15. DEPTH GROUNDWATER ENCOUNTERED: 14'
13. DEPTH DRILLED INTO ROCK: 1'.	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED. 12.85' 1 hour 40 minutes
14. TOTAL DEPTH OF HOLE: 31'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): 10.06' 1103 hour 6 October 1993

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		David Stern

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1 2 3 4 5	Split Spoon 0 - 2' Brown to dark brown clay. Sample grades to a lighter brown clay a 4'. 0 - 5' Low to moderate plasticity. Massive and dense.	0 ppm	N.A.	N.A.		Sampling was rotated with auger flights. No blow counts were required with this drilling method. Dry. Organic grass and roots present throughout the sample. Very mottled.

HTW DRILLING LOG

HOLE NO. WR-93-01

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
David Stein

SHEET 2 OF 5 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	6						
	7	Split Spoon					
	8						
	9	**5 - 10'** Brown silty clay. Friable. Slightly plastic due to organic material. Dense, massive, speckled throughout with black organic material.	0 ppm	N.A.	N.A.		Dry.
	10						
	11	Split Spoon					
	12	**10 - 15'** Sample is same stratigraphy as above, 5 - 10'.	0 ppm	N.A.	N.A.		
	13						

HTW DRILLING LOG

HOLE NO. WR-93-01

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: David Stein

SHEET 3 OF 5 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	14	Split Spoon **10 - 15'** (cont.) Interval similar to 5 - 10'. Brown silty clay. Friable. Slightly plastic due to organic material. Dense, massive, speckled throughout with black organic material	0 ppm	N.A.	N.A.		First water at 14'.
	15						
	16						
	17	Split Spoon **15 - 18'** Brown silty clay. Friable. Slightly plastic due to organic material. Dense, massive, speckled throughout with black organic material.					
	18						
	19	**18 - 20'** At 18', sample grades to a light gray, whitish weathered shale. Gravelly, dense. **15 - 20':**	0 ppm	N.A.	N.A.		Wet.
	20	Split Spoon **20 - 25'** Weathered shale. At 25' sample retains relic budding.	0 ppm	N.A.	N.A.		Sample was very soupy.
	21						

HTW DRILLING LOG

HOLE NO. WR-93-01

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: David Stein

SHEET 4 OF 5 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	22						
	23	Split Spoon					
		A 2" iron staining was encountered at 24.5'.					
	24	**20 - 25'** (cont.) Weathered shale. At 25 sample retains relic budding.	0 ppm	N.A.	N.A.		Sample was very soupy. Weathered sandy material (weathered shale and limestone).
	25						
	26						
	27	Split Spoon					
	28	**25 - 30'** Sample is simialr to the sequence from 20 - 25'. Weathered shale.	0 ppm	N.A.	N.A.		Soupy
	29						

HTW DRILLING LOG

HOLE NO. WR-93-01

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: David Stein

SHEET 5 OF 5 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	30	Split Spoon **25 - 30'** (cont.) Sample is simialr to the sequence from 20 - 25'. Weathered shale.	0 ppm	N.A.	N.A.		Soupy Competent bedrock encountered at 30'.
	31	Split Spoon **30 - 31'** Broken competent limestone.					Sample fizzed when acid was dropped on sample. Wet. Total depth = 31'.
	32						
	33						
	34						
	35						
	36						
	37						

LOUIS BERGER & ASSOCIATES, INC.

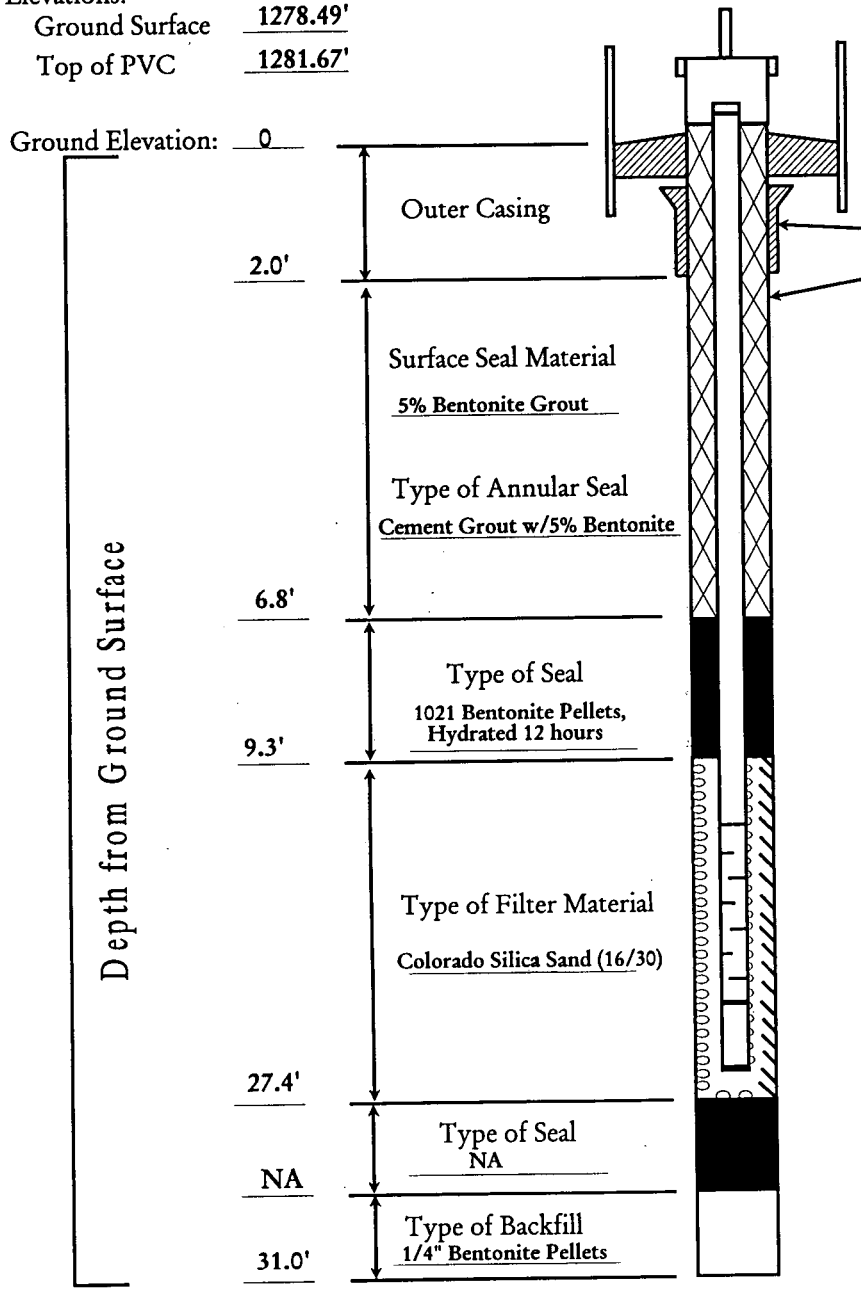
Client: U. S. Army Corps of Engineers Project No.: High Priority SI
Project: Ft. Riley High Priority SI Page: Page 1 of 1
Prepared by: Steve Keller Date: 8-OCT-93
Checked by: _____ Date: _____

MONITORING WELL AS-BUILT DIAGRAM

Driller: Layne Western
Drilling Method: 4 1/4" x 8" auger with CME continuous sampler
Well No.: WR-93-01
Date Installed: 6-OCT-93

Location: Custer Hill Wash Rack Reservoir

Elevations:
Ground Surface 1278.49'
Top of PVC 1281.67'



SURFACE CASING:
Size: NA
Material: NA
Length: NA

Drill Hole Diameter:
NA
8"

Riser:
Diameter: 2"
Material: PVC
Sch.: 40
Type of Joints: Flush Thread
Length: 15'

Screen:
Diameter: 2"
Material: PVC
Slot Size: 0.02
Length: 15'

Sump:
Length: 0.4'
Type of Cap: Threaded PVC

Centralizer: Used X
Not Used ____

Depth to Water From Top of Riser at Completion: ____

Note: Not to Scale

Form: ftrly\mwdiagrm.prs

WELL SPECIFICATION FORM

CLIENT: Louis Berger & Associates, Inc.

JOB NUMBER: High Prioiry Sites

WELL OWNER: Fort Riley & HQ 1st Division

ADDRESS:

CITY, STATE, ZIP CODE: Fort Riley, Kansas 66442-6000

PHONE: (913) 239- 3343

WELL NUMBER OR OTHER IDENTIFICATION: WR-93-01

WELL INSTALLATION DATE: 6 October 1993

GEOLOGIST SUPERVISING INSTALLATION: Dave Stein

GROUND SURFACE ELEVATION (FT): 1278.49'

TOP OF CASING ELEVATION (FT): 1281.67'

WELL STICK-UP (FT): 3'

TOTAL BORING DEPTH (FT): 27.0'

BORING DIAMETER (IN): 8.25"

TOTAL DEPTH OF OUTER CASING (FT): 5' Protective Casing

OUTER CASING MATERIAL: Steel

OUTER CASING DIAMETER (IN): 4"

TOTAL DEPTH OF INNER CASING (FT. EXCLUDING SCREEN): 12'

INNER CASING MATERIAL: PVC

INNER CASING DIAMETER (IN): 2"

TOTAL LENGTH OF WELL SCREEN (FT): 15'

WELL SCREEN MATERIAL: PVC

WELL SCREEN DIAMETER (FT): 0.167

SCREEN SLOT SIZE (IN): 020

WELL SPECIFICATION FORM (Cont'd)

WELL NUMBER: WR-93-01

BACKFILL MATERIAL AROUND SCREEN: Silica Sand

DEPTH RANGE OF BACKFILL (FT): 27' TO 17.7'

SEAL MATERIAL ABOVE SCREEN: Bentonite Slurry

DEPTH RANGE OF SEAL (FT): 17.7' TO 4.7'

BACKFILL MATERIAL AROUND CASING: Grout

DEPTH RANGE OF BACKFILL (FT): 4.7'

DESCRIPTION OF TOP SEAL:

DESCRIPTION OF WELL COVER:

OTHER ADDITIONAL INFORMATION:

WELL DEVELOPMENT RECORD

CLIENT: Fort Riley - High Priority Sites JOB NO: High Priority SI

FIELD PERSONNEL: Steve Keller (SAIC) SHEET: 1 of 1

1. WELL NUMBER: WR-93-01
2. DATE OF INSTALLATION: 6 October 1993
3. DATE OF DEVELOPMENT: 10 & 11 October 1993
4. STATIC WATER LEVEL: BEFORE DEVELOPMENT (FT): 10.85 (bls) 24 HOURS AFTER (FT): ____
5. QUANTITY OF WATER LOSS DURING DRILLING, IF USED (GAL): 0
6. QUANTITY OF STANDING WATER IN WELL AND ANNULUS BEFORE DEVELOPMENT (GAL): 11 gal.

7.		START	DURING		END
	PHYSICAL APPEARANCE	slightly cloudy	clear	clear	clear
	SPECIFIC CONDUCTANCE (umhos/cm)	440	444	420	442
	TEMPERATURE (°C)	14.8	15.2	13.8	14.5
	pH (s.u.)	6.42	6.65	6.17	6.50
	TURBIDITY (NTU)	323	2.4	11.7	4.1

8. DEPTH FROM TOP OF WELL CASING TO BOTTOM OF WELL (FT): 30.4'
9. SCREEN LENGTH (FT): 15'
10. DEPTH TO TOP OF SEDIMENT: BEFORE DEVELOPMENT (FT): ____ AFTER DEVELOPMENT (FT): ____
11. TYPE AND SIZE OF WELL DEVELOPMENT EQUIPMENT: 1.5" diam.x3' stainless steel bailer and 1.5" diam. Grumdfos Redi-Flow submersible pump.
12. DESCRIPTION OF SURGE TECHNIQUE, IF USED: Surged with pump at successive intervals of screen.
13. HEIGHT OF WELL CASING ABOVE GROUND SURFACE (FT): 3.0'
14. QUANTITY OF WATER REMOVED (GAL): 802 gal. TIME OF REMOVAL (HR:MIN): 4:08

HTW DRILLING LOG

HOLE NO. WR-93-02

SHEET 1 OF 6 SHEETS

1. COMPANY NAME: Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR: Layne Western – Witchita, KS
3. PROJECT: High Priority Site Investigation , Fort Riley, KS	4. LOCATION: Northwest Wash Rack Reservoir, Fort Riley,KS
5. NAME OF DRILLER: John Gornick	6. MANUFACTURER'S DESIGNATION OF DRILL: Hollow stem auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 8.25" O.D. Auger; 5' continuous split spoon sampler	8. HOLE LOCATION: Southeast corner of reservoir
	9. SURFACE ELEVATION: 1295.96'
	10. DATE STARTED: 5 October 1993 — 11. DATE COMPLETED: 5 October 1993
12. OVERBURDEN THICKNESS: 38.5'	15. DEPTH GROUNDWATER ENCOUNTERED: 31.2'
13. DEPTH DRILLED INTO ROCK: 0.5'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED. 22.6' BLS, 3.5 hours
14. TOTAL DEPTH OF HOLE: 39'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): 15.11' 7:43 hour 7 October 1992

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Stephen M. Keller

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1 2 3 4 5	**0'-1.8'** Road Fill Clay. Dark gray-brown to black, poorly consolidated clay with minor angular gravel. Dry and non-plastic, with medium olive-green mottles, 1.5'-1.8'. **1.8'-4'** Lost recovery. Split Spoon **4'-9'** Road Fill. Only 1.1' recovered, light olive-green and black clay, as 0' -1.8'.	0 ppm				Dry.

PROJECT: Fort Riley High Priority Site Investigations -- Wash Rack

HOLE NO. WR-93-02

ftrly\drillog.prs

HTW DRILLING LOG

HOLE NO. WR-93-02

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: Steve Keller

SHEET 2 OF 6 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	6	**4'-9'** Road Fill. Cont.					
	7	Split Spoon					
	8						
	9	**9'-10.3'** Road Fill. Brown clay with limestone gravel, dry.	0.1 ppm				Dry.
	10	**10.3'-12.2'** Clay. Native (weathered formation) Light gray-green with abundant brown and black mottling and black fracture coatings. Dry to moist, plastic, with interbedded maroon zones.					Dry to moist.
	11	Split Spoon					
	12	**12.2'-14'** Silt. Weak, maroon to light maroon-gray, almost dry, nonplastic, well sorted, with little or no clay. Minor lamination and fissility.					
	13						

HTW DRILLING LOG

HOLE NO. WR-93-02

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Steve Keller

SHEET 3 OF 6 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
		12.2'-14' Clay. Cont.					
	14	Split Spoon **14'-16.5'** Silt. Variegated maroon, maroon-gray; dry. Minor clay content, and wak lamination and fissility. Nonplastic, well sorted.	0.1 ppm				Dry.
	15						
	16						
	17	**16.5'-17.3'** Clay. Silty clay, sight gray-green, dry, blocky fracture, minor maroon mottling.					Dry.
	18	**17.3'-18.2'** Silt. Maroon, dry, nonplastic, with weak fissility.					
		18.2'-19' Lost recovery.					
	19						
	20	**19'-22.2'** Clayey Silt. (or Silty Clay) Dry, nonplastic, weakly consolidated, fissility poor to none. Intercalated light gray-green and deep maroon. Well sorted. Split Spoon	0.1 ppm	N.A.	N.A.		Dry.
	21						

HTW DRILLING LOG

PROJECT: High Priority Site Investigation , Fort Riley, KS	INSPECTOR: Steve Keller	HOLE NO. WR-93-02
		SHEET 4 OF 6 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	22	**19'-22.2'** Clayey Silt. Cont.					
	23	**22.2'-23.5'** Clay. Slightly moist, slightly plastic, mottled light gray-green and maroon. Weakly consolidated. Split Spoon					Moist
	24	**23.5'-24'** Lost recovery.					
	25	**24'-26.8'** Clay. Same as 22.2'-23.5'.	0.1 ppm				
	26						
	27	**26.8'-29'** Silty Clay. Light gray-green grading to light tan-brown with maroon and yello mottles. Dry to sightly moist, crumbly to weakly plastic. Carbonate coatings in partings. Split Spoon					Dry to Slightly Moist.
	28						
	29						

HTW DRILLING LOG

PROJECT High Priority Site Investigation , Fort Riley, KS	INSPECTOR Steve Keller	HOLE NO. WR-93-02 SHEET 5 OF 6 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	30	**29'-31.2'** Lost recovery. Split Spoon					
	31	**31.2'-31.8'** Clay. Mottled gray-green, saturated, with maroon and tan mottles. Driller says possible loss and water bearingzone in 31.8'-34'.					
	32	Split Spoon					
	33						
	34						Wet.
	35	**34'-34.4'** Lost recovery, except for mixed noncohesive clay and silt. Wet.					
	36	**34.4'-37'** Claystone. Hard, with saturated fractures, zone of moisture. Split Spoon					
	37						

HTW DRILLING LOG

HOLE NO. WR-93-02

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
Steve Keller

SHEET 6 OF 6 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	38	Split Spoon **37'- 38.5'** Claystone. Hard, with saturated fractures, zone of moisture. **38.5'-39'** Limestone. Dry, gray, well indurated, fine-grained. **39'** Total Depth.					Saturated. 39' Stopped Drilling.
	39						
	40						
	41						
	42						
	43						
	44						
	45						

LOUIS BERGER & ASSOCIATES, INC.

Client: U. S. Army Corps of Engineers Project No.: High Priority SI
Project: Ft. Riley High Priority SI Page: Page 1 of 1
Prepared by: Dave Stein Date: 8-OCT-93
Checked by: _____ Date: _____

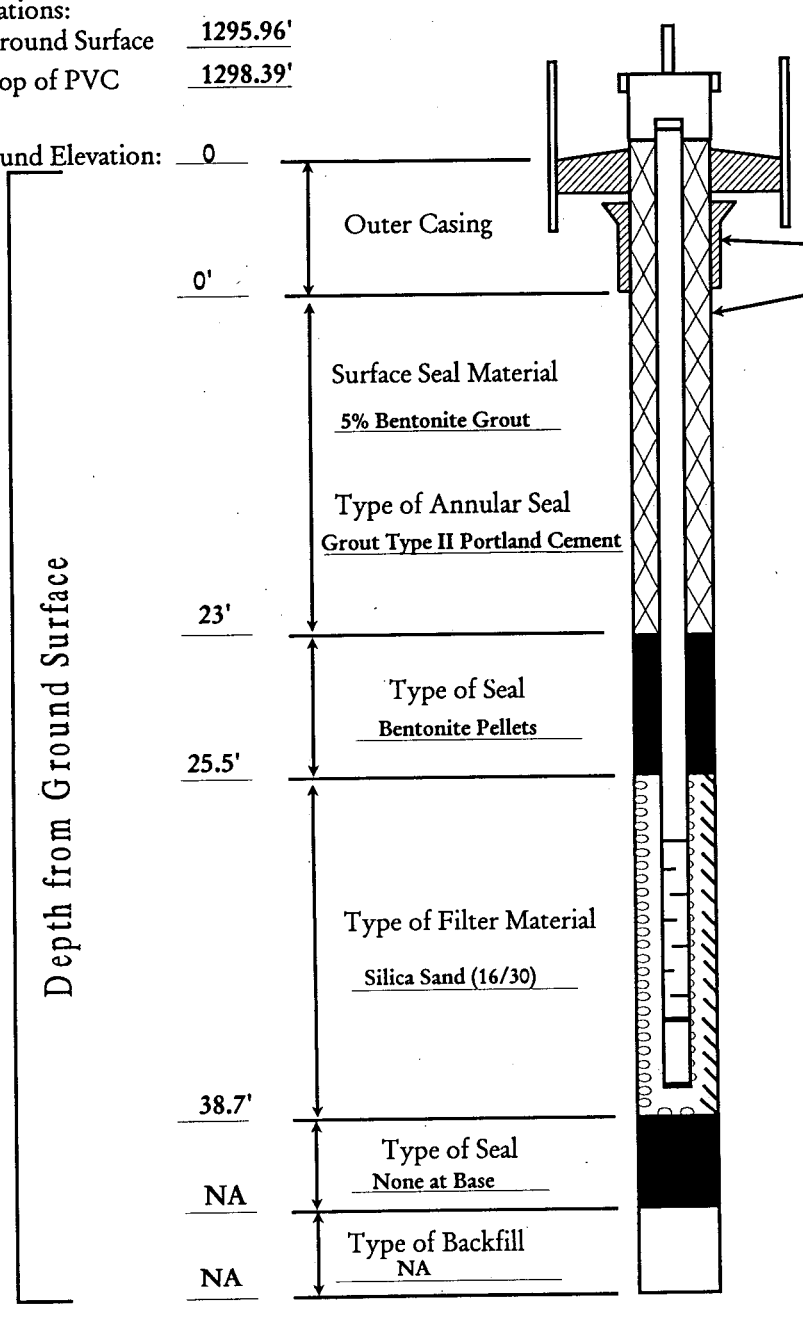
MONITORING WELL AS-BUILT DIAGRAM

Driller: Layne Western
Drilling Method: 4 1/4" x 8" auger with CME continuous sampler
Well No.: WR-93-02
Date Installed: 6-OCT-93

Location: Custer Hill Wash Rack Reservoir

Elevations:
Ground Surface 1295.96'
Top of PVC 1298.39'

SURFACE CASING:
Size: NA
Material: NA
Length: NA



Drill Hole Diameter:
NA
8.25" OD

Riser:
Diameter: 2"
Material: PVC
Sch.: 40
Type of Joints: Flush Thread
Length: 31.2'

Screen:
Diameter: 2"
Material: PVC
Slot Size: 0.02
Length: 10'

Sump:
Length: 4"
Type of Cap: Threaded PVC

Centralizer: Used X
Not Used ____

Depth to Water
From Top of Riser
at Completion: 25.75'

Note: Not to Scale

Form: ftrly\mwdiagrm.prs

WELL SPECIFICATION FORM

CLIENT: Louis Berger & Associates, Inc.

JOB NUMBER: High Priority SI

WELL OWNER: Fort Riley & HQ 1st Division

ADDRESS:

CITY, STATE, ZIP CODE: Fort Riley, Kansas

PHONE: (913) 239-3343

WELL NUMBER OR OTHER IDENTIFICATION: WR-93-02

WELL INSTALLATION DATE: 6 October 1993

GEOLOGIST SUPERVISING INSTALLATION: Dave Stein

GROUND SURFACE ELEVATION (FT): 1295.96'

TOP OF CASING ELEVATION (FT): 1298.39'

WELL STICK-UP (FT): 2.5'

TOTAL BORING DEPTH (FT): 38.7'

BORING DIAMETER (IN): 8.25"

TOTAL DEPTH OF OUTER CASING (FT): 5' Protective Casing

OUTER CASING MATERIAL: Steel

OUTER CASING DIAMETER (IN): 4"

TOTAL DEPTH OF INNER CASING (FT. EXCLUDING SCREEN): 28.7'

INNER CASING MATERIAL: PVC

INNER CASING DIAMETER (IN): 2"

TOTAL LENGTH OF WELL SCREEN (FT): 10'

WELL SCREEN MATERIAL: PVC

WELL SCREEN DIAMETER (FT): 0.167

SCREEN SLOT SIZE (IN): 020

WELL SPECIFICATION FORM (Cont'd)

WELL NUMBER: WR-93-02

BACKFILL MATERIAL AROUND SCREEN: Silica Sand

DEPTH RANGE OF BACKFILL (FT): 38.7' TO 25.5'

SEAL MATERIAL ABOVE SCREEN: Bentonite Pellets

DEPTH RANGE OF SEAL (FT): 25.5' TO 23'

BACKFILL MATERIAL AROUND CASING: Grout (Type II Portland Cement)

DEPTH RANGE OF BACKFILL (FT):

DESCRIPTION OF TOP SEAL:

DESCRIPTION OF WELL COVER:

OTHER ADDITIONAL INFORMATION:

WELL DEVELOPMENT RECORD

CLIENT: Fort Riley - High Priority Sites JOB NO: High Priority SI

FIELD PERSONNEL: Steve Keller (SAIC) SHEET: 1 of 1

1. WELL NUMBER: WR-93-02
2. DATE OF INSTALLATION: 6 October 1993
3. DATE OF DEVELOPMENT: 11 October 1993
4. STATIC WATER LEVEL: BEFORE DEVELOPMENT (FT): 24.1 (bls) 24 HOURS AFTER (FT): _____
5. QUANTITY OF WATER LOSS DURING DRILLING, IF USED (GAL): 0
6. QUANTITY OF STANDING WATER IN WELL AND ANNULUS BEFORE DEVELOPMENT (GAL): 21 gal.

7.		START	DURING		END
	PHYSICAL APPEARANCE	almost clear	almost clear	clear	clear
	SPECIFIC CONDUCTANCE (umhos/cm)	670	630	620	620
	TEMPERATURE (°C)	16.3	15.5	15.5	15.1
	pH (s.u.)	6.59	6.61	6.52	6.51
	TURBIDITY (NTU)	35.9	11.7	8.8	6.7

8. DEPTH FROM TOP OF WELL CASING TO BOTTOM OF WELL (FT): 38.7'
9. SCREEN LENGTH (FT): 10'
10. DEPTH TO TOP OF SEDIMENT: BEFORE DEVELOPMENT (FT): _____ AFTER DEVELOPMENT (FT): _____
11. TYPE AND SIZE OF WELL DEVELOPMENT EQUIPMENT: 1.5" diam.x3' stainless steel bailer and 1.5" diam. Grumdfos Redi-Flow submersible pump.
12. DESCRIPTION OF SURGE TECHNIQUE, IF USED: Surged with pump at successive intervals of screen.
13. HEIGHT OF WELL CASING ABOVE GROUND SURFACE (FT): 2.5'
14. QUANTITY OF WATER REMOVED (GAL): 453 gal. TIME OF REMOVAL (HR:MIN): 5:55

HTW DRILLING LOG

1. COMPANY NAME: Louis Berger & Associates, Inc.	2. DRILLING SUBCONTRACTOR: Layne Western -- Witchita, KS	HOLE NO. WR-93-03
		SHEET 1 OF 5 SHEETS
3. PROJECT: High Priority Site Investigation , Fort Riley, KS	4. LOCATION: Northwest Wash Rack Reservoir, Fort Riley,KS	
5. NAME OF DRILLER: John Gornick	6. MANUFACTURER'S DESIGNATION OF DRILL: Hollow stem auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 8.25" O.D. Auger; 5' continuous split spoon sampler	8. HOLE LOCATION: Northwest corner of reservoir	
	9. SURFACE ELEVATION: 1288.13	
	10. DATE STARTED: 6 October 1993	11. DATE COMPLETED: 6 October 1993
12. OVERBURDEN THICKNESS: 34'	15. DEPTH GROUNDWATER ENCOUNTERED: 47.0 - 48.0''	
13. DEPTH DRILLED INTO ROCK: N.A.	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED. 15.5' 1 hour 15 minutes	
14. TOTAL DEPTH OF HOLE: 34'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): 15.11' 7:43 hour 7 October 1992	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N.A.			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		David Stern

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	1 2 3 4 5	Split Spoon 0 - 5' Brown silty clay. Massive. Dense. Organic material speckled throughout sample fill material.	0 ppm	N.A.	N.A.		Sampling was rotated with auger flights. No blow counts were required with this drilling method. Dry.

HTW DRILLING LOG

HOLE NO. WR-93-03

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: David Stein

SHEET 2 OF 5 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	6						
	7	Split Spoon					
	8						
	9	**5 - 10'** Brown silty clay. Massive. Dense. Sample stratigraphy is similar to 0 - 5' interval.	0 ppm	N.A.	N.A.		Dry.
	10						
	11						
	12	Split Spoon					
	13	**10 - 15'** Interval similar to 5 - 10'. Brown silty clay. Massive. Dense.	0 ppm	N.A.	N.A.		

HTW DRILLING LOG

HOLE NO. WR-93-03

PROJECT: High Priority Site Investigation , Fort Riley, KS

INSPECTOR: David Stein

SHEET 3 OF 5 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	14	Split Spoon **10 - 15'** (cont.) Interval similar to 5 - 10'. Brown silty clay. Massive. Dense.	0 ppm	N.A.	N.A.		
	15						
	16						
	17	Split Spoon					
	18						
	19	**15 - 20'** Maroon and gray interbonded silty clay. Friable. Encountered the top of a weathered shale zone.	0 ppm	N.A.	N.A.		Dry.
	20	Split Spoon **20 - 25'** Sample grades to a greenish gray silty clay.	0 ppm	N.A.	N.A.		
	21						

HTW DRILLING LOG

PROJECT High Priority Site Investigation , Fort Riley, KS	INSPECTOR David Stein	HOLE NO. WR-93-03 SHEET 4 OF 5 SHEETS

LITH.	DEPTH	DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
	22						
	23	Split Spoon					
	24	**20 - 25'** (cont.) Sample grades to a greenish gray silty clay. At 25' sample graded into a maroon silty clay interbedded with a greenish silty clay.	0 ppm	N.A.	N.A.		First water at 24'. Dry sample, however the tip of the sample at 24' was wet.
	25						
	26						
	27	Split Spoon					
	28	**25 - 30'** Sample is similar to the interval 20 - 25'. Relic bedding is apparent.	0 ppm	N.A.	N.A.		Dry. Sample is very dense with wet stringers, where material is weathered.
	29						

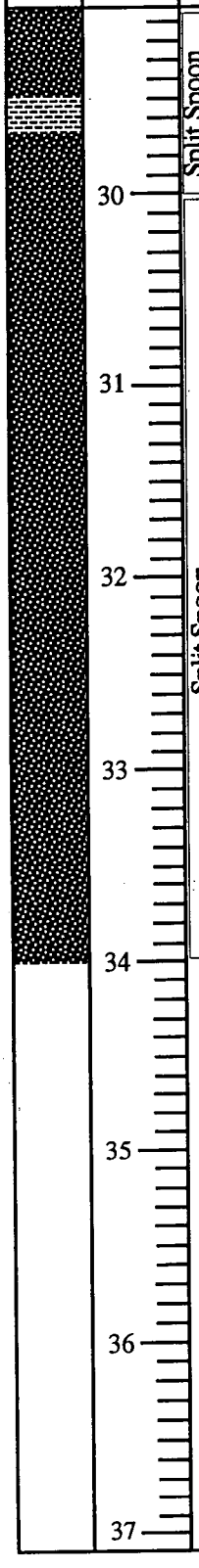
HTW DRILLING LOG

HOLE NO. WR-93-03

PROJECT
High Priority Site Investigation , Fort Riley, KS

INSPECTOR
David Stein

SHEET 5 OF 5 SHEETS



DESRIPTION OF MATERIALS	FIELD SCREEN RESULTS	CORE BOX NO.	SAMPLE NO.	BLOW COUNTS	REMARKS
At 25.5' exits a 2" zone of weathered maroon shale.					
25 - 30' (cont.) Sample is similar to the interval 20 - 25'. Relic bedding is apparent.	0 ppm	N.A.	N.A.		Dry. Sample is very dense with wet stringers, where material is weathered.
30 - 34' Sample represents a weathered zone. Broken fragments of limestone and weathered sandy limestone. Light brown and gray.					Very wet. Bedrock at 34'. Total Depth = 34'.

LOUIS BERGER & ASSOCIATES, INC.

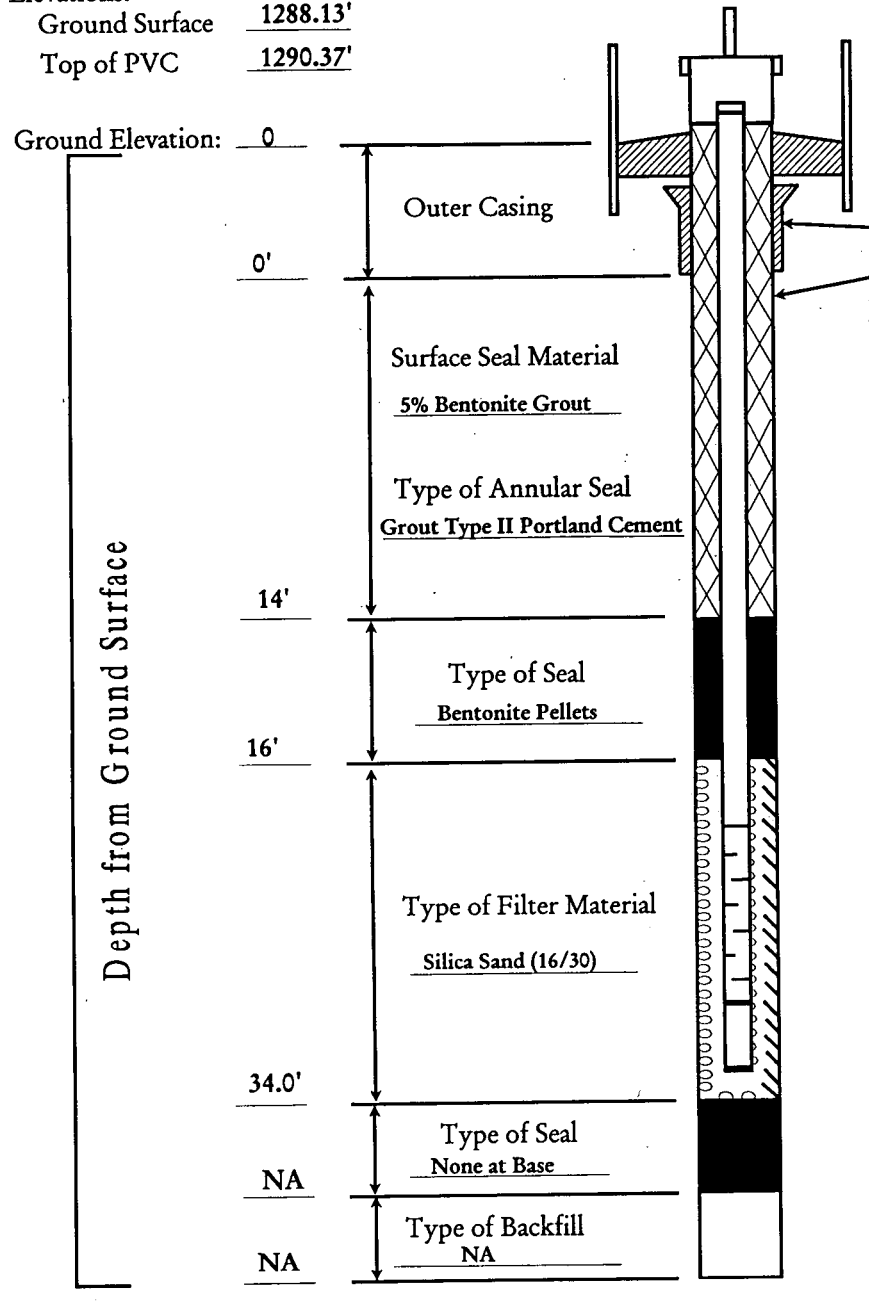
Client: U. S. Army Corps of Engineers Project No.: High Priority SI
Project: Ft. Riley High Priority SI Page: Page 1 of 1
Prepared by: Dave Stein Date: 7-OCT-93
Checked by: _____ Date: _____

MONITORING WELL AS-BUILT DIAGRAM

Driller: Layne Western
Drilling Method: 4 1/4" x 8" auger with CME continuous sampler
Well No.: WR-93-03
Date Installed: 7-OCT-93

Location: Custer Hill Wash Rack Reservoir

Elevations:
Ground Surface 1288.13'
Top of PVC 1290.37'



SURFACE CASING:
Size: NA
Material: NA
Length: NA

Drill Hole Diameter:
NA
8.25" OD

Riser:
Diameter: 2"
Material: PVC
Sch.: 40
Type of Joints: Flush Thread
Length: 21.25'

Screen:
Diameter: 2"
Material: PVC
Slot Size: 0.02
Length: 15'

Sump:
Length: 4"
Type of Cap: Threaded PVC

Centralizer: Used X
Not Used ____

Depth to Water From Top of Riser at Completion: 16.67'

Note: Not to Scale

Form: ftrly\mwdiagrm.prs

WELL SPECIFICATION FORM

CLIENT: Louis Berger & Associates, Inc.

JOB NUMBER: High Priority SI

WELL OWNER: Fort Riley & HQ 1st Division

ADDRESS:

CITY, STATE, ZIP CODE: Fort Riley, Kansas

PHONE: (913) 239-3343

WELL NUMBER OR OTHER IDENTIFICATION: WR-93-03

WELL INSTALLATION DATE: 7 October 1993

GEOLOGIST SUPERVISING INSTALLATION: Dave Stein

GROUND SURFACE ELEVATION (FT): 1288.13'

TOP OF CASING ELEVATION (FT): 1290.37'

WELL STICK-UP (FT): 2.25'

TOTAL BORING DEPTH (FT): 34'

BORING DIAMETER (IN): 8.25"

TOTAL DEPTH OF OUTER CASING (FT): 5' Protective Casing

OUTER CASING MATERIAL: Steel

OUTER CASING DIAMETER (IN): 4"

TOTAL DEPTH OF INNER CASING (FT. EXCLUDING SCREEN): 19'

INNER CASING MATERIAL: PVC

INNER CASING DIAMETER (IN): 2"

TOTAL LENGTH OF WELL SCREEN (FT): 15'

WELL SCREEN MATERIAL: PVC

WELL SCREEN DIAMETER (FT): 0.167

SCREEN SLOT SIZE (IN): 020

WELL SPECIFICATION FORM (Cont'd)

WELL NUMBER: WR-93-03

BACKFILL MATERIAL AROUND SCREEN: Silica Sand

DEPTH RANGE OF BACKFILL (FT): 34' TO 16'

SEAL MATERIAL ABOVE SCREEN: Bentonite Pellets

DEPTH RANGE OF SEAL (FT): 16' TO 14'

BACKFILL MATERIAL AROUND CASING: Grout (Type II Portland Cement)

DEPTH RANGE OF BACKFILL (FT): 0'

DESCRIPTION OF TOP SEAL:

DESCRIPTION OF WELL COVER:

OTHER ADDITIONAL INFORMATION:

WELL DEVELOPMENT RECORD

CLIENT: Fort Riley - High Priority Sites JOB NO: High Priority SI

FIELD PERSONNEL: Steve Keller (SAIC) , Julie Jaglowski (LBA), Randy Smith (Layne) SHEET: 1 of 1

1. WELL NUMBER: WR-93-03
2. DATE OF INSTALLATION: 7 October 1993
3. DATE OF DEVELOPMENT: 12 October 1993
4. STATIC WATER LEVEL: BEFORE DEVELOPMENT (FT): 13.1 (bls) 24 HOURS AFTER (FT):
5. QUANTITY OF WATER LOSS DURING DRILLING, IF USED (GAL): 0
6. QUANTITY OF STANDING WATER IN WELL AND ANNULUS BEFORE DEVELOPMENT (GAL): 17 gal.

	START	DURING		END
7. PHYSICAL APPEARANCE	slightly cloudy	almost clear	clear	clear
SPECIFIC CONDUCTANCE (umhos/cm)	480	413	445	430
TEMPERATURE (°C)	16.2	16.6	16.2	16.0
pH (s.u.)	6.73	6.95	6.91	6.47
TURBIDITY (NTU)	108	44.7	30.8	22.0

8. DEPTH FROM TOP OF WELL CASING TO BOTTOM OF WELL (FT): 34'
9. SCREEN LENGTH (FT): 15'
10. DEPTH TO TOP OF SEDIMENT: BEFORE DEVELOPMENT (FT): AFTER DEVELOPMENT (FT):
11. TYPE AND SIZE OF WELL DEVELOPMENT EQUIPMENT: 1.5" diam.x3' stainless steel bailer and 1.5" diam. Grumdfos Redi-Flow submersible pump.
12. DESCRIPTION OF SURGE TECHNIQUE, IF USED: Surged with pump at successive intervals of screen.
13. HEIGHT OF WELL CASING ABOVE GROUND SURFACE (FT): 2.25'
14. QUANTITY OF WATER REMOVED (GAL): 621 gal. TIME OF REMOVAL (HR:MIN): 6:27