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FINAL PRELIMINARY GROUNDWATER ASSESSMENT FOR OIL SATURATED AREA,
HAZARDOUS WASTE STORAGE AREA, HAZARDOUS MATERIAL STORAGE AND FIRE
VALVE AREA KANSAS CITY MO
11/1/1996
VERSAR

United States Air Force

Environmental Restoration Program

F I N A L**Preliminary Groundwater Assessment
Oil Saturated Area (SS003), Hazardous Waste Storage Area
(SS004), Hazardous Material Storage (SS006), and Fire Valve
Area (SS009)****Operating Location Q, Missouri
(Richards-Gebaur Air Force Base)****Contract No. F41624-94-D-8051
Delivery Order No. 0016
AFBCA Project No. UEBL 95-7011****November 1996****ADMINISTRATIVE
RECORD COPY**

F I N A L

**Operating Location Q
(Richards-Gebaur Air Force Base)**

PRELIMINARY GROUNDWATER ASSESSMENT

**Oil Saturated Area (SS003), Hazardous Waste Storage Area
(SS004), Hazardous Material Storage (SS006), and Fire Valve
Area (SS009)**

November 1996

Prepared for

**Air Force Center for Environmental Excellence (AFCEE/ERB)
Base Closure Restoration Division
Brooks Air Force Base, Texas 78235-5328**

**USAF Contract No. F41624-94-D-8051, Delivery Order No. 0016
AFBCA Project No. UEBL 95-7011**

Prepared by

**Versar, Inc.
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Springfield, Virginia 22151**

NOTICE

This report has been prepared for the United States Air Force by Versar, Inc. for the purpose of summarizing an environmental investigation under the Air Force Environmental Restoration Program. Because this report provides results from environmental investigations at the site, its release prior to an Air Force final decision on site conditions may be in the public's interest. The limited objectives of this report and the ongoing nature of the investigations, along with the evolving knowledge of site conditions and chemical effects on the environment and health, must be considered when evaluating this report because subsequent facts may become known that may make this report premature or inaccurate. Acceptance of this report in performance of the contract under which it is prepared does not mean the Air Force adopts the conclusions, recommendations, or other views expressed herein, which are those of the contractor only and do not necessarily reflect the official position of the United States Air Force.

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| 13 ABSTRACT (Maximum 200 words) This Preliminary Groundwater Assessment Report details the field activities and investigation results associated with the preliminary groundwater assessments performed in May through July 1996 at Sites SS003, SS004, SS006, and SS009 at Operating Location Q, formerly known as Richards-Gebaur Air Force Base. | | | | |
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ACRONYMS & ABBREVIATIONS

| | |
|--------|--|
| ACE | Army Corps of Engineers |
| ADC | Air Defense Command |
| AFB | Air Force Base |
| AFCEE | Air Force Center for Environmental Excellence |
| AFCS | Air Force Communications Service |
| AFRES | Air Force Reserve |
| ASTM | American Society of Testing Material |
| B&M | Burns & McDonnell |
| beg | below existing grade |
| BNAs | base-neutral acids |
| BRAC | Base Realignment and Closure |
| BTEX | benzene, toluene, ethylbenzene, and total xylenes |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| COC | chain of custody |
| cm/sec | centimeters per second |
| DoD | Department of Defense |
| DRO | diesel range organics |
| DSMOA | Department of Defense and State Memorandum of Agreement |
| E&E | Ecology and Environment |
| FFA | Federal Facility Agreement |
| FSP | Field Sampling Plan |
| FVA | Fire Valve Area |
| GRO | gasoline range organics |
| GSA | General Services Administration |
| HASP | Health and Safety Plan |
| HCL | hydrochloric acid |
| ID | inner diameter |
| IDL | Instrument Detection Limit |
| IDW | Investigation-Derived Waste |
| IRP | Installation Restoration Program |
| IRPIMS | Installation Restoration Program Information Management System |
| MAC | Military Airlift Command |
| MCL | Maximum Contaminant Level |
| MDNR | Missouri Department of Natural Resources |
| MDOH | Missouri Department of Health |
| mg/kg | milligrams per kilogram |
| mg/L | milligrams per liter |
| MS/MSD | matrix spike/matrix spike duplicate |
| msl | mean sea level |
| NPL | National Priorities List |
| OD | outer diameter |

ACRONYMS & ABBREVIATIONS

| | |
|--------|--|
| O&G | O'Brien and Gere |
| OL | Operating Location |
| OWS704 | Oil/water separator at Building 704 |
| PCBs | polychlorinated biphenyls |
| PID | photoionization detector |
| POL | petroleum, oil, and lubricants |
| ppm | parts per million |
| PQL | practical quantitation limit |
| PVC | polyvinyl chloride |
| QA | quality assurance |
| QAPP | Quality Assurance Project Plan |
| QC | quality control |
| RCRA | Resource Conservation and Recovery Act |
| SAP | Sampling and Analysis Plan |
| SARA | Superfund Amendments and Reauthorization Act |
| SI | Site Inspection |
| SMCL | Secondary Maximum Containment Level |
| SVOC | Semivolatile Organic Compounds |
| TCLP | toxicity characteristic leachate procedure |
| TICS | tentatively identified compounds |
| TOC | top of casing |
| TPH | total petroleum hydrocarbons |
| µg/L | micrograms per liter |
| µm | micrometer |
| U.S. | United States |
| USAF | United States Air Force |
| USCS | Unified Soil Classification System |
| USEPA | U.S. Environmental Protection Agency |
| UST | underground storage tank |
| VOC | volatile organic compound |
| °C | degrees Celsius |
| WP | Work Plan |

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- Appendix A. Soil Boring Logs, Well Construction Diagrams, and MDNR Well Certification Records
- Appendix B. Well Sampling Forms, Well Development, and Borehole Volume Calculation Table
- Appendix C. Survey Data
- Appendix D. Laboratory Results
- Appendix E. Quality Control Sample Results
- Appendix F. Investigation Derived Waste Sampling Results

SECTION 1.0**INTRODUCTION**

This report details the field activities and investigation results associated with the preliminary groundwater assessments performed by Versar, Inc. (Versar), in May and June 1996 at Operating Location Q (OL-Q), formerly known as Richards-Gebaur Air Force Base, Missouri (Figure 1-1). The work was part of the United States (U.S.) Air Force Base Realignment and Closure (BRAC) Program efforts to evaluate and remediate contamination at Air Force facilities prior to deed transfer or closure. Versar, under contract to the Air Force Center for Environmental Excellence (AFCEE), performed groundwater assessments at five sites on the Base.

The work was performed in accordance with the AFCEE approved work plan as specified in the AFCEE "Handbook for IRP Remedial Investigation/Feasibility Studies" (1993).

1.1 PURPOSE OF INVESTIGATION

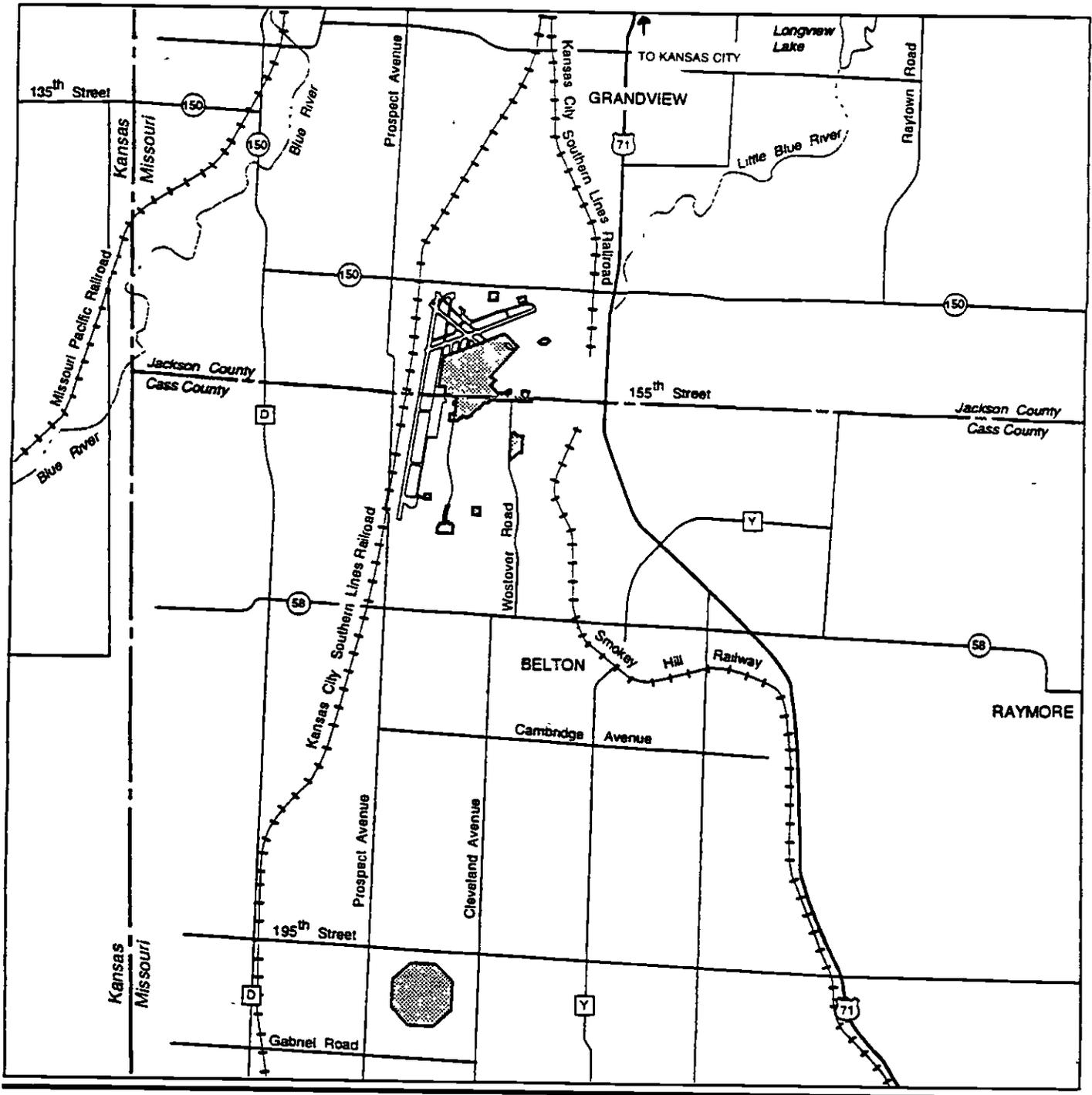
Versar, Inc., performed preliminary groundwater assessments at OL-Q under Contract No. F41624-94-D-8051, Delivery Order No. 0016 with AFCEE. Five sites were investigated throughout the main Cantonment Area of OL-Q (Figure 1-2). One of the sites, the oil/water separator at Building 704 (OWS704), is the subject of a separate report. This report focuses on the remaining four sites, identified as: the Oil-Saturated Area (Site SS003); the Hazardous Waste Storage Area (Site SS004); Hazardous Materials Storage (Site SS006); and the Fire Valve Area (Site SS009). The following sections describe the project objectives, other documents produced for conducting the studies, and subcontractors that participated in the work.

Project Objectives

The purpose of this project was to perform a preliminary groundwater assessment at the four sites to determine the presence or absence of groundwater contamination as a result of contaminated soils present at the sites, but have since been remediated. Direct-push technology was utilized in an attempt to collect groundwater samples and determine groundwater flow direction beneath the sites; however, the majority of the direct-push borings did not produce a sufficient volume of groundwater to complete the sampling or measure the groundwater flow direction. To obtain the necessary data, groundwater monitoring wells were installed at three of the sites using air-rotary drilling methods.

Project Documents

The work conducted under this delivery order was based on three technical documents incorporated into an overall Quality Project Plan. These documents include the Work Plan (WP), Sampling and Analysis Plan (SAP) which was comprised of a Quality Assurance



EXPLANATION

-  Base Property
-  U. S. Highway
-  State Highway
-  County Road

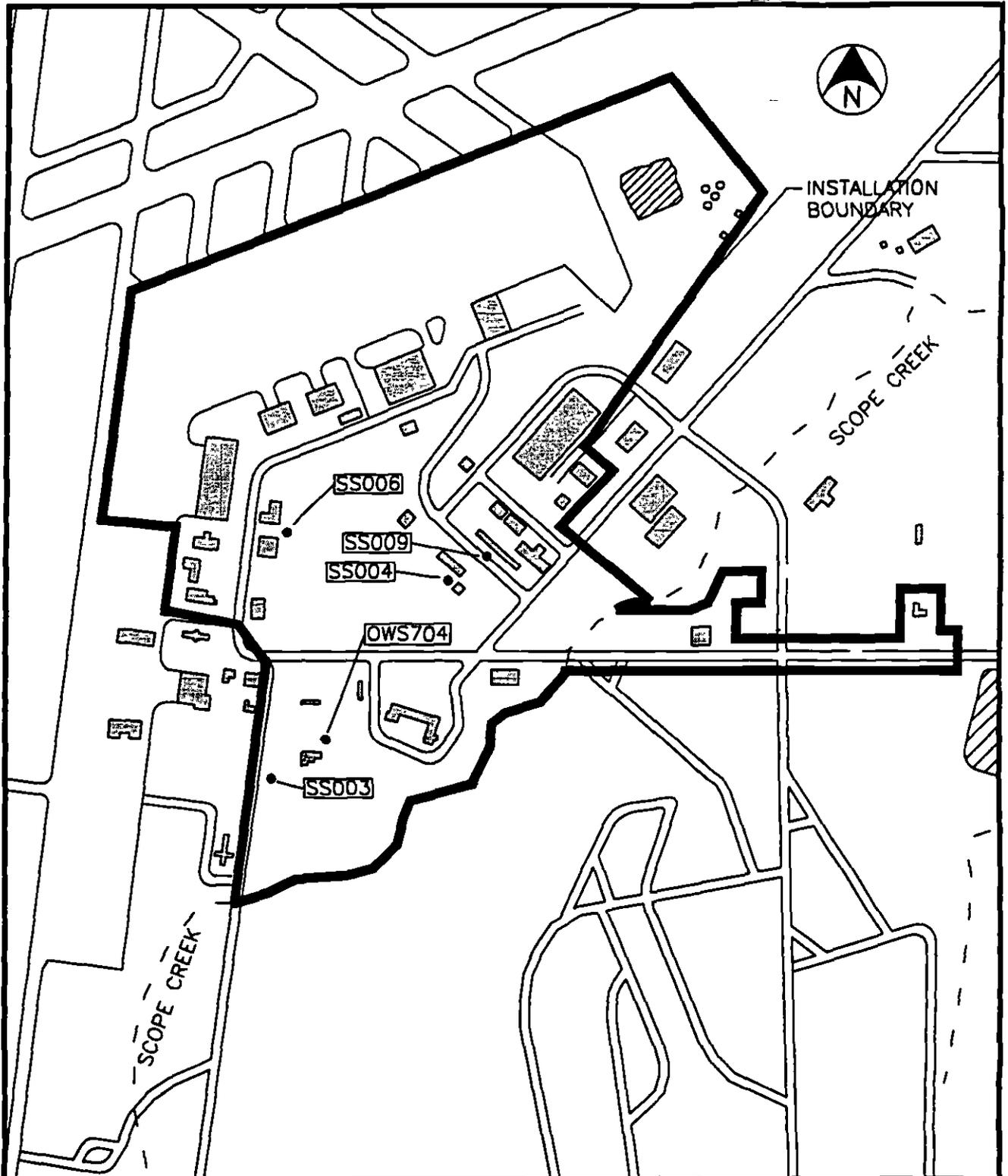


SOURCE DAMES & MOORE, 1995



FIGURE 1-1
OL-Q Location Map

140011



VF\2816-201\9510-439.DWG PLOT DATE: 09-12-96 FIG 1-2



NOTE: ALL OL-Q PROPERTY IS NOT SHOWN ON THIS MAP

| | | | |
|---|------|---|-----------------|
| AFCEE/OL-Q | | LAYOUT OF OPERATING LOCATION Q AND SITE LOCATIONS | |
| DESIGNED DORMAN | DATE | PROJECT NO. 2816-201 | SCALE: AS SHOWN |
| DRAWN MACLIN | DATE | | |
| Versar inc. 6850 VERSAR CENTER SPRINGFIELD, VIRGINIA 22151 (703) 750-3000 | | DRAWING NO. 9510-439 | FIGURE 1-2 |

Project Plan (QAPP) and a Field Sampling Plan (FSP), and Health and Safety Plan (HASP), all of which were produced by Versar in 1996.

Subcontractors

The subcontractors utilized during the performance of the groundwater assessments at OL-Q include the following:

| <u>Task</u> | <u>Subcontractor</u> |
|-----------------------------------|-------------------------------------|
| • Laboratory analysis | Lockheed Environmental Laboratories |
| • Direct-push | PSA Environmental |
| • Monitoring well installation | Layne-Western |
| • Surveying | Anderson Surveying |
| • Waste characterization/disposal | Essex Waste Management |

1.2 SITE HISTORY

OL-Q is located approximately 18 miles south of downtown Kansas City, Missouri. The northern portion of the Base, which includes Site SS003, is located in Jackson County, and the southern portion, in which the Sites SS004, SS006, and SS009 are situated, is located in Cass County. Primary access to the Base is by U.S. Highway 71.

In 1941, portions of the land now occupied by OL-Q were acquired by Kansas City for use as an auxiliary airport (Grandview Airport). In 1952, the Aerospace Defense Command leased the airport from the city for air defense operations; in 1953, the property (approximately 2,400 acres) was turned over to the Federal Government for establishment of an Air Force base. Initially, only C-46 airlift aircraft were stationed at the Base. Conversion to C-119 and C-124 aircraft occurred in 1957 and 1961, respectively. The Base was given the name Richards-Gebaur Air Force Base (AFB) in 1957.

Until 1970, the Air Defense Command (ADC) had the primary mission on the Base. In 1970, the Air Force Communications Service (AFCS) relocated its headquarters from Scott AFB, Illinois, to Richard-Gebaur AFB, and assumed command of the Base. In 1971, the C-124 aircraft were phased out and replaced with C-130 aircraft. This conversion reportedly reduced the industrial waste produced by the Base and also reduced the generation of waste oil. In 1977, AFCS moved back to Scott AFB, and Richards-Gebaur came under the Military Airlift Command (MAC).

The Air Force Reserve (AFRES) assumed operational control of the Base in October 1980. In 1981, approximately 80 percent of the Base property (including runways and taxiways) were transferred to the General Services Administration (GSA). GSA then transferred a majority of the airport-related property to the Kansas City Aviation Department as a public benefit transfer with the condition of continued runway access by the Air Force. Other excess parcels were also transferred by GSA for public and other military uses to Kansas City, the Federal Aviation Administration, the City of Belton, the Department of the

Navy, and the Department of the Army. Currently, the Base property comprises approximately 428 acres, with an additional 421 acres of easements. Richards-Gebaur was closed on 30 September 1994, and is now known as Operating Location Q (OL-Q).

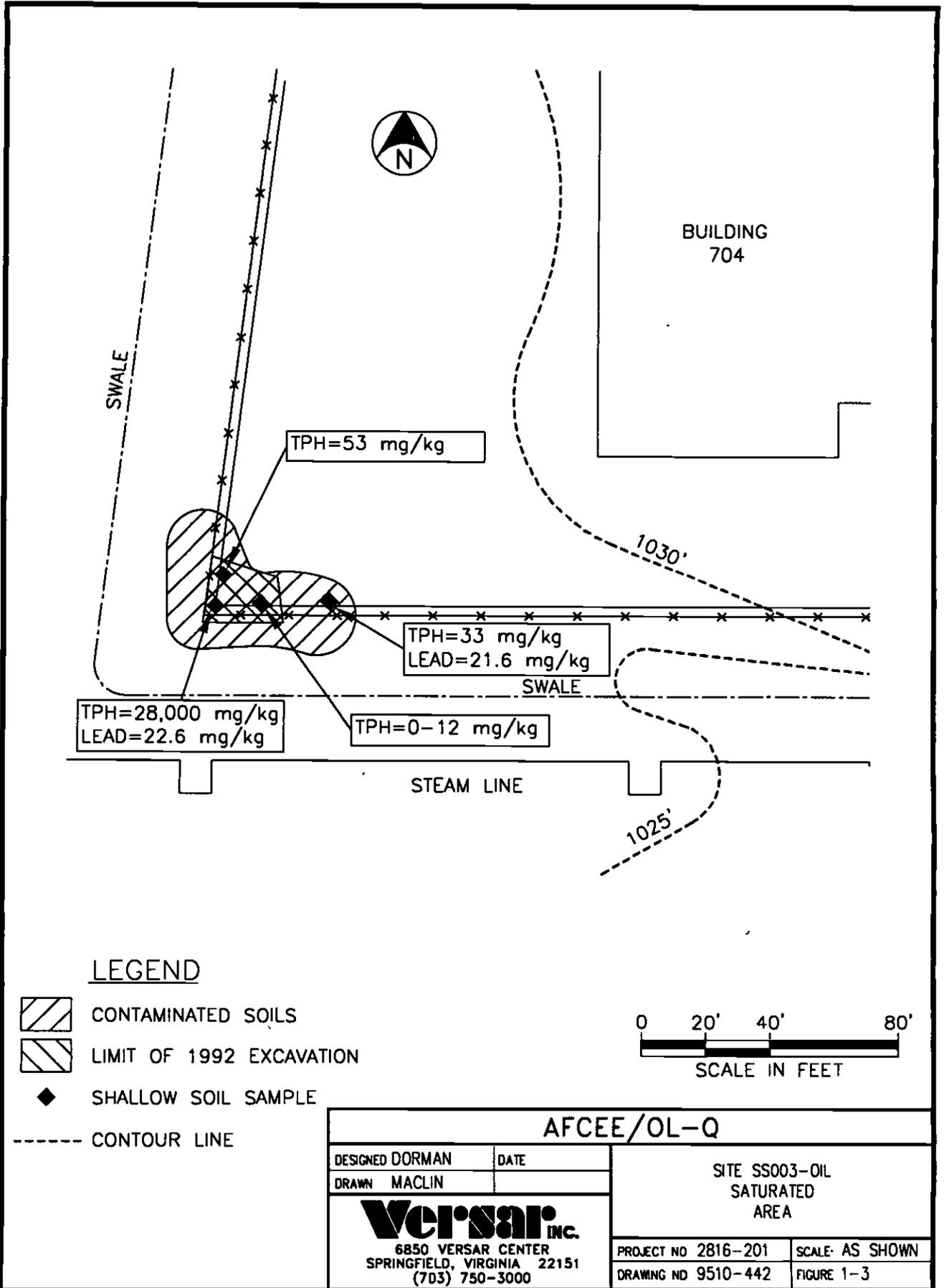
OL-Q is not on the National Priorities List (NPL) and the ongoing Installation Restoration Program (IRP) has no Federal Facility Agreement (FFA) with the U.S. Environmental Protection Agency (USEPA) Region VII; however, the Department of Defense (DoD), on behalf of the Base, has entered into a cooperative agreement (Department of Defense and State Memorandum of Agreement [DSMOA]) with the Missouri Department of National Resources (MDNR) for oversight and guidance for DoD implementation of cleanups under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Superfund Amendments and Reauthorization Act (SARA). Since 1982, the IRP process has identified eight sites located in currently owned parcels, and seven additional sites on property now owned or indentured to other parties that require environmental investigation and possible remediation. The Army Corps of Engineers (ACE) is responsible for environmental restoration on property no longer owned by the DoD. Of the eight IRP sites on OL-Q, seven are located in the main Cantonment Area.

1.3 SITE DESCRIPTIONS

1.3.1 Site SS003

The Oil-Saturated Area (Site SS003) is located southwest of Building 704 (Figure 1-3). This area was previously used for storage of waste oil products generated by the Motor Pool from the mid-1950s to the late 1980s. The area was noticeably saturated with waste oil and possibly hydraulic fluids and solvents. During completion of an IRP Phase II Stage 2 investigation of the site by Ecology & Environment in 1988 (E&E, 1988), lead was detected in soil samples collected from the surface to 1 foot below existing grade (beg). Based on the detection of lead in the shallow soil samples, E&E collected three surficial and three subsurface soil samples from the oil-saturated area, and three sediment samples and one surface water sample from a drainage ditch that runs along the western edge of the site (which may have received surface runoff from the oil-saturated area during periods of high precipitation).

Total petroleum hydrocarbons (TPH) were detected in the surface soil samples at concentrations exceeding the MDNR guideline of 200 milligrams per kilogram (mg/kg) for TPH-impacted soil. Lead was also detected at concentrations above background in the surface soil samples. TPH and lead were not detected above background in the subsurface soil, surface sediment, or surface water samples. Based on the shallow depth of contamination, it was determined that the source of the contaminants was most likely surficial spills from the stored waste oil products. Based on the results of E&E's investigations, the TPH- and lead-impacted areas appeared to be limited to the oil-stained area, and was not impacting the ditches or soils surrounding the site.



\AFCEE\2816-211\9510-442.DWG PLOT DATE: 09-17-96 FIG 1-3

In 1991, O'Brien and Gere (O&G, 1991) collected three surface soil samples from within the fence line, adjacent to the storage shed, for laboratory analysis. Metals were not detected at concentrations exceeding normal background for the area. Xylenes were detected at low concentrations in one of the samples. Volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) were not detected in any of the samples.

Based on the investigations performed by E&E and O&G, TPH- and lead-impacted soil appeared to be confined to the surface soils of the oil-stained area, on both sides of the fence line. Based on the absence or low concentrations of these contaminants in soils adjacent to, beneath, and in the surface runoff path, it did not appear that contaminants migrated from the oil-saturated area.

In 1991, Burns and McDonnell (B&M) excavated 27 cubic yards of contaminated soil from the oil-saturated area. TPH concentrations detected in soil samples collected from the bottom of the 2-foot deep excavation exceeded the MDNR cleanup goals of 200 mg/kg for TPH-impacted soil. Lead was detected at concentrations of 238 mg/kg, which exceeded Level B background for the area. In February 1992, B&M excavated an additional 15 cubic yards of soil from the oil-saturated area. Soil samples collected at the base of the excavation did not exceed MDNR cleanup goals, and the site was recommended for closure. Although the TPH- and lead-impacted soil was excavated from the oil-saturated area, the potential impact of the contaminants on shallow groundwater was not investigated at this time. The soil sampling and excavation work completed at the site to date are summarized on Figure 1-3.

1.3.2 Site SS004

The Hazardous Waste Storage Area (Site SS004) was formerly located at the southwest corner of Building 923, north of the intersection of Andrews Road and 155th Street. This area was used, for an undetermined number of years, as a storage area for hazardous and nonhazardous drummed wastes pending proper disposal. This area was partially surfaced with asphalt and tarmac. Surface water runoff in this area would flow into a grassy drainage ditch along the western part of the site (E&E, 1988). It was noted in the IRP Phase II Stage 2 report (E&E, 1988) that remedial efforts, such as the overpacking seeping drums, removing stained soil, and scraping the asphalt surface were performed on several occasions over the years.

In 1988, E&E completed one soil boring and collected three subsurface soil samples in the direct-path of surface runoff. E&E collected three surface soil samples within the eastern fence line, collected one soil sample from outside the northern corner of fence line (where the drums were previously stored), and collected one surface water sample from the site. An additional surface soil and surface water sample was collected from a location 200 to 300 feet topographically downgradient of the site, in natural drainage pattern feature. TPH exceeding MDNR soil cleanup guidelines were only detected in soils collected along the northern fence line (where the drums were formerly stored).

In 1991, O&G collected four surface soil samples from the surface to 2 feet beg in the grassy area inside the northwest fence line. TPH and metals were not detected at concentrations above background levels in this area. VOCs and base-neutral acids (BNAs) were not detected in any of the samples.

In 1991, B&M excavated 15 cubic yards of contaminated soils from the site. On the northwest part of the site, the upper 1 foot of soil was excavated, and on the southeast part of the site, the upper 2.5 feet of soil were excavated. Based on the results of soil samples collected from the base of the excavation, the area was considered remediated. Although soils in the former waste storage area had been remediated, the potential impact of the contaminants on shallow groundwater was not investigated. The soil sampling and excavation work completed at the site to date are summarized on Figure 1-4.

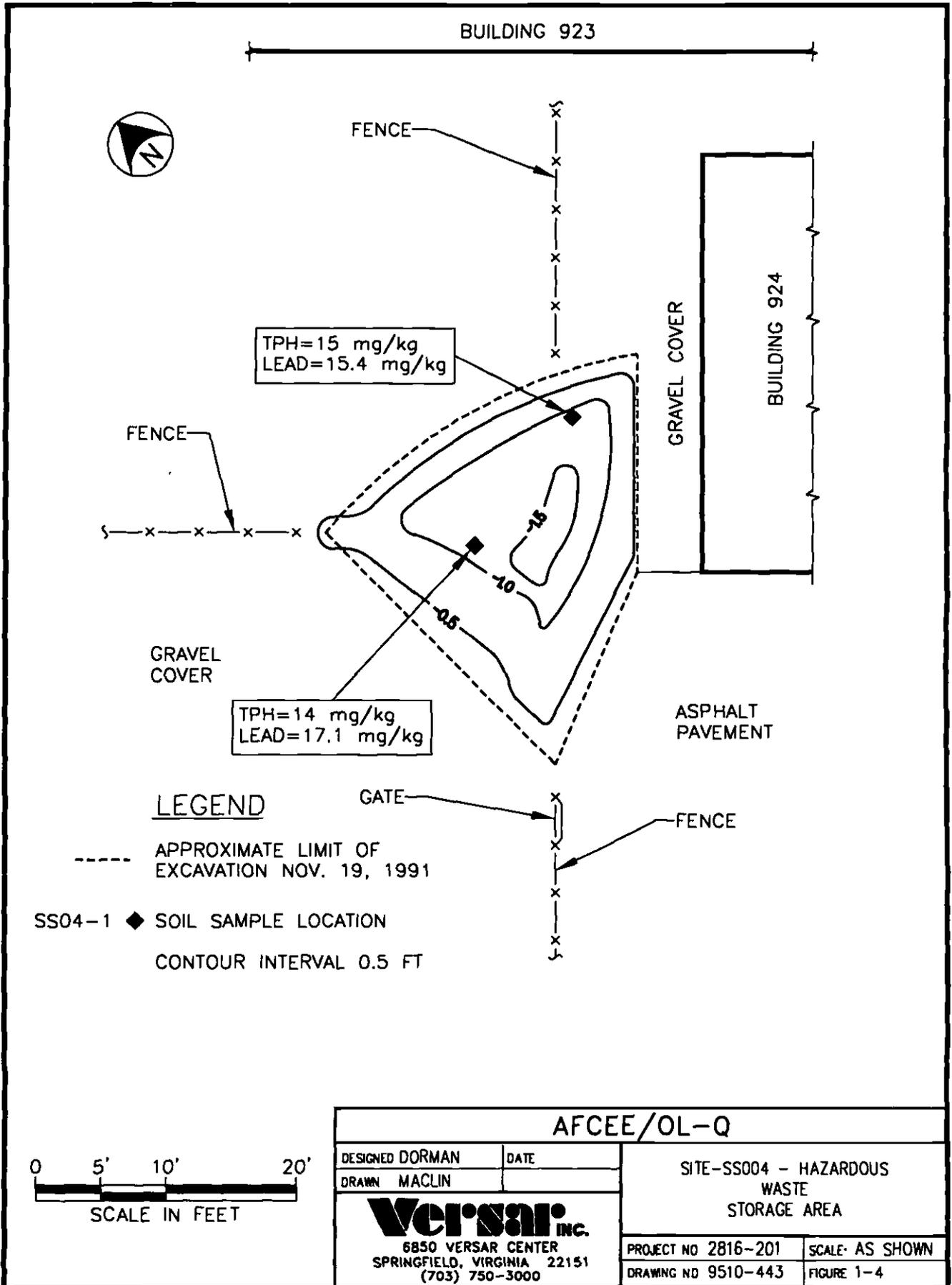
1.3.3 Site SS006

Since 1957, Building 927 had been used as an aircraft engine and propeller maintenance shop. Various degreasers, solvents, oils, and lubricants were stored at the shop. Most of these materials were stored in metal barrels and containers on racks that were located in the grass bank adjacent to the parking lot behind the shop (Site SS006). In the past, stressed vegetation in this area had been observed; however, after the racks and chemicals were removed, the stressed vegetation was no longer evident. At times, waste solvents generated during parts cleaning operations and used engine oil generated from maintenance procedures were also temporarily stored at the site. The topography at the site slopes to the east into the Central Drainage Area, then into Scope Creek. The surface drainage of the site is separated from the parking lot drainage by a 0.5-foot high curb.

In 1988, O&G collected two surface samples from the surface to 2 feet beg within the former area of stressed vegetation. VOCs were not detected in the soil samples; however, several BNAs were detected in both the sampling locations. Metals were detected at concentrations within normal background levels for the area with the exception of lead, which was detected at concentrations slightly higher than background.

In 1991, B&M completed a Site Inspection (SI) that included drilling six soil borings and collecting SVOC samples from 1 to 6 feet beg. SVOCs were only detected in one of the borings at a depth of 2 feet beg.

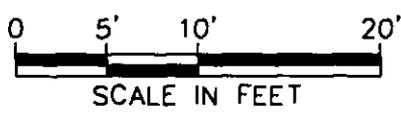
In 1993, B&M excavated approximately 40 cubic yards of contaminated soil from the former storage rack area. Soil was excavated in layers until screening with a photoionization detector (PID) indicated the soils were clean. The soil was excavated to a depth of approximately 3 feet beg. Based on the results of soil samples collected from the base of the excavation, the area was considered remediated. Although soils in the former hazardous material storage area had been remediated, the potential impact of the contaminants on shallow groundwater was not investigated. The soil sampling and excavation work completed at the site to date are summarized on Figure 1-5.



AFCEE\2816-211\9510-443.DWG PLOT DATE: 11-13-96 FIG 1-4

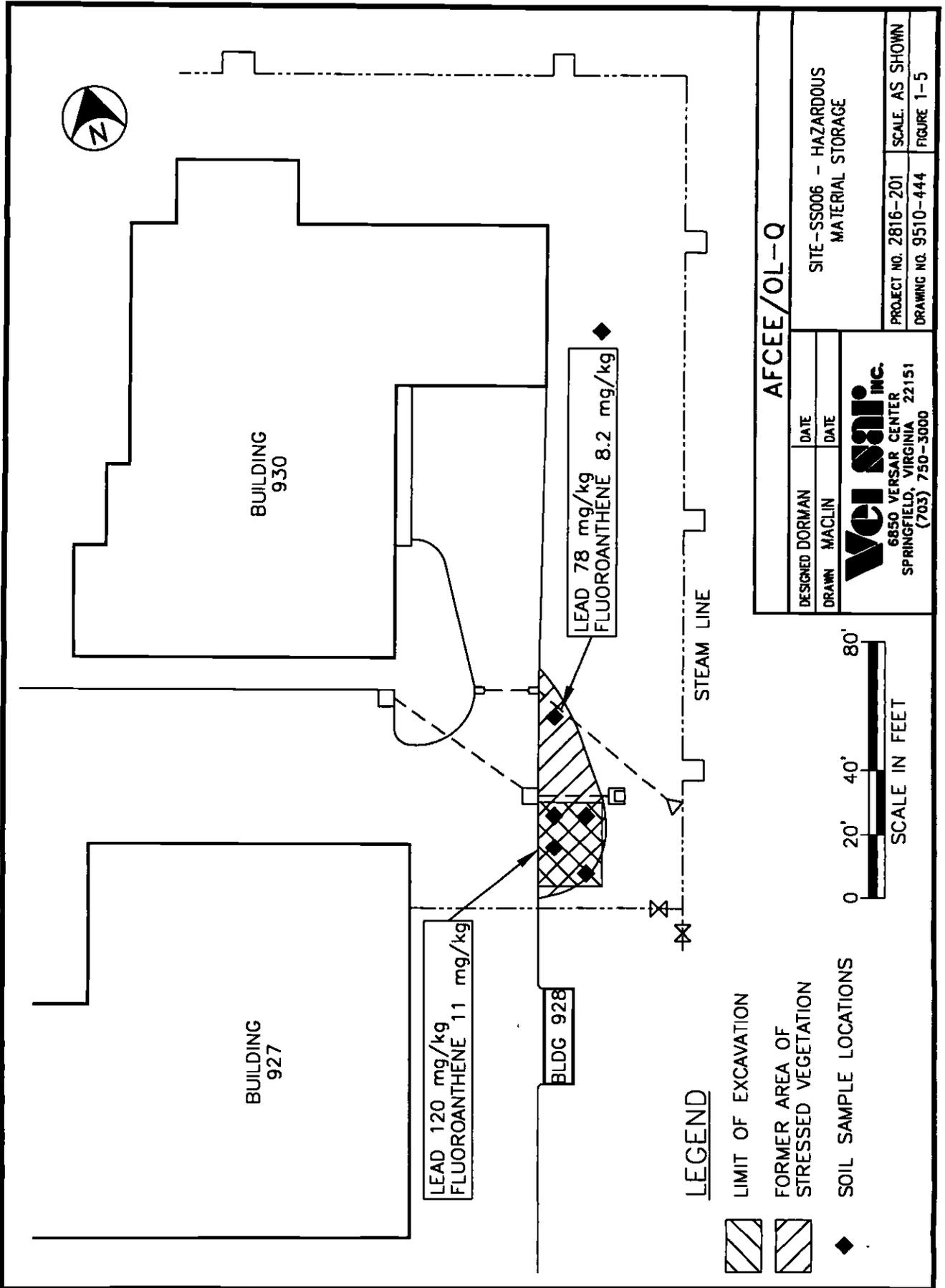
LEGEND

- APPROXIMATE LIMIT OF EXCAVATION NOV. 19, 1991
- SS04-1 ◆ SOIL SAMPLE LOCATION
- CONTOUR INTERVAL 0.5 FT



| AFCEE/OL-Q | | | |
|---|------|---|----------------|
| DESIGNED DORMAN | DATE | SITE-SS004 - HAZARDOUS WASTE STORAGE AREA | |
| DRAWN MACLIN | | PROJECT NO 2816-201 | SCALE AS SHOWN |
| Versar Inc. 6850 VERSAR CENTER SPRINGFIELD, VIRGINIA 22151 (703) 750-3000 | | DRAWING NO 9510-443 | FIGURE 1-4 |

\\AFCEE\2816-21\9510-444.DWG PLOT DATE: 09-17-96 FIG 1-5

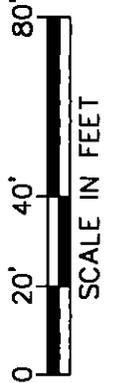


AFCEE/OL-Q

| | | | | | | |
|----------|--------|------|---|---|--|-------------------------------|
| DESIGNED | DORMAN | DATE | | SITE-SS006 - HAZARDOUS MATERIAL STORAGE | PROJECT NO. 2816-201 DRAWING NO. 9510-444 | SCALE, AS SHOWN FIGURE 1-5 |
| DRAWN | MACLIN | DATE | | | | |
| | | | 6850 VERSAR CENTER SPRINGFIELD, VIRGINIA 22151 (703) 750-3000 | | | |

LEGEND

- LIMIT OF EXCAVATION
- FORMER AREA OF STRESSED VEGETATION
- SOIL SAMPLE LOCATIONS



1.3.4 Site SS009

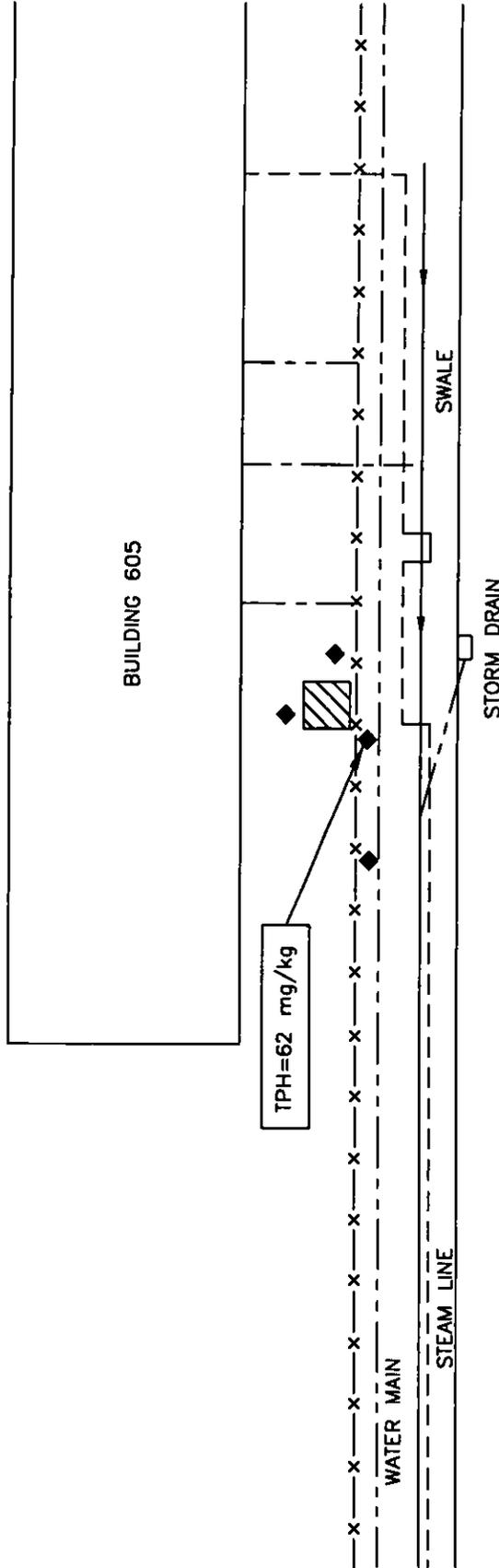
Site SS009 is located near Building 605 on Corkill Road, southeast of the intersection of Westover and Corkill Roads. In 1993, petroleum products were encountered in the Fire Valve Area (FVA) during the excavation and repair of an underground water main valve. Approximately 10 cubic yards of petroleum-impacted soil were excavated from this area. The excavated soil was analyzed for TPH and benzene, toluene, ethylbenzene, and total xylenes (BTEX). TPH and BTEX concentrations detected in the excavated soil exceeded MDNR cleanup goals for TPH- and BTEX-impacted sites.

In 1993, Tetra Tech (U.S. Air Force, 1995) completed four soil borings, one on the southeastern, northern, and northwestern sides of the previously excavated area and one along the water line located northwest of the FVA.

In 1994, 15 additional borings were drilled to depths of 8 to 15 feet below along the gas and water lines which ran toward the abandoned petroleum, oil, and lubricants (POL) lines, located northwest of the FVA. Petroleum impacted soils were not encountered beyond Building 605. Three additional borings were completed southwest of the FVA to determine the absence or presence of contamination observed previously in the water line trench.

TPH was detected in only one of these borings at a concentration below the MDNR soil cleanup guideline for TPH-impacted soil. A small area of contaminated soil was also encountered near the site of the former excavation, along the water line immediately northwest of the FVA. No additional excavations of TPH-impacted soil, either above or below MDNR Guidelines, were performed. Contamination was not encountered along the utility lines leading from the site to the north. Based on the Tetra Tech investigation, no further environmental activities were recommended for the site. Although no further activities were recommended for the FVA, the potential impact of the contaminants on shallow groundwater was not investigated. The soil sampling and excavation work completed at the site to date are summarized on Figure 1-6.

\\AFCEE\2816-21\9510-440.DWG PLOT DATE 09-17-96 FIG 1-6



LEGEND

-  LIMITS OF EXCAVATION
-  SOIL SAMPLE LOCATIONS

AFCEE/OL-Q

| | |
|-----------------|---------------|
| DESIGNED DORMAN | DATE 10/03/95 |
| DRAWN MACLIN | 10/03/95 |

wei ssi inc.
 6850 VERSAR CENTER
 SPRINGFIELD, VIRGINIA 22151
 (703) 750-3000

SITE SS009-
 FIRE VALVE
 AREA

| | |
|----------------------|-----------------|
| PROJECT NO. 2816-201 | SCALE. AS SHOWN |
| DRAWING NO. 9510-440 | FIGURE 1-6 |

SECTION 2.0**SITE BACKGROUND**

OL-Q is located approximately 18 miles south of downtown Kansas City, Missouri. The northern portion of the Base is located in Jackson County, and the southern portion is located in Cass County. Primary access to the Base is from U.S. Highway 71. The Base property currently occupies approximately 428 acres and is composed of 11 parcels. The main Cantonment Area, which covers 209 acres, is the largest parcel and contains the main aviation support and administrative areas for the Base.

2.1 SITE PHYSIOGRAPHY AND TOPOGRAPHY

OL-Q is located within the Osage Plains region of the Central Lowland physiographic province. The Osage Plains are characterized by low relief, wide, maturely dissected uplands, and relatively steep valley slopes carved on sedimentary rocks of Pennsylvanian age. The topography of the Base is gently rolling, with relief between 960 and 1,060 feet above mean sea level (msl).

2.2 SURFACE WATER

The main Base area is located within the watershed of the Missouri River drainage basin, characterized by a dendritic drainage pattern. In the Osage Plains section of the basin, the yield from the low-flow streams is poor.

The local surface hydrology is dominated by the drainage systems of the Blue and Little Blue Rivers, which have a confluence with the Missouri River. Scope Creek, a natural drainage/surface water feature next to the Base, is a tributary of the Little Blue River (Figure 1-2). The stream is intermittent, but contains water much of the time, and flows from the south to the northeast. Surface water supplies are limited, so a number of surface water impoundments have been built in the area for agricultural purposes. None of these ponds are located on OL-Q, although two ponds are located near the Base property. No major natural springs exist on or in the vicinity of the Base.

The primary drinking water source for the Base and entire region is the Missouri River. The water is piped from the river by the Kansas City Water and Pollution Control Department.

2.3 BASE GEOLOGY

The geology of the Base is characterized by thin Pleistocene age glacial loess (wind blown silt) deposits overlying residual soils. The residual soils were derived from the in-situ weathering of limestones and shale bedrock. The soils belong to the Macksburg-Urban series, which is defined as being poorly drained silt and silt clay loams, covered in places by urban features. The weathered zone overlying the bedrock (in the undisturbed state) is typically 2

to 15 feet thick. The soil is generally fine silty clays and silts with a hydraulic conductivity of approximately 1×10^{-7} centimeters per second (cm/sec).

Based on previous studies at the Base, rock outcrops found along Scope Creek are of the Kansas City Group, which consists of the Wyandotte Formation, Lane Formation, Iola Formation, and Chanute Formation, all of which are Pennsylvanian in age. The Argentine Limestone Member (of the Wyandotte Formation) is a light gray limestone characterized by thin, wavy bedding, except in the lower few feet, where the unit is thick-bedded. The Lane Formation is a medium gray to bluish-gray shale that is commonly silty in the upper part. The Raytown Member (of the Iola Formation) is a medium bluish-gray, wavy bedded limestone, locally containing interbedded lenses of shale approximately 3-inches thick. The Chanute Formation is a gray, purple-red, and green shale with thin nodular limestone near the middle, and local occurrences of cross bedded sandstone and conglomerate.

2.4 BASE HYDROGEOLOGY

OL-Q is located within the Osage-Salt Plains groundwater area on the Central Nonglaciated Plains groundwater region (USAF, 1994). The primary aquifers of the Osage-Salt Plains area are characterized by Pennsylvanian and Mississippian age sandstone and limestone units. The low permeability of the Pennsylvanian and Mississippian strata impedes vertical groundwater movement. The release of groundwater in storage from shales and claystone is very slow, effectively acting as a confining layers to the lower limestone units. In general, groundwater yields from wells completed in the shallow aquifers are very low and appear to be seasonal (USAF, 1995). The groundwater from these aquifers is characterized as saline, because the total dissolved solids exceed 1,000 parts per million (ppm). There are no water supply wells at OL-Q.

Groundwater recovery in shallow monitoring wells (installed in the upper 100 feet of carbonate bedrock) is the result of minimal percolation of water through joints, bedding planes, fractures, and/or faults. Water-yielding openings are irregularly distributed, both vertically and horizontally. Movement of groundwater results chiefly from secondary permeability (i.e., fractures).

Shallow groundwater was encountered at the sites investigated by Versar at depths ranging from several to 30 feet and varied significantly over short distances. The source of groundwater encountered at these sites is believed to be saturated weathered bedrock units and microfractures and bedding planes in weathered bedrock units in which saturated conditions were not encountered. Because of the lack of saturated units at most of the drilling locations, the weathered bedrock encountered above competent bedrock was treated as one water-bearing unit. The groundwater monitoring wells installed at each site were constructed to intercept groundwater present in both the saturated and unsaturated zones. All of the wells were installed to as shallow a depth as possible, in an effort to target groundwater most likely to have been impacted by contaminated soil formerly located at the sites.

Based on previous studies (Jacobs, 1995) and groundwater contour maps prepared for sites SS003 and SS004, groundwater flow beneath the sites appears to be to the east-southeast, towards Scope Creek. Based on depth to bedrock beneath sites SS003 and SS004, shallow groundwater also appears to be influenced by bedrock topography (bedrock was encountered at greater depths in a southerly and easterly direction).

140024

SECTION 3.0

PRELIMINARY GROUNDWATER ASSESSMENT

3.1 OBJECTIVES

The purpose of this project was to perform a preliminary groundwater assessment at the four sites to determine the presence or absence of groundwater contamination as a result of the contaminated soil that was present at the sites, but has since been remediated. Direct-push technology was used in an effort to collect groundwater samples and to determine groundwater flow direction beneath the sites. Temporary wells (piezometers) were installed in the direct-push borings in which groundwater was observed. A majority of the direct-push borings did not yield a sufficient volume of groundwater to complete the sampling or determine groundwater flow direction throughout the sites. Sufficient groundwater for sampling was only encountered in two direct-push boring locations, both of which were completed at Site SS009. To obtain the necessary data, groundwater monitoring wells were installed at the three remaining sites (SS003, SS004, and SS006) using air-rotary drilling methods. The direct-push boring, temporary well, and monitoring well locations are depicted on Figures 3-1 through 3-4.

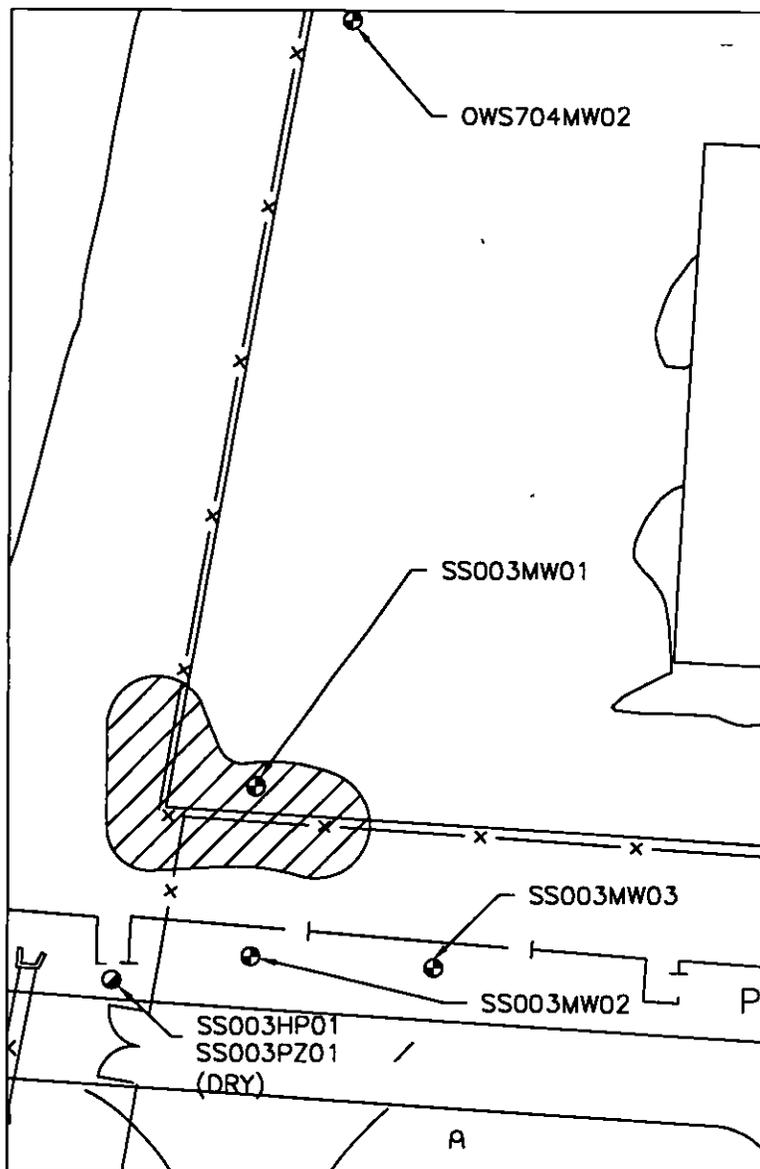
The direct-push groundwater monitoring well locations were selected based on the location of the former source of shallow soil contamination, topography of the surrounding area, accessibility, direction of surface water runoff, and presumed flow direction of shallow groundwater. Originally, three monitoring well/direct-push locations were selected for each site surrounding the remediated areas, with two locations hydraulically downgradient and one location hydraulically upgradient of these areas. The hydraulically upgradient and downgradient designations were based upon surface water drainage, topography, and the assumption that a uniform water bearing zone existed beneath the sites. However, uniform water bearing zones were not encountered beneath the sites, and the direct-push and well locations and sampling depth were determined in the field.

3.2 DEVIATION FROM WORK PLAN

Based on field conditions, it was necessary to alter the number of direct-push borings completed and groundwater monitoring wells installed at each site designated in the WP (Versar, 1995). The additional borings and wells were completed to obtain the necessary data for performing the preliminary groundwater assessment. The deviations from the WP are explained in detail in each applicable Section of this report.

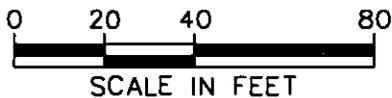
In order to meet the reporting requirements for volatile organic analyses, the laboratory reporting objectives were changed from those described in the WP. The WP stipulates the required reporting levels to be lower than attainable laboratory Practical Quantitation Limits (PQLs). The laboratory instrument detection limits (IDLs), however, are lower than the laboratory PQLs and the reporting levels required by the WP. Detected VOCs above the IDLs, but below the PQLs, are estimated quantities but meet the reporting requirements of the WP. Therefore, estimated values are reported for all VOCs detected

\AFCEE\RGAFB\2816-105\9608-629.DWG PLOT DATE: 11-13-96 FIG 3-1

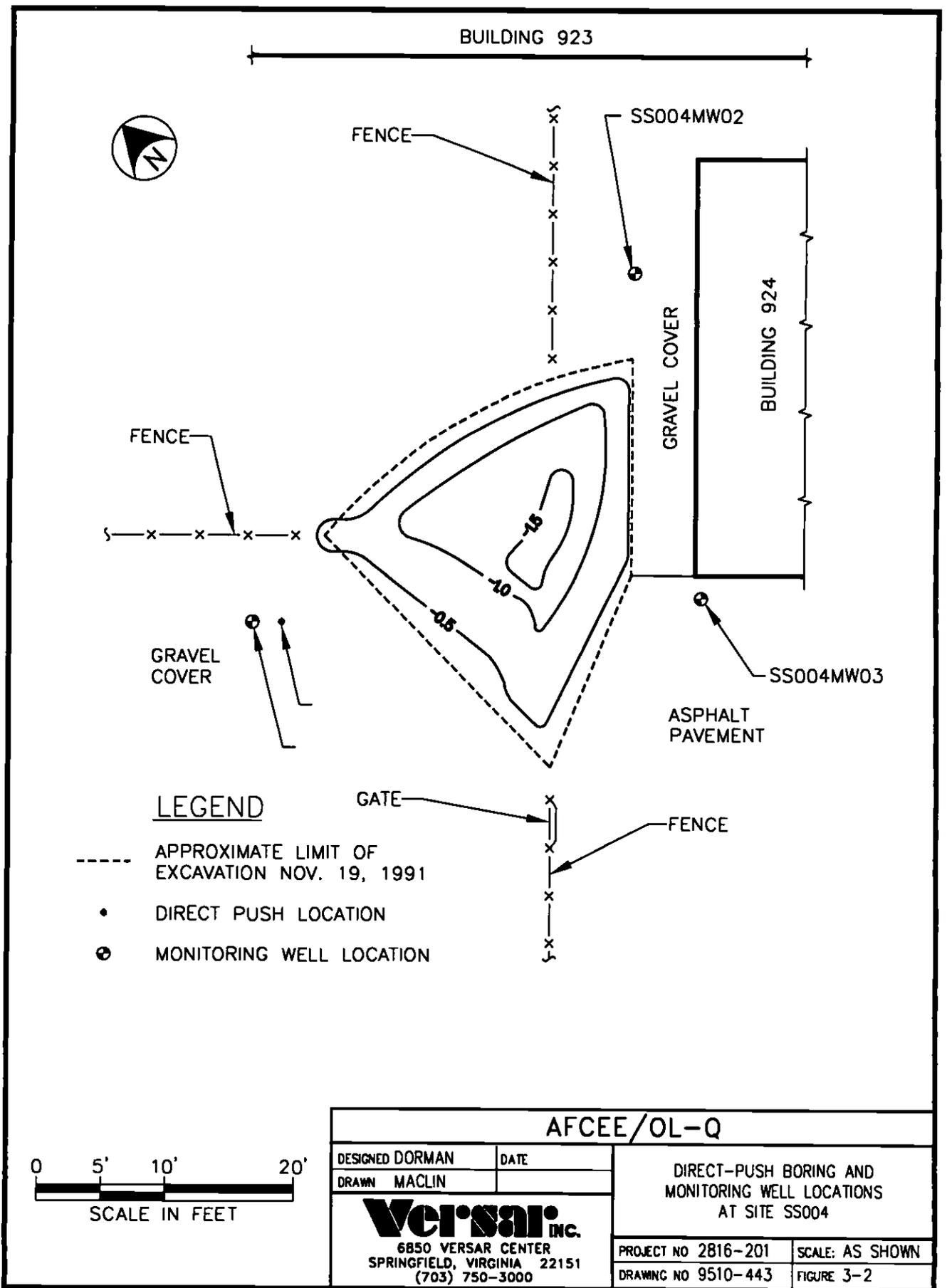


LEGEND

- LIMITS OF EXCAVATION
CONTAMINATED SOILS
- GROUNDWATER
MONITORING WELL
- DIRECT-PUSH BORING/
TEMPORARY
WELL LOCATION



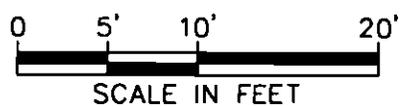
| | | | |
|---|---------------|--|-----------------|
| AFCEE-RGAFB | | | |
| DESIGNED DORMAN | DATE 08/21/96 | BORING AND MONITORING WELL LOCATIONS AT SITE SS003 | |
| DRAWN MACLIN | DATE 08/21/96 | | |
| Versar inc. | | PROJECT NO 2816-211 | SCALE: AS SHOWN |
| 6850 VERSAR CENTER SPRINGFIELD, VIRGINIA 22151 (703) 750-3000 | | DRAWING NO 9608-629 | FIGURE 3-1 |



\AFCEE\2816-105\9510-443.DWG PLOT DATE: 11-13-96 FIG 3-2

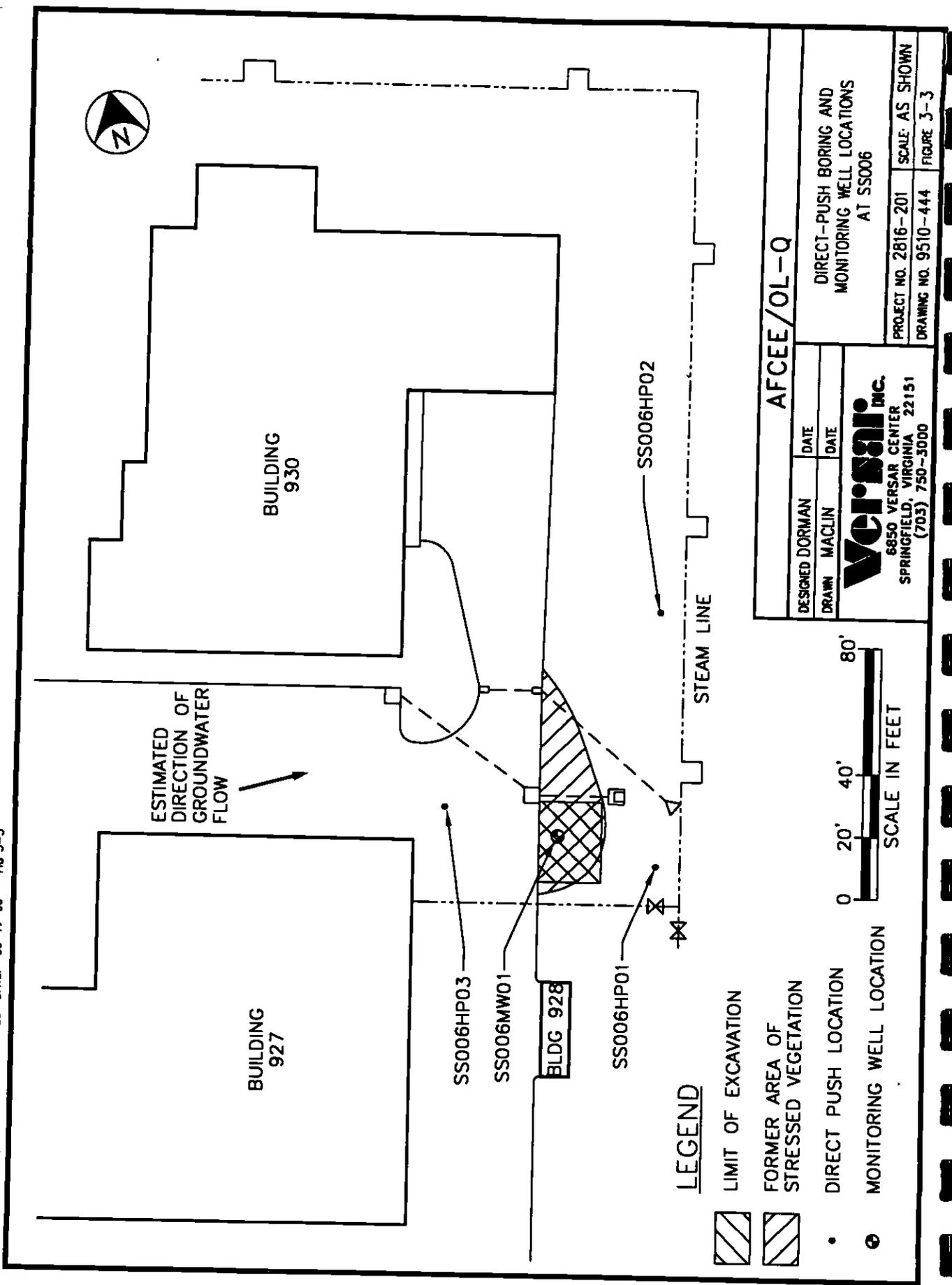
LEGEND

- APPROXIMATE LIMIT OF EXCAVATION NOV. 19, 1991
- DIRECT PUSH LOCATION
- ⊙ MONITORING WELL LOCATION



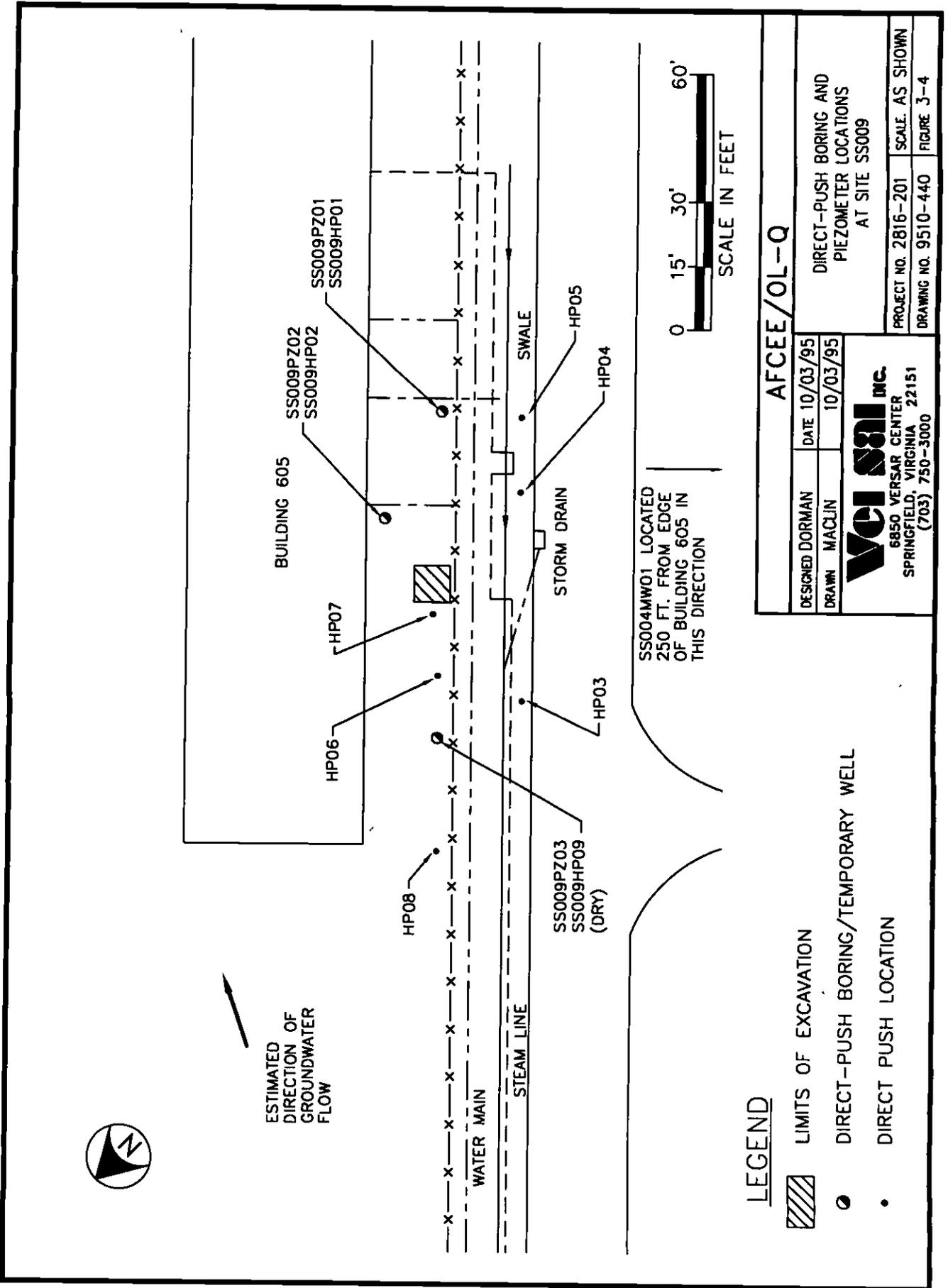
| AFCEE/OL-Q | | | |
|--|------|--|-----------------|
| DESIGNED DORMAN | DATE | DIRECT-PUSH BORING AND MONITORING WELL LOCATIONS AT SITE SS004 | |
| DRAWN MACLIN | | | |
| Versar INC. 6850 VERSAR CENTER SPRINGFIELD, VIRGINIA 22151 (703) 750-3000 | | PROJECT NO 2816-201 | SCALE: AS SHOWN |
| | | DRAWING NO 9510-443 | FIGURE 3-2 |

\\AFCEE\2816-211\9510-444.DWG PLOT DATE: 09-17-96 FIG 3-3



| | | | |
|---|--|-----------------|--|
| DESIGNED | | DATE | |
| DRAWN | | DATE | |
| Versar, Inc. | | | |
| 6850 VERSAR CENTER SPRINGFIELD, VIRGINIA 22151 (703) 750-3000 | | | |
| AFCEE/OL-Q | | | |
| DIRECT-PUSH BORING AND MONITORING WELL LOCATIONS AT SS006 | | | |
| PROJECT NO. 2816-201 | | SCALE: AS SHOWN | |
| DRAWING NO. 9510-444 | | FIGURE 3-3 | |

\\AFCEE\2816-211\9510-440.DWG PLOT DATE. 11-13-96 FIG 3-4



above the IDLs but below the PQLs. The laboratory reports identify estimated values with flagging codes on the laboratory data sheets.

3.3 DIRECT-PUSH ACTIVITIES

From 28 May through 31 May 1996, direct-push technology was used to investigate subsurface conditions at the four sites by PSA Environmental Inc., of Lee's Summit, Missouri, under the direction of a Versar geologist (Missouri Certified). A total of 14 direct-push borings were advanced at the sites. At least one boring was advanced at each site. The direct-push boring locations are depicted on Figures 3-1 through 3-4. The borings were advanced until bedrock was encountered and refusal was experienced. Soil samples were collected continuously during the direct-push activities for lithologic characterization, visual inspection, and field screening. These samples were collected using split-spoon barrel samplers fitted with removable Teflon® inner liners.

The soil samples were collected using the direct-push rig by hydraulically driving a 1.25-inch inner diameter (ID) piston-type sampler to the top of the desired sample interval. The piston within the sampler was then released, and the pipe was advanced through the target interval. The Teflon® liner containing the soil sample was removed, and the soils classified. A temporary groundwater monitoring well was installed within the first direct-push boring completed at the sites (SS003) because groundwater infiltration was anticipated. The well was constructed of 1-inch ID polyvinyl chloride (PVC) screen and casing.

Based on the absence of groundwater at this location after 48-hours, the well was removed, and the borehole was backfilled to grade with bentonite. Temporary wells were not installed within the subsequent direct-push borings unless a sufficient volume of groundwater was observed in the borehole within 48 hours. If at the end of the 48-hour period, a sufficient volume of groundwater was not observed in the borehole, the borehole was backfilled to grade with bentonite. Air-rotary drilling technology was then used to install permanent monitoring wells in the vicinity of boring locations that did not encounter a sufficient volume of groundwater.

The soil samples were described in detail on a standardized field soil boring log by a Versar geologist. Soil textural descriptions conformed to the Unified Soil Classification System (USCS). The soil samples were visually inspected (i.e., for staining, discoloration, etc.) and field-screened for the presence of potential contamination. Each sample was screened in the field for evidence of VOCs using a PID. No visual signs of contamination or VOCs were observed or detected in any of the collected samples. The lithologic descriptions and visual observations are noted on the field soil boring logs included in Appendix A

Decontamination procedures, as specified in the AFCEE Handbook and MDNR Guidelines, were followed to prevent cross-contamination between direct-push locations and sampling horizons. Direct-push equipment that came in contact with potentially contaminated soil and groundwater (e.g., rods and split spoons) were thoroughly washed using nonphosphate detergent and approved rinse water between sampling horizons.

3.4 MONITORING WELL INSTALLATION

From 27 June through 1 July 1996, air-rotary technology was used to drill at seven locations by Layne Western Company, of Kansas City, Missouri, under the direction of a Versar geologist (Missouri Certified). Layne Western installed a total of seven groundwater monitoring wells at three of the sites (SS003, SS004, and SS006). The wells were constructed of 4-inch ID PVC casing and well screen, and installed to a maximum depth of 35.5 feet beg. The well locations are depicted on Figures 3-1 through 3-4.

The drill rig was fitted with a 6.25-inch outer diameter rotating rock bit attached to drill rods. As the drill bit advanced, air was used as the medium to lift soil and rock cuttings from the borehole. Equipment used for air rotary drilling included a large air compressor, a swivel hose assembly connected to the top of the drill pipe or kelly, and a rock bit (i.e., tricone, roller type). Air was forced down through the center of the drill pipe and exited through small openings at the bottom of the drill bit. The cuttings were lifted along the annular space of the borehole, to the top of the borehole, where they were deposited on the surface.

Soil samples were collected continuously during the drilling activities for lithologic characterization, visual inspection (i.e., for staining, discoloration, etc.), and field screening. The samples were collected from the cuttings exiting the borehole. The soil samples were described in detail on a standardized field soil boring log by the Versar geologist. Although collecting soil samples for contamination analysis was not part of the study, each sample collected was screened in the field for the presence of VOCs using a PID. Some volatilization most likely occurred during the drilling, but the use of this screening tool provided a quick indication of the presence or absence of VOCs in the soil. Impacted soil identified during previous investigations was properly excavated and removed from the sites as described in Section 1.3. No visual signs of contamination were observed nor were VOCs detected in any of the collected samples. The lithologic descriptions and visual observations are noted on the field soil boring logs included in Appendix A.

Decontamination procedures, as specified in the AFCEE Handbook and MDNR Guidelines, were followed to prevent cross-contamination between drilling locations and sampling horizons. Drilling equipment that came in contact with potentially contaminated soil and groundwater (e.g., augers, rods, and split spoons) was steam cleaned between drilling locations. Split-spoon samplers were thoroughly washed using nonphosphate detergent and approved rinse water between sampling horizons.

Soil cuttings generated during the drilling activities were containerized in designated and labeled 55-gallon sealed drums and stored in a designated area pending proper disposal. After drilling, samples were collected from each drum for disposal characteristics.

The monitoring wells were developed at least 24 hours after grouting was completed. During development, each well was mechanically surged, then purged of 5 borehole volumes of groundwater or until groundwater parameters (i.e., pH, temperature, conductivity, and turbidity stabilized). Due to the slow recharge rate of groundwater, purging of 5 borehole

volumes of groundwater was not feasible, so the majority of the wells were developed until groundwater parameters stabilized. The wells were considered developed when readings remained stable or three consecutive measurements were within plus or minus 10 percent of each other. Copies of the well development forms and borehole volume calculation table are included in Appendix B.

3.5 GROUNDWATER SAMPLING

On 29 May 1996, groundwater samples were collected from the two temporary wells at Site SS009. From 9 July through 11 July 1996, groundwater samples were collected from the seven permanent groundwater monitoring wells for select laboratory analyses. Groundwater samples were collected from temporary wells SS009-PZ-01 and SS009-PZ-02 using a peristaltic pump fitted with dedicated Tygon® tubing. Groundwater samples were collected from the remaining wells using dedicated polyethylene disposable bailers with a Teflon® leader. Before sampling the monitoring wells, an oil/water interface probe was used to measure depth to groundwater, total depth, and thickness of nonaqueous layers, if encountered. The groundwater measurements were recorded on monitoring well sampling sheets, which are included in Appendix B. Nonaqueous layers were not detected in any of the wells during the sampling event. To avoid cross-contamination between wells, the interface probe and attached tape were decontaminated after each use using nonphosphate detergent and deionized water.

Each well was purged of three borehole volumes of groundwater or until dryness using a peristaltic pump or dedicated polyethylene disposable bailer. *In situ* measurements (temperature, pH, specific conductance, and turbidity) were collected at the beginning, middle, and end of each purge. Due to extremely low recharge rates, a sufficient volume of groundwater was not recovered for final *in situ* measurements (end of purge) for several of the wells. In these cases, groundwater samples were collected immediately after sufficient quantity had recharged for laboratory analysis. The purge water generated during sampling was combined with the respective development water from each well, in sealed 55-gallon drums, pending proper disposal.

Samples were collected from each monitoring well directly from the pump tubing or by using a dedicated polyethylene disposable bailer. To reduce the loss of volatiles, the groundwater was transferred into sample containers in a manner that minimized agitation and aeration. Both filtered and unfiltered samples were collected for metals analysis. The filtered samples were collected by forcing the sample through a 0.45-micrometer (μm) filter using a peristaltic pump fitted with dedicated Tygon® tubing. The unfiltered samples were collected directly from the pump tubing or bailer. All sample containers were certified clean in accordance with USEPA protocols, and all vials for collection of samples for volatiles analyses were pre-preserved with hydrochloric acid (HCL). Each sample was affixed with a sample label at the time of collection and given a unique sample number compatible with the AFCEE Installation Restoration Program Information Management System (IRPIMS) data base.

In addition to the groundwater samples collected during this sampling event, the following Quality Control (QC) samples were collected:

- One equipment blank sample each day for all parameters collected that day;
- One trip blank sample for each cooler, for analysis of VOCs using EPA Method 8240;
- One field duplicate sample for all parameters from well SS004-MW-03;
- One matrix spike/matrix spike duplicate (MS/MSD) sample for all parameters from wells SS006-MW-01 and at SS009-PZ-01; and
- One ambient conditions blank sample at sites SS009, SS004, and SS003 for analyses of VOCs.

All samples were packed securely in coolers filled with ice and stored at approximately 4 degrees Celsius (°C) during storage, shipping, and prior to analysis. Standard chain of custody (COC) procedures were followed during all phases of sampling and analysis. Each cooler was secured with two Versar custody seals and shipped via common carrier to Lockheed Analytical Services in Las Vegas, Nevada, for analysis. Groundwater samples from each site were submitted to the laboratory for several or all of the following parameters:

- VOCs using EPA Method 8240 (all sites);
- TPH, both gasoline (GRO) and diesel range organics (DRO), using EPA Method 8015 modified (all sites);
- SVOCs using EPA Method 8270 (Sites SS006 and SS009);
- Resource Conservation and Recovery Act (RCRA) metals (total and dissolved) using EPA Method 6010/7000 (all sites); and
- Polychlorinated biphenyls (PCBs) using EPA Method 8080 (Site SS009).

3.6 SURVEYING

Each groundwater monitoring well was surveyed by Anderson Survey Company (Anderson), of Kansas City, Missouri, using the state-plane coordinate system and national geodetic vertical datum. Anderson determined the horizontal coordinates, the top of casing (TOC) elevation, and the ground surface elevation for each well. From these measurements, the location of the wells, elevation of the static groundwater, and inferred groundwater flow direction were determined. The survey data are included in Appendix C.

3.7 INVESTIGATION-DERIVED WASTE

Wastes generated during the preliminary groundwater assessment included soil, generated from drilling activities, and groundwater, generated during well development and sampling. The investigation-derived waste (IDW) was contained in properly labeled and sealed 55-gallon drums and stored on site adjacent to Building 924, southwest of the decontamination area. This section addresses disposition of these wastes. The wastes were handled according to applicable EPA (*Management of Investigation-Derived Wastes During Site Inspections*, May 1991) and MDNR protocols and guidelines.

Soil Cuttings

After drilling was completed, a soil sample composite was collected from each drum, by site, for disposal classification (i.e., "free" of contamination, recyclable waste, or RCRA hazardous waste). The samples were analyzed for all toxicity characteristics leachate procedures (TCLP) parameters and TPH. The soils will be disposed of appropriately based on the laboratory results.

Well Development and Sampling Water

All water removed from the monitoring wells during development and sampling activities was containerized in labeled and sealed 55-gallon drums. The water will be disposed of appropriately based on the groundwater sampling results.

Equipment Decontamination

A centralized decontamination area, located southeast of Building 924 and approved by the Base, was set up for the preliminary groundwater assessment. The decontamination area was previously used by Layne Western during drilling activities, and had access to an approved potable water source. Heavy equipment, drill rods, and split-spoons were steam cleaned using a steam pressure washer. Because no observable contamination was noted during field screening, the decontamination water was discharged directly into the on-site oil/water separator system.

RESULTS OF FIELD INVESTIGATION**4.1 SITE SS003****Direct-Push**

On 28 May 1996, one direct-push boring (designated SS003-HP-01) was completed at Site SS003, approximately 20 feet southwest of the excavated area. The direct-push boring location is depicted on Figure 3-1. Competent bedrock was encountered at approximately 25 feet beg, at which depth auger refusal was experienced. Because this was the first boring completed at any of the sites and groundwater infiltration was anticipated, a temporary groundwater monitoring well was installed. The temporary well (designated SS003-PZ-01) was constructed of 12 feet of 1-inch ID PVC screen and 13 feet of casing. After 48 hours, groundwater had not infiltrated the temporary well; the screen and riser were removed; and the boring was backfilled to grade with bentonite.

Monitoring Well Installation

On 28 June 1996, Layne Western installed three groundwater monitoring wells (designated SS003-MW-01 through SS003-MW-03) at the site. Well SS003-MW-01 was installed in the center of the previously excavated area. Well SS003-MW-02 was installed approximately 20 feet south, and well SS003-MW-03 was installed approximately 40 feet southeast of the previously excavated area. Both of these wells were installed on locations presumed to be hydraulically downgradient of the excavated areas. Monitoring well OWS704-MW-02, which was installed during the investigation of an adjacent site (OWS704), is located approximately 180 feet north of the excavated area (hydraulically upgradient) and was used as the upgradient well. The locations of the wells are depicted on Figure 3-1.

Well SS003-MW-01 was drilled into silt/clay overburden to a depth of 20 feet beg and was constructed of 10 feet of 2-inch ID PVC well screen and 10 feet of casing. Well OWS704-MW-02 was drilled through the overburden into bedrock to a depth of 25.5 feet beg and was constructed of 15 feet of 2-inch ID PVC well screen and 10 feet of casing. These wells were completed with flushmount, bolt-down manhole covers and watertight-locking gripper plugs. Well SS003-MW-02 was drilled through the overburden into bedrock to a depth of 33.4 feet beg and was constructed of 10 feet of 2-inch ID PVC well screen and 25 feet of casing. Well SS003-MW-03 was drilled through the overburden into bedrock to a depth of 32 feet beg and was constructed of 10 feet of 2-inch ID PVC well screen and 24 feet of casing. Both of these wells were completed with watertight-locking casing caps and locking, steel guardpipes to protect the casing. The boring logs, well construction diagrams, and MDNR Monitoring Well Certification Records are included in Appendix A.

Site Geology and Hydrogeology

Based on observations made during the direct-push and drilling activities, the unconsolidated subsurface materials encountered beneath the site consisted of interbedded sands, silts, and clays to approximately 17 feet beg. These unconsolidated sediments were underlain by partially weathered interbedded claystone, shale, and limestone to a maximum explored depth of 33.4 feet beg. The encountered sediments and weathered bedrock correlate with published documents (Section 2.3).

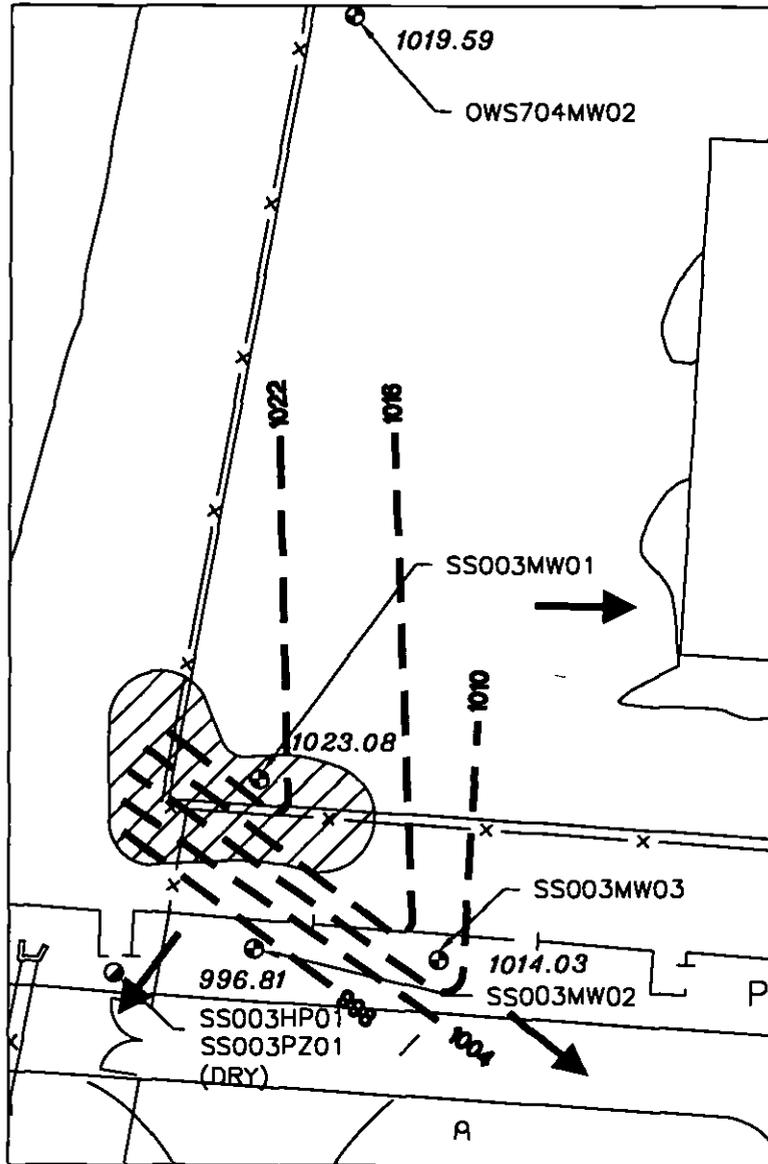
The depth to shallow groundwater varied greatly beneath the site, with groundwater encountered between approximately 7 (well SS003-MW-01) and 31 (well SS003-MW-02) feet beg. Based on Versar's observations, the shallow groundwater encountered at the site appears to be "perched" above competent bedrock. The source of groundwater in the wells is believed to be moist weathered bedrock units (shale and claystone) and microfractures and bedding planes in weathered bedrock units (shale and claystone) in which saturated conditions were not encountered.

A groundwater contour map based on well measurements collected before sampling was prepared for the site (Figure 4-1). Based on the map, groundwater flow beneath the site appears to be southeast, towards Scope Creek (Figure 1-2). Based on depth to bedrock (Table 4-1) beneath the site, shallow groundwater also appears to be influenced by bedrock topography (bedrock was encountered at greater depths in a southerly direction).

Groundwater Sampling Results

In July 1996, groundwater samples were collected from the four wells for VOCs, TPH (both GRO and DRO), and RCRA metals (total and dissolved) analysis. The groundwater sampling results are summarized in Table 4-2. Laboratory reports of analyses and associated chain of custody forms are included as Appendix D. VOCs were detected at low concentrations in the samples collected from wells SS003-MW-01 (center of excavation) and SW003-MW-03 (hydraulically downgradient). The following VOCs were detected in well SS003-MW-01: acetone at 4.2 micrograms per liter ($\mu\text{g/L}$), cis-1,2-dichloroethene (cis-1,2-DCE) at 3.6 $\mu\text{g/L}$, and trichloroethene (TCE) at 3.8 $\mu\text{g/L}$. Only TCE (2.5 $\mu\text{g/L}$) was detected in well SS003-MW-03. The concentrations of the VOCs detected in the wells did not exceed their respective maximum contaminant level (MCL) established by USEPA for drinking water. TPH was not detected in any of the samples.

Only three RCRA metals were detected in the samples: barium, lead, and selenium. Barium was detected in all samples at concentrations ranging from 64.6 to 546 $\mu\text{g/L}$ (total) and 30.8 to 511 $\mu\text{g/L}$ (dissolved phase). Lead was detected in one well, SS003-MW-03, at a concentration of 4.9 $\mu\text{g/L}$ (total). Selenium was only detected in well SS003-MW-02 at a concentration of 5.6 $\mu\text{g/L}$ (total) and 7.7 $\mu\text{g/L}$ (dissolved phase). None of the detected metals exceeded established MCLs.



LEGEND

-  LIMITS OF EXCAVATION CONTAMINATED SOILS
-  GROUNDWATER MONITORING WELL
-  DIRECT-PUSH BORING/ TEMPORARY WELL LOCATION
-  996.81 GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
-  GROUNDWATER ELEVATION CONTOURS
-  GROUNDWATER FLOW DIRECTION

AFCEE\RGAFB\2816-105\9608-629 DWG PLOT DATE: 11-13-96 FIG 4-1



| AFCEE-RGAFB | | | |
|---|---------------|------------------------------------|-----------------|
| DESIGNED DORMAN | DATE 08/21/96 | GROUNDWATER CONTOURS AT SITE SS003 | |
| DRAWN MACLIN | DATE 08/21/96 | | |
|  6850 VERSAR CENTER SPRINGFIELD, VIRGINIA 22151 (703) 750-3000 | | PROJECT NO 2816-211 | SCALE: AS SHOWN |
| | | DRAWING NO. 9608-629 | FIGURE 4-1 |

| Table 4-1. Bedrock and Groundwater Data | | | | |
|---|------------------------------|--------------------------------|---|---------------------------------------|
| Well/Boring ID | Depth to Water (Feet TOC) | Depth to Bedrock (Feet BEG) | Groundwater Elevation (Feet Above MSL) | Bedrock Elevation (Feet Above MSL) |
| SS003-MW-01 | 6.64 | | 1023.35 | NS |
| SS003-MW-02 | 31.19 | 16 | 996.81 | 1012 |
| SS003-MW-03 | 13.01 | 16 | 1014.03 | 1011.04 |
| SS003-HP-01 | DRY | 25 | NA | NS |
| OWS704-MW-02 | 9.98 | 21 | 1019.59 | 1008.57 |
| | | | | |
| SS004-MW-01 | 5 | 18 | 1009.37 | 1006.37 |
| SS004-MW-02 | 20.72 | 16 | 992.34 | 1001.06 |
| SS004-MW-03 | 11.89 | 16 | 1001.55 | 1001.44 |
| SS004-HP-01 | DRY | 12 | NA | NS |
| | | | | |
| SS006-MW-01 | 5 | 4 | 1046.85 | 1051.85 |
| SS006-HP-01 | DRY | 1 | NA | NS |
| SS006-HP-02 | DRY | 2.5 | NA | NS |
| SS006-HP-03 | DRY | 4 | NA | NS |
| | | | | |
| SS009-HP-01(PZ01) | 9.22 | 18 | 1000.41 | 991.63 |
| SS009-HP-02(PZ02) | 1.6 | 14 | 1008.58 | 996.18 |
| SS009-HP-03 | DRY | 13 | NA | NS |
| SS009-HP-04 | DRY | 13 | NA | NS |
| SS009-HP-05 | DRY | 13 | NA | NS |
| SS009-HP-06 | DRY | 14 | NA | NS |
| SS009-HP-07 | DRY | 14 | NA | NS |
| SS009-HP-08 | DRY | 14 | NA | NS |
| SS009-HP-09(PZ03) | 13.74 | 14 | 995.4 | 995.14 |

TOC = Top of casing.
 BEG = Below existing grade.
 MSL = Mean sea level.
 NA = Not applicable.
 NS = Not surveyed.

Table 4-2 Groundwater Sampling Results for Site SS003 (in ug/L)

| Parameter | Drinking Water MCL/SMCL | SS003MW1 | | SS003MW2 | | SS003MW3 | | OWS704-MW2 | |
|---------------------------|-------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | 07/10/96 | | 07/10/96 | | 07/10/96 | | 07/10/96 | |
| | | Total | Dissolved | Total | Dissolved | Total | Dissolved | Total | Dissolved |
| TRPH | | | | | | | | | |
| GRO | - | <100 | - | <100 | - | <100 | - | <100 | - |
| DRO | - | <1,000 | - | <2,200 | - | <1,200 | - | <1,100 | - |
| RCRA Metals | | | | | | | | | |
| Arsenic | 50 | 3.2 | <i><3.0</i> | 3.0 | <i><3.0</i> | 3.0 | <i><3.0</i> | 3.0 | <i><3.0</i> |
| Barium | 2,000 | 546 | 511 | 64.6 | 30.8 | 369 | 116 | 104 | 42.8 |
| Cadmium | 5.0 | <i><3.0</i> |
| Chromium | 100 | <i><6.0</i> |
| Lead | 15 | <i><2.0</i> | <i><2.0</i> | <i><2.0</i> | <i><2.0</i> | 4.9 | <i><2.0</i> | <i><2.0</i> | <i><2.0</i> |
| Mercury | 2.0 | <i><0.20</i> |
| Selenium | 50 | <i><4.0</i> | <i><4.0</i> | 5.6 | 7.7 | <i><4.0</i> | <i><4.0</i> | <i><4.0</i> | <i><4.0</i> |
| Silver | 100 | <i><6.0</i> |
| VOCs | | | | | | | | | |
| 1,1-Dichloroethane | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| 1,1-Dichloroethene | 7.0 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| 1,1,1-Trichloroethane | 200 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| 1,1,2-Trichloroethane | 5.0 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| 1,1,2,2-Tetrachloroethane | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| 1,2-Dichlorobenzene | 600 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| 1,2-Dichloroethane | 5.0 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| 1,2-Dichloropropane | 5.0 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| 1,3-Dichlorobenzene | 600 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| 1,4-Dichlorobenzene | 75 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| 2-Butanone | - | <i><10.0</i> | - | <i><10.0</i> | - | <i><10.0</i> | - | <i><10.0</i> | - |
| 2-Chloroethylvinylether | - | <i><20.0</i> | - | <i><20.0</i> | - | <i><20.0</i> | - | <i><20.0</i> | - |
| 2-Hexanone | - | <i><10.0</i> | - | <i><10.0</i> | - | <i><10.0</i> | - | <i><10.0</i> | - |
| 4-Methyl-2-Pentanone | - | <i><10.0</i> | - | <i><10.0</i> | - | <i><10.0</i> | - | <i><10.0</i> | - |
| Acetone | - | 4.2 | - | <i><10.0</i> | - | <i><10.0</i> | - | 4.4 | - |
| Benzene | 5.0 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Bromodichloromethane | 100 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Bromoform | 100 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Bromomethane | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Carbon Disulfide | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Carbon tetrachloride | 5.0 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Chlorobenzene | 100 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Chloroethane | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Chloroform | 100 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Chloromethane | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| cis-1,2-Dichloroethene | 7.0 | 3.6 | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| cis-1,2-Dichloropropene | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Dibromochloromethane | 100 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Ethylbenzene | 700 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Methylene Chloride | 5.0 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| m,p-Xylene | 10,000 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| o-Xylene | 10,000 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Styrene | 100 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Tetrachloroethene | 5.0 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Toluene | 1,000 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| trans-1,2-Dichloroethene | 100 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| trans-1,2-Dichloropropene | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Trichloroethene | 5.0 | 3.8 | - | <i><5.0</i> | - | 2.5 | - | <i><5.0</i> | - |
| Trichlorofluoromethane | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |
| Vinyl Acetate | - | <i><10.0</i> | - | <i><10.0</i> | - | <i><10.0</i> | - | <i><10.0</i> | - |
| Vinyl Chloride | 2.0 | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - | <i><5.0</i> | - |

The results of the QC samples (equipment, trip, and ambient conditions blanks), discussed in Section 4.5, were within acceptable ranges; however, barium was detected at low concentrations in the laboratory method blanks. The relatively low concentrations of barium and selenium detected in the groundwater samples may also be the result of the natural occurrence of these metals in surficial soils underlying the Base (Tidball, undated). Laboratory reports of analysis and associated COC forms for the QC samples are included as Appendix E.

4.2 SITE SS004

Direct-Push

On 30 May 1996, one direct-push boring (designated SS004-HP-01) was completed approximately 20 feet west of the previously excavated area. The direct-push boring location is depicted in Figure 3-2. Bedrock was encountered at approximately 12 feet beg, at which depth auger refusal was experienced. Groundwater was not encountered during the completion of the boring or after the boring was left open for 48 hours. After 48 hours, the boring was backfilled to grade with bentonite.

Monitoring Well Installation

On 30 June 1996, Layne Western installed three groundwater monitoring wells (designated SS004-MW-01, SS004-MW-02, and SS004-MW-03) at the site. Three wells, instead of the one well required by the WP, were installed at this site in an effort to adequately determine groundwater from beneath the site. Well SS004-MW-01 was installed northwest (presumed hydraulically upgradient), well SS004-MW-02 was installed northeast (presumed hydraulically downgradient), and well SS004-MW-03 was installed south (presumed hydraulically downgradient) of the previously excavated area. The well locations are depicted on Figure 3-2. Monitoring well SS004-MW-01 was drilled through the unconsolidated sediments into bedrock to a depth of 18.5 feet beg and was constructed of 10 feet of 2-inch ID PVC well screen and 8.5 feet of casing. Monitoring well SS004-MW-02 was drilled through the unconsolidated sediments into bedrock to a depth of 25 feet beg and was constructed of 15 feet of 2-inch ID PVC well screen and 10 feet of casing. Monitoring well SS004-MW-03 was drilled through the unconsolidated sediments into bedrock to a depth of 25 feet beg and was constructed of 15 feet of 2-inch ID PVC well screen and 10 feet of casing. The wells were completed with flushmount, bolt-down manhole covers, and watertight-locking gripper plugs. The boring logs, well construction diagrams, and MDNR Monitoring Well Certification Record are included in Appendix A.

Site Geology and Hydrogeology

Based on observations made during the direct-push and drilling activities, the unconsolidated subsurface materials encountered beneath the site consisted of fill and interbedded sands, silts, and clays ranging from the surface to approximately 18 feet beg. These unconsolidated sediments were underlain by partially weathered interbedded claystone,

shale, and limestone to a maximum explored depth of 25 feet beg. The encountered sediments and weathered bedrock correlate with published documents. (See Section 2.3.)

The depth to shallow groundwater varied greatly beneath the site, with groundwater encountered between approximately 5 (well SS004-MW-01) and 21 (well SS004-MW-02) feet beg. Based on Versar's observations, the shallow groundwater encountered at the site appears to be "perched" above competent bedrock. The source of groundwater in the wells is believed to be the moist and weathered bedrock (shale and claystone) overlying competent bedrock (limestone). The source of groundwater in the unsaturated weathered bedrock is believed to be microfractures and bedding planes present in these units.

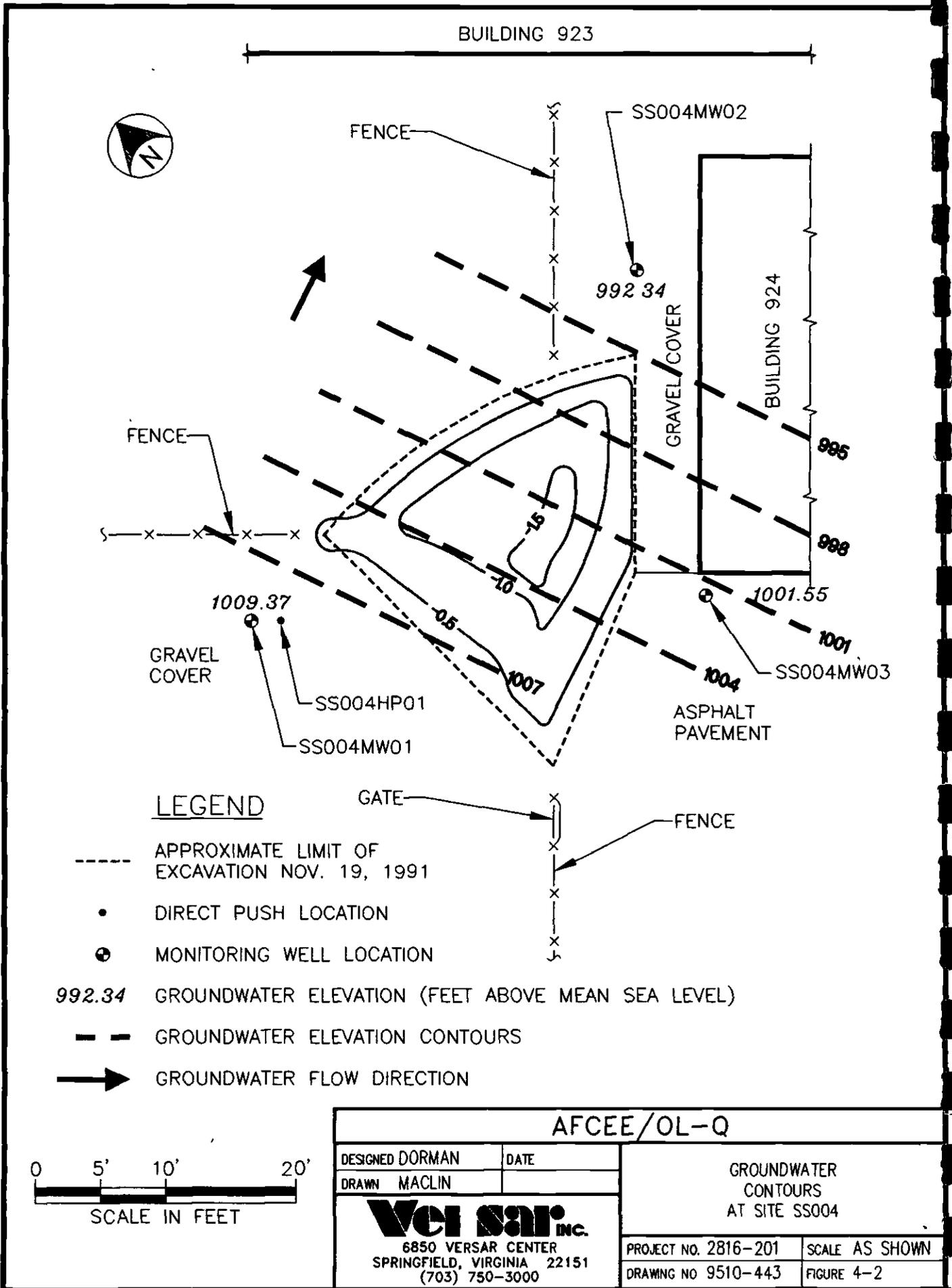
A groundwater contour map based on well measurements collected before sampling was prepared for the site (Figure 4-2). Based on the map, groundwater flow beneath the site appears to be east, towards Scope Creek (Figure 1-2). Based on depth to bedrock (Table 4-1) beneath the site, shallow groundwater also appears to be influenced by bedrock topography (bedrock was encountered at greater depths in an easterly direction).

Groundwater Sampling Results

In July 1996, groundwater samples were collected from the three wells and analyzed for VOCs, TPH (both GRO and DRO), and RCRA metals (total and dissolved) analysis. The groundwater sampling results are summarized in Table 4-3. Laboratory reports of analysis and associated COC forms are included as Appendix D. VOCs were detected at low concentrations in the samples collected from wells SS004-MW-01 (hydraulically upgradient) and SW004-MW-02 (hydraulically downgradient). Only TCE (4.2 µg/L) was detected in well SS004-MW-01. The following VOCs were detected in well SS004-MW-02: acetone at 4.7 µg/L; 1,1,1-trichloroethane (1,1,1-TCA) at 1.1 µg/L; and TCE at 3.1 µg/L. The concentrations of the target VOCs detected in the wells did not exceed their respective MCLs. TPH were not detected in any of the samples.

Four RCRA metals (arsenic, barium, lead, and selenium) were detected in the samples. Arsenic was detected in wells SS004-MW-01 and SS004-MW-02 at concentrations of 4.7 and 4.3 µg/L (total only), respectively. Barium was detected in all samples at concentrations ranging from 154 to 1,200 µg/L (total) and 103 to 355 µg/L (dissolved phase). Lead was detected in wells SS004-MW-01 and SS004-MW-02 at concentrations of 5.9 and 2.1 µg/L (total), respectively, and 4 µg/L (well SS004-MW-01, dissolved phase). Selenium was detected in wells SS004-MW-01 and SS004-MW-02 at concentrations of 7.4 µg/L (well SS004-MW-02, total) and 4.9 and 8.3 µg/L (dissolved phase), respectively. None of the detected metals exceeded established MCLs.

The results of the QC samples (equipment, trip, and ambient conditions blanks), discussed in Section 4.5, were within acceptable ranges; however, barium, arsenic, and lead were detected at low concentrations in the laboratory method blanks. The relatively low concentrations of barium, arsenic, lead, and selenium detected in the groundwater samples



\AFCEE\2816-105\9510-443.DWG PLOT DATE: 11-11-96 FIG 4-2

140042

Table 4-3 Groundwater Sampling Results for Site SS004 (in ug/L)

| Parameter | Drinking Water MCL/SMCL | SS004MW1 07/09/96 | | SS004MW2 07/10/96 | | SS004MW3 07/10/96 | | SS004MW3-DUP 07/10/96 | |
|---------------------------|-------------------------|----------------------|-----------|----------------------|-----------|----------------------|-----------|--------------------------|-----------|
| | | Total | Dissolved | Total | Dissolved | Total | Dissolved | Total | Dissolved |
| TRPH | | | | | | | | | |
| GRO | - | <100 | - | <100 | - | <100 | - | <100 | - |
| DRO | - | <1,000 | - | <1,500 | - | <1,000 | - | <1,000 | - |
| RCRA Metals | | | | | | | | | |
| Arsenic | 50 | 4.7 | <3.0 | 4.3 | <3.0 | <3.0 | <3.0 | <3.0 | <3.0 |
| Barium | 2,000 | 1,200 | 355 | 154 | 103 | 297 | NA | 335 | 328 |
| Cadmium | 50 | <3.0 | <3.0 | <3.0 | <3.0 | <3.0 | <3.0 | <3.0 | <3.0 |
| Chromium | 100 | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 |
| Lead | 15 | 5.9 | 4.0 | 2.1 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| Mercury | 20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| Selenium | 50 | <4.0 | 4.9 | 7.4 | 8.3 | <4.0 | <4.0 | <4.0 | <4.0 |
| Silver | 100 | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 |
| VOCs | | | | | | | | | |
| 1,1-Dichloroethane | - | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| 1,1-Dichloroethene | 7.0 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| 1,1,1-Trichloroethane | 200 | <5.0 | - | 1.1 | - | <5.0 | - | <5.0 | - |
| 1,1,2-Trichloroethane | 5.0 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| 1,1,2,2-Tetrachloroethane | - | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| 1,2-Dichlorobenzene | 600 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| 1,2-Dichloroethane | 5.0 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| 1,2-Dichloropropane | 5.0 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| 1,3-Dichlorobenzene | 600 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| 1,4-Dichlorobenzene | 75 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| 2-Butanone | - | <10.0 | - | <10.0 | - | <10.0 | - | <10.0 | - |
| 2-Chloroethylvinylether | - | <20.0 | - | <20.0 | - | <20.0 | - | <20.0 | - |
| 2-Hexanone | - | <10.0 | - | <10.0 | - | <10.0 | - | <10.0 | - |
| 4-Methyl-2-Pentanone | - | <10.0 | - | <10.0 | - | <10.0 | - | <10.0 | - |
| Acetone | - | <10.0 | - | 4.7 | - | <10.0 | - | <10.0 | - |
| Benzene | 5.0 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Bromodichloromethane | 100 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Bromoform | 100 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Bromomethane | - | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Carbon Disulfide | - | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Carbon tetrachloride | 5.0 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Chlorobenzene | 100 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Chloroethane | - | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Chloroform | 100 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Chloromethane | - | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| cis-1,2-Dichloroethene | 7.0 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| cis-1,2-Dichloropropene | - | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Dibromochloromethane | 100 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Ethylbenzene | 700 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Methylene Chloride | 5.0 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| m,p-Xylene | 10,000 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| o-Xylene | 10,000 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Styrene | 100 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Tetrachloroethene | 5.0 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Toluene | 1,000 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| trans-1,2-Dichloroethene | 100 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| trans-1,2-Dichloropropene | - | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Trichloroethene | 5.0 | 4.2 | - | 3.1 | - | <5.0 | - | <5.0 | - |
| Trichlorofluoromethane | - | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Vinyl Acetate | - | <10.0 | - | <10.0 | - | <10.0 | - | <10.0 | - |
| Vinyl Chloride | 2.0 | <5.0 | - | <5.0 | - | <5.0 | - | <5.0 | - |

may also be the result of the natural occurrence of these metals in surficial soils underlying the Base (Tidball, undated). Laboratory reports of analysis and associated chain of custody forms for the QC samples are included as Appendix E.

4.3 SITE SS006

Direct-Push

On 30 May 1996, three direct-push borings (designated SS006-HP-01, SS006-HP-02, and SS006-HP-03) were completed at the site. Borings SS006-HP-01 and SS006-HP-02 were located east (presumed hydraulically downgradient), and SS006-HP-03 was located west (presumed hydraulically upgradient) of the previously excavated area. The direct-push boring locations are depicted on Figure 3-3. The borings were advanced to bedrock encountered between 1 and 4 feet beg. Groundwater was not encountered during the completion of any of the borings or after the boring was left open for 48 hours. After 48 hours, the borings were filled to grade with bentonite.

Monitoring Well Installation

On 26 June 1996, Layne Western installed one groundwater monitoring well (designated SS006-MW-01) at the site. Only one well was installed at this site due to the steep topographic slope, immediately east (and believed to be hydraulically downgradient of the previously remediated area. In an effort to identify potential groundwater impact, well SS006-MW-01 was installed in the area most likely to have been impacted, the center of the previously excavated area. The location of the well is depicted on Figure 3-3. Well SS006-MW-01 was drilled through the overburden into bedrock to a depth of 16.3 feet beg and constructed of 10 feet of 2-inch ID PVC well screen and 8.3 feet of casing. The well was completed with a watertight-locking casing cap and locking, steel guardpipe to protect the casing. The boring logs, well construction diagram, and MDNR Monitoring Well Certification Record are included in Appendix A.

Site Geology and Hydrogeology

Based on observations made during the direct-push and drilling activities, the unconsolidated subsurface materials encountered beneath the site consisted of interbedded silts and clays ranging from the surface to approximately 4 feet beg. These unconsolidated sediments were underlain by partially weathered interbedded claystone, shale, and limestone to a maximum explored depth of 16.3 feet beg. The encountered sediments and weathered bedrock correlate with published documents (Section 2.3).

Shallow groundwater was encountered at approximately 8.5 feet beg. Based on Versar's observations, the shallow groundwater encountered at the site appears to be from saturated weathered bedrock units (silty clay) interlayered between component bedrock units (limestone and shale). The component bedrock rock units are relatively thin (less than 2 feet in thickness).

Based on site topography and groundwater maps prepared for sites SS003 and SS004 (Figures 4-1 and 4-2), groundwater flow beneath the site is inferred to be to the east-southeast, towards Scope Creek (Figure 1-2). Based on depth to bedrock (Table 4-1) beneath these sites, shallow groundwater also appears to be influenced by bedrock topography (bedrock was encountered at greater depths in a southerly and easterly direction).

Groundwater Sampling Results

On 9 July 1996, a groundwater sample was collected from the well and analyzed for VOCs, TPH (both GRO and DRO), SVOCs, and RCRA metals (total and dissolved) analysis. The following VOCs were detected in the well: vinyl chloride at 18 µg/L; trans-1,2-dichloroethene (trans-1,2-DCE) at 6.8 µg/L; cis-1,2-DCE at 74 µg/L; and TCE at 44 µg/L. Three of these VOCs (cis-1,2-DCE, TCE, and vinyl chloride) exceeded their respective MCLs, but were within one order of magnitude of their MCL. TPH were not detected in the sample. Two RCRA metals (barium and selenium) were detected in the sample. Barium was detected at concentrations of 179 µg/L (total) and 122 µg/L (dissolved). Selenium was detected at a concentration of 4.2 µg/L (dissolved). Both of these metals were present at concentrations below their respective MCL. The only SVOC detected in the sample was bis(2-ethylhexyl)phthalate at a concentration of 10 µg/L, which is slightly above the MCL of 6.0 µg/L. The groundwater sampling results are summarized in Table 4-4. Laboratory reports of analysis and associated COC forms are included as Appendix D.

The results of the QC samples (equipment, trip, and ambient conditions blanks), discussed in Section 4.5, were within acceptable ranges; however, barium and selenium were detected at low concentrations in the laboratory method blanks, and bis(2-ethylhexyl)phthalate was detected in one equipment blank. The relatively low concentrations of barium and selenium detected in the groundwater samples may also be the result of the natural occurrence of these metals in surficial soils underlying the Base (Tidball, undated). Laboratory reports of analysis and associated COC forms for the QC samples are included as Appendix E.

4.4 SITE SS009

Direct-Push

On 29 May 1996, nine direct-push borings (designated SS009-HP-01 through SS009-HP-09) were completed at the site. The boring locations are depicted on Figure 3-4. Competent bedrock was encountered at 13 to 18 feet below the site. Groundwater was encountered in three of the borings (SS009-HP-01, SS009-HP-02, and SS009-HP-09) and temporary wells were installed (designated as SS009-PZ-01, SS009-PZ-02, and SS009-PZ-03). The remaining borings did not yield groundwater during completion or after the boring was left open for 48 hours. After 48 hours, these borings were filled to grade with bentonite.

Temporary well SS009-PZ-01 was completed to bedrock (18 feet below) on the southeastern side of the previously excavated area, and was constructed of 12 feet of 1-inch ID PVC screen and 6 feet of casing. Temporary well SS009-PZ-02 on the southeastern side

Table 4-4 Groundwater Sampling Results for Site SS006 (in ug/L).

| Parameter | Drinking Water MCL/SMCL | SS006MW1 07/09/96 | |
|---------------------------|-------------------------|----------------------|------------|
| | | Total | Dissolved |
| TRPH | | | |
| GRO | - | <100 | - |
| DRO | - | <1,000 | - |
| RCRA Metals | | | |
| Arsenic | 50 | <3.0 | <3.0 |
| Barium | 2,000 | 179 | 122 |
| Cadmium | 5.0 | <3.0 | <3.0 |
| Chromium | 100 | <6.0 | <6.0 |
| Lead | 15 | <2.0 | <2.0 |
| Mercury | 2.0 | <0.20 | <0.20 |
| Selenium | 50 | <4.0 | 4.2 |
| Silver | 100 | <6.0 | <6.0 |
| VOCs | | | |
| 1,1-Dichloroethane | - | 3.6 | - |
| 1,1-Dichloroethene | 7.0 | <5.0 | - |
| 1,1,1-Trichloroethane | 200 | <5.0 | - |
| 1,1,2-Trichloroethane | 5.0 | <5.0 | - |
| 1,1,2,2-Tetrachloroethane | - | <5.0 | - |
| 1,2-Dichlorobenzene | 600 | <5.0 | - |
| 1,2-Dichloroethane | 5.0 | <5.0 | - |
| 1,2-Dichloropropane | 5.0 | <5.0 | - |
| 1,3-Dichlorobenzene | 600 | <5.0 | - |
| 1,4-Dichlorobenzene | 75 | <5.0 | - |
| 2-Butanone | - | <10.0 | - |
| 2-Chloroethylvinylether | - | <20.0 | - |
| 2-Hexanone | - | <10.0 | - |
| 4-Methyl-2-Pentanone | - | <10.0 | - |
| Acetone | - | <10.0 | - |
| Benzene | 5.0 | <5.0 | - |
| Bromodichloromethane | 100 | <5.0 | - |
| Bromofom | 100 | <5.0 | - |
| Bromomethane | - | <5.0 | - |
| Carbon Disulfide | - | <5.0 | - |
| Carbon tetrachloride | 5.0 | <5.0 | - |
| Chlorobenzene | 100 | <5.0 | - |
| Chloroethane | - | <5.0 | - |
| Chlorofom | 100 | <5.0 | - |
| Chloromethane | - | <5.0 | - |
| cis-1,2-Dichloroethene | 7.0 | 7.4 | - |
| cis-1,2-Dichloropropene | - | <5.0 | - |
| Dibromochloromethane | 100 | <5.0 | - |
| Ethylbenzene | 700 | <5.0 | - |
| Methylene Chloride | 5.0 | <5.0 | - |
| m,p-Xylene | 10,000 | <5.0 | - |
| o-Xylene | 10,000 | <5.0 | - |
| Styrene | 100 | <5.0 | - |
| Tetrachloroethene | 5.0 | <5.0 | - |
| Toluene | 1,000 | <5.0 | - |
| trans-1,2-Dichloroethene | 100 | 6.8 | - |
| trans-1,2-Dichloropropene | - | <5.0 | - |
| Trichloroethene | 5.0 | 4.4 | - |
| Trichlorofluoromethane | - | <5.0 | - |
| Vinyl Acetate | - | <10.0 | - |
| Vinyl Chloride | 2.0 | 1.8 | - |

Bold-above PQL, Not bold-below PQL Italic-Detected in blank

PQL-Practical Quantification Limit

Table 4-4 Groundwater Sampling Results for Site SS006 (in ug/L) (contd)

| Parameter | Drinking Water MCL/SMCL | SS006MW1 07/09/96 | |
|-----------------------------|-------------------------------|----------------------|-----------|
| | | Total | Dissolved |
| SVOCs | | | |
| 1,2-Dichlorobenzene | 600 | <100 | - |
| 1,2,4-Trichlorobenzene | 70 | <100 | - |
| 1,3-Dichlorobenzene | 600 | <100 | - |
| 1,4-Dichlorobenzene | 75 | <100 | - |
| 2-Chloronaphthalene | - | <100 | - |
| 2-Chlorophenol | - | <100 | - |
| 2-Methylnaphthalene | - | <100 | - |
| 2-Methylphenol | - | <100 | - |
| 2-Nitroaniline | - | <520 | - |
| 2-Nitrophenol | - | <100 | - |
| 2,4-Dichlorophenol | - | <100 | - |
| 2,4-Dimethylphenol | - | <100 | - |
| 2,4-Dinitrophenol | - | <520 | - |
| 2,4-Dinitrotoluene | - | <100 | - |
| 2,4,5-Trichlorophenol | - | <100 | - |
| 2,4,6-Trichlorophenol | - | <100 | - |
| 2,6-Dinitrotoluene | - | <100 | - |
| 3-Nitroaniline | - | <520 | - |
| 3,3'-Dichlorobenzidine | - | <210 | - |
| 4-bromophenyl-phenylether | - | <100 | - |
| 4-Chloro-3-methylphenol | - | <210 | - |
| 4-Chloroaniline | - | <210 | - |
| 4-Chlorophenyl-phenylether | - | <100 | - |
| 4-Methylphenol | - | <100 | - |
| 4-Nitroaniline | - | <210 | - |
| 4-Nitrophenol | - | <520 | - |
| 4,6-Dinitro-2-methylphenol | - | <520 | - |
| Acenaphthene | - | <100 | - |
| Acenaphthylene | - | <100 | - |
| Anthracene | - | <100 | - |
| Benzoic acid | - | <520 | - |
| Benzo(a)anthracene | 0.1 | <100 | - |
| Benzo(a)pyrene | 0.2 | <100 | - |
| Benzo(b)fluoranthene | 0.2 | <100 | - |
| Benzo(g,h,i)perylene | - | <100 | - |
| Benzo(k)fluoranthene | 0.2 | <100 | - |
| Benzyl alcohol | - | <210 | - |
| bis(2-Chloroethoxy)methane | - | <100 | - |
| bis(2-Chloroethyl)ether | - | <100 | - |
| bis(2-chloroisopropyl)ether | - | <100 | - |
| bis(2-Ethylhexyl)phthalate | 60 | 100 | - |
| Butylbenzylphthalate | 100 | <100 | - |
| Carbazole | - | <100 | - |
| Chrysene | 0.2 | <100 | - |
| Dibenzofuran | - | <100 | - |
| Dibenz(a,h)anthracene | 0.3 | <100 | - |
| Diethylphthalate | - | <100 | - |
| Dimethylphthalate | - | <100 | - |
| Di-n-butylphthalate | - | <100 | - |
| Di-n-octylphthalate | - | <100 | - |
| Fluoranthene | - | <100 | - |
| Fluorene | - | <100 | - |
| Hexachlorobenzene | 10 | <100 | - |
| Hexachlorobutadiene | - | <100 | - |
| Hexachlorocyclopentadiene | 50 | <100 | - |
| Hexachloroethane | - | <100 | - |
| Indeno(1,2,3-cd)pyrene | 0.4 | <100 | - |
| Isophorone | - | <100 | - |
| Naphthalene | - | <100 | - |
| Nitrobenzene | - | <100 | - |
| N-Nitroso-di-n-propylamine | - | <100 | - |
| N-Nitrosodiphenylamine | - | <100 | - |
| Pentachlorophenol | 10 | <520 | - |
| Phenathrene | - | <100 | - |
| Phenol | - | <100 | - |
| Pyrene | - | <100 | - |

Bold-above PQL, Not bold-below PQL, Italic-Detected in blank

PQL-Practical Quantification Limit

of the previously excavated area was completed to bedrock (14 feet beg) was constructed of 9 feet of 1-inch ID PVC screen and 5 feet of casing. Temporary well SS009-PZ-03 was completed to bedrock (14 feet beg) on the northwestern side of the previously excavated area and was constructed of 9 feet of 1-inch ID PVC screen and 5 feet of casing. However, this well could not be sampled because it contained an insufficient volume of groundwater; therefore, well SW004-MW-01 was used as the upgradient well. Based on a groundwater contour map prepared for site SS004, which is located approximately 230 feet southwest of site SS009, groundwater flow beneath site SS009 is most likely to the east or southeast (towards Scope creek). Therefore, well SS004-MW-01 can suffice as the upgradient well.

Site Geology and Hydrogeology

Based on observations made during the direct-push activities, the unconsolidated subsurface materials encountered beneath the site consisting of fill and intermixed sands, silts, and clays ranging from the surface to approximately 14 feet beg. These unconsolidated sediments are underlain by partially weathered interbedded claystone, shale, and limestone. The encountered sediments and weathered bedrock correlate with published documents (Section 2.3).

The depth to shallow groundwater varied greatly beneath the site, with groundwater encountered between approximately 9 (well SS009-PZ-01) and 2 (well SS004-PZ-02) feet beg. Based on Versar's observations, the shallow groundwater encountered at the site appears to be "perched" above competent bedrock. The source of groundwater in the wells is believed to be microfractures and bedding planes in weathered bedrock units (claystone) in which saturated conditions were not encountered.

Based on site topography and groundwater maps prepared for sites SS003 and SS004 (Figures 4-1 and 4-2), groundwater flow beneath Site SS009 is inferred to be to the east-southeast, towards Scope Creek (Figure 1-2). Groundwater contours were not developed for this site because of the elevation of water found in PZ-02, which appeared to be influenced by the building foundation (i.e., groundwater contained within the foundation base material). Based on depth to bedrock (Table 4-1) beneath this site, shallow groundwater appears to be influenced by bedrock topography (bedrock was encountered at greater depths in a southerly and easterly direction).

Groundwater Sampling Results

On 29 May 1996, groundwater samples were collected from the two temporary wells for VOCs, TPH (both GRO and DRO), SVOCs, RCRA metals (total and dissolved), and PCBs analyses. The groundwater sampling results are summarized in Table 4-5. Laboratory reports of analyses and associated COC forms are included as Appendix D. VOCs were detected at low concentrations in both of the temporary wells. The following VOCs were detected in well SS009-PZ-01: 1,1-DCE at 17 µg/L; 1,1-DCA at 8.4 µg/L; cis-1,2-DCE at 19 µg/L; acetone at 5.7 µg/L; TCE at 8.8 µg/L; toluene at 1.6 µg/L; vinyl chloride at 4.6 µg/L; and tetrachlorethene (PCE) at 33 µg/L. The following VOCs were detected in well

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Table 4-5 Groundwater Sampling Results for Site SS009 (in ug/L)

| Parameter | Drinking Water MCL/SMCL | SS009HP1 05/29/96 | | SS009HP2 05/29/96 | | SS004MW1 07/09/96 | |
|---------------------------|-------------------------|----------------------|-----------|----------------------|-----------|----------------------|-----------|
| | | Total | Dissolved | Total | Dissolved | Total | Dissolved |
| TRPH | | | | | | | |
| GRO | - | <1,100 | - | <1,100 | - | <100 | - |
| DRO | - | <1,100 | - | <1,100 | - | <1,000 | - |
| RCRA Metals | | | | | | | |
| Arsenic | 50 | 16.8 | <3.0 | 63.1 | 5.3 | 4.7 | <3.0 |
| Barium | 2,000 | 1,800 | 437 | 5,240 | 178 | 1,200 | 355 |
| Cadmium | 5.0 | 3.3 | <1.0 | 5.3 | <1.0 | <3.0 | <3.0 |
| Chromium | 100 | 157 | <2.0 | 227 | <2.0 | <6.0 | <6.0 |
| Lead | 15 | 57.4 | <2.0 | 184 | <2.0 | 5.9 | 4.0 |
| Mercury | 2.0 | 1.0 | <0.20 | 0.35 | <0.20 | <0.20 | <0.20 |
| Selenium | 50 | 7.8 | <3.0 | <3.0 | 5.4 | 4.0 | 4.9 |
| Silver | 100 | <1.0 | <1.0 | <1.0 | <1.0 | <6.0 | <6.0 |
| VOCs | | | | | | | |
| 1,1-Dichloroethane | - | 8.4 | - | 12 | - | <5.0 | - |
| 1,1-Dichloroethene | 7.0 | 17 | - | 16 | - | <5.0 | - |
| 1,1,1-Trichloroethane | 200 | <5.0 | - | <5.0 | - | <5.0 | - |
| 1,1,2-Trichloroethane | 5.0 | <5.0 | - | <5.0 | - | <5.0 | - |
| 1,1,2,2-Tetrachloroethane | - | <5.0 | - | <5.0 | - | <5.0 | - |
| 1,2-Dichlorobenzene | 600 | <5.0 | - | <5.0 | - | <5.0 | - |
| 1,2-Dichloroethane | 5.0 | <5.0 | - | <5.0 | - | <5.0 | - |
| 1,2-Dichloropropane | 5.0 | <5.0 | - | <5.0 | - | <5.0 | - |
| 1,3-Dichlorobenzene | 600 | <5.0 | - | <5.0 | - | <5.0 | - |
| 1,4-Dichlorobenzene | 75 | <5.0 | - | <5.0 | - | <5.0 | - |
| 2-Butanone | - | <10.0 | - | <10.0 | - | <10.0 | - |
| 2-Chloroethylvinylether | - | <20.0 | - | <20.0 | - | <20.0 | - |
| 2-Hexanone | - | <10.0 | - | <10.0 | - | <10.0 | - |
| 4-Methyl-2-Pentanone | - | <10.0 | - | <10.0 | - | <10.0 | - |
| Acetone | - | 5.7 | - | 8.3 | - | <10.0 | - |
| Benzene | 5.0 | <5.0 | - | 2.4 | - | <5.0 | - |
| Bromodichloromethane | 100 | <5.0 | - | <5.0 | - | <5.0 | - |
| Bromoform | 100 | <5.0 | - | <5.0 | - | <5.0 | - |
| Bromomethane | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Carbon Disulfide | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Carbon tetrachloride | 5.0 | <5.0 | - | <5.0 | - | <5.0 | - |
| Chlorobenzene | 100 | <5.0 | - | <5.0 | - | <5.0 | - |
| Chloroethane | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Chloroform | 100 | <5.0 | - | <5.0 | - | <5.0 | - |
| Chloromethane | - | <5.0 | - | <5.0 | - | <5.0 | - |
| cis-1,2-Dichloroethene | 7.0 | 19 | - | 55 | - | <5.0 | - |
| cis-1,2-Dichloropropene | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Dibromochloromethane | 100 | <5.0 | - | <5.0 | - | <5.0 | - |
| Ethylbenzene | 700 | <5.0 | - | <5.0 | - | <5.0 | - |
| Methylene Chloride | 5.0 | <5.0 | - | <5.0 | - | <5.0 | - |
| m,p-Xylene | 10,000 | <5.0 | - | <5.0 | - | <5.0 | - |
| o-Xylene | 10,000 | <5.0 | - | <5.0 | - | <5.0 | - |
| Styrene | 100 | <5.0 | - | <5.0 | - | <5.0 | - |
| Tetrachloroethene | 5.0 | 33 | - | 12 | - | <5.0 | - |
| Toluene | 1,000 | 1.6 | - | 1.4 | - | <5.0 | - |
| trans-1,2-Dichloroethene | 100 | <5.0 | - | <5.0 | - | <5.0 | - |
| trans-1,2-Dichloropropene | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Trichloroethene | 5.0 | 8.8 | - | 11 | - | 4.2 | - |
| Trichlorofluoromethane | - | <5.0 | - | <5.0 | - | <5.0 | - |
| Vinyl Acetate | - | <10.0 | - | <10.0 | - | <10.0 | - |
| Vinyl Chloride | 2.0 | 4.6 | - | 21 | - | <5.0 | - |

Table 4-5 Groundwater Sampling Results for Site SS009 (in ug/L) (contd)

| Parameter | Drinking Water MCL/SMCL | SS009HP1 05/29/96 | | SS009HP2 05/29/96 | |
|-----------------------------|-------------------------|----------------------|-----------|----------------------|-----------|
| | | Total | Dissolved | Total | Dissolved |
| SVOCs | | | | | |
| 1,2-Dichlorobenzene | 600 | <12 0 | - | <11 0 | - |
| 1,2,4-Trichlorobenzene | 70 | <12 0 | - | <11 0 | - |
| 1,3-Dichlorobenzene | 600 | <12 0 | - | <11 0 | - |
| 1,4-Dichlorobenzene | 75 | <12 0 | - | <11 0 | - |
| 2-Chloronaphthalene | - | <12 0 | - | <11 0 | - |
| 2-Chlorophenol | - | <12 0 | - | <11 0 | - |
| 2-Methylnaphthalene | - | <12 0 | - | <11 0 | - |
| 2-Methylphenol | - | <12 0 | - | <11 0 | - |
| 2-Nitroaniline | - | <58 0 | - | <54 0 | - |
| 2-Nitrophenol | - | <12 0 | - | <11 0 | - |
| 2,4-Dichlorophenol | - | <12 0 | - | <11 0 | - |
| 2,4-Dimethylphenol | - | <12 0 | - | <11 0 | - |
| 2,4-Dinitrophenol | - | <58 0 | - | <54 0 | - |
| 2,4-Dinitrotoluene | - | <12 0 | - | <11 0 | - |
| 2,4,5-Trichlorophenol | - | <12 0 | - | <11 0 | - |
| 2,4,6-Trichlorophenol | - | <12 0 | - | <11 0 | - |
| 2,6-Dinitrotoluene | - | <12 0 | - | <11 0 | - |
| 3-Nitroaniline | - | <58 0 | - | <54 0 | - |
| 3,3'-Dichlorobenzidine | - | <23 0 | - | <22 0 | - |
| 4-bromophenyl-phenylether | - | <12 0 | - | <11 0 | - |
| 4-Chloro-3-methylphenol | - | <23 0 | - | <22 0 | - |
| 4-Chloroaniline | - | <23 0 | - | <22 0 | - |
| 4-Chlorophenyl-phenylether | - | <12 0 | - | <11 0 | - |
| 4-Methylphenol | - | <12 0 | - | <11 0 | - |
| 4-Nitroaniline | - | <23 0 | - | <22 0 | - |
| 4-Nitrophenol | - | <58 0 | - | <54 0 | - |
| 4,6-Dinitro-2-methylphenol | - | <58 0 | - | <54 0 | - |
| Acenaphthene | - | <12 0 | - | <11 0 | - |
| Acenaphthylene | - | <12 0 | - | <11 0 | - |
| Anthracene | - | <12 0 | - | <11 0 | - |
| Benzoic acid | - | <58 0 | - | <54 0 | - |
| Benzo(a)anthracene | 0 1 | <12 0 | - | <11 0 | - |
| Benzo(a)pyrene | 0 2 | <12 0 | - | <11 0 | - |
| Benzo(b)fluoranthene | 0 2 | <12 0 | - | <11 0 | - |
| Benzo(g,h,i)perylene | - | <12 0 | - | <11 0 | - |
| Benzo(k)fluoranthene | 0 2 | <12 0 | - | <11 0 | - |
| Benzyl alcohol | - | <23 0 | - | <22 0 | - |
| bis(2-Chloroethoxy)methane | - | <12 0 | - | <11 0 | - |
| bis(2-Chloroethyl)ether | - | <12 0 | - | <11 0 | - |
| bis(2-chloroisopropyl)ether | - | <12 0 | - | <11 0 | - |
| bis(2-Ethylhexyl)phthalate | 6 0 | <12 0 | - | 3 6 | - |
| Butylbenzylphthalate | 100 | <12 0 | - | <11 0 | - |
| Carbazole | - | <12 0 | - | <11 0 | - |
| Chrysene | 0 2 | <12 0 | - | <11 0 | - |
| Dibenzofuran | - | <12 0 | - | <11 0 | - |
| Dibenz(a,h)anthracene | 0 3 | <12 0 | - | <11 0 | - |
| Diethylphthalate | - | <12 0 | - | <11 0 | - |
| Dimethylphthalate | - | <12 0 | - | <11 0 | - |
| Di-n-butylphthalate | - | <12 0 | - | <11 0 | - |
| Di-n-octylphthalate | - | <12 0 | - | <11 0 | - |
| Fluoranthene | - | <12 0 | - | <11 0 | - |
| Fluorene | - | <12 0 | - | <11 0 | - |
| Hexachlorobenzene | 1 0 | <12 0 | - | <11 0 | - |
| Hexachlorobutadiene | - | <12 0 | - | <11 0 | - |
| Hexachlorocyclopentadiene | 50 | <12 0 | - | <11 0 | - |
| Hexachloroethane | - | <12 0 | - | <11 0 | - |
| Indeno(1,2,3-cd)pyrene | 0 4 | 1 3 | - | <11 0 | - |
| Isophorone | - | <12 0 | - | <11 0 | - |
| Naphthalene | - | <12 0 | - | <11 0 | - |
| Nitrobenzene | - | <12 0 | - | <11 0 | - |
| N-Nitroso-di-n-propylamine | - | <12 0 | - | <11 0 | - |
| N-Nitrosodiphenylamine | - | <12 0 | - | <11 0 | - |
| Pentachlorophenol | 1 0 | <58 0 | - | <54 0 | - |
| Phenathrene | - | <12 0 | - | <11 0 | - |
| Phenol | - | <12 0 | - | <11 0 | - |
| Pyrene | - | <12 0 | - | <11 0 | - |

Bold-above PQL, Not bold-below PQL, Italic-Detected in blank

PQL-Practical Quantification Limit

Table 4-5 Groundwater Sampling Results for Site SS009 (in ug/L) (contd)

| Parameter | Drinking Water MCL/SMCL | SS009HP1 05/29/98 | | SS009HP2 05/29/98 | |
|-------------|-------------------------------|----------------------|-----------|----------------------|-----------|
| | | Total | Dissolved | Total | Dissolved |
| PCBs | | | | | |
| PCB-1016 | 05 | <11 | - | <11 | - |
| PCB-1221 | 05 | <22 | - | <22 | - |
| PCB-1232 | 05 | <1.1 | - | <11 | - |
| PCB-1242 | 05 | <11 | - | <11 | - |
| PCB-1248 | 05 | <11 | - | <11 | - |
| PCB-1254 | 05 | <11 | - | <11 | - |
| PCB-1260 | 05 | <11 | - | <11 | - |

SS009-PZ-02: 1,1-DCE at 16 µg/L; 1,1-DCA at 12 µg/L; acetone of 8.3 µg/L; benzene at 2.4 µg/L; cis-1,2-DCE at 55 µg/L; TCE at 11 µg/L; toluene at 1.4 µg/L; vinyl chloride at 21 µg/L; and PCE at 12 µg/L. Only TCE was detected in SS004-MW-01 at a concentration of 4.2 µg/L. TPH (both DRO and GRO) were not detected in any of the samples.

Seven RCRA metals were detected in the samples: arsenic, barium, cadmium, chromium, lead, mercury, and selenium. Arsenic was detected in wells SS009-PZ-01, SS009-PZ-02, and SS004-MW-01 at concentrations of 16.8, 63.1, and 4.7 µg/L (total only), respectively, and 5.3 µg/L (well SS009-PZ-02, dissolved). Barium was detected in wells SS009-PZ-01, SS009-PZ-02, and SS004-MW-01 at concentrations of 1,800, 5,240, and 1,200 µg/L (total only) and 437, 178, and 355 µg/L (dissolved), respectively. Cadmium was detected in wells SS009-PZ-01 and SS009-PZ-02 at concentrations of 3.3 and 5.3 µg/L (total), respectively. Chromium was detected in wells SS009-PZ-01 and SS009-PZ-02 at concentrations of 157 and 227 µg/L (total), respectively. Lead was detected in wells SS009-PZ-01, SS009-PZ-02, and SS006-MW-01 at concentrations of 57.4, 184, and 5.9 µg/L (total), respectively. Mercury was detected in wells SS009-PZ-01 and SS009-PZ-02 at concentrations of 1.0 and 0.35 µg/L (total), respectively. Selenium was detected in wells SS009-PZ-01 and SS009-PZ-02 at concentrations of 7.8 µg/L (well SS009-PZ-01, total) and 5.4 µg/L (well SS009-PZ-02, dissolved phase). Two SVOCs were detected: indeno(1,2,3-cd)pyrene, in well SS009-HP-01, at 1.3 µg/L; and bis(2-ethylhexyl)phthalate, in well SS009-PZ-02, at a concentration of 3.6 µg/L. PCBs were not detected in either of the wells.

A number of analytes were detected above MCLs in both PZ-01 and PZ-02, including: arsenic; barium; cadmium; chromium, lead; 1,1,1-DCE; PCE; TCE; and vinyl chloride, but were within one order of magnitude of their MCL. Analytes were not detected at concentrations above MCLs in well SS004-MW-01.

The results of the QC samples (equipment, trip, and ambient conditions blanks) were within acceptable ranges; however, barium, cadmium, and selenium were detected at low concentrations in the laboratory method blanks. Arsenic, barium, cadmium, chromium, and lead were detected at concentrations above the MCLs in groundwater from Site SS009. These results, as well as the relatively low concentrations of selenium and mercury detected in the groundwater samples may also be the result of the natural occurrence of these metals in surficial soils underlying the Base (Tidball, undated). Laboratory reports of analysis and associated COC forms for the QC samples are included as Appendix E.

4.5 QUALITY CONTROL RESULTS

Quality control issues include results obtained from QC samples (field and laboratory) and are discussed in the following sections by analytical group.

4.5.1 Field Quality Control Blanks

Field quality control blanks included three equipment rinseate blanks, seven trip blanks, and three ambient condition blanks. Each equipment rinseate blank was analyzed for

all target compounds that normal environmental samples were collected for that day. The ambient condition blanks and trip blanks were analyzed for VOCs only.

The analytical results of the equipment blanks indicate two metals (chromium and selenium) were detected in Equipment Blank 1. Carbon disulfide and acetone (VOCs) were detected in Equipment Blanks 1 and 4, respectively. Additionally, bis(2-ethylhexyl)phthalate (SVOC) was detected in Equipment Blank 1. The presence of these VOCs and SVOCs indicates either possible laboratory contamination or incomplete equipment decontamination. No PCBs or TPH were detected in any of the equipment blanks.

Analytical results for the trip blanks and ambient condition blanks indicate the presence of acetone in six of the ten samples. In each case, however, the reported concentration was below the PQL and, therefore, estimated. Additionally, 1,1,1-trichloroethane was detected above the IDL, but below the PQL in Trip Blank 4. The presence of these VOCs indicate possible laboratory contamination.

4.5.2 Field Duplicates

One field duplicate was collected from well SS004-MW-03 and analyzed for TPH, metals, and VOCs. The results show good agreement with the normal environmental sample collected from the same well; however, metals data for the unfiltered normal environmental sample are missing. After comparison of the COCs with laboratory login sheets, it is clear that an unfiltered water sample was collected; however, it was not logged by the laboratory and, therefore, not analyzed. The results of the filtered normal environmental sample, however, show good agreement with the filtered duplicate sample. Additionally, both the filtered and unfiltered duplicate samples show good agreement. In each case, only one metal (barium) was detected and at concentrations well below the MCL of 2,000 $\mu\text{g/L}$.

4.5.3 Laboratory Quality Control

Laboratory quality control includes meeting preparation and analysis requirements and holding times, analysis of method blanks, and identification of data qualifiers. In all cases, the sample preparation and holding times were met for all samples, and internal quality control criteria were met. The following paragraphs discuss out-of-control situations and data qualifiers pertaining to each analytical method.

Volatile Organic Compounds

Several VOCs were detected in laboratory method blanks indicating possible laboratory contamination. These compounds, acetone, 2-butanone, and several tentatively identified compounds (TICs) were flagged with a "B" qualifier on the laboratory data sheets. Of these VOCs, acetone was detected in several of the normal environmental samples and field QC samples.

The reported laboratory PQLs were approximately 10 times higher than the reporting limits stipulated in the AFCEE Handbook and Work Plan. The IDLs utilized for VOC

analyses, however, were lower than these PQLs. The laboratory was, therefore, instructed to report all VOCs detected at concentrations above the laboratory IDL, and to compute estimated values for concentrations detected below the PQLs.

Generally, the PQLs used to report VOC data were below established MCLs. Vinyl chloride, however, was reported at a PQL of 5.0 µg/L which is greater than the MCL of 2 µg/L. Because all VOCs detected above the laboratory IDL were reported as an estimated value below the PQL, the reported "Not Detected" results are lower than the laboratory IDLs.

Semi-Volatile Organic Compounds

The laboratory data reported for SVOCs indicate that most of the target analytes were not detected. Surrogate recoveries were low (outside QC limits) for two of the six surrogates in sample SS009-HP-01. This low recovery suggests that some compounds reported as "Not Detected" may be invalid. The results obtained from the other samples analyzed for SVOCs which were within QC limits, indicate only one SVOC [bis(2-Ethylhexyl)phthalate] was detected. This SVOC was also detected in one equipment blank, indicating possible laboratory contamination. Based on these observations, it is believed that no SVOC contamination was found during this investigation and that the results obtained for sample SS009-HP-01 are probably still valid.

Total Petroleum Hydrocarbons

The laboratory data reported for TPH indicate that no TPH were detected in any of the samples collected. Surrogate recoveries for DROs were outside QC limits for three of the samples analyzed (SS003-MW-02, SS004-MW-04, and SS009-HP2). This low recovery suggests that the DRO results reported as "Not Detected" may be invalid. The DRO recoveries, however, were within QC limits for the laboratory control samples and the matrix spike samples. Additionally, each of the other sample results for TPH, which were within QC limits, indicates that TPH were not detected. Based on these observations, it is believed that no TPH contamination was found during this investigation and that the DRO results obtained for the above samples are still valid.

Metals

The laboratory data reported for metals show "N" qualifiers for mercury results. The "N" qualifier indicates that the matrix spike recovery exceeded acceptance limits, and suggests that the reported results may be invalid. However, the acceptable recoveries for the aqueous laboratory control samples (prep blank spiked) for mercury indicate that the analytical system was operating correctly and the out-of-control recovery may be attributed to matrix interferences. The results for mercury are, therefore, believed to still be valid.

Polychlorinated Biphenyls

All internal laboratory control criteria were met. Surrogate recoveries were within QC limits, and no data qualifiers were identified.

4.6 INVESTIGATION DERIVED WASTE SAMPLING RESULTS

The soil generated during drilling activities was sampled and analyzed for disposal classification (i.e., "free" of contamination, recyclable waste, or RCRA hazardous waste). The samples were analyzed for all TCLP parameters and TPH. The results of the July 1996 groundwater sampling event were used to characterize the water generated during well development and sampling activities. Based on the sampling results, the soil and groundwater generated during the groundwater assessment activities have been deemed nonhazardous. The drummed soil and water will be properly disposed based on this classification. Laboratory reports of analysis and associated COC forms are included as Appendix F.

SECTION 5.0**SUMMARY****5.1 ASSESSMENT OF ENVIRONMENTAL CONCERNS**

Remedial activities, consisting of soil excavation, were previously performed at Sites SS003, SS004, SS006, and SS009. Based on the results of soil sampling conducted after excavating, a follow-up groundwater assessment was performed by Versar from May through July 1996. The assessment was performed to determine if the presence of contaminated soils at the sites had impacted shallow groundwater beneath the sites. The assessment consisted of installing and sampling two temporary groundwater monitoring wells (installed at Site SS009) and seven permanent groundwater monitoring wells (installed at Sites SS003, SS004, and SS006). Based on the site contaminants, the groundwater samples were analyzed for several or all of the following analyses: VOCs, TPH (both GRO and DRO), SVOCs, PCBs, and RCRA metals (total and dissolved).

5.2 DATA GAPS

Because of the intermittent encountering of groundwater beneath each site, groundwater flow direction could only be determined at two sites (SS003 and SS004), leaving some potential doubt as to which monitoring wells were upgradient or downgradient at the remaining two sites. Based on previous studies (Jacobs, 1995), groundwater contour maps prepared for sites SS003 and SS004, and depth to bedrock beneath the sites, groundwater flow appears to be to the east-southeast, towards Scope Creek.

Review of analytical results identified missing metals data for one unfiltered water sample collected from well SS004-MW-3. Because these results were to be compared with one duplicate sample collected from this well, method precision for unfiltered metals analysis cannot be evaluated. As discussed in Section 4.5.2, the existing data for filtered water samples (normal environmental and duplicate) show good agreement and suggest this data gap has little impact on this assessment.

5.3 RECOMMENDATIONS

Based on the information contained in this study, the Air Force recommends closure of each of these IRP sites. The justifications for closure are presented below, by site.

5.3.1 Site SS003 - Oil Saturated Area

IRP Site SS003 is recommended for closure because: (1) the pollutant source has been removed; and (2) no groundwater contamination was detected. These reasons are further explained below:

- **Pollutant sources have been removed.** Twenty-seven cubic yards of TPH- and lead-impacted soil were excavated from the site in 1991. An additional 15 cubic yards of contaminated soil were excavated in 1992. Concentrations of target contaminants in soil samples collected from the bottom of this latter excavation did not exceed MDNR cleanup goals.
- **Groundwater data reflect no contamination.** The two downgradient wells (MW-02 and MW-03) in close proximity to the site show no evidence of contamination. TPH were not detected in any wells, and lead was only detected in the unfiltered sample collected from MW-03. TCE was detected in well MW-03 at a concentration below the well PQL. The estimated concentration of TCE was 2.5 µg/l, which is below the MCL of 5.0 µg/l. Selenium was detected in both the filtered and unfiltered samples collected from MW-02, but at concentrations well below the MCL of 50 µg/l.

In well MW-01, located directly within the remediated area, concentrations of VOCs were detected below PQLs (and therefore estimated) for acetone, cis-1,2-DCE, and TCE. Each estimated concentration was below MCLs.

5.3.2 Site SS004 - Hazardous Waste Storage Area

IRP Site SS004 is recommended for closure because: (1) the pollutant source has been removed; and (2) no groundwater contamination was detected. These reasons are further explained below:

- **Pollutant sources have been removed.** Fifteen cubic yards of TPH-impacted soil were excavated from the site in 1991. Target contaminants were not detected in soil samples collected from the bottom of the excavation at concentrations exceeding MDNR cleanup goals.
- **Groundwater data reflect no contamination.** The one downgradient well (MW-02) in close proximity to the site showed no evidence of contamination. TPH were not detected in this well. TCE, 1,1,1-TCA, and acetone were detected in MW-02 at concentrations below PQLs. The estimated concentrations were 3.1 µg/l, 1.1 µg/l, and 4.7 µg/l, respectively (all below MCLs). Selenium, lead, and arsenic were detected in the unfiltered sample collected from MW-02, but at concentrations well below MCLs.

5.3.3 Site SS006 - Hazardous Materials Storage

IRP Site SS006 is recommended for closure because: (1) the pollutant source has been removed; (2) groundwater contamination was detected at levels within one order of magnitude over drinking water standards (MCLs); and (3) no potential users of groundwater are within the vicinity of the site. These reasons are further explained below:

- **Pollutant sources have been removed.** Forty cubic yards of SVOC-impacted soil were excavated from the site in 1992. Target contaminants were not detected in soil samples collected from the bottom of the excavation at concentrations exceeding MDNR cleanup goals.
- **Groundwater data reflect some contamination.** The only well (MW-01) installed at this site (in a location assumed to be worst case) did indicate evidence of contamination. TPH were not detected in this well. Only one SVOC was detected; bis(2-ethylhexyl)phthalate at a concentration of 10 µg/l, which is slightly above the MCL of 6.0 µg/l. TCE (44 µg/L), cis-1,2-DCE (74 µg/L), and vinyl chloride (18 µg/L) were all detected above their respective MCLs, but were within one order of magnitude of their MCL. Trans-1,2-DCE was also detected, but at a concentration below the MCL, and 1,1-DCA had an estimated concentration of 3.6 µg/l (below its MCL). Selenium was detected in the unfiltered sample, but at a concentration well below its MCL.
- **Groundwater exposure pathway not likely.** It is documented that no drinking water wells are present on OL-Q and that the water within surficial aquifer is generally not potable because of high salinity (Jacobs, 1995). Shallow groundwater flow appears to be consistent with surface drainage and physiographic features (Jacobs, 1995), which is towards Scope Creek. The groundwater flow direction was verified during the course of this study at Sites SS003 and SS004.

Groundwater seeps have been reported in the general vicinity of this site (Versar, 1996c). At the Central Drainage Area (just northeast of Site SS006), several seeps were observed near drainage conduits. Samples from one seep showed low levels of VOC contamination; however, concentrations of VOCs in the surface water decreased to undetectable levels before exiting the Central Drainage Area.

Because there are no groundwater receptors at the Base, drinking water exposures are highly unlikely. If groundwater enters surface water via a seep, the concentrations of any contaminants would attenuate within a short distance from the seep.

5.3.4 Site SS009 - Fire Valve Area

IRP Site SS009 is recommended for closure because: (1) the pollutant source has been removed; (2) groundwater contamination was detected at levels slightly above one order of magnitude over drinking water standards (MCLs); and (3) no potential users of groundwater are within the vicinity of the site. These reasons are further explained below:

- **Pollutant sources have been removed.** Ten cubic yards of petroleum-impacted soil were excavated from the site in 1993. TPH were detected in one

boring completed near the excavated area, but the concentration was below MDNR cleanup guidelines.

- **Groundwater data reflect some contamination.** Samples from both wells installed presumably downgradient of the excavated area indicate evidence of contamination. TPH was not detected in either well. Four VOCs [1,1-DCE (16 to 17 µg/L), PCE (12 to 13 µg/L), TCE (8.8 to 11 µg/L), and vinyl chloride) (4.6 to 21 µg/L)] were detected at concentrations above MCLs (the concentration of vinyl chloride was one order of magnitude over its MCL). Arsenic (63.1 µg/L), barium (5,240 µg/L), cadmium (5.3 µg/L), chromium (157 to 227 µg/L), and lead (57.4 to 184 µg/L) were also detected at concentrations above MCLs.
- **Groundwater exposure pathway not likely.** It is documented that no drinking water wells are present on OL-Q and that the water within surficial aquifer is generally not potable because of high salinity (Jacobs, 1995). Shallow groundwater flow direction is consistent with surface drainage and physiographic features (Jacobs, 1995), which is towards Scope Creek. The groundwater flow direction was verified during the course of this study at Sites SS003 and SS004.

Even though some contaminants are above MCLs, there are no groundwater receptors at the Base, indicating that drinking water exposures are highly unlikely (Tetra Tech, 1995).

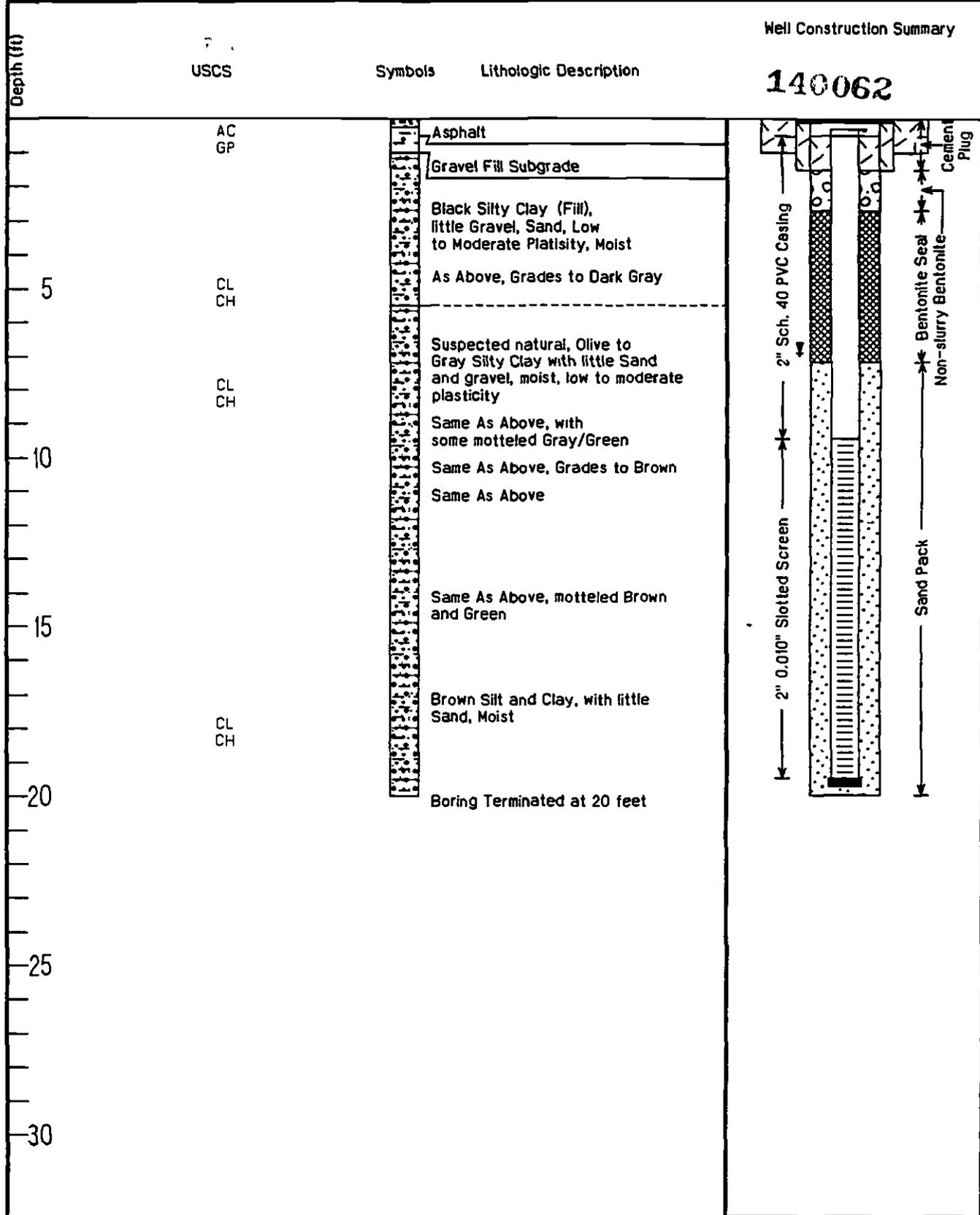
SECTION 6.0**REFERENCES**

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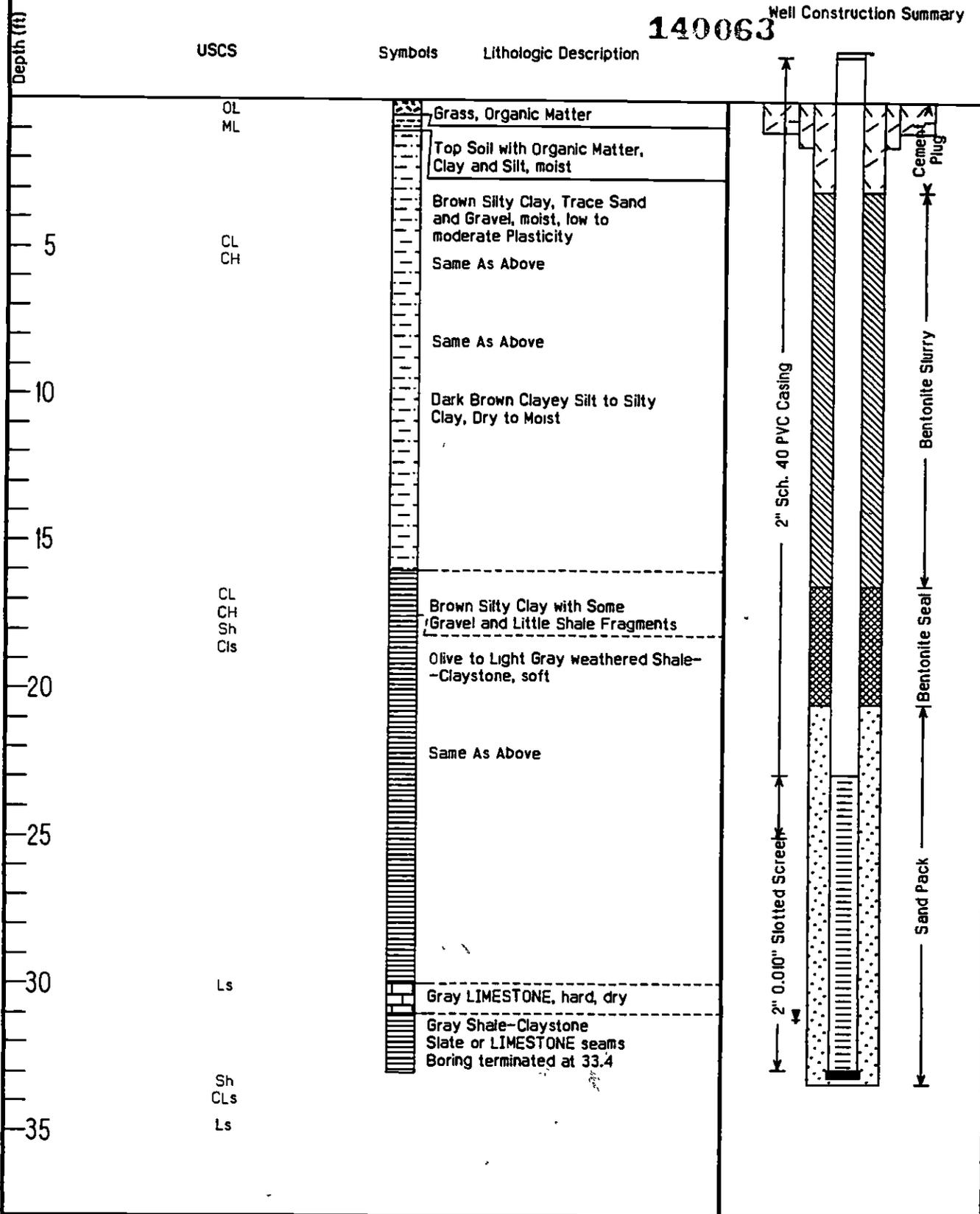
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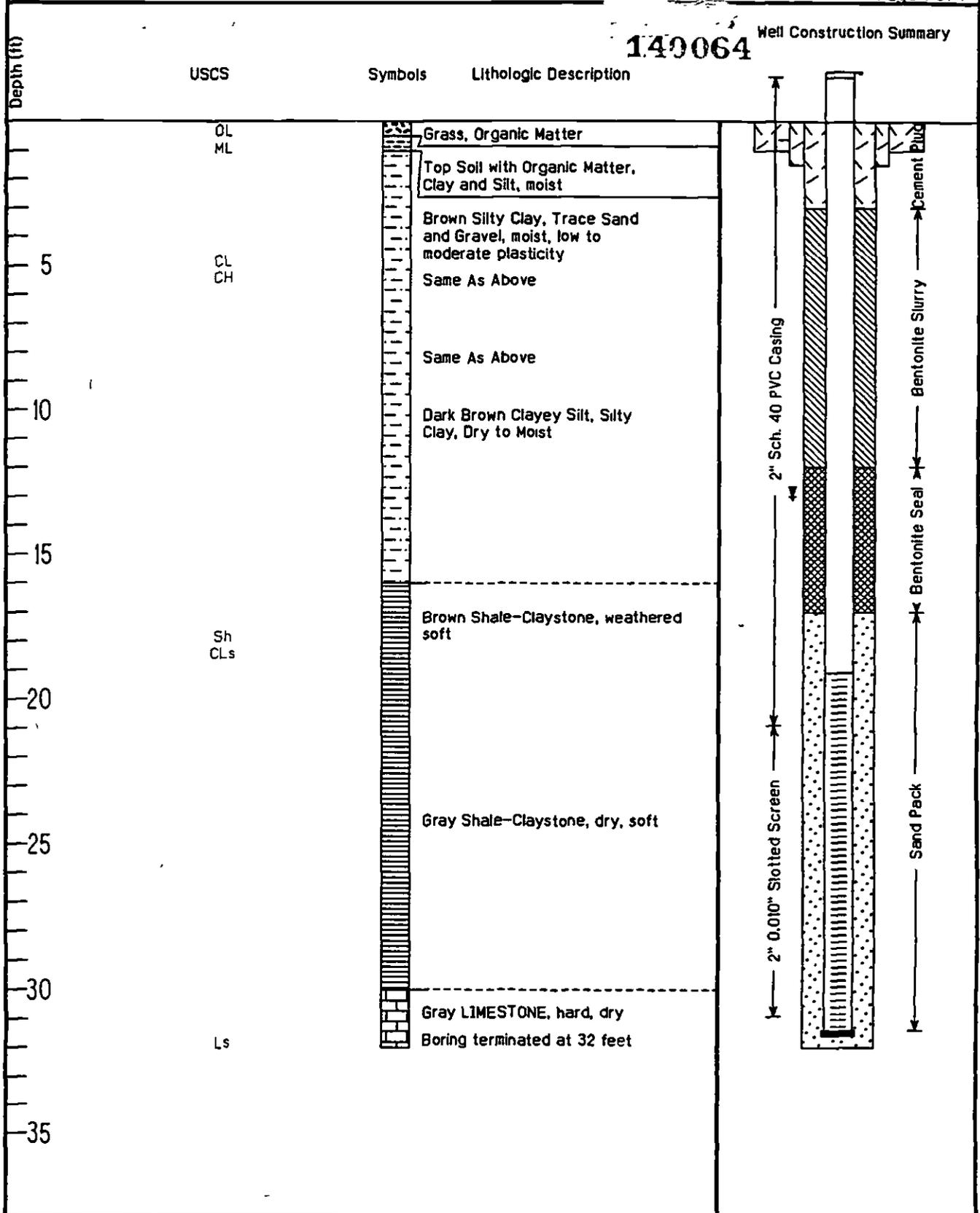
APPENDIX A
SOIL BORING LOGS, WELL CONSTRUCTION DIAGRAMS,
AND MDNR WELL CERTIFICATION RECORDS



| | | | | | |
|---------------|-----------------|------------------|---------------|-----------------|---------------------|
| Job Name | Richards-Gabaur | Date Started | 06/28/96 | Drill Method | Air Rotary |
| Job Number | 2816 211 | Date Completed | 06/28/96 | Casing Diameter | 2" |
| Client Name | AFCEE | Total Depth | 20 Feet BEG | Screen Interval | 9.5 - 19.5 Feet BEG |
| Location | Kansas City, MO | Water Level | 6.91 Feet TOC | Slot Size | 0.010" |
| Boring Number | SS003-MW-01 | Water Level Date | 7/9/96 | Drilling Co. | Layne Western Co |
| Geologist | Alan Esko | Signature | | Date | |

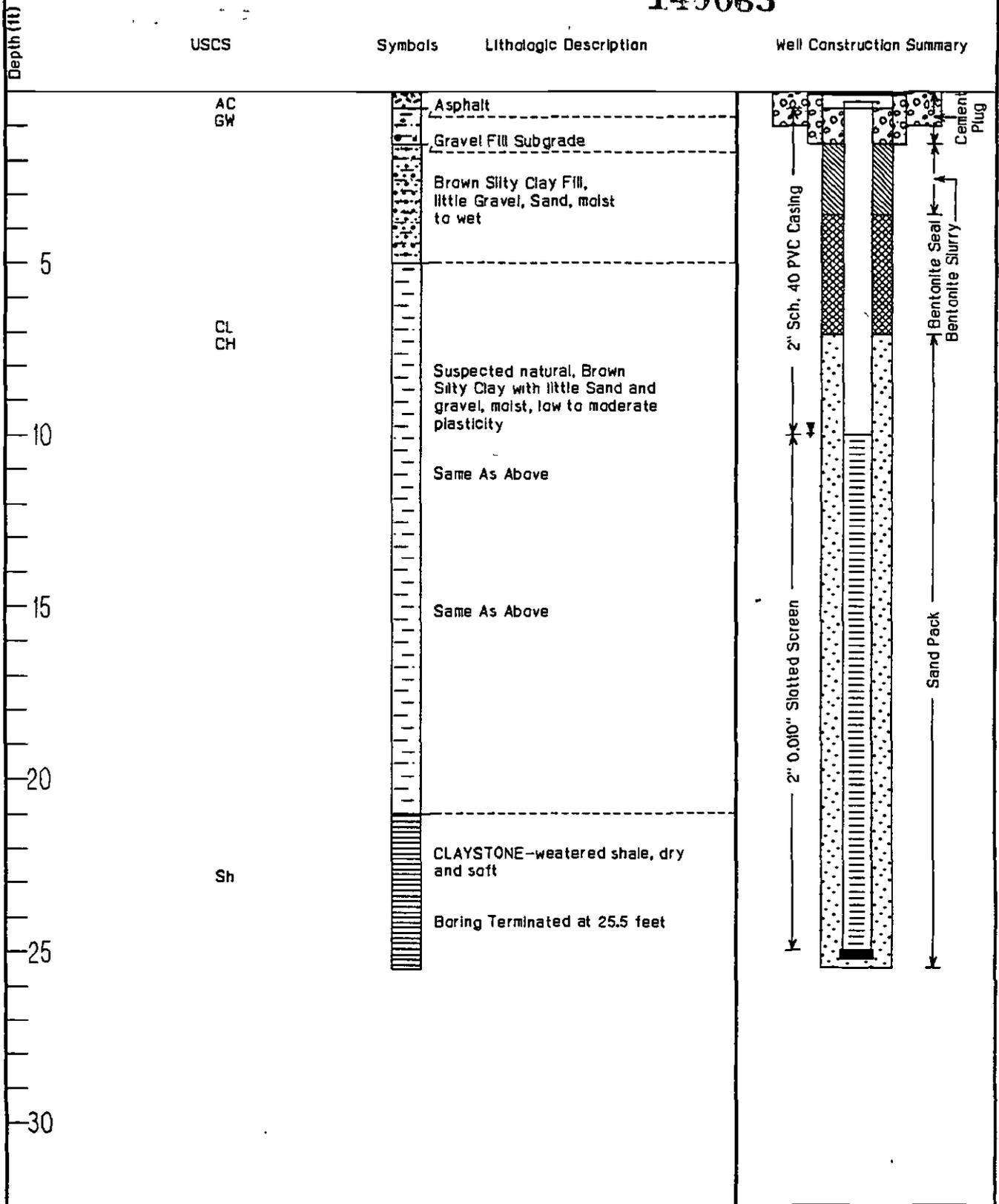


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|---------------|-----------------|------------------|----------------|-----------------|--------------------|
| Job Name | Richards-Gabaur | Date Started | 06/28/96 | Drill Method | Air Rotary |
| Job Number | 2816.211 | Date Completed | 06/29/96 | Casing Diameter | 2" |
| Client Name | AFCEE | Total Depth | 33.43 Feet BEG | Screen Interval | 22.9-32.9 Feet BEG |
| Location | Kansas City, MO | Water Level | 31.19 Feet TOC | Slot Size | 0.010" |
| Boring Number | SS003-MW-02 | Water Level Date | 7/9/96 | Drilling Co. | Layne Western Co |
| Geologist | Alan Esko | Signature | | Date | |



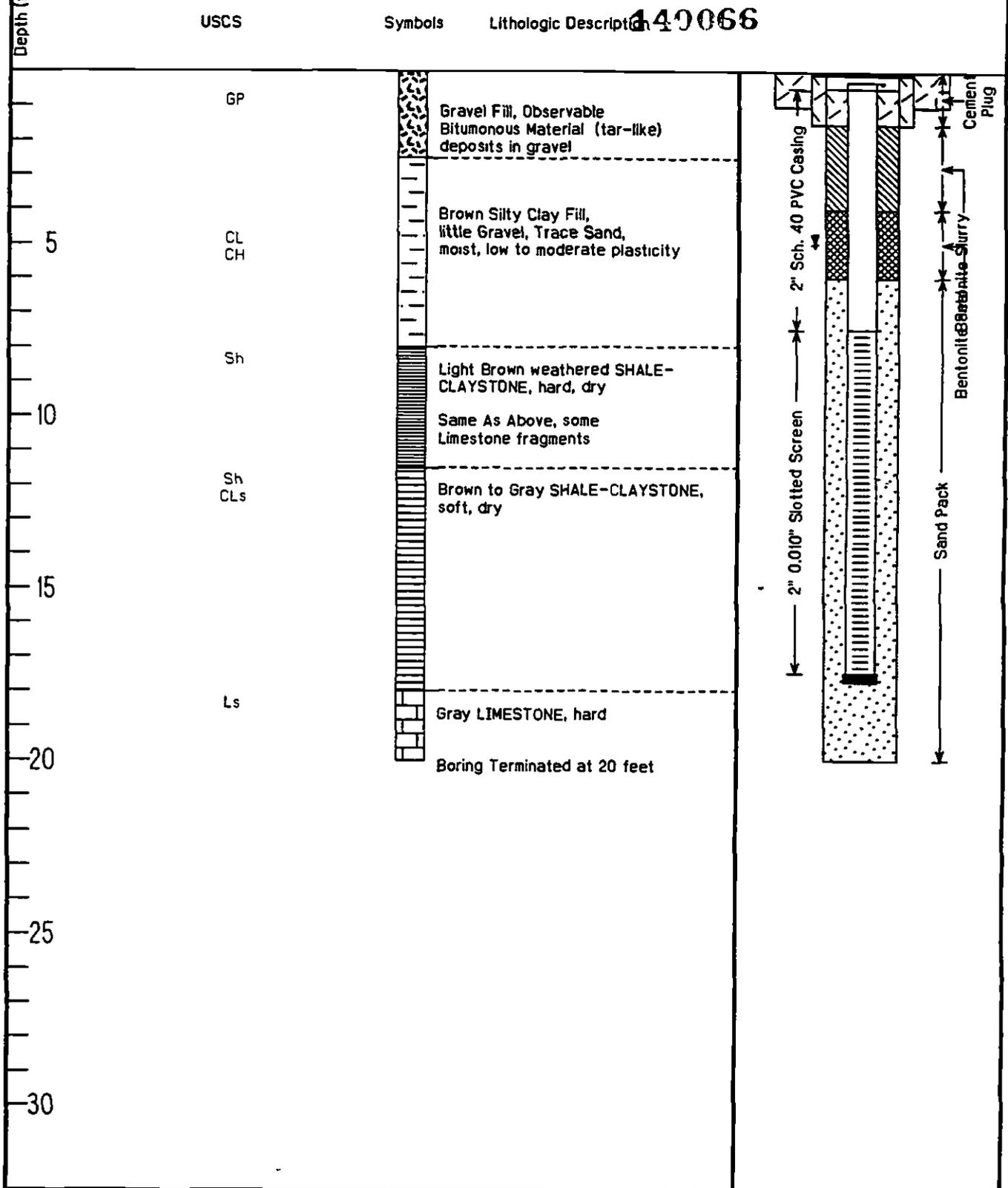
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|---------------|-----------------|------------------|----------------|-----------------|----------------------|
| Job Name | Richards-Gabaur | Date Started | 06/28/96 | Drill Method | Air Rotary |
| Job Number | 2816.211 | Date Completed | 06/29/96 | Casing Diameter | 2" |
| Client Name | AFCEE | Total Depth | 32 Feet BEG | Screen Interval | 20.8 - 31.4 Feet BEG |
| Location | Kansas City, MO | Water Level | 13.01 Feet TOC | Slot Size | 0.010" |
| Boring Number | SS003-MW-03 | Water Level Date | 7/9/96 | Drilling Co. | Layne Western Co |
| Geologist | Alan Esko | Signature | | Date | |

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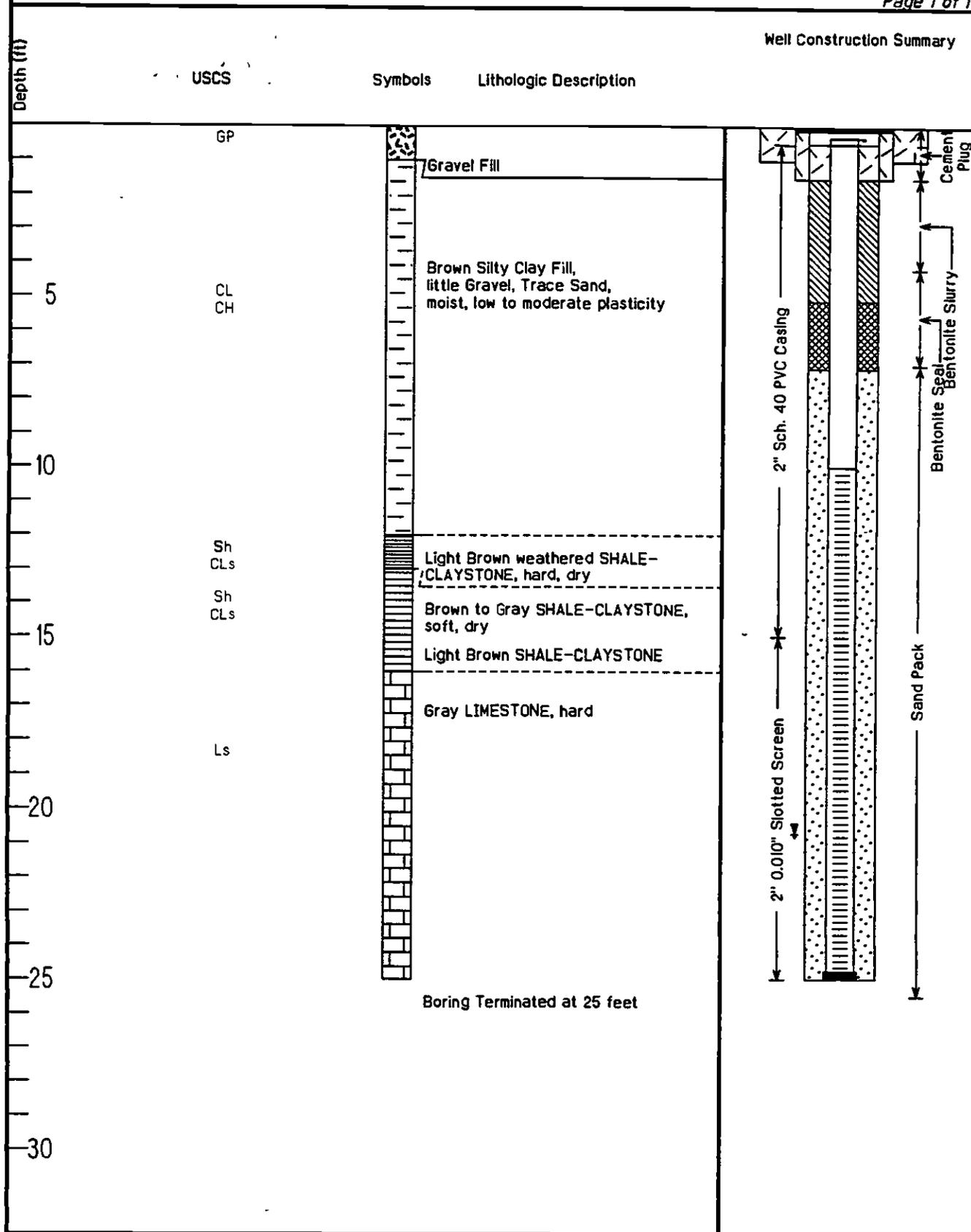


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|---------------|-----------------|------------------------------|---------------|-----------------|---------------------|
| Job Name | Richards-Gabaur | Date Started | 07/01/98 | Drill Method | Air Rotary |
| Job Number | 2818.211 | Water Level Measurement Date | 07/09/98 | Casing Diameter | 2" |
| Client Name | AFCEE | Total Depth | 25.5 Feet BEG | Screen Interval | 8.5 - 24.5 Feet BEG |
| Location | Kansas City, MO | Water Level | 8.98 Feet TOC | Slot Size | 0.010" |
| Boring Number | OWS704-MW-02 | Surface Elevation | | Drilling Co. | Layne Western Co. |
| Geologist | Alan Eska | Signature | | Date | |

Well Construction Summary

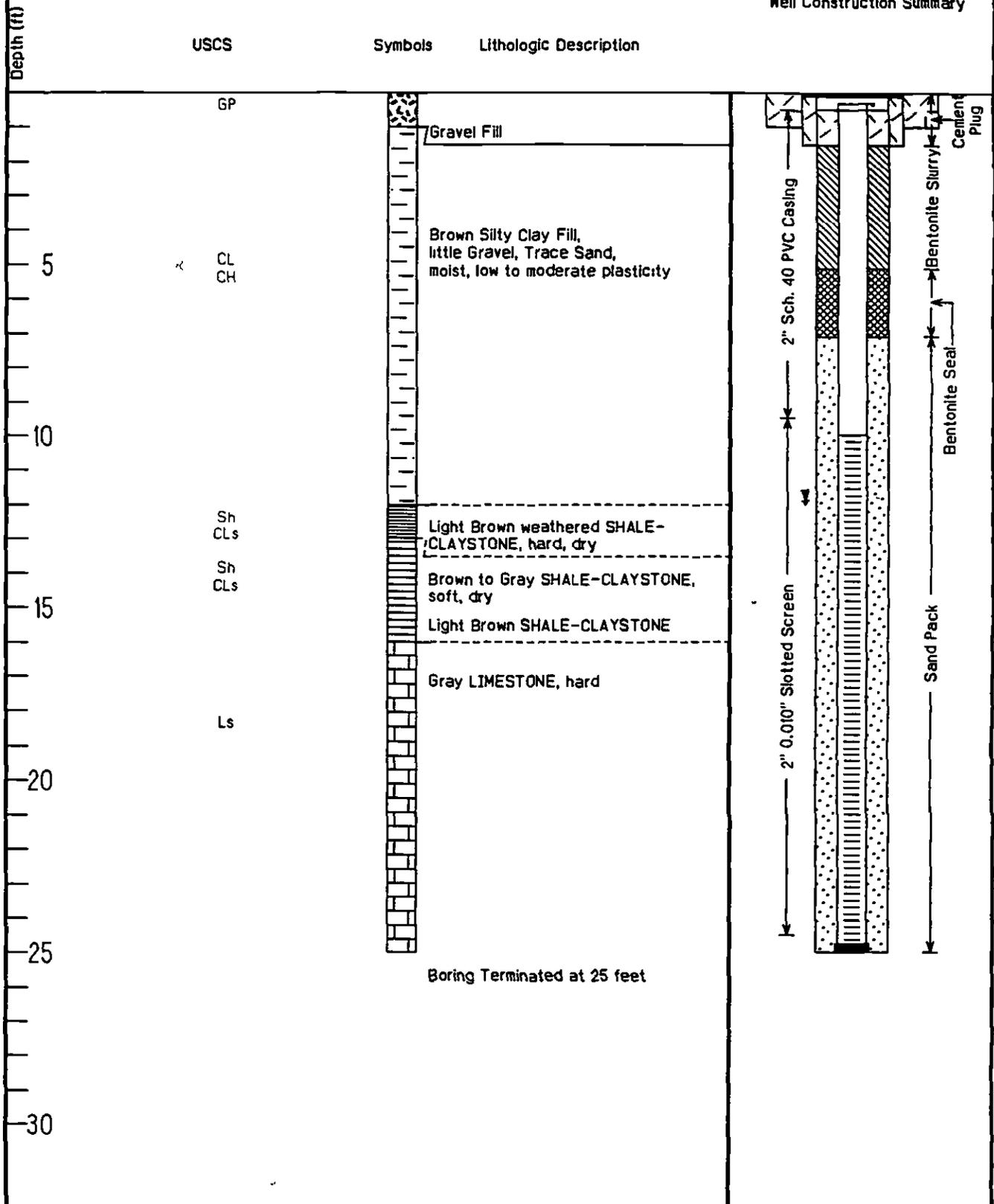


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|---------------|-----------------|------------------|--------------|-----------------|---------------------|
| Job Name | Richards-Gabaur | Date Started | 06/29/96 | Drill Method | Air Rotary |
| Job Number | 2816.211 | Date Completed | 06/30/96 | Casing Diameter | 2" |
| Client Name | AFCEE | Total Depth | 20 Feet BEG | Screen Interval | 7.5 - 17.5 Feet BEG |
| Location | Kansas City, MO | Water Level | 5.0 Feet TOC | Slot Size | 0.010" |
| Boring Number | SS004-MW-01 | Water Level Date | 7/9/96 | Drilling Co. | Layne Western Co |
| Geologist | Alan Esko | Signature | | Date | |

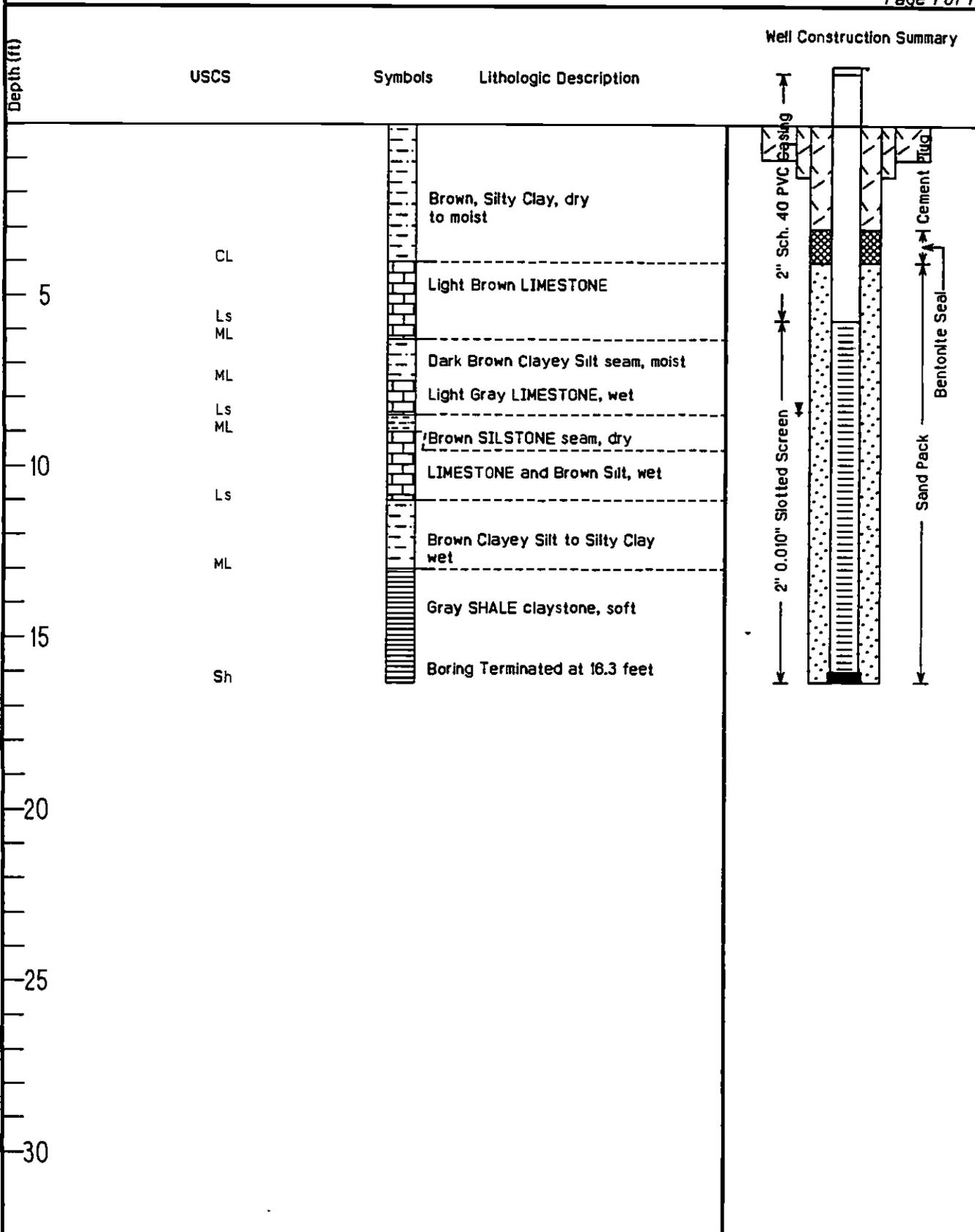


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|---------------|-----------------|------------------|----------------|-----------------|------------------|
| Job Name | Richards-Gabaur | Date Started | 06/30/96 | Drill Method | Air Rotary |
| Job Number | 2816.211 | Date Completed | 06/30/96 | Casing Diameter | 2" |
| Client Name | AFCEE | Total Depth | 25 Feet BEG | Screen Interval | 10 - 25 Feet BEG |
| Location | Kansas City, MO | Water Level | 20 72 Feet TOC | Slot Size | 0 010" |
| Boring Number | SS004-MW-02 | Water Level Date | 7/9/96 | Drilling Co. | Layne Western Co |
| Geologist | Alan Esko | Signature | | Date | |

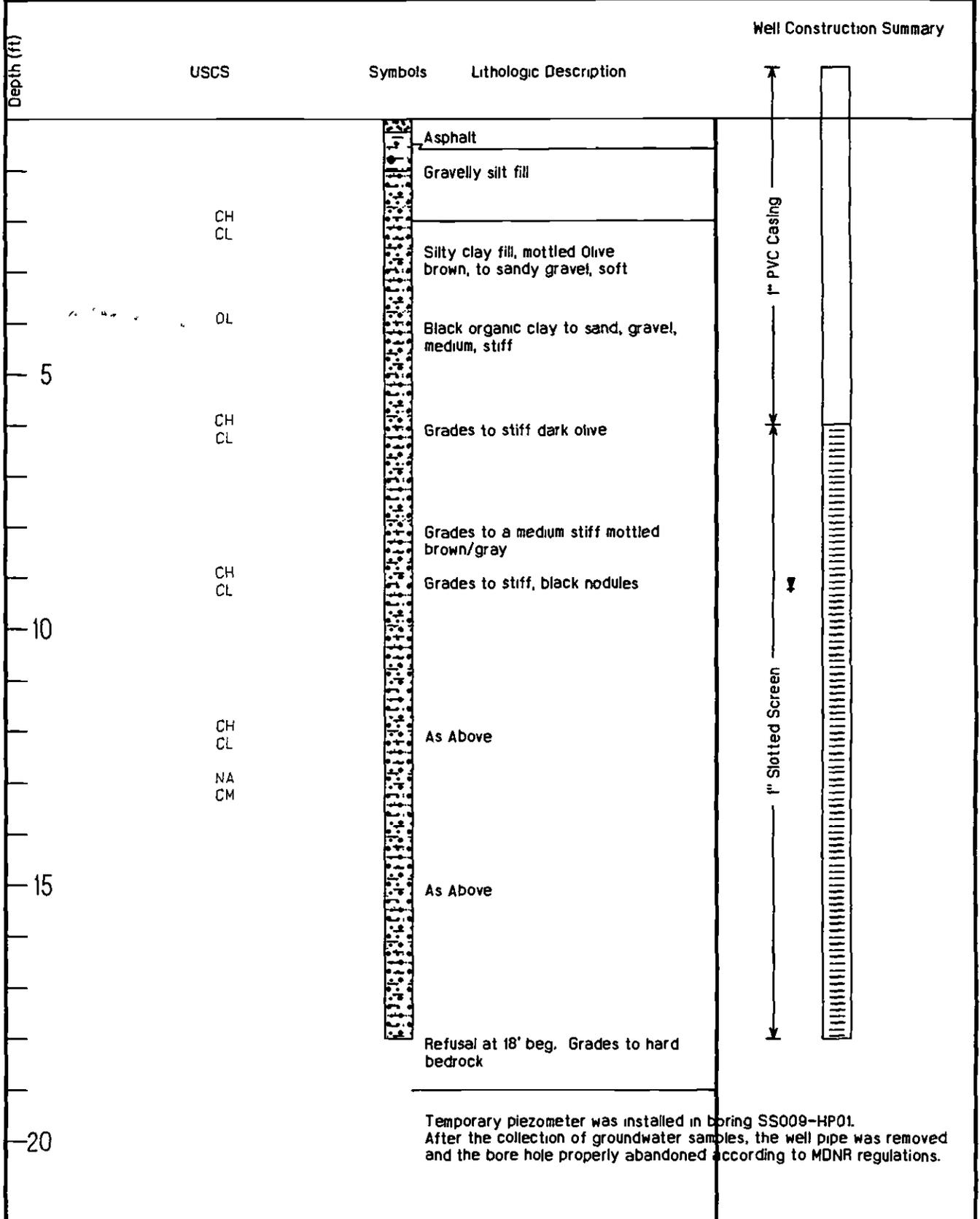
Well Construction Summary



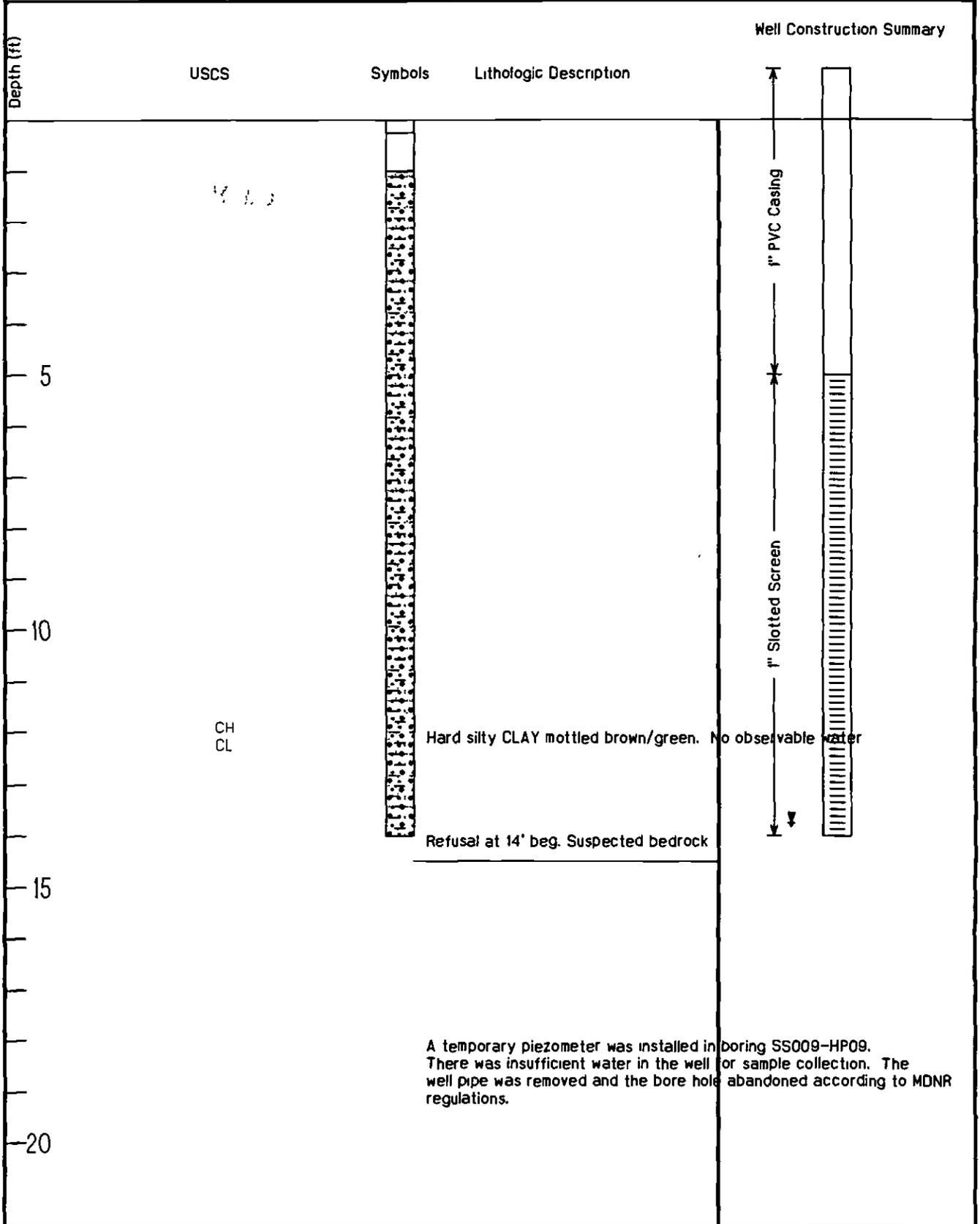
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|---------------|-----------------|------------------|----------------|-----------------|-------------------|
| Job Name | Richards-Gabaur | Date Started | 06/29/96 | Drill Method | Air Rotary |
| Job Number | 2818.211 | Date Completed | 06/30/96 | Casing Diameter | 2" |
| Client Name | AFCEE | Total Depth | 25 Feet BEG | Screen Interval | 9.6-24.6 Feet BEG |
| Location | Kansas City, MO | Water Level | 11.89 Feet TOC | Slot Size | 0.010" |
| Boring Number | SS004-MW-03 | Water Level Date | 7/9/96 | Drilling Co. | Layne Western Co |
| Geologist | Alan Esko | Signature | | Date | |



| | | | | | |
|---------------|-----------------|------------------|---------------|-----------------|---------------------|
| Job Name | Richards-Gabaur | Date Started | 06/26/96 | Drill Method | Air Rotary |
| Job Number | 2816.211 | Date Completed | 06/27/96 | Casing Diameter | 2" |
| Client Name | AFCEE | Total Depth | 16.3 Feet BEG | Screen Interval | 5.7 - 15.7 Feet BEG |
| Location | Kansas City, MO | Water Level | 8.42 Feet TOC | Slot Size | 0.010" |
| Boring Number | SS006-MW-01 | Water Level Date | 7/9/96 | Drilling Co. | Layne Western Co |
| Geologist | Alan Esko | Signature | | Date | |



| | | | | | |
|---------------|-----------------|------------------|---------------|-----------------|-------------------|
| Job Name | Richards-Gabaur | Date Started | 05/29/96 | Drill Method | Direct Push |
| Job Number | 2816 211 | Date Completed | 05/29/96 | Casing Diameter | 1" |
| Client Name | AFCEE | Total Depth | 18 Feet BEG | Screen Interval | 6 - 18 Feet BEG |
| Location | Kansas City, MO | Water Level | 9.22 Feet TOC | Slot Size | 0.010" |
| Boring Number | SS009-PZ01 | Water Level Date | 05/29/96 | Drilling Co. | PSA Environmental |
| Geologist | Alan Esko | Signature | | Date | |



| | | | | | |
|---------------|-----------------|------------------|----------------|-----------------|-------------------|
| Job Name | Richards-Gabaur | Date Started | 05/29/96 | Drill Method | Direct Push |
| Job Number | 2816 211 | Date Completed | 05/29/96 | Casing Diameter | 1" |
| Client Name | AFCEE | Total Depth | 14 Feet BEG | Screen Interval | 5 - 14 Feet BEG |
| Location | Kansas City, MO | Water Level | 13.74 Feet TOC | Slot Size | 0.010" |
| Boring Number | SS009-PZ03 | Water Level Date | 05/29/96 | Drilling Co. | PSA Environmental |
| Geologist | Alan Esko | Signature | | Date | |



MISSOURI DEPARTMENT OF NATURAL RESOURCES DIVISION OF GEOLOGY AND LAND SURVEY REGISTRATION RECORD

OFFICE USE ONLY REF NO 151951 DATE RECEIVED ROUTE STATE WELL NUMBER CHECKED BY APPROVED BY DATE ENTERED

INFORMATION SUPPLIED BY OWNER NAME: Operating USAF/Robert Lodato ADDRESS: Richard Gebaur AFB CITY: Belton Grandview STATE: MO ZIP CODE: 64147-1220

INFORMATION SUPPLIED BY CONTRACTOR SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS: Abandoned upon completion of borehole. LOCATION OF WELL: Site QUAD COUNTY Jackson

CONTRACTOR'S NAME: PSA Environmental PERMIT NUMBER: 002241M DRILLERS NAME: Anthony Poulter PERMIT NUMBER: 002241M

ABANDONMENT OF WELLS FORMER USE OF WELL: SOIL BORING PUBLIC WATER SUPPLY MINERAL EXPLORATORY TEST HOLE DATE PLUGGED: 5-30-96 STATIC WATER LEVEL: N/A FT PUMP REMOVED FROM WELL? YES DATE RECONSTRUCTION COMPLETED: N/A



MISSOURI DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF GEOLOGY AND
LAND SURVEY
**MONITORING WELL
CERTIFICATION RECORD**

| | | |
|------------------------|--------|----------------|
| OFFICE USE ONLY | | DATE RECEIVED |
| REF NO | 146405 | 147087 |
| CR NO | | CHECK NO |
| STATE WELL NUMBER | | TRANSMITTAL NO |
| CHECKED BY | | ROUTE |
| APPROVED BY | | ENTERED |
| | | Ph 1 Ph 2 Ph 3 |

INFORMATION SUPPLIED BY MONITORING WELL CONTRACTOR

| | | | |
|---|------------------------|----------------------------|---|
| SITE/FACILITY NAME Richard Gebaur AFB | | WELL NUMBER SS003-MW01 | |
| SITE ADDRESS AFBCA/OL-Q, Bld 926, Hangar Rd. 15741 | | CITY Grandview | STATE MO |
| OWNER NAME Air Force Base Conversion Agency | | ZIP CODE 64147-1220 | TELEPHONE (816) 348-2514 |
| OWNER ADDRESS Same As Above | | CITY | STATE ZIP CODE |
| VARIANCE ISSUED <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | DATE ISSUED 1-25-96 | VARIANCE NUMBER V 00404 | LOCATION OF WELL SHOW LOCATION IN SECTION PLAT |
| DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT IT See attached maps | | COUNTY Cass | SURFACE ELEVATION 1030.15 |
| SMALLEST 1/4 LARGEST 1/4 NE NE NW | | SEC 3 | TWN 46 |
| LAT 38.50.35.51 | | NRNG 33 | E OR W |
| LONG 94.33.13.96 | | | |

| | |
|--|-------------------------------|
| MONITORING WELL INSTALLATION CONTRACTOR'S NAME Versar, Inc. | PERMIT NUMBER 002561 P.M. |
| DRILLING CONTRACTOR'S NAME Russell Bowles | PERMIT NUMBER 00247 W.P.M. |

WELL CONSTRUCTION INFORMATION

| | | |
|---|--|---|
| TYPE OF WELL <input checked="" type="checkbox"/> MONITORING WELL <input type="checkbox"/> PIEZOMETER <input type="checkbox"/> OTHER | TYPE OF POTENTIAL SITE <input checked="" type="checkbox"/> HAZARDOUS MATERIAL <input type="checkbox"/> LANDFILL <input type="checkbox"/> OTHER <input type="checkbox"/> LUST | MONITORING FOR (CHECK ALL THAT APPLY) <input checked="" type="checkbox"/> VOC <input checked="" type="checkbox"/> METALS <input type="checkbox"/> PETROLEUM PRODUCT ONLY <input checked="" type="checkbox"/> OTHER IRPH |
| PROTECTIVE CASING DETAILS (IF USED) LENGTH 1 FT DIAMETER OF CASING 8 IN WEIGHT OR SDR # DIAMETER AND DEPTH OF DRILL HOLE 3x1 FT JOINTS <input type="checkbox"/> MECHANICAL <input type="checkbox"/> WELDED <input type="checkbox"/> OTHER | THREADED <input type="checkbox"/> STEEL <input type="checkbox"/> FLUORO POLYMER TYPE | MATERIAL <input checked="" type="checkbox"/> THERMO PLASTIC <input type="checkbox"/> LOCKING CAP? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| CAP VENTED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO WEEP HOLE? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | CASING GROUT DETAILS MATERIAL <input type="checkbox"/> CEMENT <input checked="" type="checkbox"/> CONCRETE <input type="checkbox"/> OTHER | DEPTH FROM THE SURFACE TO THE BOTTOM OF THE CASING GROUT SEAL 1 to 1.5 FT TYPE OF SURFACE COMPLETION <input type="checkbox"/> ABOVE GROUND <input checked="" type="checkbox"/> FLUSH MOUNT |
| DESCRIBE HOW THE FLUSH MOUNT WAS CONSTRUCTED # three foot diameter template was used and one foot into asphalt pavement concrete surrounds the flush collar | CENTRALIZER USED ON RISER <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | MATERIAL <input type="checkbox"/> STAINLESS STEEL <input type="checkbox"/> OTHER |
| RISER PIPE DETAILS LENGTH 9.5 FT DIAMETER OF RISER PIPE 2 IN WEIGHT OR SDR # Sch 40 | DIAMETER OF DRILL HOLE 8 IN JOINTS <input type="checkbox"/> MECHANICAL <input type="checkbox"/> WELDED <input type="checkbox"/> OTHER | MATERIAL <input type="checkbox"/> STEEL <input type="checkbox"/> FLUORO POLYMER <input type="checkbox"/> OTHER |
| ANNULAR SEAL <input type="checkbox"/> CEMENT SLURRY <input type="checkbox"/> BENTONITE SLURRY <input checked="" type="checkbox"/> NON SLURRY BENTONITE TYPE Granular hydraulic | CEMENT/BENTONITE SLURRY BAGS OF CEMENT USED BENTONITE USED WATER USED/BAG GAL | BENTONITE SEAL <input type="checkbox"/> SLURRY <input type="checkbox"/> CHIPS <input checked="" type="checkbox"/> GRANULAR <input checked="" type="checkbox"/> PELLETS |
| LENGTH OF SEAL 4.5 | BENTONITE SEAL INSTALLED IN <input checked="" type="checkbox"/> UNSATURATED ZONE <input type="checkbox"/> SATURATED ZONE | |
| PRIMARY FILTER PACK TYPE <input checked="" type="checkbox"/> SAND <input type="checkbox"/> MANUFACTURED <input type="checkbox"/> NATURAL | GRAIN SIZE 10-20 | LENGTH OF FILTER PACK 12.8 FT |
| METHOD OF INSTALLATION Gravity | Information in this column to be supplied in the Feet from Surface column | FEET FROM SURFACE |
| FORMATION DESCRIPTION | | |
| SECONDARY FILTER PACK TYPE <input type="checkbox"/> SAND <input checked="" type="checkbox"/> MANUFACTURED <input type="checkbox"/> NONE | GRAIN SIZE | LENGTH OF FILTER PACK |
| METHOD OF INSTALLATION | Depth to bottom of Protective Casing Seal 1-1.5 | Asphalt pavement, Gravel Fill |
| WELL SCREEN LENGTH OF SCREEN 10 FT DIAMETER 2 IN SLOT SIZE 0.01" | WEIGHT OR SDR # Sch 40 | MATERIAL <input checked="" type="checkbox"/> PLASTIC <input type="checkbox"/> STEEL <input type="checkbox"/> FLUORO POLYMER |
| Depth to Base of Annular Seal 2.7 | | Silt, Clay Fill |
| SUMP DETAILS LENGTH OF SUMP .5' DIAMETER OF SUMP 2" | MATERIAL <input checked="" type="checkbox"/> PVC <input type="checkbox"/> FLUORO POLYMER <input type="checkbox"/> OTHER | Depth to Base of Bentonite Seal 7.2 |
| Natural drag silt, clay, etc. sand gravel, most very stiff | | |
| BACK FILL WAS THE WELL BACK FILLED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | MATERIAL USED | LENGTH OF BACK FILLED BORE HOLE |
| Depth to Top of Primary Filter Pack 7.2 | | |
| STATIONARY WATER LEVEL 6.77 | FEET FROM MEASURING POINT | MULTIPLE CASE WELLS |
| DATE OF STATIC WATER LEVEL 7-9-96 | | SUBMIT ADDITIONAL AS BUILT DIAGRAM SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING HOLE DIAMETERS AND GROUT USED |
| MEASURING POINT FOR STATIC WATER LEVEL IS <input checked="" type="checkbox"/> TOP OF RISER PIPE <input type="checkbox"/> OTHER | DRILLING EQUIPMENT <input checked="" type="checkbox"/> AIR ROTARY <input type="checkbox"/> AUGER TYPE | Depth to Bottom of the Screen 19.5 |
| ELEVATION OF MEASURING POINT 1029.99 | <input type="checkbox"/> REVERSE ROTARY <input type="checkbox"/> OTHER | Total Depth 20.0 |
| | | DATE WELL DRILLING WAS COMPLETED 6-25-96 |

I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS

| | | | |
|---|-----------------|--|-----------------|
| SIGNATURE PRIMARY CONTRACTOR/PERMIT # W. A. C. / 002561 P.M. | DATE 7-23-96 | SIGNATURE DRILLER/PERMIT # 00247 W.P.M. | DATE 7-23-96 |
|---|-----------------|--|-----------------|



MISSOURI DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF GEOLOGY AND
LAND SURVEY
**MONITORING WELL
CERTIFICATION RECORD**

| | | |
|------------------------|--------|----------------|
| OFFICE USE ONLY | | DATE RECEIVED |
| REF NO | 146388 | |
| CR NO | | CHECK NO |
| STATE WELL NUMBER | | TRANSMITTAL NO |
| CHECKED BY | | ROUTE |
| APPROVED BY | | ENTERED |
| | | Ph 1 Ph 2 Ph 3 |

149088

INFORMATION SUPPLIED BY MONITORING WELL CONTRACTOR

| | |
|---|-----------------------------|
| SITE/FACILITY NAME Richard-Gebaur AFB | WELL NUMBER SS003-MW02 |
| SITE ADDRESS AEBCA/OL-Q, Bldg 926, Hangar Rd. ¹⁵⁷⁴¹ Grandview | CITY Kansas City |
| OWNER NAME Air Force Base Conversion Agency | STATE MO |
| OWNER ADDRESS Same As Above | ZIP CODE 64147-1220 |
| | TELEPHONE (816) 348-2514 |
| | STATE MO |
| | ZIP CODE |

| | | | | | | | | | | | | | | | | | |
|---|------------------------|---------------------------|--|----------------|-----------------------------|------------|-----------|--|--|----|----|-------|--------|---------|----------------------------------|--|--|
| VARIANCE ISSUED <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | DATE ISSUED 1-25-96 | VARIANCE NUMBER V00404 | LOCATION OF WELL SHOW LOCATION IN SECTION PLAT | COUNTY Cass | SURFACE ELEVATION 1025.9 | | | | | | | | | | | | |
| DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT IT See attached maps | | | <table border="1"> <tr> <td>SMALLEST %</td> <td colspan="2">LARGEST %</td> </tr> <tr> <td></td> <td>NE</td> <td>NW</td> </tr> <tr> <td>SEC 3</td> <td>TWN 46</td> <td>NRNG 33</td> </tr> <tr> <td colspan="3">LAT 38.50.35.14 LONG 94.33.13.91</td> </tr> </table> | | | SMALLEST % | LARGEST % | | | NE | NW | SEC 3 | TWN 46 | NRNG 33 | LAT 38.50.35.14 LONG 94.33.13.91 | | |
| SMALLEST % | LARGEST % | | | | | | | | | | | | | | | | |
| | NE | NW | | | | | | | | | | | | | | | |
| SEC 3 | TWN 46 | NRNG 33 | | | | | | | | | | | | | | | |
| LAT 38.50.35.14 LONG 94.33.13.91 | | | | | | | | | | | | | | | | | |

| | |
|--|----------------------------|
| MONITORING WELL INSTALLATION CONTRACTOR'S NAME Versar, Inc. | PERMIT NUMBER 002561 PM |
| DRILLING CONTRACTOR'S NAME Russell Bowles | PERMIT NUMBER D0247 WPM |

WELL CONSTRUCTION INFORMATION

| | | | |
|---|--|---|--|
| TYPE OF WELL <input checked="" type="checkbox"/> MONITORING WELL <input type="checkbox"/> PIEZOMETER <input type="checkbox"/> OTHER | TYPE OF POTENTIAL SITE <input checked="" type="checkbox"/> HAZARDOUS MATERIAL <input type="checkbox"/> LANDFILL <input type="checkbox"/> LUST <input type="checkbox"/> OTHER | MONITORING FOR (CHECK ALL THAT APPLY) <input checked="" type="checkbox"/> VOC <input checked="" type="checkbox"/> METALS <input type="checkbox"/> PETROLEUM PRODUCT ONLY <input checked="" type="checkbox"/> OTHER TRPH | |
| PROTECTIVE CASING DETAILS (IF USED) LENGTH 5 FT DIAMETER OF CASING 4 IN WEIGHT OR SDR # DIAMETER AND DEPTH OF DRILL HOLE 3x3 FT | JOINTS <input type="checkbox"/> MECHANICAL <input type="checkbox"/> WELDED <input type="checkbox"/> OTHER | MATERIAL <input checked="" type="checkbox"/> STEEL <input type="checkbox"/> THERMO PLASTIC <input type="checkbox"/> FLUORO POLYMER TYPE | LOCKING CAP? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| CAP VENTED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | WEEP HOLE? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | CASING GROUT DETAILS MATERIAL <input checked="" type="checkbox"/> CEMENT <input checked="" type="checkbox"/> CONCRETE <input type="checkbox"/> OTHER | DEPTH FROM THE SURFACE TO THE BOTTOM OF THE CASING GROUT SEAL 3 FT |
| TYPE OF SURFACE COMPLETION <input checked="" type="checkbox"/> ABOVE GROUND <input type="checkbox"/> FLUSH MOUNT | DESCRIBE HOW THE FLUSH MOUNT WAS CONSTRUCTED | | |
| CENTRALIZER USED ON RISER <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES | LOCATED AT | MATERIAL <input type="checkbox"/> STAINLESS STEEL <input type="checkbox"/> OTHER | |
| RISER PIPE DETAILS LENGTH 25.4 FT DIAMETER OF RISER PIPE 2 IN WEIGHT OR SDR # Sch 40 | DIAMETER OF DRILL HOLE 8 IN | JOINTS <input checked="" type="checkbox"/> THREADED <input type="checkbox"/> MECHANICAL <input type="checkbox"/> WELDED <input type="checkbox"/> OTHER | MATERIAL <input type="checkbox"/> STEEL <input type="checkbox"/> FLUORO POLYMER <input type="checkbox"/> OTHER |
| ANNULAR SEAL <input checked="" type="checkbox"/> CEMENT SLURRY <input type="checkbox"/> BENTONITE SLURRY <input type="checkbox"/> NON SLURRY BENTONITE | CEMENT/BENTONITE SLURRY BAGS OF CEMENT USED % BENTONITE USED WATER USED/BAG GAL | BENTONITE SEAL MATERIAL <input type="checkbox"/> SLURRY <input type="checkbox"/> CHIPS <input checked="" type="checkbox"/> GRANULAR PELLETS | LENGTH OF SEAL 4.0 BENTONITE SEAL INSTALLED IN <input checked="" type="checkbox"/> UNSATURATED ZONE <input type="checkbox"/> SATURATED ZONE |
| PRIMARY FILTER PACK TYPE <input checked="" type="checkbox"/> SAND <input type="checkbox"/> MANUFACTURED <input type="checkbox"/> NATURAL | GRAIN SIZE 10-20 | LENGTH OF FILTER PACK 12.9 FT | METHOD OF INSTALLATION Gravity |
| SECONDARY FILTER PACK TYPE <input type="checkbox"/> SAND <input type="checkbox"/> MANUFACTURED <input checked="" type="checkbox"/> NONE | GRAIN SIZE | LENGTH OF FILTER PACK | METHOD OF INSTALLATION |
| WELL SCREEN LENGTH OF SCREEN 10 FT | DIAMETER 2 IN | SLOT SIZE 0.01" | WEIGHT OR SDR # Sch 40 |
| SUMP DETAILS LENGTH OF SUMP 5' | DIAMETER OF SUMP 2" | MATERIAL <input checked="" type="checkbox"/> PVC <input type="checkbox"/> FLUORO POLYMER <input type="checkbox"/> STEEL <input type="checkbox"/> OTHER | DEPTH TO BASE OF BENTONITE SEAL 20.5 |
| BACK FILL WAS THE WELL BACK FILLED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | MATERIAL USED | LENGTH OF BACK FILLED BORE HOLE | DEPTH TO TOP OF PRIMARY FILTER PACK 20.5 |
| STATIC WATER LEVEL 31.19 | FEET FROM MEASURING POINT | MULTIPLE CASED WELLS SUBMIT ADDITIONAL AS BUILT DIAGRAM SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING HOLE DIAMETERS, AND GROUT USED | |
| DATE OF STATIC WATER LEVEL 7-9-96 | MEASURING POINT FOR STATIC WATER LEVEL IS <input checked="" type="checkbox"/> TOP OF RISER PIPE <input type="checkbox"/> OTHER | | |
| ELEVATION OF MEASURING POINT 1028.00 | DRILLING EQUIPMENT <input checked="" type="checkbox"/> AIR ROTARY <input type="checkbox"/> AUGER TYPE <input type="checkbox"/> REVERSE ROTARY <input type="checkbox"/> OTHER | | DEPTH TO BOTTOM OF THE SCREEN 32.9 |
| DATE WELL DRILLING WAS COMPLETED 6-29-96 | | | TOTAL DEPTH 33.4 |

I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS

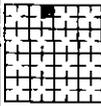
| | | | |
|---|-----------------|--|-----------------|
| SIGNATURE PRIMARY CONTRACTOR/PERMIT # 1100001-6/2/96 | DATE 7-23-96 | SIGNATURE DRILLER/PERMIT # 1100001-6/2/96 | DATE 9-30-96 |
|---|-----------------|--|-----------------|



MISSOURI DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF GEOLOGY AND
LAND SURVEY
**MONITORING WELL
CERTIFICATION RECORD**

| | | |
|------------------------|--------|----------------|
| OFFICE USE ONLY | | DATE RECEIVED |
| REF NO | 146383 | 140089 |
| C.R. NO | | CHECK NO |
| STATE WELL NUMBER | | TRANSMITTAL NO |
| CHECKED BY | | ROUTE |
| APPROVED BY | | ENTERED |
| | | PH 1 PH 2 PH 3 |

| | | | |
|---|--|----------------------------|------------------------|
| INFORMATION SUPPLIED BY MONITORING WELL CONTRACTOR | | | |
| SITE/FACILITY NAME Richard-Gebaur AFB | | WELL NUMBER 55003-MW03 | |
| SITE ADDRESS AFBCA/OL-Q, Bld 926, Hangar Rd. 15741 | | CITY Grandview | STATE MO |
| OWNER NAME Air Force Base Conversion Agency | | TELEPHONE (916)348-2514 | |
| OWNER ADDRESS Same As Above | | CITY | ZIP CODE 64147-1220 |

| | | | | | | |
|--|--|------------------------|---------------------------|--|----------------|-----------------------------|
| VARIANCE ISSUED | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | DATE ISSUED 1-25-96 | VARIANCE NUMBER V60404 | LOCATION OF WELL SHDW LOCATION IN SECTION PLAT | COUNTY Cass | SURFACE ELEVATION 1024.5 |
| DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT IT Sec attached maps | | | |  SMALLEST 1/4 LARGEST 1/4 NE NE NW SEC 3 TWN 46 N RANG 33 E OR W LAT 38.50.35.08 LONG 94.33.13.25 | | |

| | | | |
|---|--|---------------|-----------|
| MONITORING WELL INSTALLATION | | PERMIT NUMBER | 002561 PM |
| CONTRACTOR'S NAME Versar, Inc. | | PERMIT NUMBER | 00247 WPM |
| DRILLING CONTRACTOR'S NAME Russell Bowles | | | |

| | | | | | | | |
|--|--|--|--|--|---|--|---|
| WELL CONSTRUCTION INFORMATION | | | | | | | |
| TYPE OF WELL | <input checked="" type="checkbox"/> MONITORING WELL <input type="checkbox"/> PIEZOMETER <input type="checkbox"/> OTHER | TYPE OF POTENTIAL SITE | <input checked="" type="checkbox"/> HAZARDOUS MATERIAL <input type="checkbox"/> LANDFILL <input type="checkbox"/> OTHER <input type="checkbox"/> LUST | MONITORING FOR (CHECK ALL THAT APPLY) | | | |
| PROTECTIVE CASING DETAILS (IF USED) | | LENGTH | DIAMETER OF CASING | WEIGHT OR SDR # | DIAMETER AND DEPTH OF DRILL HOLE | JOINTS | MATERIAL |
| | | 5 FT | 4 IN | | 3x3 FT | <input type="checkbox"/> MECHANICAL <input type="checkbox"/> WELDED <input type="checkbox"/> OTHER | <input checked="" type="checkbox"/> STEEL <input type="checkbox"/> THERMO PLASTIC <input type="checkbox"/> FLUORO POLYMER <input type="checkbox"/> OTHER |
| CAP VENTED | | CASING GROUT DETAILS | | MATERIAL | DEPTH FROM THE SURFACE TO THE BOTTOM OF THE CASING GROUT SEAL | TYPE OF SURFACE COMPLETION | LOCKING CAP? |
| <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | | <input checked="" type="checkbox"/> CONCRETE <input type="checkbox"/> OTHER | | | 3 FT | <input checked="" type="checkbox"/> ABOVE GROUND <input type="checkbox"/> FLUSH MOUNT | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| CENTRALIZER USED ON RISER | | LOCATED AT | | MATERIAL | | | |
| <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | | | | <input type="checkbox"/> STAINLESS STEEL <input type="checkbox"/> OTHER | | | |

| | | | | | | | |
|--------------------|---|------------------------|-----------------|------------------------|--|---|----------------|
| RISER PIPE DETAILS | LENGTH | DIAMETER OF RISER PIPE | WEIGHT OR SDR # | DIAMETER OF DRILL HOLE | JOINTS | MATERIAL | BENTONITE SEAL |
| | 23.4 FT | 2 IN | | 8 IN | <input checked="" type="checkbox"/> THREADED <input type="checkbox"/> MECHANICAL <input type="checkbox"/> WELDED <input type="checkbox"/> OTHER | <input checked="" type="checkbox"/> THERMO PLASTIC <input type="checkbox"/> STEEL <input type="checkbox"/> FLUORO POLYMER <input type="checkbox"/> OTHER | |
| ANNULAR SEAL | TYPE | | GRAIN SIZE | LENGTH OF FILTER PACK | METHOD OF INSTALLATION | FORMATION DESCRIPTION | |
| | <input checked="" type="checkbox"/> CEMENT SLURRY <input type="checkbox"/> BENTONITE SLURRY <input type="checkbox"/> NON SLURRY BENTONITE | | 10-20 | 14 FT | Gravity | Silty Clay Fill | |

| | | | | | | | |
|-----------------------|---|------------|-----------------------|------------------------|--|-------------------------------|--|
| PRIMARY FILTER PACK | TYPE | GRAIN SIZE | LENGTH OF FILTER PACK | METHOD OF INSTALLATION | Information in this column to be supplied in the Feet from Surface column | FEET FROM SURFACE | FORMATION DESCRIPTION |
| | <input checked="" type="checkbox"/> SAND <input type="checkbox"/> MANUFACTURED <input type="checkbox"/> NATURAL | | | | | | |
| SECONDARY FILTER PACK | TYPE | GRAIN SIZE | LENGTH OF FILTER PACK | METHOD OF INSTALLATION | Depth to bottom of Protective Casing Seal | | |
| | <input checked="" type="checkbox"/> SAND <input type="checkbox"/> MANUFACTURED <input checked="" type="checkbox"/> NONE | | | | 3' | | |
| WELL SCREEN | LENGTH OF SCREEN | DIAMETER | SLOT SIZE | WEIGHT OR SDR # | MATERIAL | Depth to Base of Annular Seal | |
| | 10 FT | 2 IN | 6.01" | Sch 40 | <input checked="" type="checkbox"/> PLASTIC <input type="checkbox"/> STEEL <input type="checkbox"/> FLUORO POLYMER | 12.0 | Brown, Silty, Clay, etc s. id, gravel, moist, hard |

| | | | | | |
|---|---|--|--|-------------------------------------|------------------------------------|
| SUMP DETAILS | LENGTH OF SUMP | DIAMETER OF SUMP | MATERIAL | DEPTH TO BASE OF BENTONITE SEAL | |
| | .5' | 2" | <input checked="" type="checkbox"/> PVC <input type="checkbox"/> STEEL <input type="checkbox"/> FLUORO POLYMER <input type="checkbox"/> OTHER | 17.0 | Weathered Claystone soft dry @ 16' |
| BACK FILL | WAS THE WELL BACK FILLED? | MATERIAL USED | LENGTH OF BACK FILLED BORE HOLE | Depth to Top of Primary Filter Pack | |
| | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | | | 17.0 | |
| STATIC WATER LEVEL | FEET FROM MEASURING POINT | MULTIPLE CASED WELLS | | | |
| 13.01 | | SUBMIT ADDITIONAL AS BUILT DIAGRAM SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING HOLE DIAMETERS AND GROUT USED | | | |
| DATE OF STATIC WATER LEVEL | | DRILLING EQUIPMENT | | | |
| 7-9-96 | | <input checked="" type="checkbox"/> AIR ROTARY <input type="checkbox"/> AUGER TYPE <input type="checkbox"/> REVERSE ROTARY <input type="checkbox"/> OTHER | | | |
| MEASURING POINT FOR STATIC WATER LEVEL IS | | DEPTH TO BOTTOM OF THE SCREEN | | | |
| <input checked="" type="checkbox"/> TOP OF RISER PIPE <input type="checkbox"/> OTHER | | 30.9 | | | |
| ELEVATION OF MEASURING POINT | | TOTAL DEPTH | | | |
| 1027.04 | | 31.4 | | | |
| | | DATE WELL DRILLING WAS COMPLETED | | | |
| | | 6-29-96 | | | |

I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS

| | | | |
|---------------------------------------|---------|----------------------------|---------|
| SIGNATURE PRIMARY CONTRACTOR/PERMIT # | DATE | SIGNATURE DRILLER/PERMIT # | DATE |
| W. C. H. / 002561 PM | 1-23-96 | Russell Bowles | 9-30-96 |



MISSOURI DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF GEOLOGY AND
LAND SURVEY
**MONITORING WELL
CERTIFICATION RECORD**

| | | |
|------------------------|--------|----------------|
| OFFICE USE ONLY | | DATE RECEIVED |
| REF NO | 146402 | 140090 |
| C R NO | | CHECK NO |
| STATE WELL NUMBER | | TRANSMITTAL NO |
| CHECKED BY | | ROUTE |
| APPROVED BY | | ENTERED |
| | | Ph 1 Ph 2 Ph 3 |

INFORMATION SUPPLIED BY MONITORING WELL CONTRACTOR

| | | | |
|--|--|-----------------------------|------------------------|
| SITE/FACILITY NAME Richard Gebaur AFB/OL-Q | | WELL NUMBER SS004-MW01 | |
| SITE ADDRESS AFBCA/OL-Q, Bldg 926, Hangar Rd. | | CITY Grandview | STATE MO |
| OWNER NAME Air Force Base Conversion Agency | | TELEPHONE (816) 348-2514 | ZIP CODE 64147-1220 |
| OWNER ADDRESS Same As Above | | CITY | STATE ZIP CODE |

| | | | | | | |
|---|--|------------------------|---------------------------|---|-------------------|-----------------------------|
| VARIANCE ISSUED | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | DATE ISSUED 1-25-96 | VARIANCE NUMBER V00404 | LOCATION OF WELL SHOW LOCATION IN SECTION PLAT | COUNTY Jackson | SURFACE ELEVATION 1014.6 |
| DESCRIBE LOCATION OF THE WELL SOME WOULD BE ABLE TO VISIT IT See attached maps | | | | | | |
| | | | | SMALLEST % | LARGEST % | |
| | | | | SEC 34 | TWN 47 | N, R33 E, S34 |
| | | | | LAT 38.50 | LONG 94.33.02.87 | |

| | |
|--|----------------------------|
| MONITORING WELL INSTALLATION CONTRACTOR'S NAME Versar, Inc. | PERMIT NUMBER 002561 PM |
| DRILLING CONTRACTOR'S NAME Russell Bowles | PERMIT NUMBER 00247 WPM |

WELL CONSTRUCTION INFORMATION

| | | | | | |
|--------------|--|------------------------|--|---------------------------------------|--|
| TYPE OF WELL | <input checked="" type="checkbox"/> MONITORING WELL <input type="checkbox"/> PIEZOMETER <input type="checkbox"/> OTHER | TYPE OF POTENTIAL SITE | <input checked="" type="checkbox"/> HAZARDOUS MATERIAL <input type="checkbox"/> LANDFILL <input type="checkbox"/> LUST <input type="checkbox"/> OTHER | MONITORING FOR (CHECK ALL THAT APPLY) | <input checked="" type="checkbox"/> VOC <input checked="" type="checkbox"/> METALS <input type="checkbox"/> PETROLEUM PRODUCT <input checked="" type="checkbox"/> OTHER TRPH ONLY |
|--------------|--|------------------------|--|---------------------------------------|--|

| | | | | | | | | | | |
|-------------------------------------|----------------|----------------------------|-----------------|--|--------|---|----------|--|--------------|--|
| PROTECTIVE CASING DETAILS (IF USED) | LENGTH 1 FT | DIAMETER OF CASING 8 IN | WEIGHT OR SDR # | DIAMETER AND DEPTH OF DRILL HOLE 3 x 1 FT | JOINTS | <input type="checkbox"/> MECHANICAL <input type="checkbox"/> THREADED <input type="checkbox"/> WELDED <input type="checkbox"/> OTHER | MATERIAL | <input checked="" type="checkbox"/> THERMO PLASTIC <input type="checkbox"/> STEEL <input type="checkbox"/> FLURO POLYMER <input type="checkbox"/> OTHER | LOCKING CAP? | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
|-------------------------------------|----------------|----------------------------|-----------------|--|--------|---|----------|--|--------------|--|

| | | | | | | | | | | | | |
|------------|--|------------|--|----------------------|----------|--|---|-------------|----------------------------|--|--|---|
| CAP VENTED | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | WEEP HOLE? | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | CASING GROUT DETAILS | MATERIAL | <input checked="" type="checkbox"/> CEMENT <input checked="" type="checkbox"/> CONCRETE <input type="checkbox"/> OTHER | DEPTH FROM THE SURFACE TO THE BOTTOM OF THE CASING GROUT SEAL | 1 to 1.5 FT | TYPE OF SURFACE COMPLETION | <input type="checkbox"/> ABOVE GROUND <input checked="" type="checkbox"/> FLUSH MOUNT | DESCRIBE HOW THE FLUSH MOUNT WAS CONSTRUCTED | A three foot diameter template was advanced one foot into gravel till, concrete surrounds the flush mount cover |
|------------|--|------------|--|----------------------|----------|--|---|-------------|----------------------------|--|--|---|

| | | | | |
|---------------------------|--|------------|----------|--|
| CENTRALIZER USED ON RISER | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | LOCATED AT | MATERIAL | <input type="checkbox"/> STAINLESS STEEL <input type="checkbox"/> OTHER |
|---------------------------|--|------------|----------|--|

| | | | | | | | | |
|--------------------|----------------|--------------------------------|---------------------------|--------------------------------|--------|--|----------|--|
| RISER PIPE DETAILS | LENGTH 8 FT | DIAMETER OF RISER PIPE 2 IN | WEIGHT OR SDR # Sch 40 | DIAMETER OF DRILL HOLE 8 IN | JOINTS | <input checked="" type="checkbox"/> THREADED <input type="checkbox"/> MECHANICAL <input type="checkbox"/> WELDED <input type="checkbox"/> OTHER | MATERIAL | <input checked="" type="checkbox"/> THERMO PLASTIC <input type="checkbox"/> STEEL <input type="checkbox"/> FLURO POLYMER <input type="checkbox"/> OTHER |
|--------------------|----------------|--------------------------------|---------------------------|--------------------------------|--------|--|----------|--|

| | | | | | | | | | | |
|-----------------------|---|------------|-------|-----------------------|-------|------------------------|---------|---|-------------------|-----------------------|
| ANNULAR SEAL | <input type="checkbox"/> CEMENT SLURRY <input type="checkbox"/> BENTONITE SLURRY <input checked="" type="checkbox"/> NON SLURRY BENTONITE | GRAIN SIZE | 10-20 | LENGTH OF FILTER PACK | 12 FT | METHOD OF INSTALLATION | Gravity | Information in this column to be supplied in the Feet from Surface column | FEET FROM SURFACE | FORMATION DESCRIPTION |
| SECONDARY FILTER PACK | <input type="checkbox"/> SAND <input type="checkbox"/> MANUFACTURED <input checked="" type="checkbox"/> NONE | GRAIN SIZE | | LENGTH OF FILTER PACK | | METHOD OF INSTALLATION | | Depth to bottom of Protective Casing Seal | 11.5' | Gravel Fill |

| | | | | | | | | | |
|-------------|---------------------------|------------------|--------------------|---------------------------|----------|---|-------------------------------|-----|---|
| WELL SCREEN | LENGTH OF SCREEN 10 FT | DIAMETER 2 IN | SLOT SIZE 0.01" | WEIGHT OR SDR # Sch 40 | MATERIAL | <input checked="" type="checkbox"/> PLASTIC <input type="checkbox"/> STEEL <input type="checkbox"/> FLURO POLYMER | Depth to Base of Annular Seal | 4-0 | Brown Silty clay tc-little gravel, tc sand, moist very stiff + hard |
|-------------|---------------------------|------------------|--------------------|---------------------------|----------|---|-------------------------------|-----|---|

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|--------------|-----------------------|------------------------|----------|---|---------------------------------|-----|
| SUMP DETAILS | LENGTH OF SUMP .5' | DIAMETER OF SUMP 2" | MATERIAL | <input checked="" type="checkbox"/> PVC <input type="checkbox"/> FLURO POLYMER <input type="checkbox"/> OTHER | Depth to Base of Bentonite Seal | 6-0 |
|--------------|-----------------------|------------------------|----------|---|---------------------------------|-----|

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|-----------|---|------------------------------|---------------------------------------|-------------------------------------|-----|
| BACK FILL | WAS THE WELL BACK FILLED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | MATERIAL USED filter sand | LENGTH OF BACK FILLED BORE HOLE 2' | Depth to Top of Primary Filter Pack | 6-0 |
|-----------|---|------------------------------|---------------------------------------|-------------------------------------|-----|

| | | | | | |
|--------------------|------|---------------------------|----------------------|----------------------------|-----|
| STATIC WATER LEVEL | 5-00 | FEET FROM MEASURING POINT | MULTIPLE CASED WELLS | Depth to Top of the Screen | 7.5 |
|--------------------|------|---------------------------|----------------------|----------------------------|-----|

| | | | | | |
|----------------------------|--------|---|---|-------------------------------|------|
| DATE OF STATIC WATER LEVEL | 7-9-96 | MEASURING POINT FOR STATIC WATER LEVEL IS | <input checked="" type="checkbox"/> TOP OF RISER PIPE <input type="checkbox"/> OTHER | Depth to Bottom of the Screen | 17.5 |
|----------------------------|--------|---|---|-------------------------------|------|

| | | | | | |
|------------------------------|---------|--------------------|--|-------------|------|
| ELEVATION OF MEASURING POINT | 1014.37 | DRILLING EQUIPMENT | <input checked="" type="checkbox"/> AIR ROTARY <input type="checkbox"/> AUGER TYPE <input type="checkbox"/> REVERSE ROTARY <input type="checkbox"/> OTHER | Total Depth | 20.0 |
|------------------------------|---------|--------------------|--|-------------|------|

| | | | | |
|---|--|--|----------------------------------|---------|
| I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS | | | DATE WELL DRILLING WAS COMPLETED | 6-30-96 |
|---|--|--|----------------------------------|---------|

| | | | |
|---------------------------------------|---------|----------------------------|---------|
| SIGNATURE PRIMARY CONTRACTOR/PERMIT # | DATE | SIGNATURE DRILLER/PERMIT # | DATE |
| 11.11.96 | 7-22-96 | 00247 WPM | 9-30-96 |



MISSOURI DEPARTMENT OF NATURAL RESOURCES DIVISION OF GEOLOGY AND LAND SURVEY MONITORING WELL CERTIFICATION RECORD

OFFICE USE ONLY REF NO 146403 DATE RECEIVED CHECK NO STATE WELL NUMBER TRANSMITTAL NO CHECKED BY ROUTE APPROVED BY ENTERED

INFORMATION SUPPLIED BY MONITORING WELL CONTRACTOR

SITE FACILITY NAME Richard-Gebaur AFB/OL-Q WELL NUMBER S5004-MW02 SITE ADDRESS DEBCA/OL-Q, Bld. 926, Hangar Rd. Grandview CITY Kansas City STATE MO ZIP CODE 64147-1220 OWNER NAME Air Force Base Conversion Agency TELEPHONE (516) 348-2514 OWNER ADDRESS Same As Above CITY STATE ZIP CODE

VARIANCE ISSUED YES DATE ISSUED 1-25-96 LOCATION OF WELL SHOW LOCATION IN SECTION PLAT COUNTY Jackson SURFACE ELEVATION 1013.1

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT IT See attached maps. Grid coordinates: SEC 34 TWN 47 N RANG 33 E OR W LAT 38.50 44.20 LONG 94.33 02.02

MONITORING WELL INSTALLATION CONTRACTOR'S NAME Versar, Inc. PERMIT NUMBER 002561 PM DRILLING CONTRACTOR'S NAME Russell Bowles PERMIT NUMBER 00247 WPM

WELL CONSTRUCTION INFORMATION

TYPE OF WELL MONITORING WELL HAZARDOUS MATERIAL MONITORING FOR (CHECK ALL THAT APPLY) VOC METALS PETROLEUM PRODUCT OTHER TRPH ONLY

PROTECTIVE CASING DETAILS LENGTH 1 FT DIAMETER OF CASING 8 IN WEIGHT OR SDR # 3' x 1' DIAMETER AND DEPTH OF DRILL HOLE MECHANICAL THREADED MATERIAL THERMO PLASTIC FLUORO POLYMER LOCKING CAP? YES NO

CAP VENTED WEEP HOLE? CASING GROUT DETAILS MATERIAL CEMENT CONCRETE OTHER DEPTH FROM THE SURFACE TO THE BOTTOM OF THE CASING GROUT SEAL TYPE OF SURFACE COMPLETION ABOVE GROUND FLUSH MOUNT DESCRIBE HOW THE FLUSH MOUNT WAS CONSTRUCTED 4 1/2 three foot diameter template was advanced one foot at a time into gravel fill, concrete surrounds the flush mount cover

CENTRALIZER USED ON RISER NO MATERIAL STAINLESS STEEL OTHER

RISER PIPE DETAILS LENGTH 10 FT DIAMETER OF RISER PIPE 2 IN WEIGHT OR SDR # 56.40 DIAMETER OF DRILL HOLE 8 IN JOINTS THREADED MECHANICAL WELDED OTHER MATERIAL THERMO PLASTIC STEEL FLUORO POLYMER OTHER

ANNULAR SEAL CEMENT SLURRY BENTONITE SLURRY NON SLURRY BENTONITE TYPE Granular Bentonite CEMENT/BENTONITE SLURRY BAGS OF CEMENT USED BENTONITE USED WATER USED/BAG GAL BENTONITE SEAL SLURRY CHIPS GRANULAR PELLETS LENGTH OF SEAL 2.8 BENTONITE SEAL INSTALLED IN UNSATURATED ZONE SATURATED ZONE

PRIMARY FILTER PACK TYPE SAND MANUFACTURED NATURAL GRAIN SIZE 10-20 LENGTH OF FILTER PACK 18.5 FT METHOD OF INSTALLATION Gravity Information in this column to be supplied in the Feet from Surface column FEET FROM SURFACE FORMATION DESCRIPTION

SECONDARY FILTER PACK TYPE SAND MANUFACTURED NONE GRAIN SIZE LENGTH OF FILTER PACK FT METHOD OF INSTALLATION Depth to bottom of Protective Casing Seal 1.5 Gravel Fill

WELL SCREEN LENGTH OF SCREEN 15 FT DIAMETER 2 IN SLOT SIZE 0.01' Sch 40 MATERIAL PLASTIC STEEL FLUORO POLYMER Depth to Base of Annular Seal 4.2 Brown silt, clay, etc sand, gravel, moist.

SUMP DETAILS LENGTH OF SUMP 15' DIAMETER OF SUMP 2" MATERIAL PVC STEEL FLUORO POLYMER OTHER Depth to Base of Bentonite Seal 7.0 Very stiff - hard

BACK FILL WAS THE WELL BACK FILLED? YES NO MATERIAL USED LENGTH OF BACK FILLED BORE HOLE Depth to Top of Primary Filter Pack 10.0

STATIC WATER LEVEL FEET FROM MEASURING POINT 10.73 DATE OF STATIC WATER LEVEL 1-7-96 MEASURING POINT FOR STATIC WATER LEVEL IS TOP OF RISER PIPE ELEVATION OF MEASURING POINT 1013.06 MULTIPLE CASED WELLS SUBMIT ADDITIONAL AS BUILT DIAGRAM SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING HOLE DIAMETERS AND GROUT USED DRILLING EQUIPMENT AIR ROTARY AUGER TYPE REVERSE OTHER DATE WELL DRILLING WAS COMPLETED 6-30-96

I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS SIGNATURE PRIMARY CONTRACTOR/PERMIT # DATE SIGNATURE DRILLER/PERMIT # DATE



MISSOURI DEPARTMENT OF NATURAL RESOURCES DIVISION OF GEOLOGY AND LAND SURVEY MONITORING WELL CERTIFICATION RECORD

OFFICE USE ONLY REF NO 146404 DATE RECEIVED CHECK NO TRANSMITTAL NO ROUTE ENTERED

INFORMATION SUPPLIED BY MONITORING WELL CONTRACTOR

SITE FACILITY NAME Richard-Gebaur AFB WELL NUMBER 55004-MW03 SITE ADDRESS AFBCA/OL-Q, Bldg 26, Hungar Rd 15741 CITY Kansas City STATE MO ZIP CODE 64147-1220

OWNER NAME Air Force Base Conversion Agency TELEPHONE (816) 348-2514 VARIANCE ISSUED YES DATE ISSUED 1-25-96 VARIANCE NUMBER V00404 LOCATION OF WELL SHOW LOCATION IN SECTION PLAT COUNTY Jackson SURFACE ELEVATION 1013.5

MONITORING WELL INSTALLATION CONTRACTOR'S NAME Versar, Inc. PERMIT NUMBER 002561 PM DRILLING CONTRACTOR'S NAME Russell Bowles PERMIT NUMBER D0247 WPM

WELL CONSTRUCTION INFORMATION

TYPE OF WELL MONITORING WELL HAZARDOUS MATERIAL LANDFILL OTHER VOC METALS PETROLEUM PRODUCT OTHER TRPH

PROTECTIVE CASING DETAILS LENGTH 1 FT DIAMETER OF CASING 8 IN WEIGHT OR SDR # 3x1 DIAMETER AND DEPTH OF DRILL HOLE 8 IN JOINTS MECHANICAL WELDED

CAP VENTED YES NO WEEP HDL? YES NO CASING GROUT DETAILS MATERIAL CEMENT CONCRETE OTHER DEPTH FROM THE SURFACE TO THE BOTTOM OF THE CASING GROUT SEAL 141.5 FT TYPE OF SURFACE COMPLETION ABOVE GROUND FLUSH MOUNT

CENTRALIZER USED ON RISER NO LOCATED AT MATERIAL STAINLESS STEEL OTHER

RISER PIPE DETAILS LENGTH 10 FT DIAMETER OF RISER PIPE 2 IN WEIGHT OR SDR # Sch 40 DIAMETER OF DRILL HOLE 8 IN JOINTS THREADED MECHANICAL WELDED OTHER

ANNULAR SEAL CEMENT SLURRY BENTONITE SLURRY NON SLURRY BENTONITE CEMENT/BENTONITE SLURRY BAGS OF CEMENT USED BENTONITE USED WATER USED/BAG GAL BENTONITE SEAL SLURRY CHIPS GRANULAR PELLETS LENGTH OF SEAL 2' BENTONITE SEAL INSTALLED IN UNSATURATED ZONE SATURATED ZONE

PRIMARY FILTER PACK TYPE SAND MANUFACTURED NATURAL GRAIN SIZE 10-20 LENGTH OF FILTER PACK 17.9 FT METHOD OF INSTALLATION Gravity

SECONDARY FILTER PACK TYPE SAND MANUFACTURED NONE GRAIN SIZE LENGTH OF FILTER PACK FT METHOD OF INSTALLATION

WELL SCREEN LENGTH OF SCREEN 15 FT DIAMETER 2 IN SLOT SIZE 0.01" WEIGHT DR SDR # Sch 40 MATERIAL PLASTIC STEEL FLUORO POLYMER

SUMP DETAILS LENGTH OF SUMP 5' DIAMETER OF SUMP 2" MATERIAL PVC STEEL FLUORO POLYMER OTHER

BACK FILL WAS THE WELL BACK FILLED? YES NO MATERIAL USED LENGTH OF BACK FILLED BORE HOLE

STATIC WATER LEVEL FEET FROM MEASURING POINT 11.89 DATE OF STATIC WATER LEVEL 7-9-96 MULTIPLE CASED WELLS SUBMIT ADDITIONAL AS BUILT DIAGRAM SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING HOLE DIAMETERS AND GROUT USED

MEASURING POINT FOR STATIC WATER LEVEL IS TOP OF RISER PIPE DRILLING EQUIPMENT AIR ROTARY AUGER TYPE REVERSE ROTARY

ELEVATION OF MEASURING POINT 1013.44 DATE WELL DRILLING WAS COMPLETED 6-30-96

I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS

SIGNATURE PRIMARY CONTRACTOR/PERMIT # DATE SIGNATURE DRILLER/PERMIT # DATE



MISSOURI DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF GEOLOGY AND
LAND SURVEY

**MONITORING WELL
CERTIFICATION RECORD**

| | | |
|-------------------|--------|----------------|
| OFFICE USE ONLY | | DATE RECEIVED |
| REF NO | 146399 | |
| CR NO | | CHECK NO |
| STATE WELL NUMBER | | TRANSMITTAL NO |
| CHECKED BY | | ROUTE |
| APPROVED BY | | ENTERED |
| | | Ph 1 Ph 2 Ph 3 |

INFORMATION SUPPLIED BY MONITORING WELL CONTRACTOR

| | | | |
|--|-------------------------------|--|--------------------|
| SITE/FACILITY NAME <i>Richard-Gebaur AFB/OL-Q</i> | | WELL NUMBER <i>55006-MW01</i> | |
| SITE ADDRESS <i>AFBCH/OL-Q Bld. 926 Hangar Rd</i> | | CITY <i>Grandview Kansas City</i> | STATE <i>MO</i> |
| OWNER NAME <i>Mo. Force Base Conversion Agency</i> | | TELEPHONE <i>(816)348-2514</i> | |
| OWNER ADDRESS <i>Same As Above</i> | | CITY | STATE |
| VARIANCE ISSUED <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | DATE ISSUED <i>1-25-96</i> | LOCATION OF WELL SHOW LOCATION IN SECTION PLAT | |
| VARIANCE NUMBER <i>V00404</i> | | COUNTY <i>Jackson</i> | |
| DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT IT <i>See the attached maps.</i> | | SURFACE ELEVATION <i>1049.8</i> | |
| SMALLEST 1/4 <i>SE</i> | | LARGEST 1/4 <i>SE</i> | |
| SEC <i>34</i> TWN <i>47</i> N RANG <i>33</i> E OR W | | LAT <i>38.50.47.09</i> LONG <i>94.33.12.48</i> | |

| | |
|---|-----------------------------------|
| MONITORING WELL INSTALLATION CONTRACTOR'S NAME <i>Versai, Inc.</i> | PERMIT NUMBER <i>002561 PM</i> |
| DRILLING CONTRACTOR'S NAME <i>Russell Powles</i> | PERMIT NUMBER <i>00247 WPM</i> |

WELL CONSTRUCTION INFORMATION

| | | | |
|--|--|--|--|
| TYPE OF WELL <input checked="" type="checkbox"/> MONITORING WELL <input type="checkbox"/> PIEZOMETER <input type="checkbox"/> OTHER | TYPE OF POTENTIAL SITE <input checked="" type="checkbox"/> HAZARDOUS MATERIAL <input type="checkbox"/> LANDFILL <input type="checkbox"/> OTHER | MONITORING FOR (CHECK ALL THAT APPLY) <input checked="" type="checkbox"/> VOC <input checked="" type="checkbox"/> METALS <input type="checkbox"/> PETROLEUM PRODUCT <input checked="" type="checkbox"/> OTHER SVOCs, TRPH ONLY | |
| PROTECTIVE CASING DETAILS (IF USED) LENGTH <i>5</i> FT DIAMETER OF CASING <i>4</i> IN WEIGHT OR SDR # DIAMETER AND DEPTH OF DRILL HOLE <i>3x3</i> FT | JOINTS <input checked="" type="checkbox"/> THREADED <input type="checkbox"/> MECHANICAL <input type="checkbox"/> WELDED <input type="checkbox"/> OTHER | MATERIAL <input checked="" type="checkbox"/> STEEL <input type="checkbox"/> THERMO PLASTIC <input type="checkbox"/> FLUORO POLYMER | LOCKING CAP? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| CAP VENTED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | WEEP HOLE? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | CASING GROUT DETAILS <input checked="" type="checkbox"/> CEMENT <input checked="" type="checkbox"/> CONCRETE <input type="checkbox"/> OTHER | DEPTH FROM THE SURFACE TO THE BOTTOM OF THE CASING GROUT SEAL <i>3</i> FT |
| CENTRALIZER USED ON RISER <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES | LOCATED AT | MATERIAL <input type="checkbox"/> STAINLESS STEEL <input type="checkbox"/> OTHER | DESCRIBE HOW THE FLUSH MOUNT WAS CONSTRUCTED |
| RISER PIPE DETAILS LENGTH <i>8.3</i> FT DIAMETER OF RISER PIPE <i>2</i> IN WEIGHT OR SDR # <i>Sch 40</i> | DIAMETER OF DRILL HOLE <i>8</i> IN | JOINTS <input checked="" type="checkbox"/> THREADED <input type="checkbox"/> MECHANICAL <input type="checkbox"/> WELDED <input type="checkbox"/> OTHER | MATERIAL <input type="checkbox"/> STEEL <input type="checkbox"/> THERMO PLASTIC <input type="checkbox"/> FLUORO POLYMER <input type="checkbox"/> OTHER |
| ANNULAR SEAL <input type="checkbox"/> CEMENT SLURRY <input type="checkbox"/> BENTONITE SLURRY <input checked="" type="checkbox"/> NON SLURRY BENTONITE | CEMENT/BENTONITE SLURRY BAGS OF CEMENT USED BENTONITE USED WATER USED/BAG GAL | BENTONITE SEAL MATERIAL <input type="checkbox"/> SLURRY <input type="checkbox"/> CHIPS <input checked="" type="checkbox"/> GRANULAR <input checked="" type="checkbox"/> PELLETS | LENGTH OF SEAL <i>2</i> BENTONITE SEAL INSTALLED IN <input checked="" type="checkbox"/> UNSATURATED ZONE <input type="checkbox"/> SATURATED ZONE |
| PRIMARY FILTER PACK TYPE <input checked="" type="checkbox"/> SAND <input type="checkbox"/> MANUFACTURED <input type="checkbox"/> NATURAL | GRAIN SIZE <i>10-20</i> | LENGTH OF FILTER PACK <i>12.3</i> FT | METHOD OF INSTALLATION <i>Gravity</i> |
| SECONDARY FILTER PACK TYPE <input type="checkbox"/> SAND <input type="checkbox"/> MANUFACTURED <input checked="" type="checkbox"/> NONE | GRAIN SIZE | LENGTH OF FILTER PACK | METHOD OF INSTALLATION |
| WELL SCREEN LENGTH OF SCREEN <i>10</i> FT | DIAMETER <i>2</i> IN | SLOT SIZE <i>0.01</i> | WEIGHT OR SDR # <i>Sch 40</i> |
| SUMP DETAILS LENGTH OF SUMP <i>.5</i> FT | DIAMETER OF SUMP <i>2</i> IN | MATERIAL <input checked="" type="checkbox"/> PVC <input type="checkbox"/> STEEL <input type="checkbox"/> FLUORO POLYMER <input type="checkbox"/> OTHER | DEPTH TO BASE OF BENTONITE SEAL <i>4</i> |
| BACK FILL WAS THE WELL BACK FILLED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | MATERIAL USED | LENGTH OF BACK FILLED BORE HOLE | DEPTH TO TOP OF PRIMARY FILTER PACK <i>4</i> |
| STATIC WATER LEVEL <i>8.42</i> | FEET FROM MEASURING POINT | MULTIPLE CASED WELLS | |
| DATE OF STATIC WATER LEVEL <i>7-9-96</i> | | SUBMIT ADDITIONAL AS BUILT DIAGRAM SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING HOLE DIAMETERS AND GROUT USED | |
| MEASURING POINT FOR STATIC WATER LEVEL IS <input checked="" type="checkbox"/> TOP OF RISER PIPE <input type="checkbox"/> OTHER | DRILLING EQUIPMENT <input checked="" type="checkbox"/> AIR ROTARY <input type="checkbox"/> AUGER TYPE | DEPTH TO BOTTOM OF THE SCREEN <i>16.3</i> | TOTAL DEPTH <i>16.3</i> |
| ELEVATION OF MEASURING POINT <i>1051.85</i> | <input type="checkbox"/> REVERSE ROTARY <input type="checkbox"/> OTHER | DATE WELL DRILLING WAS COMPLETED <i>6/20/96</i> | |

I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS

| | | | |
|---|------------------------|--|------------------------|
| SIGNATURE PRIMARY CONTRACTOR/PERMIT # <i>[Signature]</i> | DATE <i>7-22-96</i> | SIGNATURE DRILLER/PERMIT # <i>[Signature]</i> | DATE <i>9-30-96</i> |
|---|------------------------|--|------------------------|

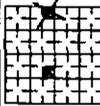


MISSOURI DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF GEOLOGY AND
LAND SURVEY
**MONITORING WELL
CERTIFICATION RECORD**

| | | |
|------------------------|--------|----------------|
| OFFICE USE ONLY | | DATE RECEIVED |
| REF NO | 146389 | 140094 |
| CR NO | | CHECK NO |
| STATE WELL NUMBER | | TRANSMITTAL NO |
| CHECKED BY | | ROUTE |
| APPROVED BY | | ENTERED |
| | | Ph 1 Ph 2 Ph 3 |

INFORMATION SUPPLIED BY MONITORING WELL CONTRACTOR

| | | | |
|--|--|-----------------------------|------------------------|
| SITE/FACILITY NAME Richard-Gebaur AFB | | WELL NUMBER GWMW 605 | |
| SITE ADDRESS AFBCH/OL-Q, Bldg 926, Hungar Rd. 15741 | | CITY Kansas City | STATE MO |
| OWNER NAME Air Force Base Conversion Agency | | TELEPHONE (816) 348-2514 | |
| OWNER ADDRESS Same As Above | | STATE | ZIP CODE 64147-1220 |

| | | | | | |
|---|------------------------|---------------------------|--|-------------------|-----------------------------|
| VARIANCE ISSUED <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | DATE ISSUED 1-25-96 | VARIANCE NUMBER V00404 | LOCATION OF WELL SHOW LOCATION IN SECTION PLAT | COUNTY Jackson | SURFACE ELEVATION 1055.2 |
| DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT IT See Attached Maps, of FTS02 North Burn Pit | | |  SMALLEST % SE LARGEST % NE, SW SEC 35 TWN 47 N, R. 33 E OR W LAT 38. 51 47.00' LONG 94. 32 24.90' | | |

| | |
|--|----------------------------|
| MONITORING WELL INSTALLATION CONTRACTOR'S NAME Versai, Inc. | PERMIT NUMBER 002561 PM |
| DRILLING CONTRACTOR'S NAME Russell Powles | PERMIT NUMBER 00247 WPM |

WELL CONSTRUCTION INFORMATION

| | | |
|--|--|---|
| TYPE OF WELL <input checked="" type="checkbox"/> MONITORING WELL <input type="checkbox"/> PIEZOMETER <input type="checkbox"/> OTHER | TYPE OF POTENTIAL SITE <input checked="" type="checkbox"/> HAZARDOUS MATERIAL <input type="checkbox"/> LANDFILL <input type="checkbox"/> LUST | MONITORING FOR (CHECK ALL THAT APPLY) <input checked="" type="checkbox"/> VOC <input checked="" type="checkbox"/> METALS <input type="checkbox"/> PETROLEUM PRODUCT <input type="checkbox"/> OTHER |
| PROTECTIVE CASING DETAILS (IF USED) LENGTH 5 FT DIAMETER OF CASING 4 IN WEIGHT OR SDR # DIAMETER AND DEPTH OF DRILL HOLE 3x3 | JOINTS <input type="checkbox"/> MECHANICAL <input type="checkbox"/> WELDED <input type="checkbox"/> OTHER | MATERIAL <input checked="" type="checkbox"/> STEEL <input type="checkbox"/> THERMO PLASTIC <input type="checkbox"/> FLUORO POLYMER LOCKING CAP? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| CAP VENTED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | CASING GROUT DETAILS MATERIAL <input checked="" type="checkbox"/> CEMENT <input checked="" type="checkbox"/> CONCRETE <input type="checkbox"/> OTHER | DEPTH FROM THE SURFACE TO THE BOTTOM OF THE CASING GROUT SEAL 3 FT |
| WEEP HOLE? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | TYPE OF SURFACE COMPLETION <input checked="" type="checkbox"/> ABOVE GROUND <input type="checkbox"/> FLUSH MOUNT | DESCRIBE HOW THE FLUSH MOUNT WAS CONSTRUCTED |

| | | |
|---|------------|--|
| CENTRALIZER USED ON RISER <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES | LOCATED AT | MATERIAL <input type="checkbox"/> STAINLESS STEEL <input type="checkbox"/> OTHER |
|---|------------|--|

| | | | |
|---|-----------------------------|--|--|
| RISER PIPE DETAILS LENGTH 22 FT DIAMETER OF RISER PIPE 2 IN WEIGHT OR SDR # Sch 40 | DIAMETER OF DRILL HOLE 8 IN | JOINTS <input checked="" type="checkbox"/> THREADED <input type="checkbox"/> MECHANICAL <input type="checkbox"/> WELDED <input type="checkbox"/> OTHER | MATERIAL <input type="checkbox"/> STEEL <input type="checkbox"/> THERMO PLASTIC <input type="checkbox"/> FLUORO POLYMER |
|---|-----------------------------|--|--|

| | | | | |
|---|--|---|--------------------|---|
| ANNULAR SEAL <input checked="" type="checkbox"/> CEMENT SLURRY <input type="checkbox"/> BENTONITE SLURRY <input type="checkbox"/> NON SLURRY BENTONITE | CEMENT/BENTONITE SLURRY BAGS OF CEMENT USED % BENTONITE USED WATER USED/BAG GAL | BENTONITE SEAL MATERIAL <input type="checkbox"/> SLURRY <input type="checkbox"/> CHIPS <input checked="" type="checkbox"/> GRANULAR PELLETS | LENGTH OF SEAL 4.8 | BENTONITE SEAL INSTALLED IN <input type="checkbox"/> UNSATURATED ZONE <input type="checkbox"/> SATURATED ZONE |
|---|--|---|--------------------|---|

| | | | | | | |
|--|------------------|-------------------------------|--------------------------------|---|-------------------|-----------------------|
| PRIMARY FILTER PACK TYPE <input checked="" type="checkbox"/> SAND <input type="checkbox"/> MANUFACTURED <input type="checkbox"/> NATURAL | GRAIN SIZE 10-20 | LENGTH OF FILTER PACK 16.7 FT | METHOD OF INSTALLATION Gravity | Information in this column to be supplied in the Feet from Surface column | FEET FROM SURFACE | FORMATION DESCRIPTION |
|--|------------------|-------------------------------|--------------------------------|---|-------------------|-----------------------|

| | | | | | | |
|---|------------|-----------------------|------------------------|---|---|-----------------|
| SECONDARY FILTER PACK TYPE <input type="checkbox"/> SAND <input type="checkbox"/> MANUFACTURED <input checked="" type="checkbox"/> NONE | GRAIN SIZE | LENGTH OF FILTER PACK | METHOD OF INSTALLATION | Depth to bottom of Protective Casing Seal 3 | 1 | Silt, Clay Fill |
|---|------------|-----------------------|------------------------|---|---|-----------------|

| | | | | | | |
|---------------------------------------|---------------|-----------------|------------------------|--|------------------------------------|---|
| WELL SCREEN LENGTH OF SCREEN 10 FT | DIAMETER 2 IN | SLOT SIZE 0.01" | WEIGHT OR SDR # Sch 40 | MATERIAL <input checked="" type="checkbox"/> PLASTIC <input type="checkbox"/> STEEL <input type="checkbox"/> FLUORO POLYMER | Depth to Base of Annular Seal 12.0 | Brown-gray Silt, Clay, to sand gravel, moist, very stiff hard |
|---------------------------------------|---------------|-----------------|------------------------|--|------------------------------------|---|

| | | | |
|------------------------------------|---------------------|--|--------------------------------------|
| SUMP DETAILS LENGTH OF SUMP .5' | DIAMETER OF SUMP 2" | MATERIAL <input checked="" type="checkbox"/> PVC <input type="checkbox"/> STEEL <input type="checkbox"/> FLUORO POLYMER <input type="checkbox"/> OTHER | Depth to Base of Bentonite Seal 16.8 |
|------------------------------------|---------------------|--|--------------------------------------|

| | | | |
|--|--------------------------|--|--|
| BACK FILL WAS THE WELL BACK FILLED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | MATERIAL USED Silt, sand | LENGTH OF BACK FILLED BORE HOLE 3.5-4' | Depth to Top of Primary Filter Pack 16.8 |
|--|--------------------------|--|--|

| | | | |
|--------------------------|---------------------------|----------------------|------------------------------------|
| STATIC WATER LEVEL 33.20 | FEET FROM MEASURING POINT | MULTIPLE CASED WELLS | Depth to Bottom of the Screen 19.5 |
|--------------------------|---------------------------|----------------------|------------------------------------|

| | | | |
|-----------------------------------|--|--|------------------------------------|
| DATE OF STATIC WATER LEVEL 7-2-96 | MEASURING POINT FOR STATIC WATER LEVEL IS <input checked="" type="checkbox"/> TOP OF RISER PIPE <input type="checkbox"/> OTHER | DRILLING EQUIPMENT <input type="checkbox"/> AIR ROTARY <input checked="" type="checkbox"/> AUGER TYPE 4 1/4" HSA | Depth to Bottom of the Screen 29.5 |
|-----------------------------------|--|--|------------------------------------|

| | | | |
|--------------------------------------|---|------------------------------------|------------------|
| ELEVATION OF MEASURING POINT 1057.45 | DATE WELL DRILLING WAS COMPLETED 7-2-96 | DEPTH TO BOTTOM OF THE SCREEN 29.5 | TOTAL DEPTH 33.5 |
|--------------------------------------|---|------------------------------------|------------------|

I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS

| | | | |
|---|-----------------|---|-----------------|
| SIGNATURE PRIMARY CONTRACTOR/PERMIT # 1162123-1002561 PM | DATE 7-23-96 | SIGNATURE DRILLER/PERMIT # 00247 WPM | DATE 9-30-96 |
|---|-----------------|---|-----------------|

APPENDIX B
WELL DEVELOPMENT, SAMPLING FORMS, AND
BOREHOLE VOLUME CALCULATION TABLE

149096

CALCULATIONS
Groundwater Monitoring Well Sampling
AFCEE OL-Q (Richards-Gebaur Airport)
July 1996

| | <u>Ref.</u> | <u>Well</u> | <u>Bore</u> | <u>Annulus</u> | |
|------------------|-------------|-------------|-------------|----------------|---------------|
| Diameter | 4 | 2 | 6.25 | | in. |
| X-Sectional Area | 12.566 | 3.142 | 30.680 | 27.538 | sq.in. |
| Spec. Volume | 0.650 | 0.163 | | 1.424 | gal/ft. |
| Porosity | | 100% | | 30% | |
| Corrected Vol. | | 0.163 | | 0.427 | 0.590 gal/ft. |
| # Casings | | | | | 3 |
| Purge Vol | | | | | 1.8 gal/ft. |

Approximate Purge Volumes

| <u>Well ID</u> | <u>Water Column</u> | <u>Purge Vol.</u> | |
|------------------|---------------------|-------------------|---------|
| SS006-MW-01 | 10.2 | 18 | gallons |
| OWS704-MW-01 | 17.16 | 30 | |
| OWS704-MW-2 | 1.72 | 3 | |
| SS003MW-01 | 12.96 | 23 | |
| SS003MW-02 | 1.26 | 2 | |
| SS003MW-03 | 27.45 | 49 | |
| SS004MW-01 | 15.82 | 28 | |
| SS004MW-02 | 1.28 | 2 | |
| SS004MW-03 | 10.77 | 19 | |
| 20% Contingency | | 35 | |
| TOTAL Purge Vol. | | 209 | gallons |

VERSAR WELL DATA SHEET

Date: Beg. July 9, 1996 End July 10, 1996

Site Name Richards Gebaur AFB

Well No./Location SS003 MW-3 Job No. 2816.206

1. Well Information¹

Inner Casing Diameter 2"
 Outer Casing Diameter 6.25"
 Outer Casing Height Stick up approx 3'
 ΔOuter Casing/Inner Casin. .5'
 Inner Casing Height .5'
 Depth to Product (to TIC) N/A
 Total Depth (from TIC) 34.10'
 DTW (from TIC) 13.01'
 Water Column Length 21.09'
 Casing Volume 12.67 Gallons (21.09 x .59)
 x 3 38.0 Gallons
 DTW Time 1055

 Date July 9, 1996
 Personnel Webb, Baptista, and Panek

2. General Observations

Organic Vapors (HNu, OVA, TIP) ND
 Reading: Breathing Zone ND
 Reading: Water/Air Interface ND
 Radation _____

 Sediment Moderate
 Color Clear
 Odor None

3. Purge Methods

Date July 9, 1996
 Time: Begin 1103 End 1115
 Equipment Disposable bailer
 Personnel Same

 Volume Removed 4 Gallons (well is dry)
 Disposition of Purge Water 55-Gallon Drums

4. Sample Methods

Date July 10, 1996
 Time: Begin 0720 End 0725
 Personnel Same

 Equipment Peristaltic pump with dedicated
tubing and dedicated .45 micron
filter
 Three Part Label No. 62587

5. Notes

- Facility Well Security Locking well Cap locking screw-on cover
- Dedicated Equipment
- Casing Material PVC
- Nonaqueous Phases N/A
- Sampling Ambient Conditions (weather, etc.) 70's and Partly Sunny
- Other Insitu Measurements

Sample No./Temp/ pH /Conductivity²/Turbidity³

1 / 17.3 °C /6.70 / 780 /10.1

2 / 19.2 °C /6.66 / 920 / >200

¹ All length measurements to .01 foot.

²All conductivity measurements are in μs/cm

³All turbidity measurements are in NTU.

VERSAR WELL DATA SHEETDate: Beg. July 9, 1996 End July 10, 1996Site Name Richards Gebaur AFBWell No./Location SS003 MW-1 Job No. 2816.2061. Well Information¹Inner Casing Diameter 2"Outer Casing Diameter 6.25"Outer Casing Height Flush Δ Outer Casing/Inner Casing .5'Inner Casing Height .5'Depth to Product (to TIC) N/ATotal Depth (from TIC) 19.92'DTW (from TIC) 6.91'Water Column Length 13.01'Casing Volume 7.8 Gallons (13.01 x .59)x 3 23.4 GallonsDTW Time 1330Date July 9, 1996Personnel Webb, Baptista, & Panek2. General ObservationsOrganic Vapors (HNU, OVA, TIP) NDReading: Breathing Zone NDReading: Water/Air Interface NDRadiation Sediment ModerateColor ClearOdor None3. Purge MethodsDate July 9, 1996Time: Begin 1330 End 1340Equipment Disposable bailerPersonnel Webb, Baptista, & PanekVolume Removed 8 Gallons (well is dry)Disposition of Purge Water 55-Gallon Drums4. Sample MethodsDate July 10, 1996Time: Begin 0750 End 0755Personnel Webb, Baptista, & PanekEquipment Peristaltic pump with dedicated tubing and dedicated .45 micron filterThree Part Label No. 625865. Notes

- Facility Well Security Locking well Cap with locking screw-on cover

- Dedicated Equipment

- Casing Material PVC

- Nonaqueous Phases N/A

- Sampling Ambient Conditions (weather, etc.) 70's and Partly Sunny

- Other Insitu Measurements

Sample No./Temp/ pH /Conductivity²/Turbidity³

1 / 19.2 °C/ 6.62 / 1010 /10.0

2 / 17.2 °C/ 6.76 / 990 / 89.4

¹All length measurements to .01 foot²All conductivity measurements are in $\mu\text{s/cm}$ ³All turbidity measurements are in NTU.

Date: Beg. July 9, 1996 End July 10, 1996Site Name Richards Gebaur AFBWell No./Location SS004 MW-3 Job No. 2816.2061. Well Information¹Inner Casing Diameter 2"Outer Casing Diameter 6.25"Outer Casing Height FlushOuter Casing/Inner Casin. .5'Inner Casing Height .5'Depth to Product (to TIC) N/ATotal Depth (from TIC) 24.69'DTW (from TIC) 11.89'Water Column Length 12.80'Casing Volume 7.67 Gallons (12.80 x 59)
x 3 23.0 GallonsDTW Time 1425Date July 9, 1996Personnel Webb, Baptista, & Panek2. General ObservationsOrganic Vapors (HNU, OVA, TIP) NDReading: Breathing Zone NDReading: Water/Air Interface NDRadiation Sediment ModerateColor ClearOdor None3. Purge MethodsDate July 9, 1996Time: Begin 1430 End 1445Equipment Disposable bailerPersonnel Webb, Baptista, & PanekVolume Removed 6.5 Gallons (well is dry)Disposition of Purge Water 55-Gallon Drums4. Sample MethodsDate July 10, 1996Time: Begin 0645 End 0655Personnel Webb, Baptista, & PanekEquipment Peristaltic pump with dedicated
tubing and dedicated .45 micron
filterThree Part Label No. 62588 & 62589 (Dup)5. Notes

- Facility Well Security Locking well Cap with
screw-on cover

- Dedicated Equipment

- Casing Material PVC

- Nonaqueous Phases N/A

- Sampling Ambient Conditions (weather, etc.)
70's and Partly Sunny

- Other Insitu Measurements

Sample No./Temp/ pH /Conductivity²/Turbidity³

1 / 16.2 °C/ 7.05 / 1220 / 96.6

2 / 16.2 °C/ 7.02 / 1320 / >200

3 / 16.5 °C/ 7.23 / 1400 / 66.8

¹All length measurements to 01 foot.²All conductivity measurements are in $\mu\text{s}/\text{cm}$.³All turbidity measurements are in NTU.

Date: July 9, 1996 End July 10, 1996

Site Name Richards Gebaur AFB

Well No./Location SS004 MW-2 Job No. 2816.206

1. Well Information¹

Inner Casing Diameter 2"
 Outer Casing Diameter 6.25"
 Outer Casing Height Flush
 ΔOuter Casing/Inner Casin. .5'
 Inner Casing Height .5'
 Depth to Product (to TIC) N/A
 Total Depth (from TIC) 25.40'
 DTW (from TIC) 20.72'
 Water Column Length 4.68'
 Casing Volume 2.84 Gallons (4.68 x .59)
 x 3 8.5 Gallons
 DTW Time 1420

Date July 9, 1996
 Personnel Webb, Baptista, & Panek

2. General Observations

Organic Vapors (HNu, OVA, TIP) ND
 Reading: Breathing Zone ND
 Reading: Water/Air Interface ND
 Radiation _____
 Sediment Moderate
 Color Clear
 Odor None

3. Purge Methods

Date July 9, 1996
 Time: Begin 1430 End 1445
 Equipment Disposable bailer
 Personnel Webb, Baptista, & Panek

Volume Removed 2.2 Gallons (well is dry)
 Disposition of Purge Water 55-Gallon Drums

4. Sample Methods

Date July 10, 1996
 Time: Begin 0710 End 0715
 Personnel Webb, Baptista, & Panek

Equipment Peristaltic pump with dedicated tubing and dedicated .45 micron filter
 Three Part Label No. 62590

5. Notes

- Facility Well Security Locking well Cap with locking screw-on cover
- Dedicated Equipment _____
- Casing Matenal PVC
- Nonaqueous Phases N/A
- Sampling Ambient Conditions (weather, etc.) 70's and Partly Sunny
- Other Insitu Measurements _____

Sample No./Temp/ pH /Conductivity²/Turbidity³

| | | | | | | |
|---|---|----------|--------|-----|---|-------|
| 1 | / | 16.6 °C/ | 7.26 / | 830 | / | 8.2 |
| 2 | / | 17.4 °C/ | 7.28 / | 910 | / | 187.0 |

¹All length measurements to .01 foot.
²All conductivity measurements are in μs/cm.
³All turbidity measurements are in NTU.

VERSAR WELL DATA SHEET

Date: Beg. July 9, 1996 End July 10, 1996

Site Name Richards Gebaur AFB

Well No./Location SS004 MW-1 Job No. 2816.206

1. Well Information¹

Inner Casing Diameter 2"
 Outer Casing Diameter 6.25"
 Outer Casing Height Flush
 ΔOuter Casing/Inner Casin. .5'
 Inner Casing Height .5'
 Depth to Product (to TIC) N/A
 Total Depth (from TIC) 18.46'
 DTW (from TIC) 5.00'
 Water Column Length 13.46'
 Casing Volume 8.1 Gallons (13.46 x .59)
 x 3 24.3 Gallons
 DTW Time 1500

Date July 9, 1996
 Personnel Webb, Baptista, & Panek

2. General Observations

Organic Vapors (HNU, OVA, TIP) ND
 Reading: Breathing Zone ND
 Reading: Water/Air Interface ND
 Radation

Sediment Moderate
 Color Clear
 Odor None

3. Purge Methods

Date July 9, 1996
 Time. Begin 1505 End 1525
 Equipment Disposable bailer
 Personnel Webb, Baptista, & Panek

Volume Removed 7 Gallons (well is dry)
 Disposition of Purge Water 55-Gallon Drums

4. Sample Methods

Date July 9, 1996
 Time: Begin 1830 End 1835
 Personnel Webb, Baptista, & Panek
 Equipment Peristaltic pump with dedicated tubing and dedicated .45 micron filter
 Three Part Label No. 62580

5. Notes

- Facility Well Security Locking well Cap with locking screw-on cover
- Dedicated Equipment
- Casing Material PVC
- Nonaqueous Phases N/A
- Sampling Ambient Conditions (weather, etc.) 70's and Partly Sunny
- Other In situ Measurements

Sample No./Temp/ pH /Conductivity²/Turbidity³

| | | | | | | |
|---|---|----------|--------|------|---|-------|
| 1 | / | 18.6 °C/ | 7.07 / | 1670 | / | 53.7 |
| 2 | / | 17.3 °C/ | 7.15 / | 1530 | / | 116.0 |
| 3 | / | 19.8 °C/ | 7.17 / | 1730 | / | 171.1 |

¹All length measurements to .01 foot.

²All conductivity measurements are in μs/cm.

³All turbidity measurements are in NTU.

Date: Beg. July 9, 1996 End July 10, 1996

Site Name Richards Gebaur AFB

Well No./Location SS006 MW-1 Job No. 2816.206

1. Well Information¹

Inner Casing Diameter 2"
 Outer Casing Diameter 6.25"
 Outer Casing Height Stick up approximately 3'
 ΔOuter Casing/Inner Casin. .5'
 Inner Casing Height .5'
 Depth to Product (to TIC) N/A
 Total Depth (from TIC) 18.43'
 DTW (from TIC) 8.42'

Water Column Length 10.01'
 Casing Volume 6 Gallons (10.01 x .59)
 x 3 18 Gallons
 DTW Time 1543

Date July 9, 1996
 Personnel Webb, Baptista, & Panek

2. General Observations

Organic Vapors (HNu, OVA, TIP) ND
 Reading: Breathing Zone ND
 Reading: Water/Air Interface ND
 Radation _____

Sediment Moderate
 Color Clear
 Odor None

3. Purge Methods

Date July 9, 1996
 Time: Begin 1548 End 1607
 Equipment Disposable bailer
 Personnel Webb, Baptista, & Panek

Volume Removed 6 Gallons (well is dry)
 Disposition of Purge Water 55-Gallon Drums

4. Sample Methods

Date July 9, 1996
 Time: Begin 1900 End 1915
 Personnel Webb, Baptista, & Panek
 Equipment Peristaltic pump with dedicated tubing and dedicated .45 micron filter
 Three Part Label No. 62575,62576,62577

5. Notes

- Facility Well Security Locking well Cap with locking screw-on cover
- Dedicated Equipment
- Casing Material PVC
- Nonaqueous Phases N/A
- Sampling Ambient Conditions (weather, etc.) 7y's and Partly Sunny
- Other Insitu Measurements

Sample No./Temp/ pH /Conductivity²/Turbidity³

| | | | | |
|---|------------|--------|-----|---------|
| 1 | / 22.0 °C/ | 7.13 / | 760 | / 33.6 |
| 2 | / 18.0 °C/ | 7.29 / | 710 | / 104.1 |
| 3 | / 16.2 °C/ | ---- | 740 | / 20.8 |

¹All length measurements to .01 foot

²All conductivity measurements are in μs/cm.

³All turbidity measurements are in NTU.

VERSAR WELL DATA SHEET

140104

Date: Beg. July 9, 1996 End July 10, 1996Site Name Richards Gebaur AFBWell No./Location OWS 704 MW-02 Job No. 2816.2061. Well Information¹Inner Casing Diameter 2"Outer Casing Diameter 6.25"Outer Casing Height Flush Δ Outer Casing/Inner Casin. .5'Inner Casing Height .5'Depth to Product (to TIC) N/ATotal Depth (from TIC) 25.46'DTW (from TIC) 9.98'Water Column Length 15.48'Casing Volume 9.3 Gallons (15.48 x .59)
x 3 27.9 GallonsDTW Time 1030Date July 9, 1996Personnel Webb, Baptista, & Panek2. General ObservationsOrganic Vapors (HNU, OVA, TIP) NDReading: Breathing Zone NDReading: Water/Air Interface NDRadation Sediment ModerateColor ClearOdor None3. Purge MethodsDate July 9, 1996Time: Begin 1030 End 1042Equipment Disposable bailerPersonnel Webb, Baptista, & PanekVolume Removed 8 Gallons (well is dry)Disposition of Purge Water 55-Gallon Drums4. Sample MethodsDate July 10, 1996Time: Begin 0750 End 0800Personnel Webb, Baptista, & PanekEquipment Peristaltic pump with dedicated
tubing and dedicated .45 micron
filterThree Part Label No. 625855. Notes

- Facility Well Security Locking well Cap with
locking screw-on cover

- Dedicated Equipment

- Casing Material PVC

- Nonaqueous Phases N/A

- Sampling Ambient Conditions (weather, etc.)
70's and Partly Sunny

- Other Insitu Measurements

Sample No./Temp / pH /Conductivity²/Turbidity³

1 / 19.1 °C/ 6.35 / 670 /12

2 / 19.2 °C/ 6.65 810 /151.9

¹All length measurements to .01 foot.²All conductivity measurements are in μ s/cm.³All turbidity measurements are in NTU.

WELL DEVELOPMENT DATA SHEET

| | | | |
|---------------------------------------|--|-------|-----|
| Project: | Date: | Page: | Of: |
| Project Number: | Well Number: <i>025704/MW-02</i> | | |
| Diameter of Well: <i>2' 6.25 bore</i> | Length of Water Column: <i>1.72 x 1.75</i> | | |
| Depth of Well: <i>25.5</i> | One Well Volume: <i>3.01 x 4</i> | | |
| Initial Water Level: <i>23.78</i> | Time: <i>216</i> | | |

Field Personnel:
 Development Method: *Surge/pump*

WITHDRAWAL OF WELL VOLUMES

| CATEGORY | Volume 1 | Volume 2 | Volume 3 | Volume 4 | Volume 5 | Volume 6 |
|-------------------------|------------------------|----------|----------|----------|----------|----------|
| Time End Flushing | <i>2.21</i> | | | | | |
| Volume Flushed (gal) | <i>.5 gal</i> | | | | | |
| Temperature (C°) | <i>21.1</i> | | | | | |
| Conductivity (mS) | <i>540</i> | | | | | |
| pH | <i>7.75</i> | | | | | |
| Odor | <i>none</i> | | | | | |
| Water Quality | <i>slightly cloudy</i> | | | | | |
| Color | | | | | | |
| Other: <i>turbidity</i> | <i>66.6</i> | | | | | |

| CATEGORY | Volume 7 | Volume 8 | Volume 9 | Volume 10 | Volume 11 | Volume 12 |
|-------------------|----------|----------|----------|-----------|-----------|-----------|
| Time End Flushing | | | | | | |
| Volume Flushed | | | | | | |
| Temperature | | | | | | |
| Conductivity | | | | | | |
| pH | | | | | | |
| Odor | | | | | | |
| Water Quality | | | | | | |
| Color | | | | | | |
| Other: | | | | | | |

| | |
|--|----------------------|
| Well Casting Volumes - (GAL/FT) | Remarks |
| 1 1/4" = 0.077 1 1/2" = 0.10 2" = 0.164 2 1/2" = 0.24 3" = 0.37 3 1/2" = 0.50 4" = 0.65 6" = 1.46 | <i>poor recharge</i> |

WELL DEVELOPMENT DATA SHEET

| | | | |
|---|--|----------------|--------------|
| Project: <i>Richards Gabrun GW Assessment</i> | Date: <i>7/2/96</i> | Page: <i>1</i> | Of: <i>1</i> |
| Project Number: | Well Number: <i>SS006mw01</i> | | |
| Diameter of Well: <i>2" bore 625</i> | Length of Water Column: <i>10.33</i> | | |
| Depth of Well: <i>16.4'</i> | One Well Volume: (<i>borehole</i>) <i>17.5 x 4</i> | | |
| Initial Water Level: <i>8.07</i> | Time: <i>start purge 11:47</i> | | |
| Field Personnel: <i>Singh, Esko</i> | | | |
| Development Method: <i>Surge / pump</i> | | | |

WITHDRAWAL OF WELL VOLUMES

| CATEGORY | Volume 1 | Volume 2 | Volume 3 | Volume 4 | Volume 5 | Volume 6 |
|----------------------|---------------------|----------------|---|---|----------|----------|
| Time End Flushing | <i>1153</i> | <i>1330</i> | <i>1616</i> <i>1818 (F)</i> | <i>1900</i> <i>1902 (F)</i> | | |
| Volume Flushed (gal) | <i>4 gals (REV)</i> | <i>3.75</i> | <i>3 (REV)</i> | <i>3 gals (REV)</i> | | |
| Temperature (C°) | <i>18.7</i> | <i>18.5</i> | <i>19.3</i> | <i>18.9</i> | | |
| Conductivity (mS) | <i>610</i> | <i>540</i> | <i>540</i> | <i>550</i> | | |
| pH | <i>5.94</i> | <i>7.06</i> | <i>7.52</i> | <i>7.48</i> | | |
| Odor | <i>none</i> | <i>none</i> | <i>none</i> | <i>none</i> | | |
| Water Quality | <i>cloudy</i> | <i>cloudy</i> | <i>cloudy</i> | <i>cloudy</i> | | |
| Color | <i>beige</i> | <i>beige</i> | <i>beige</i> | <i>beige</i> | | |
| Other: turbidity | <i>>200</i> | <i>>200</i> | <i>>200</i> | <i>7200</i> | | |

| CATEGORY | Volume 7 | Volume 8 | Volume 9 | Volume 10 | Volume 11 | Volume 12 |
|-------------------|----------|----------|----------|-----------|-----------|-----------|
| Time End Flushing | | | | | | |
| Volume Flushed | | | | | | |
| Temperature | | | | | | |
| Conductivity | | | | | | |
| pH | | | | | | |
| Odor | | | | | | |
| Water Quality | | | | | | |
| Color | | | | | | |
| Other: | | | | | | |

| Well Casting Volumes - (GAL/FT) | Remarks |
|--|---|
| 1 1/4" = 0.077 1 1/2" = 0.10 2" = 0.164 2 1/2" = 0.24 3" = 0.37 3 1/2" = 0.50 4" = 0.65 6" = 1.46 | Full Recharge < 1 hr. excellent recharge |

WELL DEVELOPMENT DATA SHEET

| | | | |
|---|---|----------------|-----|
| Project: <i>RGAFB gw assessment</i> | Date: <i>7/2/96</i> | Page: <i>1</i> | Of: |
| Project Number: | Well Number: <i>SS004MW01</i> | | |
| Diameter of Well: <i>2" 6.25</i> | Length of Water Column: <i>16.32 x 1.75</i> | | |
| Depth of Well: <i>18.5</i> | One Well Volume: <i>28.56 x 4</i> | | |
| Initial Water Level: <i>2.18</i> | Time: <i>1745</i> | | |
| Field Personnel: <i>Smith/Esko</i> | | | |
| Development Method: <i>pump + surge</i> | | | |

WITHDRAWAL OF WELL VOLUMES

| CATEGORY | Volume 1 | Volume 2 | Volume 3 | Volume 4 | Volume 5 | Volume 6 |
|-------------------------|-----------------|---|----------|----------|----------|----------|
| Time End Flushing | <i>1750</i> | <i>1800 (S)</i> <i>1801 (S)</i> | | | | |
| Volume Flushed (gal) | <i>5g (day)</i> | <i>1 gallon</i> | | | | |
| Temperature (C°) | <i>17.9</i> | <i>18</i> | | | | |
| Conductivity (mS) | <i>1070</i> | <i>1100</i> | | | | |
| pH | <i>7.77</i> | <i>7.73</i> | | | | |
| Odor | <i>none</i> | <i>none</i> | | | | |
| Water Quality | <i>cloudy</i> | <i>cloudy</i> | | | | |
| Color | <i>beige</i> | <i>beige</i> | | | | |
| Other: <i>turbidity</i> | <i>>200</i> | <i>>200</i> | | | | |

| CATEGORY | Volume 7 | Volume 8 | Volume 9 | Volume 10 | Volume 11 | Volume 12 |
|-------------------|----------|----------|----------|-----------|-----------|-----------|
| Time End Flushing | | | | | | |
| Volume Flushed | | | | | | |
| Temperature | | | | | | |
| Conductivity | | | | | | |
| pH | | | | | | |
| Odor | | | | | | |
| Water Quality | | | | | | |
| Color | | | | | | |
| Other: | | | | | | |

| Well Casing Volumes - (GAL/FT) | Remarks |
|--|---|
| <ul style="list-style-type: none"> 1 1/4" = 0.077 1 1/2" = 0.10 2" = 0.164 2 1/2" = 0.24 3" = 0.37 3 1/2" = 0.50 4" = 0.65 6" = 1.16 | <p><i>Good recharge</i></p> <p><i>Recovery = 3' in 10 minutes</i></p> |

WELL DEVELOPMENT DATA SHEET

| | | | |
|--------------------------------|--------------------------------------|---------|-----|
| Project: | Date: 7/2/96 | Page: , | Of: |
| Project Number: | Well Number: 55004M403 | | |
| Diameter of Well: 2" C-25 bore | Length of Water Column: 10.77 x 1.75 | | |
| Depth of Well: 25 | One Well Volume: 18.84 x 4 | | |
| Initial Water Level: 14.23 | Time: 1305 | | |

Field Personnel:

Development Method: Surge Pump

WITHDRAWAL OF WELL VOLUMES

| CATEGORY | Volume 1 | Volume 2 | Volume 3 | Volume 4 | Volume 5 | Volume 6 |
|----------------------|----------------|----------------------|----------|----------|----------|----------|
| Time End Flushing | 1713 | 1730 (S) 1731 (F) | | | | |
| Volume Flushed (gal) | 2.75 gal (dry) | .73 dry | | | | |
| Temperature (C°) | 17.9 | 18.3 | | | | |
| Conductivity (mS) | 1030 | 930 | | | | |
| pH | 7.76 | 7.81 | | | | |
| Odor | solvent like | → | | | | |
| Water Quality | cloudy | → | | | | |
| Color | yellow/beige | → | | | | |
| Other: turbidity | > 200 | > 200 | | | | |

| CATEGORY | Volume 7 | Volume 8 | Volume 9 | Volume 10 | Volume 11 | Volume 12 |
|-------------------|----------|----------|----------|-----------|-----------|-----------|
| Time End Flushing | | | | | | |
| Volume Flushed | | | | | | |
| Temperature | | | | | | |
| Conductivity | | | | | | |
| pH | | | | | | |
| Odor | | | | | | |
| Water Quality | | | | | | |
| Color | | | | | | |
| Other: | | | | | | |

Well Casting Volumes - (GAL/FT)

Remarks

- 1 1/4" = 0.077
- 1 1/2" = 0.10
- 2" = 0.164
- 2 1/2" = 0.24
- 3" = 0.37
- 3 1/2" = 0.50
- 4" = 0.65

"Solvent-like" odor in water

WELL DEVELOPMENT DATA SHEET

| | | | |
|----------------------------------|-----------------------------|-------|-----|
| Project: | Date: 7/2/96 | Page: | Of: |
| Project Number: | Well Number: S5004MWO2 | | |
| Diameter of Well: 2' 6.25 bore | Length of Water Column: .58 | | |
| Depth of Well: 24.5' | One Well Volume: | | |
| Initial Water Level: 23.92 | Time: 1658 | | |
| Field Personnel: | | | |
| Development Method: surge / pump | | | |

WITHDRAWAL OF WELL VOLUMES

| CATEGORY | Volume 1 | Volume 2 | Volume 3 | Volume 4 | Volume 5 | Volume 6 |
|----------------------|-----------|----------|----------|----------|----------|----------|
| Time End Flushing | 1701 | | | | | |
| Volume Flushed (gal) | .001 gal | | | | | |
| Temperature (C°) | 23.6 | | | | | |
| Conductivity (mS) | 590 | | | | | |
| pH | 7.48 | | | | | |
| Odor | | | | | | |
| Water Quality | v. cloudy | | | | | |
| Color | | | | | | |
| Other: | >200 | | | | | |

| CATEGORY | Volume 7 | Volume 8 | Volume 9 | Volume 10 | Volume 11 | Volume 12 |
|-------------------|----------|----------|----------|-----------|-----------|-----------|
| Time End Flushing | | | | | | |
| Volume Flushed | | | | | | |
| Temperature | | | | | | |
| Conductivity | | | | | | |
| pH | | | | | | |
| Odor | | | | | | |
| Water Quality | | | | | | |
| Color | | | | | | |
| Other: | | | | | | |

| Well Casting Volumes - (GAL/FT) | Remarks |
|---------------------------------|---|
| 1 1/4" = 0.077 | insufficient volume to run accurate field parameters very slow recharge |
| 1 1/2" = 0.10 | |
| 2" = 0.164 | |
| 2 1/2" = 0.24 | |
| 3" = 0.37 | |
| 3 1/2" = 0.50 | |
| 4" = 0.65 | |

WELL DEVELOPMENT DATA SHEET

| | | | |
|---|--|-------|-----|
| Project: <i>Richards/Gabrun GW Assess</i> | Date: <i>7/2/96</i> | Page: | Of: |
| Project Number: | Well Number: <i>5003MWO1</i> | | |
| Diameter of Well: <i>2' G.25 bore</i> | Length of Water Column: <i>13.36 v1 75</i> | | |
| Depth of Well: <i>20'</i> | One Well Volume: <i>2338 y4</i> | | |
| Initial Water Level: <i>6.64</i> | Time: <i>1436</i> | | |
| Field Personnel: <i>Singh/psko</i> | | | |
| Development Method: <i>Surge/pump</i> | | | |

WITHDRAWAL OF WELL VOLUMES

| CATEGORY | Volume 1 | Volume 2 | Volume 3 | Volume 4 | Volume 5 | Volume 6 |
|----------------------|------------------|------------------------------|----------|----------|----------|----------|
| Time End Flushing | <i>1443</i> | <i>1624 (S) 1631 (F)</i> | | | | |
| Volume Flushed (gal) | <i>5.5</i> | <i>4.5 gal</i> | | | | |
| Temperature (C°) | <i>17.1</i> | <i>17.0</i> | | | | |
| Conductivity (mS) | <i>650</i> | <i>670</i> | | | | |
| pH | <i>7.80</i> | <i>7.59</i> | | | | |
| Odor | <i>none</i> | <i>none</i> | | | | |
| Water Quality | <i>V. Cloudy</i> | <i>cloudy</i> | | | | |
| Color | <i>lt brown</i> | <i>beige</i> | | | | |
| Other: | <i>>200</i> | <i>7200</i> | | | | |

| CATEGORY | Volume 7 | Volume 8 | Volume 9 | Volume 10 | Volume 11 | Volume 12 |
|-------------------|----------|----------|----------|-----------|-----------|-----------|
| Time End Flushing | | | | | | |
| Volume Flushed | | | | | | |
| Temperature | | | | | | |
| Conductivity | | | | | | |
| pH | | | | | | |
| Odor | | | | | | |
| Water Quality | | | | | | |
| Color | | | | | | |
| Other: | | | | | | |

| Well Casting Volumes - (GAL/FT) | Remarks |
|--|--|
| 1 1/4" = 0.077 1 1/2" = 0.10 2" = 0.164 2 1/2" = 0.24 3" = 0.37 3 1/2" = 0.50 4" = 0.65 6" = 1.46 | <i>Good Recharge full 13' < 2 hours</i> |

WELL DEVELOPMENT DATA SHEET

| | | | |
|--|---|-------|-----|
| Project: | Date: | Page: | Of: |
| Project Number: | Well Number: <i>SS003MWO3</i> | | |
| Diameter of Well: <i>2' 6.25 bore</i> | Length of Water Column: <i>28.45 x 1.75</i> | | |
| Depth of Well: <i>25.5</i> <i>4' stickup</i> | One Well Volume: <i>49.78 x 4</i> | | |
| Initial Water Level: <i>7.05</i> | Time: <i>1513</i> | | |
| Field Personnel: | | | |
| Development Method: <i>surge / pump</i> | | | |

WITHDRAWL OF WELL VOLUMES

| CATEGORY | Volume 1 | Volume 2 | Volume 3 | Volume 4 | Volume 5 | Volume 6 |
|-------------------------|--------------------|--------------------------------------|----------|-----------|-----------|-----------|
| Time End Flushing | <i>1520</i> | <i>340</i> <i>341</i> (E) | | | | |
| Volume Flushed (gal) | <i>7 gals</i> | <i>1 gal</i> | | | | |
| Temperature (C°) | <i>17.2</i> | <i>17.5</i> | | | | |
| Conductivity (mS) | <i>478</i> | <i>510</i> | | | | |
| pH | <i>6.94</i> | <i>6.98</i> | | | | |
| Odor | <i>non</i> | <i>none</i> | | | | |
| Water Quality | <i>v-cloudy</i> | <i>v cloudy</i> | | | | |
| Color | <i>beige/brown</i> | <i>beige/brown</i> | | | | |
| Other: <i>turbidity</i> | <i>7200</i> | <i>7200</i> | | | | |
| CATEGORY | Volume 7 | Volume 8 | Volume 9 | Volume 10 | Volume 11 | Volume 12 |
| Time End Flushing | | | | | | |
| Volume Flushed | | | | | | |
| Temperature | | | | | | |
| Conductivity | | | | | | |
| pH | | | | | | |
| Odor | | | | | | |
| Water Quality | | | | | | |
| Color | | | | | | |
| Other: | | | | | | |

Well Casing Volumes - (GAL/FT)

- 1 1/4" = 0.077*
- 1 1/2" = 0.10*
- 2" = 0.164*
- 2 1/2" = 0.24*
- 3" = 0.37*
- 3 1/2" = 0.50*
- 4" = 0.65*
- 6" = 1.46*

Remarks

WELL DEVELOPMENT DATA SHEET

| | | | |
|---------------------------------|------------------------------|-------|-----|
| Project: | Date: 7/2 | Page: | Of: |
| Project Number: | Well Number: S5003MW02 | | |
| Diameter of Well: 2" 6.25" bore | Length of Water Column: .25' | | |
| Depth of Well: 34.5 | One Well Volume: | | |
| Initial Water Level: 34.25 | Time: 1610 | | |
| Field Personnel: | | | |
| Development Method: surge pump | | | |

WITHDRAWAL OF WELL VOLUMES

| CATEGORY | Volume 1 | Volume 2 | Volume 3 | Volume 4 | Volume 5 | Volume 6 |
|----------------------|------------|----------|----------|----------|----------|----------|
| Time End Flushing | 1610 | | | | | |
| Volume Flushed (gal) | .05 gal | | | | | |
| Temperature (C°) | 21.5 (200) | | | | | |
| Conductivity (mS) | 620 | | | | | |
| pH | 7.18 | | | | | |
| Odor | none | | | | | |
| Water Quality | cloudy | | | | | |
| Color | beige | | | | | |
| Other: turbidity | >200 | | | | | |

| CATEGORY | Volume 7 | Volume 8 | Volume 9 | Volume 10 | Volume 11 | Volume 12 |
|-------------------|----------|----------|----------|-----------|-----------|-----------|
| Time End Flushing | | | | | | |
| Volume Flushed | | | | | | |
| Temperature | | | | | | |
| Conductivity | | | | | | |
| pH | | | | | | |
| Odor | | | | | | |
| Water Quality | | | | | | |
| Color | | | | | | |
| Other: | | | | | | |

| Well Casting Volumes - (GAL/FT) | Remarks |
|---------------------------------|--|
| 1 1/4" = 0.077 | Insufficient volume of water to sample or develop. |
| 1 1/2" = 0.10 | |
| 2" = 0.164 | |
| 2 1/2" = 0.24 | |
| 3" = 0.37 | |
| 3 1/2" = 0.50 | |
| 4" = 0.65 | |
| 6" = 1.46 | |

WELL DEVELOPMENT DATA SHEET

| | | | |
|---------------------------------------|--|-------|-----|
| Project: | Date: | Page: | Of: |
| Project Number: | Well Number: <i>0WS704MW-02</i> | | |
| Diameter of Well: <i>2' 6.25 bore</i> | Length of Water Column: <i>1.72 x 1.75</i> | | |
| Depth of Well: <i>25.5</i> | One Well Volume: <i>3.01 x 4</i> | | |
| Initial Water Level: <i>23.78</i> | Time: <i>216</i> | | |
| Field Personnel: | | | |
| Development Method: <i>surge/pump</i> | | | |

WITHDRAWAL OF WELL VOLUMES

| CATEGORY | Volume 1 | Volume 2 | Volume 3 | Volume 4 | Volume 5 | Volume 6 |
|-------------------------|------------------------|----------|----------|----------|----------|----------|
| Time End Flushing | <i>2:21</i> | | | | | |
| Volume Flushed (gal) | <i>.5 gal</i> | | | | | |
| Temperature (C°) | <i>21.1</i> | | | | | |
| Conductivity (mS) | <i>540</i> | | | | | |
| pH | <i>7.75</i> | | | | | |
| Odor | <i>none</i> | | | | | |
| Water Quality | <i>slightly cloudy</i> | | | | | |
| Color | | | | | | |
| Other: <i>turbidity</i> | <i>66.6</i> | | | | | |

| CATEGORY | Volume 7 | Volume 8 | Volume 9 | Volume 10 | Volume 11 | Volume 12 |
|-------------------|----------|----------|----------|-----------|-----------|-----------|
| Time End Flushing | | | | | | |
| Volume Flushed | | | | | | |
| Temperature | | | | | | |
| Conductivity | | | | | | |
| pH | | | | | | |
| Odor | | | | | | |
| Water Quality | | | | | | |
| Color | | | | | | |
| Other: | | | | | | |

| Well Casting Volumes - (GAL/FT) | Remarks |
|---------------------------------|----------------------|
| 1 1/4" = 0.077 | <i>poor recharge</i> |
| 1 1/2" = 0.10 | |
| 2" = 0.164 | |
| 2 1/2" = 0.24 | |
| 3" = 0.37 | |
| 3 1/2" = 0.50 | |
| 4" = 0.65 | |
| 6" = 1.46 | |

WELL DEVELOPMENT DATA SHEET

| | | | |
|--|--|-------|-----|
| Project: <i>Richards Gehring GW Assessment</i> | Date: <i>7/2/96</i> | Page: | Of: |
| Project Number: | Well Number: <i>OWS704-mw-01</i> | | |
| Diameter of Well: <i>2' 6.25 bore</i> | Length of Water Column: <i>17.14 (x1.75)</i> | | |
| Depth of Well: <i>25'</i> | One Well Volume: <i>23.33 x 4</i> | | |
| Initial Water Level: <i>7.86</i> | Time: <i>1355</i> | | |
| Field Personnel: <i>Singh/Esko</i> | | | |
| Development Method: <i>surge/pump</i> | | | |

WITHDRAWAL OF WELL VOLUMES

| CATEGORY | Volume 1 | Volume 2 | Volume 3 | Volume 4 | Volume 5 | Volume 6 |
|--------------------------|------------------|------------------------------|----------|----------|----------|----------|
| Time End Flushing | <i>1402</i> | <i>1458 (S) 1459 (F)</i> | | | | |
| Volume Flushed (gal) | <i>5.5 (let)</i> | <i>2 gal (dry)</i> | | | | |
| Temperature (C°) | <i>19.2</i> | <i>18.3</i> | | | | |
| Conductivity (mS) | <i>600</i> | <i>580</i> | | | | |
| pH | <i>7.24</i> | <i>6.93</i> | | | | |
| Odor | <i>none</i> | <i>none</i> | | | | |
| Water Quality | <i>cloudy</i> | <i>cloudy</i> | | | | |
| Color | <i>beige</i> | <i>beige</i> | | | | |
| Other: <i>fluoridity</i> | <i>7200</i> | <i>7200</i> | | | | |

| CATEGORY | Volume 7 | Volume 8 | Volume 9 | Volume 10 | Volume 11 | Volume 12 |
|-------------------|----------|----------|----------|-----------|-----------|-----------|
| Time End Flushing | | | | | | |
| Volume Flushed | | | | | | |
| Temperature | | | | | | |
| Conductivity | | | | | | |
| pH | | | | | | |
| Odor | | | | | | |
| Water Quality | | | | | | |
| Color | | | | | | |
| Other: | | | | | | |

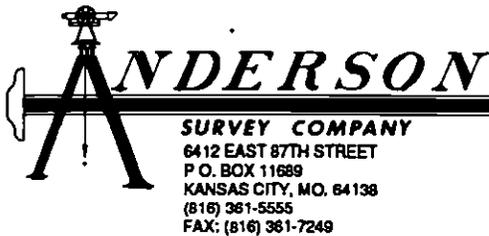
Well Casting Volumes - (GAL/FT)

| | |
|--------------|--------------------|
| 1 ¼" = 0.077 | <i>6.25 = 1.73</i> |
| 1 ½" = 0.10 | |
| 2" = 0.164 | |
| 2 ½" = 0.24 | |
| 3" = 0.37 | |
| 3 ½" = 0.50 | |
| 4" = 0.65 | |
| 6" = 1.46 | |

Remarks

Quick Recharge ≈ .5 ft per min.

APPENDIX C
SURVEY DATA



LAND SURVEYORS

INDUSTRIAL MEASUREMENT SPECIALISTS

FOUNDER: JAMES P. ANDERSON 1887 — 1948

JAMES S. ANDERSON, President

June 11, 1996

REGISTERED LAND SURVEYORS
OLIVER S. ANDERSON 1926-1983
ROBERT W. ANDERSON 1924-1965
WALTER R. FROGGE
R. C. ROUDEBUSH
WILLIAM LAHEY
DANA G. KINSLEY
THOMAS L. LANG
PHILIP A. LONG
PHILLIP J. HENEHAN
GARRY SMITH

Mr. Alan Esko
Versar, Inc.
200 West 22nd St #250
Lombard, IL 60148

RE: Piezometer Locations at Richards Gebaur
Air Force Base, Kansas City, Missouri

Dear Mr. Esko:

The following are measured locations and elevations of the 3 piezometers located southwest of Building No. 605. The coordinate values and latitude and departure are based on Missouri State Plane Coordinates, NAD 27. Elevations are on USGS Datum.

| | SS009-PZ-01 | SS009-PZ-02 | SS009-PZ-03 |
|------------------|---------------------|---------------------|---------------------|
| North Coordinate | 975519.72 | 975555.58 | 975612.74 |
| East Coordinate | 485810.98 | 485793.46 | 485712.76 |
| Latitude | 38°-50'-45.28456" N | 38°-50'-45.63897" N | 38°-50'-46.20358" N |
| Departure | 94°-32'-59.34757" W | 94°-32'-59.56932" W | 94°-33'-0.58969" W |
| Pipe Elevation | 1009.63 | 1010.18 | 1009.14 |

If you need further information on this matter please feel free to call me at my office.

Sincerely,

Thomas L. Lang, RLS
ANDERSON SURVEY COMPANY, INC.

TLL:jg

*The quiet of our estates, in a great measure, depends upon
the faithfulness, understanding, and care of our surveyors.
Virginia Statutes, 1705*

ELEVATIONS

July 24, 1996

SS 006 MW-01

| | |
|---------------------|----------|
| GROUND ELEVATION | 1049.8' |
| TOP OF CONCRETE PAD | 1049.92' |
| TOP OF CASING | 1052.38' |
| TOP OF PIPE (PVC) | 1051.85' |

SS 003-MW-01

| | |
|-------------------|----------|
| ASPHALT ELEVATION | 1030.18' |
| TOP CONCRETE PAD | 1030.27' |
| TOP OF PIPE (PVC) | 1029.99' |

SS 003 MW-02

| | |
|---------------------|----------|
| GROUND ELEVATION | 1025.9' |
| TOP OF CONCRETE PAD | 1026.27' |
| TOP OF CASING | 1028.53' |
| TOP OF PIPE (PVC) | 1028.00' |

SS 003 MW-03

| | |
|-------------------|----------|
| GROUND ELEVATION | 1024.5' |
| TOP CONCRETE PAD | 1024.88' |
| TOP OF CASING | 1027.52' |
| TOP OF PIPE (PVC) | 1027.04' |

SS 004 MW-01

| | |
|-------------------|----------|
| GROUND ELEVATION | 1014.6' |
| TOP CONCRETE PAD | 1014.62' |
| TOP OF PIPE (PVC) | 1014.37' |

S S004 MW-02

| | |
|-------------------|----------|
| GROUND ELEVATION | 1013.1' |
| TOP CONCRETE PAD | 1013.21' |
| TOP OF PIPE (PVC) | 1013.06' |

SS0044 MW-03

| | |
|-------------------|----------|
| GROUND ELEVATION | 1013.5' |
| TOP CONCRETE PAD | 1013.64' |
| TOP OF PIPE (PVC) | 1013.44' |

OWS 704 MW-01

| | |
|-------------------|----------|
| ASPHALT ELEVATION | 1029.79' |
| TOP CONCRETE PAD | 1029.97' |
| TOP OF PIPE (PVC) | 1029.83' |

OWS 704 MW-02

| | |
|-------------------|----------|
| ASPHALT ELEVATION | 1029.67' |
| TOP CONCRETE PAD | 1029.76' |
| TOP OF PIPE (PVC) | 1029.57' |

GW MW 605

| | |
|-------------------|----------|
| GROUND ELEVATION | 1055.2' |
| TOP CONCRETE PAD | 1055.36' |
| TOP OF PIPE (PVC) | 1057.45' |
| TOP OF CASING | 1057.94' |



149118

SS003 MW3 SAMPLE RESULTS

LOCKHEED ANALYTICAL SERVICES

140119

DETN. OF GAS. BY PURGE AND TRAP GC-FID
P&T GAS

| | | | |
|-------------------|--------------|-----------------------|------------------|
| Client Sample ID: | SS003MW3-N10 | LAL Sample ID: | L7410-49 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 16-JUL-96 | Analytical Batch ID: | 071596-PTGAS-M-2 |
| Date Extracted: | N/A | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |

| SURROGATE | RECOVERY | QC Limits |
|-----------|----------|-----------|
| TFT | 100% | 70-130 |
| BFB | 105% | 75-130 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(S) |
|-------------|-----------|----------------|---|----------------------|
| Gasoline | 8006-61-9 | <100 | 100 | |

000568

LOCKHEED ANALYTICAL SERVICES

140120

TOTAL PETROLEUM HYDROCARBONS (TPH)
8015M - TPH

| | | | |
|-------------------|--------------|-----------------------|-------------------|
| Client Sample ID: | SS003MW3-N10 | LAL Sample ID: | L7410-75 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 22-JUL-96 | Analytical Batch ID: | 071996-8015-L-5 |
| Date Extracted: | 14-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.2 |
| | | QC Group: | 8015M - TPH_38858 |

| SURROGATE | RECOVERY | QC Limits |
|---------------------|----------|-----------|
| DI-N-OCTYLPHTHALATE | 61% | 56-166 |

| CONSTITUENT | CAS NO. | RESULT mg/L | PRACTICAL QUANTIFICATION LIMIT mg/L | DATA QUALIFIER |
|-------------|---------|----------------|---|-------------------|
| C12-C24 | | <1.2 | 1.2 | |

LOCKHEED ANALYTICAL SERVICES

140123

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | | | |
|-------------------|--------------|-----------------------|----------------|
| Client Sample ID: | SS003MW3-N10 | LAL Sample ID: | L7410-19 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 17-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071796-8260-E1 |
| | | Preparation Dilution: | 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 94% | 84-122 |
| Toluene-d8 | 109% | 87-117 |
| Bromofluorobenzene | 104% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(s) |
|---------------------------|-------------|----------------|---|----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | <10. | 10. | |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | 2.5 | 5.0 | J |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000019

LOCKHEED ANALYTICAL SERVICES

149124

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

| | | | |
|-------------------|--------------|-----------------------|----------------|
| Client Sample ID: | SS003MW3-N10 | LAL Sample ID: | L7410-19 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 17-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071796-8260-E1 |
| | | Preparation Dilution: | 1.00 |

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
| 1 | | | | | |
| 2 | | | | | |
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000029

OWS704 MW2 SAMPLE RESULTS

LOCKHEED ANALYTICAL SERVICES

140126

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | | | |
|-------------------|---------------|-----------------------|----------------|
| Client Sample ID: | OWS704MW2-N08 | LAL Sample ID: | L7410-15 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 17-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071696-8260-E1 |
| | | Preparation Dilution: | 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 94% | 84-122 |
| Toluene-d8 | 110% | 87-117 |
| Bromofluorobenzene | 110% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL | DATA |
|---------------------------|-------------|----------------|----------------------------|---------------|
| | | | QUANTITATION LIMIT ug/L | QUALIFIER (s) |
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | 4.4 | 10. | JB |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000015

LOCKHEED ANALYTICAL SERVICES

149127

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

Client Sample ID: OWS704MW2-N08
Date Collected: 10-JUL-96
Date Analyzed: 17-JUL-96
Matrix: Water

LAL Sample ID: L7410-15
Date Received: 12-JUL-96
Analytical Dilution: 1
Analytical Batch ID: 071696-8260-E1
Preparation Dilution: 1.00

Number of TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|------|------------|----|
| 1 | | Unknown | 8.41 | 10 | JB |
| 2 | | | | | |
| 3 | | | | | |
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000018

LOCKHEED ANALYTICAL SERVICES

140130

DETN. OF GAS. BY PURGE AND TRAP GC-FID
P&T GAS

| | | | |
|-------------------|---------------|-----------------------|------------------|
| Client Sample ID: | OWS704MW2-N08 | LAL Sample ID: | L7410-46 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 15-JUL-96 | Analytical Batch ID: | 071596-PTGAS-M-1 |
| Date Extracted: | N/A | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |

| SURROGATE | RECOVERY | QC Limits |
|-----------|----------|-----------|
| TFT | 95% | 70-130 |
| BFB | 104% | 75-130 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(S) |
|-------------|-----------|----------------|---|----------------------|
| Gasoline | 8006-61-9 | <100 | 100 | |

000564

LOCKHEED ANALYTICAL SERVICES

140131

TOTAL PETROLEUM HYDROCARBONS (TPH)
8015M - TPH

| | | | |
|-------------------|---------------|-----------------------|-------------------|
| Client Sample ID: | OWS704MW2-N08 | LAL Sample ID: | L7410-71 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 22-JUL-96 | Analytical Batch ID: | 071996-8015-L-4 |
| Date Extracted: | 14-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.1 |
| | | QC Group: | 8015M - TPH_38858 |

| SURROGATE | RECOVERY | QC Limits |
|---------------------|----------|-----------|
| DI-N-OCTYLPHTHALATE | 83% | 56-166 |

| CONSTITUENT | CAS NO. | RESULT mg/L | PRACTICAL QUANTITATION LIMIT mg/L | DATA QUALIFIER |
|-------------|---------|----------------|---|-------------------|
| C12-C24 | | <1.1 | 1.1 | |

149132

SS003 MW2 SAMPLE RESULTS

LOCKHEED ANALYTICAL SERVICES

140133

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | | | |
|-------------------|--------------|-----------------------|----------------|
| Client Sample ID: | SS003MW2-N11 | LAL Sample ID: | L7410-28 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 18-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071796-8260-E1 |
| | | Preparation Dilution: | 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 95% | 84-122 |
| Toluene-d8 | 109% | 87-117 |
| Bromofluorobenzene | 109% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(S) |
|---------------------------|-------------|----------------|---|----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | <10. | 10. | |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000029

LOCKHEED ANALYTICAL SERVICES

140134

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

Client Sample ID: SS003MW2-N11
Date Collected: 10-JUL-96
Date Analyzed: 18-JUL-96
Matrix: Water

LAL Sample ID: L7410-28
Date Received: 12-JUL-96
Analytical Dilution: 1
Analytical Batch ID: 071796-8260-E1
Preparation Dilution: 1.00

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
| 1 | | | | | |
| 2 | | | | | |
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000039

LOCKHEED ANALYTICAL SERVICES

140137

DETN. OF GAS. BY PURGE AND TRAP GC-FID
P&T GAS

| | | | |
|-------------------|--------------|-----------------------|------------------|
| Client Sample ID: | SS003MW2-N11 | LAL Sample ID: | L7410-57 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 16-JUL-96 | Analytical Batch ID: | 071596-PTGAS-M-2 |
| Date Extracted: | N/A | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |

| SURROGATE | RECOVERY | QC Limits |
|-----------|----------|-----------|
| TFT | 95% | 70-130 |
| BFB | 103% | 75-130 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER (s) |
|-------------|-----------|----------------|---|-----------------------|
| Gasoline | 8006-61-9 | <100 | 100 | |

LOCKHEED ANALYTICAL SERVICES

140138

TOTAL PETROLEUM HYDROCARBONS (TPH)
8015M - TPH

| | | | |
|-------------------|--------------|-----------------------|-------------------|
| Client Sample ID: | SS003MW2-N11 | LAL Sample ID: | L7410-82 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 23-JUL-96 | Analytical Batch ID: | 071996-8015-L-5 |
| Date Extracted: | 14-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 2.2 |
| | | QC Group: | 8015M - TPH_38858 |

| SURROGATE | RECOVERY | QC Limits |
|---------------------|----------|-----------|
| DI-N-OCTYLPHTHALATE | 37% * | 56-166 |

| CONSTITUENT | CAS NO. | RESULT mg/L | PRACTICAL QUANTITATION LIMIT mg/L | DATA QUALIFIER |
|-------------|---------|----------------|---|-------------------|
| C12-C24 | | <2.2 | 2.2 | |

140139

SS003MW1 SAMPLE RESULTS

LOCKHEED ANALYTICAL SERVICES

140140

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | | | |
|-------------------|--------------|-----------------------|----------------|
| Client Sample ID: | SS003MW1-N12 | LAL Sample ID: | L7410-17 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 17-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071796-8260-E1 |
| | | Preparation Dilution: | 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 94% | 84-122 |
| Toluene-d8 | 110% | 87-117 |
| Bromofluorobenzene | 103% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER (s) |
|---------------------------|-------------|----------------|---|-----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | 4.2 | 10. | J |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | 3.6 | 5.0 | J |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | 3.8 | 5.0 | J |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000017

LOCKHEED ANALYTICAL SERVICES

149141

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

| | | | |
|-------------------|--------------|-----------------------|----------------|
| Client Sample ID: | SS003MW1-N12 | LAL Sample ID: | L7410-17 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 17-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071796-8260-E1 |
| | | Preparation Dilution: | 1.00 |

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

Number of TICs found: 1

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC | Q |
|----|------------|---------------|------|-----------|----|
| 1 | | Unknown | 8.41 | 9. | BJ |
| 2 | | | | | |
| 3 | | | | | |
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000018

LOCKHEED ANALYTICAL SERVICES

140144

DETN. OF GAS. BY PURGE AND TRAP GC-FID
P&T GAS

| | | | |
|-------------------|--------------|-----------------------|------------------|
| Client Sample ID: | SS003MW1-N12 | LAL Sample ID: | L7410-48 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 16-JUL-96 | Analytical Batch ID: | 071596-PTGAS-M-2 |
| Date Extracted: | N/A | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |

| SURROGATE | RECOVERY | QC Limits |
|-----------|----------|-----------|
| TFT | 95% | 70-130 |
| BFB | 104% | 75-130 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER |
|-------------|-----------|----------------|---|-------------------|
| Gasoline | 8006-61-9 | <100 | 100 | |

000565

LOCKHEED ANALYTICAL SERVICES

140145

TOTAL PETROLEUM HYDROCARBONS (TPH) 8015M - TPH

| | | | |
|-------------------|--------------|-----------------------|-------------------|
| Client Sample ID: | SS003MW1-N12 | LAL Sample ID: | L7410-73 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 22-JUL-96 | Analytical Batch ID: | 071996-8015-L-4 |
| Date Extracted: | 14-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |
| | | QC Group: | 8015M - TPH_38858 |

| SURROGATE | RECOVERY | QC Limits |
|---------------------|----------|-----------|
| DI-N-OCTYLPHTHALATE | 78% | 56-166 |

| CONSTITUENT | CAS NO. | RESULT mg/L | PRACTICAL QUANTITATION LIMIT mg/L | DATA QUALIFIER(s) |
|-------------|---------|----------------|---|----------------------|
| C12-C24 | | <1.0 | 1.0 | |

140146

GROUNDWATER MONITORING WELL SAMPLE RESULTS
SITES SS003, SS004, SS006, SSO09



CHAIN OF CUSTODY RECORD

| PROJECT NO. | PROJECT NAME | | INDUSTRIAL HYGIENE SAMPLE | | Y | N | | | | | | | | | | |
|--|------------------|--------------|---------------------------|---------------------------|-------------------|--|----|---|-----|---|------|---|-------------|---|-------------|---|
| | PROJECT NO. | PROJECT NAME | INDUSTRIAL HYGIENE SAMPLE | INDUSTRIAL HYGIENE SAMPLE | | | | | | | | | | | | |
| 2510-205 | Arling Co. / ... | | | | | | | | | | | | | | | |
| SAMPLERS: (Signature) <i>[Signature]</i> | | | | | | | | | | | | | | | | |
| STATION LOCATION | | | | | | | | | | | | | | | | |
| FIELD SAMPLE NUMBER | DATE | TIME | CONP | GRAB | NO. OF CONTAINERS | REMARKS | | | | | | | | | | |
| 95351 | 3/27/11 | 1445 | | X | 11 | Majority of bottles damaged have 3 part labels, the Field Sample Numbers are located in the lot # space - A.H.L. | | | | | | | | | | |
| 95352 | 3/27/11 | 1445 | | ↓ | 11 | | | | | | | | | | | |
| 95355 | 3/27/11 | 1445 | | ↓ | 1 | | | | | | | | | | | |
| PARAMETERS | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <td>TC</td> <td>X</td> </tr> <tr> <td>SO4</td> <td>X</td> </tr> <tr> <td>VOCs</td> <td>X</td> </tr> <tr> <td>1,1,1,2,2,2</td> <td>X</td> </tr> <tr> <td>1,1,1,2,2,2</td> <td>X</td> </tr> </table> | | | | | | | TC | X | SO4 | X | VOCs | X | 1,1,1,2,2,2 | X | 1,1,1,2,2,2 | X |
| TC | X | | | | | | | | | | | | | | | |
| SO4 | X | | | | | | | | | | | | | | | |
| VOCs | X | | | | | | | | | | | | | | | |
| 1,1,1,2,2,2 | X | | | | | | | | | | | | | | | |
| 1,1,1,2,2,2 | X | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) <i>[Signature]</i> | | | | | | | | | | | | | | | | |
| Date / Time | | Date / Time | | Date / Time | | Date / Time | | | | | | | | | | |
| 3/27/11 1445 | | 3/27/11 1445 | | 3/27/11 1445 | | 3/27/11 1445 | | | | | | | | | | |
| Received by: (Signature) <i>[Signature]</i> | | | | | | | | | | | | | | | | |
| Date / Time | | | | | | | | | | | | | | | | |
| 3/27/11 1445 | | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) <i>[Signature]</i> | | | | | | | | | | | | | | | | |
| Date / Time | | | | | | | | | | | | | | | | |
| 3/27/11 1445 | | | | | | | | | | | | | | | | |
| Received for Laboratory by: (Signature) <i>[Signature]</i> | | | | | | | | | | | | | | | | |
| Date / Time | | | | | | | | | | | | | | | | |
| 3/27/11 1445 | | | | | | | | | | | | | | | | |
| Remarks: FAX # 903-817-5386 | | | | | | | | | | | | | | | | |



CHAIN OF CUSTODY RECORD

140151

| PROJECT NO. | | PROJECT NAME | | INDUSTRIAL HYGIENE SAMPLE | | Y | | N | |
|------------------------------|--------|--------------|-------|---------------------------|-----|---|-----|-------------|--|
| 2816.206 | | AFBA 22 Q | | | | | | | |
| SAMPLERS: (Signature) | | | | (Printed) | | | | | |
| Station Location | | | | NO. OF CONTAINERS | | PARAMETERS | | REMARKS | |
| FIELD SAMPLE NUMBER | DATE | TIME | COMP. | GRAB | SPC | TPA | TPA | TPA | |
| 62575 | 7/1/82 | 1100 | | | 10 | 1 | 1 | 1 | |
| 62576 | 7/1/82 | 1100 | | | 10 | 1 | 1 | 1 | |
| 62577 | 7/1/82 | 1100 | | | 10 | 1 | 1 | 1 | |
| 62578 | 7/1/82 | 1130 | | | 2 | 1 | 1 | 1 | |
| Station Location | | | | NO. OF CONTAINERS | | PARAMETERS | | REMARKS | |
| SS126 (Mud) - N106 | | | | 10 | | 1 | 1 | 1 | |
| SS126 (Mud) - M502 | | | | 10 | | 1 | 1 | 1 | |
| SS126 (Mud) - SDOZ | | | | 10 | | 1 | 1 | 1 | |
| TB04 (COYD) | | | | 2 | | 1 | 1 | 1 | |
| Relinquished by: (Signature) | | | | Date / Time | | Received by: (Signature) | | Date / Time | |
| <i>[Signature]</i> | | | | 7/1/82 1200 | | <i>[Signature]</i> | | | |
| (Printed) | | | | | | (Printed) | | | |
| Relinquished by: (Signature) | | | | Date / Time | | Received for Laboratory by: (Signature) | | Date / Time | |
| <i>[Signature]</i> | | | | | | <i>[Signature]</i> | | | |
| (Printed) | | | | | | (Printed) | | | |
| Remarks | | | | Date / Time | | Remarks | | Date / Time | |
| | | | | | | VA F106A | | | |

APPENDIX D
LABORATORY RESULTS

JULY 24, 1996

140155

| WELL NO. | NORTH COORDINATE | EAST COORDINATE | LATITUDE | DEPARTURE |
|--|------------------|-----------------|---------------------|---------------------|
| SS 006 MW-01 Sec. 34, Twp. 47, Rge. 33, Jackson County, MO | 975703.14' | 484771.73' | 38°-50'-47.09187" N | 94°-33'-12.48493" W |
| SS 003 MW-01 Sec. 3, Twp. 46, Rge. 33 Cass County, MO | 974531.73' | 484654.47' | 38°-50'-35.51171" N | 94°-33'-13.95836" W |
| SS 003 MW-02 Sec. 3, Twp. 46, Rge. 33 Cass County, MO | 974493.78' | 484653.64' | 38°-50'-35.13656" N | 94°-33'-13.96857" W |
| SS 003 MW-03 Sec. 3, Twp. 46, Rge. 33 Cass County, MO | 974488.97' | 484710.33' | 38°-50'-35.08934" N | 94°-33'-13.25201" W |
| SS 004 MW-01 Sec. 34, Twp. 47, Rge. 33 Jackson County, MO | 975429.61' | 485531.93' | 38°-50'-44.39230" N | 94°-33'-02.87411" W |
| SS 004 MW-02 Sec. 34, Twp. 47, Rge. 33 Jackson County, MO | 975410.18' | 485599.09' | 38°-50'-44.20060" N | 94°-33'-02.02508" W |
| SS 004 MW-03 Sec. 34, Twp. 47, Rge. 33 Jackson County, MO | 975395.28' | 485585.56' | 38°-50'-44.05323" N | 94°-33'-02.19599" W |
| OWS 704 MW-01 Sec. 3, Twp. 46, Rge. 33 Cass County, MO | 974686.51' | 484939.86' | 38°-50'-37.04337" N | 94°-33'-10.35234" W |
| OWS 704 MW-02 Sec. 3, Twp. 46, Rge. 33 Cass County, MO | 974700.75' | 484676.97' | 38°-50'-37.18261" N | 94°-33'-13.67524" W |
| GW MW -605 Sec. 35, Twp. 47, Rge. 33 Jackson County, MO | 978920.65' | 488537.65' | 38°-51'-18.91630" N | 94°-32'-24.90174" W |

140156

QUALITY CONTROL SAMPLE RESULTS
EQUIPMENT BLANK 1



CHAIN OF CUSTODY RECORD

| PROJECT NO. | PROJECT NAME | | INDUSTRIAL HYGIENE SAMPLE | | Y | N | |
|------------------------------|--------------|-------------|-----------------------------------|---|------------------|------------------------------|---------------------|
| | 2511-705 | Am... / ... | | | | | |
| SAMPLERS: (Signature) | | | PARAMETERS | | | | |
| (Signature) | | | VOCs Semi-VOCs HAPs PCBs | | | | |
| FIELD SAMPLE NUMBER | DATE | TIME | COMP | GRAB | STATION LOCATION | NO. OF CONTAINERS | REMARKS |
| 55351 | 5/24 | 1145 | | X | ... | 11 | Majority of bottles |
| 45352 | 5/24 | 1145 | | ↓ | ... | 11 | don't have 3 out |
| 55355 | 5/24 | 1145 | | ↓ | ... | 1 | labels, the Field |
| | | | | | | | Sample Numbers |
| | | | | | | | are located in the |
| | | | | | | | lot # space # 111 |
| Relinquished by: (Signature) | | | Date / Time | Received by: (Signature) | Date / Time | Relinquished by: (Signature) | Date / Time |
| (Signature) | | | 5/24 1145 | (Signature) | | (Signature) | (Printed) |
| Relinquished by: (Signature) | | | Date / Time | Received for Laboratory by: (Signature) | Date / Time | Remarks | |
| (Signature) | | | | (Signature) | | FIELD EX-902812538C | |



CHAIN OF CUSTODY RECORD

140160

| PROJECT NO. | PROJECT NAME | INDUSTRIAL HYGIENE SAMPLE | | REMARKS |
|--------------------------------|--------------|---------------------------|-----------------|---------|
| | | Y | N | |
| 2816.206 | AFBA 2-Q | | | |
| SAMPLERS: (Signature) | | PARAMETERS | | |
| (Signature) | | TPH (200) | TPH (500) | |
| (Signature) | | VOC | PCB (27 Meters) | |
| (Signature) | | SJOC | PCB (500) | |
| (Signature) | | TESTS | | |
| FIELD SAMPLE NUMBER | DATE | TIME | COMP. | GRAB |
| 62579 | 7/9/96 | 1730 | | |
| 62580 | ↓ | 1900 | | |
| 62581 | ↓ | 1130 | | |
| 62584 | 7/11/96 | 1000 | | |
| STATION LOCATION | | NO. OF CONTAINERS | | |
| (Printed) WILSON PARK BAPTISTA | | 14 | X | X |
| GARDNER-S-NUS | | 8 | ↓ | ↓ |
| SS024/MUL-NUS | | 2 | ↓ | ↓ |
| ABOZ (200E) | | 2 | X | X |
| SS025 (200E) | | | | |
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| SS304 (200E) | | | | |
| SS305 (200E) | | | | |
| SS306 (200E) | | | | |
| SS307 (200E) | | | | |
| SS308 (200E) | | | | |
| SS309 (200E) | | | | |
| SS310 (200E) | | | | |
| | | | | |

APPENDIX E
QUALITY CONTROL SAMPLE RESULTS

LOCKHEED ANALYTICAL SERVICES

140165

ORGANOCHLORINE PCBS 8080 PCBS ONLY

| | | | |
|-------------------|-----------|-----------------------|----------------------|
| Client Sample ID: | 85350 | LAL Sample ID: | L7141-47 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 07-JUN-96 | Analytical Batch ID: | 060696-8080-J-1 |
| Date Extracted: | 04-JUN-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.1 |
| | | QC Group: | 8080 PCBS ONLY_37714 |

| SURROGATE | RECOVERY | QC Limits |
|-----------|----------|-----------|
| TCMX | 85% | 21-110 |
| DCB | 105% | 36-126 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER (s) |
|-------------|------------|----------------|---|-----------------------|
| PCB-1016 | 12674-11-2 | <1.1 | 1.1 | |
| PCB-1221 | 11104-28-2 | <2.1 | 2.1 | |
| PCB-1232 | 11141-16-5 | <1.1 | 1.1 | |
| PCB-1242 | 53469-21-9 | <1.1 | 1.1 | |
| PCB-1248 | 12672-29-6 | <1.1 | 1.1 | |
| PCB-1254 | 11097-69-1 | <1.1 | 1.1 | |
| PCB-1260 | 11096-82-5 | <1.1 | 1.1 | |

LOCKHEED ANALYTICAL SERVICES

140166

SEMI-VOLATILE ORGANICS BY GC/MS
8270 SEMI-VOLATILES

| | | | |
|-------------------|---------------------------|-----------------------|---------------|
| Client Sample ID: | 85350 | LAL Sample ID: | L7141-45 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 10-JUN-96 | Date Extracted: | 04-JUN-96 |
| Matrix: | Water | Analytical Batch ID: | 061096-8270-K |
| QC Group: | 8270 SEMI-VOLATILES_37734 | Analytical Dilution: | 1 |
| | | Preparation Dilution: | 1.08 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(S) |
|------------------------------|-----------|----------------|---|----------------------|
| Dibenzofuran | 132-64-9 | <11. | 11. | |
| 2,4-Dinitrotoluene | 121-14-2 | <11. | 11. | |
| Diethylphthalate | 84-66-2 | <11. | 11. | |
| 4-Chlorophenyl-phenylether | 7005-72-3 | <11. | 11. | |
| Fluorene | 86-73-7 | <11. | 11. | |
| 4-Nitroaniline | 100-01-6 | <22. | 22. | |
| 4,6-Dinitro-2-methylphenol | 534-52-1 | <54. | 54. | |
| N-Nitrosodiphenylamine (1) | 86-30-6 | <11. | 11. | |
| 4-Bromophenyl-phenylether | 101-55-3 | <11. | 11. | |
| Hexachlorobenzene | 118-74-1 | <11. | 11. | |
| Pentachlorophenol | 87-86-5 | <54. | 54. | |
| Phenanthrene | 85-01-8 | <11. | 11. | |
| Anthracene | 120-12-7 | <11. | 11. | |
| Carbazole | 86-74-8 | <11. | 11. | |
| Di-n-butylphthalate | 84-74-2 | <11. | 11. | |
| Fluoranthene | 206-44-0 | <11. | 11. | |
| Pyrene | 129-00-0 | <11. | 11. | |
| Butylbenzylphthalate | 85-68-7 | <11. | 11. | |
| 3,3'-Dichlorobenzidine | 91-94-1 | <22. | 22. | |
| Benzo (a) anthracene | 56-55-3 | <11. | 11. | |
| Chrysene | 218-01-9 | <11. | 11. | |
| bis (2-Ethylhexyl) phthalate | 117-81-7 | 3.6 | 11. | J |
| Di-n-octylphthalate | 117-84-0 | <11. | 11. | |
| Benzo (b) fluoranthene | 205-99-2 | <11. | 11. | |
| Benzo (k) fluoranthene | 207-08-9 | <11. | 11. | |
| Benzo (a) pyrene | 50-32-8 | <11. | 11. | |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | <11. | 11. | |
| Dibenz (a, h) anthracene | 53-70-3 | <11. | 11. | |
| Benzo (g, h, i) perylene | 191-24-2 | <11. | 11. | |

LOCKHEED ANALYTICAL SERVICES

149167

SEMI-VOLATILE ORGANICS BY GC/MS
TENTATIVELY IDENTIFIED COMPOUNDS
8270 SEMI-VOLATILES

| | | | |
|-------------------|---------------------------|-----------------------|---------------|
| Client Sample ID: | 85350 | LAL Sample ID: | L7141-45 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 10-JUN-96 | Date Extracted: | 04-JUN-96 |
| Matrix: | Water | Analytical Batch ID: | 061096-8270-K |
| QC Group: | 8270 SEMI-VOLATILES_37734 | Analytical Dilution: | 1 |
| | | Preparation Dilution: | 1.08 |

Number of TICs found: 2 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|------|------------|----|
| 1 | 108-88-3 | Toluene | 1.32 | 5. | JN |
| 2 | | Unknown | 9.43 | 4. | J |
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LOCKHEED ANALYTICAL SERVICES

149163

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

| | | | |
|-------------------|-----------|-----------------------|----------------|
| Client Sample ID: | 85350 | LAL Sample ID: | L7141-7 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 04-JUN-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 060496-8260-E1 |
| | | Preparation Dilution: | 1.00 |

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
| 1 | | | | | |
| 2 | | | | | |
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LOCKHEED ANALYTICAL SERVICES

SEMI-VOLATILE ORGANICS BY GC/MS
8270 SEMI-VOLATILES

| | | | |
|-------------------|---------------------------|-----------------------|---------------|
| Client Sample ID: | 85350 | LAL Sample ID: | L7141-45 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 10-JUN-96 | Date Extracted: | 04-JUN-96 |
| Matrix: | Water | Analytical Batch ID: | 061096-8270-K |
| QC Group: | 8270 SEMI-VOLATILES_37734 | Analytical Dilution: | 1 |
| | | Preparation Dilution: | 1.08 |

| SURROGATE | RECOVERY | QC Limits |
|----------------------|----------|-----------|
| 2-Fluorophenol | 48% | 31-110 |
| Phenol-d5 | 45% | 27-111 |
| Nitrobenzene-d5 | 79% | 40-114 |
| 2-Fluorobiphenyl | 68% | 41-111 |
| 2,4,6-Tribromophenol | 74% | 34-147 |
| Terphenyl-d14 | 83% | 33-141 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER |
|------------------------------|----------|----------------|---|-------------------|
| Phenol | 108-95-2 | <11. | 11. | |
| bis(2-Chloroethyl) ether | 111-44-4 | <11. | 11. | |
| 2-Chlorophenol | 95-57-8 | <11. | 11. | |
| 1,3-Dichlorobenzene | 541-73-1 | <11. | 11. | |
| 1,4-Dichlorobenzene | 106-46-7 | <11. | 11. | |
| Benzyl alcohol | 100-51-6 | <22. | 22. | |
| 1,2-Dichlorobenzene | 95-50-1 | <11. | 11. | |
| 2-Methylphenol | 95-48-7 | <11. | 11. | |
| bis(2-chloroisopropyl) ether | 108-60-1 | <11. | 11. | |
| 4-Methylphenol | 106-44-5 | <11. | 11. | |
| N-Nitroso-di-n-propylamine | 621-64-7 | <11. | 11. | |
| Hexachloroethane | 67-72-1 | <11. | 11. | |
| Nitrobenzene | 98-95-3 | <11. | 11. | |
| Isophorone | 78-59-1 | <11. | 11. | |
| 2-Nitrophenol | 88-75-5 | <11. | 11. | |
| 2,4-Dimethylphenol | 105-67-9 | <11. | 11. | |
| Benzoic acid | 65-85-0 | <54. | 54. | |
| bis(2-Chloroethoxy)methane | 111-91-1 | <11. | 11. | |
| 2,4-Dichlorophenol | 120-83-2 | <11. | 11. | |
| 1,2,4-Trichlorobenzene | 120-82-1 | <11. | 11. | |
| Naphthalene | 91-20-3 | <11. | 11. | |
| 4-Chloroaniline | 106-47-8 | <22. | 22. | |
| Hexachlorobutadiene | 87-68-3 | <11. | 11. | |
| 4-Chloro-3-methylphenol | 59-50-7 | <22. | 22. | |
| 2-Methylnaphthalene | 91-57-6 | <11. | 11. | |
| Hexachlorocyclopentadiene | 77-47-4 | <11. | 11. | |
| 2,4,6-Trichlorophenol | 88-06-2 | <11. | 11. | |
| 2,4,5-Trichlorophenol | 95-95-4 | <11. | 11. | |
| 2-Chloronaphthalene | 91-58-7 | <11. | 11. | |
| 2-Nitroaniline | 88-74-4 | <54. | 54. | |
| Dimethylphthalate | 131-11-3 | <11. | 11. | |
| Acenaphthylene | 208-96-8 | <11. | 11. | |
| 2,6-Dinitrotoluene | 606-20-2 | <11. | 11. | |
| 3-Nitroaniline | 99-09-2 | <54. | 54. | |
| Acenaphthene | 83-32-9 | <11. | 11. | |
| 2,4-Dinitrophenol | 51-28-5 | <54. | 54. | |
| 4-Nitrophenol | 100-02-7 | <54. | 54. | |

LOCKHEED ANALYTICAL SERVICES

140171

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | |
|---------------------------|-------------------------------------|
| Client Sample ID: 85350 | LAL Sample ID: L7141-7 |
| Date Collected: 29-MAY-96 | Date Received: 31-MAY-96 |
| Date Analyzed: 04-JUN-96 | Analytical Dilution: 1 |
| Matrix: Water | Analytical Batch ID: 060496-8260-E1 |
| | Preparation Dilution: 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 113% | 84-122 |
| Toluene-d8 | 115% | 87-117 |
| Bromofluorobenzene | 114% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(s) |
|---------------------------|-------------|----------------|---|----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | 21. | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | 8.3 | 10. | BJ |
| 1,1-Dichloroethene | 75-35-4 | 16. | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | 12. | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | 55. | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | 2.4 | 5.0 | J |
| Trichloroethene | 79-01-6 | 11. | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | 1.4 | 5.0 | J |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | 12. | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

140172

LOCKHEED ANALYTICAL SERVICES

TOTAL PETROLEUM HYDROCARBONS (TPH)
8015M - TPH

| | | | |
|-------------------|-----------|-----------------------|-------------------|
| Client Sample ID: | 85350 | LAL Sample ID: | L7141-44 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 06-JUN-96 | Analytical Batch ID: | 052896-8015-L-6 |
| Date Extracted: | 04-JUN-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.1 |
| | | QC Group: | 8015M - TPH_37733 |

| SURROGATE | RECOVERY | QC Limits |
|---------------------|----------|-----------|
| DI-N-OCTYLPHTHALATE | 179% * | 56-166 |

| CONSTITUENT | CAS NO. | RESULT mg/L | PRACTICAL QUANTITATION LIMIT mg/L | DATA QUALIFIER(S) |
|-------------|---------|----------------|---|----------------------|
| C7-C12 | | <1.1 | 1.1 | |
| C12-C24 | | <1.1 | 1.1 | |

140174

SS009 HP2 SAMPLE RESULTS

LOCKHEED ANALYTICAL SERVICES

140175

SEMI-VOLATILE ORGANICS BY GC/MS
8270 SEMI-VOLATILES

| | | | |
|-------------------|---------------------------|-----------------------|---------------|
| Client Sample ID: | 85348 | LAL Sample ID: | L7141-31 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 10-JUN-96 | Date Extracted: | 04-JUN-96 |
| Matrix: | Water | Analytical Batch ID: | 061096-8270-K |
| QC Group: | 8270 SEMI-VOLATILES_37734 | Analytical Dilution: | 1 |
| | | Preparation Dilution: | 1.16 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(S) |
|----------------------------|-----------|----------------|---|----------------------|
| Dibenzofuran | 132-64-9 | <12. | 12. | |
| 2,4-Dinitrotoluene | 121-14-2 | <12. | 12. | |
| Diethylphthalate | 84-66-2 | <12. | 12. | |
| 4-Chlorophenyl-phenylether | 7005-72-3 | <12. | 12. | |
| Fluorene | 86-73-7 | <12. | 12. | |
| 4-Nitroaniline | 100-01-6 | <23. | 23. | |
| 4,6-Dinitro-2-methylphenol | 534-52-1 | <58. | 58. | |
| N-Nitrosodiphenylamine (1) | 86-30-6 | <12. | 12. | |
| 4-Bromophenyl-phenylether | 101-55-3 | <12. | 12. | |
| Hexachlorobenzene | 118-74-1 | <12. | 12. | |
| Pentachlorophenol | 87-86-5 | <58. | 58. | |
| Phenanthrene | 85-01-8 | <12. | 12. | |
| Anthracene | 120-12-7 | <12. | 12. | |
| Carbazole | 86-74-8 | <12. | 12. | |
| Di-n-butylphthalate | 84-74-2 | <12. | 12. | |
| Fluoranthene | 206-44-0 | <12. | 12. | |
| Pyrene | 129-00-0 | <12. | 12. | |
| Butylbenzylphthalate | 85-68-7 | <12. | 12. | |
| 3,3'-Dichlorobenzidine | 91-94-1 | <23. | 23. | |
| Benzo(a)anthracene | 56-55-3 | <12. | 12. | |
| Chrysene | 218-01-9 | <12. | 12. | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | <12. | 12. | |
| Di-n-octylphthalate | 117-84-0 | <12. | 12. | |
| Benzo(b)fluoranthene | 205-99-2 | <12. | 12. | |
| Benzo(k)fluoranthene | 207-08-9 | <12. | 12. | |
| Benzo(a)pyrene | 50-32-8 | 1.3 | 12. | J |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | <12. | 12. | |
| Dibenz(a,h)anthracene | 53-70-3 | <12. | 12. | |
| Benzo(g,h,i)perylene | 191-24-2 | <12. | 12. | |

000080

LOCKHEED ANALYTICAL SERVICES

140176

ORGANOCHLORINE PCBS
8080 PCBS ONLY

| | | | |
|-------------------|-----------|-----------------------|----------------------|
| Client Sample ID: | 85348 | LAL Sample ID: | L7141-35 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 07-JUN-96 | Analytical Batch ID: | 060696-8080-J-1 |
| Date Extracted: | 04-JUN-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.1 |
| | | QC Group: | 8080 PCBS ONLY_37714 |

| SURROGATE | RECOVERY | QC Limits |
|-----------|----------|-----------|
| TCMX | 39% | 21-110 |
| DCB | 19% * | 36-126 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(S) |
|-------------|------------|----------------|---|----------------------|
| PCB-1016 | 12674-11-2 | <1.1 | 1.1 | |
| PCB-1221 | 11104-28-2 | <2.2 | 2.2 | |
| PCB-1232 | 11141-16-5 | <1.1 | 1.1 | |
| PCB-1242 | 53469-21-9 | <1.1 | 1.1 | |
| PCB-1248 | 12672-29-6 | <1.1 | 1.1 | |
| PCB-1254 | 11097-69-1 | <1.1 | 1.1 | |
| PCB-1260 | 11096-82-5 | <1.1 | 1.1 | |

000242

LOCKHEED ANALYTICAL SERVICES

140177

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

| | | | |
|-------------------|-----------|-----------------------|----------------|
| Client Sample ID: | 85348 | LAL Sample ID: | L7141-1 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 04-JUN-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 060496-8260-E1 |
| | | Preparation Dilution: | 1.00 |

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT. | EST. CONC. | Q |
|----|------------|---------------|-----|------------|---|
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000002

LOCKHEED ANALYTICAL SERVICES

140178

SEMI-VOLATILE ORGANICS BY GC/MS
8270 SEMI-VOLATILES

| | | | |
|-------------------|---------------------------|-----------------------|---------------|
| Client Sample ID: | 85348 | LAL Sample ID: | L7141-31 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 10-JUN-96 | Date Extracted: | 04-JUN-96 |
| Matrix: | Water | Analytical Batch ID: | 061096-8270-K |
| QC Group: | 8270 SEMI-VOLATILES_37734 | Analytical Dilution: | 1 |
| | | Preparation Dilution: | 1.16 |

| SURROGATE | RECOVERY | QC Limits |
|----------------------|----------|-----------|
| 2-Fluorophenol | 9.1% * | 31-110 |
| Phenol-d5 | 20% * | 27-111 |
| Nitrobenzene-d5 | 45% | 40-114 |
| 2-Fluorobiphenyl | 44% | 41-111 |
| 2,4,6-Tribromophenol | 37% | 34-147 |
| Terphenyl-d14 | 56% | 33-141 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(S) |
|------------------------------|----------|----------------|---|----------------------|
| Phenol | 108-95-2 | <12. | 12. | |
| bis(2-Chloroethyl) ether | 111-44-4 | <12. | 12. | |
| 2-Chlorophenol | 95-57-8 | <12. | 12. | |
| 1,3-Dichlorobenzene | 541-73-1 | <12. | 12. | |
| 1,4-Dichlorobenzene | 106-46-7 | <12. | 12. | |
| Benzyl alcohol | 100-51-6 | <23. | 23. | |
| 1,2-Dichlorobenzene | 95-50-1 | <12. | 12. | |
| 2-Methylphenol | 95-48-7 | <12. | 12. | |
| bis(2-chloroisopropyl) ether | 108-60-1 | <12. | 12. | |
| 4-Methylphenol | 106-44-5 | <12. | 12. | |
| N-Nitroso-di-n-propylamine | 621-64-7 | <12. | 12. | |
| Hexachloroethane | 67-72-1 | <12. | 12. | |
| Nitrobenzene | 98-95-3 | <12. | 12. | |
| Isophorone | 78-59-1 | <12. | 12. | |
| 2-Nitrophenol | 88-75-5 | <12. | 12. | |
| 2,4-Dimethylphenol | 105-67-9 | <12. | 12. | |
| Benzoic acid | 65-85-0 | <58. | 58. | |
| bis(2-Chloroethoxy) methane | 111-91-1 | <12. | 12. | |
| 2,4-Dichlorophenol | 120-83-2 | <12. | 12. | |
| 1,2,4-Trichlorobenzene | 120-82-1 | <12. | 12. | |
| Naphthalene | 91-20-3 | <12. | 12. | |
| 4-Chloroaniline | 106-47-8 | <23. | 23. | |
| Hexachlorobutadiene | 87-68-3 | <12. | 12. | |
| 4-Chloro-3-methylphenol | 59-50-7 | <23. | 23. | |
| 2-Methylnaphthalene | 91-57-6 | <12. | 12. | |
| Hexachlorocyclopentadiene | 77-47-4 | <12. | 12. | |
| 2,4,6-Trichlorophenol | 88-06-2 | <12. | 12. | |
| 2,4,5-Trichlorophenol | 95-95-4 | <12. | 12. | |
| 2-Chloronaphthalene | 91-58-7 | <12. | 12. | |
| 2-Nitroaniline | 88-74-4 | <58. | 58. | |
| Dimethylphthalate | 131-11-3 | <12. | 12. | |
| Acenaphthylene | 208-96-8 | <12. | 12. | |
| 2,6-Dinitrotoluene | 606-20-2 | <12. | 12. | |
| 3-Nitroaniline | 99-09-2 | <58. | 58. | |
| Acenaphthene | 83-32-9 | <12. | 12. | |
| 2,4-Dinitrophenol | 51-28-5 | <58. | 58. | |
| 4-Nitrophenol | 100-02-7 | <58. | 58. | |

000079

LOCKHEED ANALYTICAL SERVICES

140180

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | |
|---------------------------|-------------------------------------|
| Client Sample ID: 85348 | LAL Sample ID: L7141-1 |
| Date Collected: 29-MAY-96 | Date Received: 31-MAY-96 |
| Date Analyzed: 04-JUN-96 | Analytical Dilution: 1 |
| Matrix: Water | Analytical Batch ID: 060496-8260-E1 |
| | Preparation Dilution: 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 113% | 84-122 |
| Toluene-d8 | 114% | 87-117 |
| Bromofluorobenzene | 104% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA | |
|---------------------------|-------------|----------------|---|-----------|-----|
| | | | | QUALIFIER | (s) |
| Chloromethane | 74-87-3 | <5.0 | 5.0 | | |
| Vinyl Chloride | 75-01-4 | 4.6 | 5.0 | J | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | | |
| Acetone | 67-64-1 | 5.7 | 10. | BJ | |
| 1,1-Dichloroethene | 75-35-4 | 17. | 5.0 | | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | | |
| 1,1-Dichloroethane | 75-34-3 | 8.4 | 5.0 | | |
| 2-Butanone | 78-93-3 | <10. | 10. | | |
| cis-1,2-Dichloroethene | 156-59-2 | 19. | 5.0 | | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | | |
| Benzene | 71-43-2 | <5.0 | 5.0 | | |
| Trichloroethene | 79-01-6 | 8.8 | 5.0 | | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | | |
| Toluene | 108-88-3 | 1.6 | 5.0 | J | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | | |
| 2-Hexanone | 591-78-6 | <10. | 10. | | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | | |
| Tetrachloroethene | 127-18-4 | 33. | 5.0 | | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | | |
| Styrene | 100-42-5 | <5.0 | 5.0 | | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | | |

000001

149131

LOCKHEED ANALYTICAL SERVICESTOTAL PETROLEUM HYDROCARBONS (TPH)
8015M - TPH

| | | | |
|-------------------|-----------|-----------------------|-------------------|
| Client Sample ID: | 85348 | LAL Sample ID: | L7141-26 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 06-JUN-96 | Analytical Batch ID: | 052896-8015-L-6 |
| Date Extracted: | 04-JUN-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.1 |
| | | QC Group: | 8015M - TPH_37733 |

| SURROGATE | RECOVERY | QC Limits |
|---------------------|----------|-----------|
| DI-N-OCTYLPHTHALATE | 128% | 56-166 |

| CONSTITUENT | CAS NO. | RESULT mg/L | PRACTICAL QUANTITATION LIMIT mg/L | DATA QUALIFIER (s) |
|-------------|---------|----------------|---|-----------------------|
| C7-C12 | | <1.1 | 1.1 | |
| C12-C24 | | <1.1 | 1.1 | |

000316

140183

SS009 HP1 SAMPLE RESULTS

LOCKHEED ANALYTICAL SERVICES

140184

SEMI-VOLATILE ORGANICS BY GC/MS
TENTATIVELY IDENTIFIED COMPOUNDS
8270 SEMI-VOLATILES

| | | | |
|-------------------|---------------------------|-----------------------|---------------|
| Client Sample ID: | SS006MW1-N06 | LAL Sample ID: | L7396-15 |
| Date Collected: | 09-JUL-96 | Date Received: | 11-JUL-96 |
| Date Analyzed: | 22-JUL-96 | Date Extracted: | 14-JUL-96 |
| Matrix: | Water | Analytical Batch ID: | 072296-8270-L |
| QC Group: | 8270 SEMI-VOLATILES_38886 | Analytical Dilution: | 1 |
| | | Preparation Dilution: | 1.03 |

Number of TICs found: 1 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|-------|------------|---|
| 1 | | Unknown | 16.78 | 30 | J |
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000146

LOCKHEED ANALYTICAL SERVICES

140185

SEMI-VOLATILE ORGANICS BY GC/MS
8270 SEMI-VOLATILES

| | | | |
|-------------------|---------------------------|-----------------------|---------------|
| Client Sample ID: | SS006MW1-N06 | LAL Sample ID: | L7396-15 |
| Date Collected: | 09-JUL-96 | Date Received: | 11-JUL-96 |
| Date Analyzed: | 22-JUL-96 | Date Extracted: | 14-JUL-96 |
| Matrix: | Water | Analytical Batch ID: | 072296-8270-L |
| QC Group: | 8270 SEMI-VOLATILES_38886 | Analytical Dilution: | 1 |
| | | Preparation Dilution: | 1.03 |

| SURROGATE | RECOVERY | QC Limits |
|----------------------|----------|-----------|
| 2-Fluorophenol | 56% | 31-110 |
| Phenol-d5 | 72% | 27-111 |
| Nitrobenzene-d5 | 67% | 40-114 |
| 2-Fluorobiphenyl | 76% | 41-111 |
| 2,4,6-Tribromophenol | 95% | 34-147 |
| Terphenyl-d14 | 65% | 33-141 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(S) |
|------------------------------|----------|----------------|---|----------------------|
| Phenol | 108-95-2 | <10. | 10. | |
| bis(2-Chloroethyl) ether | 111-44-4 | <10. | 10. | |
| 2-Chlorophenol | 95-57-8 | <10. | 10. | |
| 1,3-Dichlorobenzene | 541-73-1 | <10. | 10. | |
| 1,4-Dichlorobenzene | 106-46-7 | <10. | 10. | |
| Benzyl alcohol | 100-51-6 | <21. | 21. | |
| 1,2-Dichlorobenzene | 95-50-1 | <10. | 10. | |
| 2-Methylphenol | 95-48-7 | <10. | 10. | |
| bis(2-chloroisopropyl) ether | 108-60-1 | <10. | 10. | |
| 4-Methylphenol | 106-44-5 | <10. | 10. | |
| N-Nitroso-di-n-propylamine | 621-64-7 | <10. | 10. | |
| Hexachloroethane | 67-72-1 | <10. | 10. | |
| Nitrobenzene | 98-95-3 | <10. | 10. | |
| Isophorone | 78-59-1 | <10. | 10. | |
| 2-Nitrophenol | 88-75-5 | <10. | 10. | |
| 2,4-Dimethylphenol | 105-67-9 | <10. | 10. | |
| Benzoic acid | 65-85-0 | <52. | 52. | |
| bis(2-Chloroethoxy) methane | 111-91-1 | <10. | 10. | |
| 2,4-Dichlorophenol | 120-83-2 | <10. | 10. | |
| 1,2,4-Trichlorobenzene | 120-82-1 | <10. | 10. | |
| Naphthalene | 91-20-3 | <10. | 10. | |
| 4-Chloroaniline | 106-47-8 | <21. | 21. | |
| Hexachlorobutadiene | 87-68-3 | <10. | 10. | |
| 4-Chloro-3-methylphenol | 59-50-7 | <21. | 21. | |
| 2-Methylnaphthalene | 91-57-6 | <10. | 10. | |
| Hexachlorocyclopentadiene | 77-47-4 | <10. | 10. | |
| 2,4,6-Trichlorophenol | 88-06-2 | <10. | 10. | |
| 2,4,5-Trichlorophenol | 95-95-4 | <10. | 10. | |
| 2-Chloronaphthalene | 91-58-7 | <10. | 10. | |
| 2-Nitroaniline | 88-74-4 | <52. | 52. | |
| Dimethylphthalate | 131-11-3 | <10. | 10. | |
| Acenaphthylene | 208-96-8 | <10. | 10. | |
| 2,6-Dinitrotoluene | 606-20-2 | <10. | 10. | |
| 3-Nitroaniline | 99-09-2 | <52. | 52. | |
| Acenaphthene | 83-32-9 | <10. | 10. | |
| 2,4-Dinitrophenol | 51-28-5 | <52. | 52. | |
| 4-Nitrophenol | 100-02-7 | <52. | 52. | |

000144

LOCKHEED ANALYTICAL SERVICES

140186

SEMI-VOLATILE ORGANICS BY GC/MS
8270 SEMI-VOLATILES

| | | | |
|-------------------|---------------------------|-----------------------|---------------|
| Client Sample ID: | SS006MW1-N06 | LAL Sample ID: | L7396-15 |
| Date Collected: | 09-JUL-96 | Date Received: | 11-JUL-96 |
| Date Analyzed: | 22-JUL-96 | Date Extracted: | 14-JUL-96 |
| Matrix: | Water | Analytical Batch ID: | 072296-8270-L |
| QC Group: | 8270 SEMI-VOLATILES_38886 | Analytical Dilution: | 1 |
| | | Preparation Dilution: | 1.03 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER |
|----------------------------|-----------|----------------|---|-------------------|
| Dibenzofuran | 132-64-9 | <10. | 10. | |
| 2,4-Dinitrotoluene | 121-14-2 | <10. | 10. | |
| Diethylphthalate | 84-66-2 | <10. | 10. | |
| 4-Chlorophenyl-phenylether | 7005-72-3 | <10. | 10. | |
| Fluorene | 86-73-7 | <10. | 10. | |
| 4-Nitroaniline | 100-01-6 | <21. | 21. | |
| 4,6-Dinitro-2-methylphenol | 534-52-1 | <52. | 52. | |
| N-Nitrosodiphenylamine (1) | 86-30-6 | <10. | 10. | |
| 4-Bromophenyl-phenylether | 101-55-3 | <10. | 10. | |
| Hexachlorobenzene | 118-74-1 | <10. | 10. | |
| Pentachlorophenol | 87-86-5 | <52. | 52. | |
| Phenanthrene | 85-01-8 | <10. | 10. | |
| Anthracene | 120-12-7 | <10. | 10. | |
| Carbazole | 86-74-8 | <10. | 10. | |
| Di-n-butylphthalate | 84-74-2 | <10. | 10. | |
| Fluoranthene | 206-44-0 | <10. | 10. | |
| Pyrene | 129-00-0 | <10. | 10. | |
| Butylbenzylphthalate | 85-68-7 | <10. | 10. | |
| 3,3'-Dichlorobenzidine | 91-94-1 | <21. | 21. | |
| Benzo (a) anthracene | 56-55-3 | <10. | 10. | |
| Chrysene | 218-01-9 | <10. | 10. | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | 10. | 10. | J |
| Di-n-octylphthalate | 117-84-0 | <10. | 10. | |
| Benzo (b) fluoranthene | 205-99-2 | <10. | 10. | |
| Benzo (k) fluoranthene | 207-08-9 | <10. | 10. | |
| Benzo (a) pyrene | 50-32-8 | <10. | 10. | |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | <10. | 10. | |
| Dibenz (a,h) anthracene | 53-70-3 | <10. | 10. | |
| Benzo (g,h,i) perylene | 191-24-2 | <10. | 10. | |

000145

LOCKHEED ANALYTICAL SERVICES

140187

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | | | |
|-------------------|--------------|-----------------------|----------------|
| Client Sample ID: | SS006MW1-N06 | LAL Sample ID: | L7396-3 |
| Date Collected: | 09-JUL-96 | Date Received: | 11-JUL-96 |
| Date Analyzed: | 16-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071696-8260-E1 |
| | | Preparation Dilution: | 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 99% | 84-122 |
| Toluene-d8 | 114% | 87-117 |
| Bromofluorobenzene | 113% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(s) |
|---------------------------|-------------|----------------|---|----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | 18. | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | <10. | 10. | |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | 6.8 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | 3.6 | 5.0 | J |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | 74. | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | 44. | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000056

LOCKHEED ANALYTICAL SERVICES

140183

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

| | | | |
|-------------------|--------------|-----------------------|----------------|
| Client Sample ID: | SS006MW1-N06 | LAL Sample ID: | L7396-3 |
| Date Collected: | 09-JUL-96 | Date Received: | 11-JUL-96 |
| Date Analyzed: | 16-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071696-8260-E1 |
| | | Preparation Dilution: | 1.00 |

Number of TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|------|------------|----|
| 1 | | Unknown | 8.43 | 10 | JB |
| 2 | | | | | |
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000057

LOCKHEED ANALYTICAL SERVICES

140191

DETN. OF GAS. BY PURGE AND TRAP GC-FID
P&T GAS

| | | | |
|-------------------|--------------|-----------------------|------------------|
| Client Sample ID: | SS006MW1-N06 | LAL Sample ID: | L7396-5 |
| Date Collected: | 09-JUL-96 | Date Received: | 11-JUL-96 |
| Date Analyzed: | 16-JUL-96 | Analytical Batch ID: | 071596-PTGAS-M-2 |
| Date Extracted: | N/A | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |

| SURROGATE | RECOVERY | QC Limits |
|-----------|----------|-----------|
| TFT | 121% | 70-130 |
| BFB | 105% | 75-130 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTIFICATION LIMIT ug/L | DATA QUALIFIER(s) |
|-------------|-----------|----------------|---|----------------------|
| Gasoline | 8006-61-9 | <100 | 100 | |

LOCKHEED ANALYTICAL SERVICES

140192

TOTAL PETROLEUM HYDROCARBONS (TPH) 8015M - TPH

| | | | |
|-------------------|--------------|-----------------------|-------------------|
| Client Sample ID: | SS006MW1-N06 | LAL Sample ID: | L7396-21 |
| Date Collected: | 09-JUL-96 | Date Received: | 11-JUL-96 |
| Date Analyzed: | 22-JUL-96 | Analytical Batch ID: | 071996-8015-L-4 |
| Date Extracted: | 14-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |
| | | QC Group: | 8015M - TPH_38858 |

| SURROGATE | RECOVERY | QC Limits |
|---------------------|----------|-----------|
| DI-N-OCTYLPHTHALATE | 74% | 56-166 |

| CONSTITUENT | CAS NO. | RESULT mg/L | PRACTICAL QUANTITATION LIMIT mg/L | DATA QUALIFIER(S) |
|-------------|---------|----------------|---|----------------------|
| C12-C24 | | <1.0 | 1.0 | |

140193

SS006 MW1 SAMPLE RESULTS

LOCKHEED ANALYTICAL SERVICES

140194

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | | | |
|-------------------|---------------|-----------------------|----------------|
| Client Sample ID: | SS004MW3-FD01 | LAL Sample ID: | L7410-22 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 17-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071796-8260-E1 |
| | | Preparation Dilution: | 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 97% | 84-122 |
| Toluene-d8 | 110% | 87-117 |
| Bromofluorobenzene | 103% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(S) |
|---------------------------|-------------|----------------|---|----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | <10. | 10. | |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000023

LOCKHEED ANALYTICAL SERVICES

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

140195

Client Sample ID: SS004MW3-FD01
Date Collected: 10-JUL-96
Date Analyzed: 17-JUL-96
Matrix: Water

LAL Sample ID: L7410-22
Date Received: 12-JUL-96
Analytical Dilution: 1
Analytical Batch ID: 071796-8260-E1
Preparation Dilution: 1.00

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC | Q |
|----|------------|---------------|----|-----------|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
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000024

LOCKHEED ANALYTICAL SERVICES

140198

DETN. OF GAS. BY PURGE AND TRAP GC-FID
P&T GAS

| | | | |
|-------------------|---------------|-----------------------|------------------|
| Client Sample ID: | SS004MW3-FD01 | LAL Sample ID: | L7410-53 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 16-JUL-96 | Analytical Batch ID: | 071596-PTGAS-M-2 |
| Date Extracted: | N/A | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |

| SURROGATE | RECOVERY | QC Limits |
|-----------|----------|-----------|
| TFT | 96% | 70-130 |
| BFB | 104% | 75-130 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTIFICATION LIMIT ug/L | DATA QUALIFIER(S) |
|-------------|-----------|----------------|---|----------------------|
| Gasoline | 8006-61-9 | <100 | 100 | |

000568

LOCKHEED ANALYTICAL SERVICES

140199

TOTAL PETROLEUM HYDROCARBONS (TPH)
8015M - TPH

| | | | |
|-------------------|---------------|-----------------------|-------------------|
| Client Sample ID: | SS004MW3-FD01 | LAL Sample ID: | L7410-79 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 23-JUL-96 | Analytical Batch ID: | 071996-8015-L-5 |
| Date Extracted: | 14-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |
| | | QC Group: | 8015M - TPH_38858 |

| SURROGATE | RECOVERY | QC Limits |
|---------------------|----------|-----------|
| DI-N-OCTYLPHTHALATE | 86% | 56-166 |

| CONSTITUENT | CAS NO. | RESULT mg/L | PRACTICAL QUANTIFICATION LIMIT mg/L | DATA QUALIFIED (s) |
|-------------|---------|----------------|---|-----------------------|
| C12-C24 | | <1.0 | 1.0 | |

149290

SS004 MW3 DUPLICATE SAMPLE RESULTS

LOCKHEED ANALYTICAL SERVICES

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

140201

| | | | |
|-------------------|--------------|-----------------------|----------------|
| Client Sample ID: | SS004MW3-N05 | LAL Sample ID: | L7410-20 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 17-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071796-8260-E1 |
| | | Preparation Dilution: | 1.00 |

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
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000022

LOCKHEED ANALYTICAL SERVICES

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

140203

| | |
|--------------------------------|-------------------------------------|
| Client Sample ID: SS004MW3-N05 | LAL Sample ID: L7410-20 |
| Date Collected: 10-JUL-96 | Date Received: 12-JUL-96 |
| Date Analyzed: 17-JUL-96 | Analytical Dilution: 1 |
| Matrix: Water | Analytical Batch ID: 071796-8260-E1 |
| | Preparation Dilution: 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 96% | 84-122 |
| Toluene-d8 | 110% | 87-117 |
| Bromofluorobenzene | 102% | 83-118 |

| CONSTITUENT | CIS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIED |
|---------------------------|-------------|----------------|---|-------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | <10. | 10. | |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000021

LOCKHEED ANALYTICAL SERVICES

DETN. OF GAS. BY PURGE AND TRAP GC-FID
P&T GAS

| | | | |
|-------------------|--------------|-----------------------|------------------|
| Client Sample ID: | SS004MW3-N05 | LAL Sample ID: | L7410-51 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 16-JUL-96 | Analytical Batch ID: | 071596-PTGAS-M-2 |
| Date Extracted: | N/A | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |

| SURROGATE | RECOVERY | QC Limits |
|-----------|----------|-----------|
| TFT | 71% | 70-130 |
| BFB | 77% | 75-130 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTIFICATION LIMIT ug/L | DATA QUALIFIER(S) |
|-------------|-----------|----------------|---|----------------------|
| Gasoline | 8006-61-9 | <100 | 100 | |

000567

LOCKHEED ANALYTICAL SERVICES

149275

TOTAL PETROLEUM HYDROCARBONS (TPH) 8015M - TPH

| | | | |
|-------------------|--------------|-----------------------|-------------------|
| Client Sample ID: | SS004MW3-N05 | LAL Sample ID: | L7410-77 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 23-JUL-96 | Analytical Batch ID: | 071996-8015-L-5 |
| Date Extracted: | 14-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |
| | | QC Group: | 8015M - TPH_38858 |

| SURROGATE | RECOVERY | QC Limits |
|---------------------|----------|-----------|
| DI-N-OCTYLPHTHALATE | 54% * | 56-166 |

| CONSTITUENT | CAS NO. | RESULT mg/L | PRACTICAL QUANTITATION LIMIT mg/L | DATA QUALIFIER |
|-------------|---------|----------------|---|-------------------|
| C12-C24 | | <1.0 | 1.0 | |

140276

SS004 MW3 SAMPLE RESULTS

LOCKHEED ANALYTICAL SERVICES

149297

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | |
|--------------------------------|-------------------------------------|
| Client Sample ID: SS004MW2-N09 | LAL Sample ID: L7410-24 |
| Date Collected: 10-JUL-96 | Date Received: 12-JUL-96 |
| Date Analyzed: 17-JUL-96 | Analytical Dilution: 1 |
| Matrix: Water | Analytical Batch ID: 071796-8260-E1 |
| | Preparation Dilution: 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 94% | 84-122 |
| Toluene-d8 | 109% | 87-117 |
| Bromofluorobenzene | 110% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER (s) |
|---------------------------|-------------|----------------|---|-----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | 4.7 | 10. | J |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | 1.1 | 5.0 | J |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | 3.1 | 5.0 | J |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000025

LOCKHEED ANALYTICAL SERVICES

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

140298

Client Sample ID: SS004MW2-N09
Date Collected: 10-JUL-96
Date Analyzed: 17-JUL-96
Matrix: Water

LAL Sample ID: L7410-24
Date Received: 12-JUL-96
Analytical Dilution: 1
Analytical Batch ID: 071796-8260-B1
Preparation Dilution: 1.00

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
| 1 | | | | | |
| 2 | | | | | |
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000026

LOCKHEED ANALYTICAL SERVICES

DETN. OF GAS. BY PURGE AND TRAP GC-FID
P&T GAS

| | | | |
|-------------------|--------------|-----------------------|------------------|
| Client Sample ID: | SS004MW2-N09 | LAL Sample ID: | L7410-55 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 16-JUL-96 | Analytical Batch ID: | 071596-PTGAS-M-2 |
| Date Extracted: | N/A | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |

| SURROGATE | RECOVERY | QC Limits |
|-----------|----------|-----------|
| TFT | 95% | 70-130 |
| BFB | 103% | 75-130 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER (S) |
|-------------|-----------|----------------|---|-----------------------|
| Gasoline | 8006-61-9 | <100 | 100 | |

LOCKHEED ANALYTICAL SERVICES

140212

TOTAL PETROLEUM HYDROCARBONS (TPH)
8015M - TPH

| | | | |
|-------------------|--------------|-----------------------|-------------------|
| Client Sample ID: | SS004MW2-N09 | LAL Sample ID: | L7410-81 |
| Date Collected: | 10-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 23-JUL-96 | Analytical Batch ID: | 071996-8015-L-5 |
| Date Extracted: | 14-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.5 |
| | | QC Group: | 8015M - TPH_38858 |

| SURROGATE | RECOVERY | QC Limits |
|---------------------|----------|-----------|
| DI-N-OCTYLPHTHALATE | 57% | 56-166 |

| CONSTITUENT | CAS NO. | RESULT mg/L | PRACTICAL QUANTITATION LIMIT mg/L | DATA QUALIFIER |
|-------------|---------|----------------|---|-------------------|
| C12-C24 | | <1.5 | 1.5 | |

140213

SS004 MW2 SAMPLE RESULTS

LOCKHEED ANALYTICAL SERVICES

140214

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

Client Sample ID: SS004MW1-N04
Date Collected: 09-JUL-96
Date Analyzed: 16-JUL-96
Matrix: Water

LAL Sample ID: L7410-3
Date Received: 12-JUL-96
Analytical Dilution: 1
Analytical Batch ID: 071696-8260-E1
Preparation Dilution: 1.00

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 97% | 84-122 |
| Toluene-d8 | 104% | 87-117 |
| Bromofluorobenzene | 105% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTIFICATION LIMIT ug/L | DATA QUALIFIER(S) |
|---------------------------|-------------|----------------|---|----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | <10. | 10. | |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | 4.2 | 5.0 | J |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000003

LOCKHEED ANALYTICAL SERVICES

140215

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

| | | | |
|-------------------|--------------|-----------------------|----------------|
| Client Sample ID: | SS004MW1-N04 | LAL Sample ID: | L7410-3 |
| Date Collected: | 09-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 16-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071696-8260-E1 |
| | | Preparation Dilution: | 1.00 |

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
| 1 | | | | | |
| 2 | | | | | |
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000004

LOCKHEED ANALYTICAL SERVICES

149218

DETN. OF GAS. BY PURGE AND TRAP GC-FID
P&T GAS

| | | | |
|-------------------|--------------|-----------------------|------------------|
| Client Sample ID: | SS004MW1-N04 | LAL Sample ID: | L7410-40 |
| Date Collected: | 09-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 15-JUL-96 | Analytical Batch ID: | 071596-PTGAS-M-1 |
| Date Extracted: | N/A | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |

| SURROGATE | RECOVERY | QC Limits |
|-----------|----------|-----------|
| TFT | 99% | 70-130 |
| BFB | 106% | 75-130 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER (s) |
|-------------|-----------|----------------|---|-----------------------|
| Gasoline | 8006-61-9 | <100 | 100 | |

000561

LOCKHEED ANALYTICAL SERVICES

140219

TOTAL PETROLEUM HYDROCARBONS (TPH) 8015M - TPH

| | | | |
|-------------------|--------------|-----------------------|-------------------|
| Client Sample ID: | SS004MW1-N04 | LAL Sample ID: | L7410-65 |
| Date Collected: | 09-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 22-JUL-96 | Analytical Batch ID: | 071996-8015-L-4 |
| Date Extracted: | 14-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |
| | | QC Group: | 8015M - TPH_38858 |

| SURROGATE | RECOVERY | QC Limits |
|---------------------|----------|-----------|
| DI-N-OCTYLPHTHALATE | 83% | 56-166 |

| CONSTITUENT | CAS NO. | RESULT mg/L | PRACTICAL QUANTITATION LIMIT mg/L | DATA QUALIFIED |
|-------------|---------|----------------|---|-------------------|
| C12-C24 | | <1.0 | 1.0 | |

149220

SS004 MW1 SAMPLE RESULTS

149221

LOCKHEED ANALYTICAL SERVICES

TOTAL PETROLEUM HYDROCARBONS (TPH)
8015M - TPH

| | | | |
|-------------------|-----------|-----------------------|-------------------|
| Client Sample ID: | 85354 | LAL Sample ID: | L7141-50 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 06-JUN-96 | Analytical Batch ID: | 052896-8015-L-6 |
| Date Extracted: | 04-JUN-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.1 |
| | | QC Group: | 8015M - TPH_37733 |

| SURROGATE | RECOVERY | QC Limits |
|---------------------|----------|-----------|
| DI-N-OCTYLPHTHALATE | 219% * | 56-166 |

| CONSTITUENT | CAS NO. | RESULT mg/L | PRACTICAL QUANTITATION LIMIT mg/L | DATA QUALIFIER (s) |
|-------------|---------|----------------|---|-----------------------|
| C7-C12 | | <1.1 | 1.1 | |
| C12-C24 | | <1.1 | 1.1 | |

LOCKHEED ANALYTICAL SERVICES

140224

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | | | |
|-------------------|-----------|-----------------------|----------------|
| Client Sample ID: | 85354 | LAL Sample ID: | L7141-13 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 04-JUN-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 060496-8260-E1 |
| | | Preparation Dilution: | 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 113% | 84-122 |
| Toluene-d8 | 115% | 87-117 |
| Bromofluorobenzene | 114% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL | DATA |
|---------------------------|-------------|----------------|----------------------------|--------------|
| | | | QUANTITATION LIMIT ug/L | QUALIFIER(s) |
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | <10. | 10. | |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | 20. | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

LOCKHEED ANALYTICAL SERVICES

140225

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

| | | | |
|-------------------|-----------|-----------------------|----------------|
| Client Sample ID: | 85354 | LAL Sample ID: | L7141-13 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 04-JUN-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 060496-8260-E1 |
| | | Preparation Dilution: | 1.00 |

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
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LOCKHEED ANALYTICAL SERVICES

140226

SEMI-VOLATILE ORGANICS BY GC/MS
8270 SEMI-VOLATILES

| | | | |
|-------------------|---------------------------|-----------------------|---------------|
| Client Sample ID: | 85354 | LAL Sample ID: | L7141-51 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 10-JUN-96 | Date Extracted: | 04-JUN-96 |
| Matrix: | Water | Analytical Batch ID: | 061096-8270-K |
| QC Group: | 8270 SEMI-VOLATILES_37734 | Analytical Dilution: | 1 |
| | | Preparation Dilution: | 1.11 |

| SURROGATE | RECOVERY | QC Limits |
|----------------------|----------|-----------|
| 2-Fluorophenol | 43% | 31-110 |
| Phenol-d5 | 33% | 27-111 |
| Nitrobenzene-d5 | 52% | 40-114 |
| 2-Fluorobiphenyl | 57% | 41-111 |
| 2,4,6-Tribromophenol | 88% | 34-147 |
| Terphenyl-d14 | 44% | 33-141 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER |
|------------------------------|----------|----------------|---|-------------------|
| Phenol | 108-95-2 | <11. | 11. | |
| bis(2-Chloroethyl) ether | 111-44-4 | <11. | 11. | |
| 2-Chlorophenol | 95-57-8 | <11. | 11. | |
| 1,3-Dichlorobenzene | 541-73-1 | <11. | 11. | |
| 1,4-Dichlorobenzene | 106-46-7 | <11. | 11. | |
| Benzyl alcohol | 100-51-6 | <22. | 22. | |
| 1,2-Dichlorobenzene | 95-50-1 | <11. | 11. | |
| 2-Methylphenol | 95-48-7 | <11. | 11. | |
| bis(2-chloroisopropyl) ether | 108-60-1 | <11. | 11. | |
| 4-Methylphenol | 106-44-5 | <11. | 11. | |
| N-Nitroso-di-n-propylamine | 621-64-7 | <11. | 11. | |
| Hexachloroethane | 67-72-1 | <11. | 11. | |
| Nitrobenzene | 98-95-3 | <11. | 11. | |
| Isophorone | 78-59-1 | <11. | 11. | |
| 2-Nitrophenol | 88-75-5 | <11. | 11. | |
| 2,4-Dimethylphenol | 105-67-9 | <11. | 11. | |
| Benzoic acid | 65-85-0 | <56. | 56. | |
| bis(2-Chloroethoxy)methane | 111-91-1 | <11. | 11. | |
| 2,4-Dichlorophenol | 120-83-2 | <11. | 11. | |
| 1,2,4-Trichlorobenzene | 120-82-1 | <11. | 11. | |
| Naphthalene | 91-20-3 | <11. | 11. | |
| 4-Chloroaniline | 106-47-8 | <22. | 22. | |
| Hexachlorobutadiene | 87-68-3 | <11. | 11. | |
| 4-Chloro-3-methylphenol | 59-50-7 | <22. | 22. | |
| 2-Methylnaphthalene | 91-57-6 | <11. | 11. | |
| Hexachlorocyclopentadiene | 77-47-4 | <11. | 11. | |
| 2,4,6-Trichlorophenol | 88-06-2 | <11. | 11. | |
| 2,4,5-Trichlorophenol | 95-95-4 | <11. | 11. | |
| 2-Chloronaphthalene | 91-58-7 | <11. | 11. | |
| 2-Nitroaniline | 88-74-4 | <56. | 56. | |
| Dimethylphthalate | 131-11-3 | <11. | 11. | |
| Acenaphthylene | 208-96-8 | <11. | 11. | |
| 2,6-Dinitrotoluene | 606-20-2 | <11. | 11. | |
| 3-Nitroaniline | 99-09-2 | <56. | 56. | |
| Acenaphthene | 83-32-9 | <11. | 11. | |
| 2,4-Dinitrophenol | 51-28-5 | <56. | 56. | |
| 4-Nitrophenol | 100-02-7 | <56. | 56. | |

LOCKHEED ANALYTICAL SERVICES

140227

SEMI-VOLATILE ORGANICS BY GC/MS
8270 SEMI-VOLATILES

| | | | |
|-------------------|---------------------------|-----------------------|---------------|
| Client Sample ID: | 85354 | LAL Sample ID: | L7141-51 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 10-JUN-96 | Date Extracted: | 04-JUN-96 |
| Matrix: | Water | Analytical Batch ID: | 061096-8270-K |
| QC Group: | 8270 SEMI-VOLATILES_37734 | Analytical Dilution: | 1 |
| | | Preparation Dilution: | 1.11 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER (s) |
|-----------------------------|-----------|----------------|---|-----------------------|
| Dibenzofuran | 132-64-9 | <11. | 11. | |
| 2,4-Dinitrotoluene | 121-14-2 | <11. | 11. | |
| Diethylphthalate | 84-66-2 | <11. | 11. | |
| 4-Chlorophenyl-phenylether | 7005-72-3 | <11. | 11. | |
| Fluorene | 86-73-7 | <11. | 11. | |
| 4-Nitroaniline | 100-01-6 | <22. | 22. | |
| 4,6-Dinitro-2-methylphenol | 534-52-1 | <56. | 56. | |
| N-Nitrosodiphenylamine (1) | 86-30-6 | <11. | 11. | |
| 4-Bromophenyl-phenylether | 101-55-3 | <11. | 11. | |
| Hexachlorobenzene | 118-74-1 | <11. | 11. | |
| Pentachlorophenol | 87-86-5 | <56. | 56. | |
| Phenanthrene | 85-01-8 | <11. | 11. | |
| Anthracene | 120-12-7 | <11. | 11. | |
| Carbazole | 86-74-8 | <11. | 11. | |
| Di-n-butylphthalate | 84-74-2 | <11. | 11. | |
| Fluoranthene | 206-44-0 | <11. | 11. | |
| Pyrene | 129-00-0 | <11. | 11. | |
| Butylbenzylphthalate | 85-68-7 | <11. | 11. | |
| 3,3'-Dichlorobenzidine | 91-94-1 | <22. | 22. | |
| Benzo (a) anthracene | 56-55-3 | <11. | 11. | |
| Chrysene | 218-01-9 | <11. | 11. | |
| bis (2-Ethylhexyl) phtalate | 117-81-7 | 63. | 11. | |
| Di-n-octylphthalate | 117-84-0 | <11. | 11. | |
| Benzo (b) fluoranthene | 205-99-2 | <11. | 11. | |
| Benzo (k) fluoranthene | 207-08-9 | <11. | 11. | |
| Benzo (a) pyrene | 50-32-8 | <11. | 11. | |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | <11. | 11. | |
| Dibenz (a,h) anthracene | 53-70-3 | <11. | 11. | |
| Benzo (g,h,i) perylene | 191-24-2 | <11. | 11. | |

LOCKHEED ANALYTICAL SERVICES

140223

SEMI-VOLATILE ORGANICS BY GC/MS
TENTATIVELY IDENTIFIED COMPOUNDS
8270 SEMI-VOLATILES

| | | | |
|-------------------|---------------------------|-----------------------|---------------|
| Client Sample ID: | 85354 | LAL Sample ID: | L7141-51 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 10-JUN-96 | Date Extracted: | 04-JUN-96 |
| Matrix: | Water | Analytical Batch ID: | 061096-8270-K |
| QC Group: | 8270 SEMI-VOLATILES_37734 | Analytical Dilution: | 1 |
| | | Preparation Dilution: | 1.11 |

Number of TICs found: 10
CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|-------|------------|---|
| 1 | | Unknown | 5.17 | 5. | J |
| 2 | | Unknown | 6.58 | 5. | J |
| 3 | | Unknown | 6.99 | 30 | J |
| 4 | | Unknown | 7.09 | 9. | J |
| 5 | | Unknown | 9.10 | 20 | J |
| 6 | | Unknown | 9.20 | 8. | J |
| 7 | | Unknown | 9.25 | 5. | J |
| 8 | | Unknown | 9.43 | 7. | J |
| 9 | | Unknown | 16.55 | 5. | J |
| 10 | | Unknown | 17.83 | 8. | J |
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LOCKHEED ANALYTICAL SERVICESORGANOCHLORINE PCBS
8080 PCBS ONLY

| | | | |
|-------------------|-----------|-----------------------|----------------------|
| Client Sample ID: | 85354 | LAL Sample ID: | L7141-53 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 07-JUN-96 | Analytical Batch ID: | 060696-8080-J-1 |
| Date Extracted: | 04-JUN-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.3 |
| | | QC Group: | 8080 PCBS ONLY_37714 |

| SURROGATE | RECOVERY | QC Limits |
|-----------|----------|-----------|
| TCMX | 91% | 21-110 |
| DCB | 52% | 36-126 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(s) |
|-------------|------------|----------------|---|----------------------|
| PCB-1016 | 12674-11-2 | <1.3 | 1.3 | |
| PCB-1221 | 11104-28-2 | <2.6 | 2.6 | |
| PCB-1232 | 11141-16-5 | <1.3 | 1.3 | |
| PCB-1242 | 53469-21-9 | <1.3 | 1.3 | |
| PCB-1248 | 12672-29-6 | <1.3 | 1.3 | |
| PCB-1254 | 11097-69-1 | <1.3 | 1.3 | |
| PCB-1260 | 11096-82-5 | <1.3 | 1.3 | |

140230

QUALITY CONTROL SAMPLE RESULTS
EQUIPMENT BLANK 3

LOCKHEED ANALYTICAL SERVICES

DETN. OF GAS. BY PURGE AND TRAP GC-FID
P&T GAS

| | | | |
|-------------------|------------|-----------------------|------------------|
| Client Sample ID: | EB03(030H) | LAL Sample ID: | L7410-59 |
| Date Collected: | 11-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 17-JUL-96 | Analytical Batch ID: | 071596-PTGAS-M-3 |
| Date Extracted: | N/A | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |

| SURROGATE | RECOVERY | QC Limits |
|-----------|----------|-----------|
| TFT | 99% | 70-130 |
| BFB | 106% | 75-130 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(s) |
|-------------|-----------|----------------|---|----------------------|
| Gasoline | 8006-61-9 | <100 | 100 | |

LOCKHEED ANALYTICAL SERVICES

140232

TOTAL PETROLEUM HYDROCARBONS (TPH) 8015M - TPH

| | | | |
|-------------------|------------|-----------------------|-------------------|
| Client Sample ID: | EB03(030H) | LAL Sample ID: | L7410-83 |
| Date Collected: | 11-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 23-JUL-96 | Analytical Batch ID: | 071996-8015-L-5 |
| Date Extracted: | 14-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |
| | | QC Group: | 8015M - TPH_38858 |

| SURROGATE | RECOVERY | QC Limits |
|---------------------|----------|-----------|
| DI-N-OCTYLPHTHALATE | 89% | 56-166 |

| CONSTITUENT | CAS NO: | RESULT mg/L | PRACTICAL QUANTITATION LIMIT mg/L | DATA QUALIFIED |
|-------------|---------|----------------|---|-------------------|
| C12-C24 | | <1.0 | 1.0 | |

LOCKHEED ANALYTICAL SERVICES

140235

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | |
|-------------------------------|-------------------------------------|
| Client Sample ID: EB03 (030H) | LAL Sample ID: L7410-30 |
| Date Collected: 11-JUL-96 | Date Received: 12-JUL-96 |
| Date Analyzed: 18-JUL-96 | Analytical Dilution: 1 |
| Matrix: Water | Analytical Batch ID: 071796-8260-E1 |
| | Preparation Dilution: 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 91% | 84-122 |
| Toluene-d8 | 109% | 87-117 |
| Bromofluorobenzene | 108% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER (s) |
|---------------------------|-------------|----------------|---|-----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | <10. | 10. | |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000031

LOCKHEED ANALYTICAL SERVICES

140236

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

| | | | |
|-------------------|------------|-----------------------|----------------|
| Client Sample ID: | EB03(030H) | LAL Sample ID: | L7410-30 |
| Date Collected: | 11-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 18-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071796-8260-E1 |
| | | Preparation Dilution: | 1.00 |

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC | Q |
|----|------------|---------------|----|-----------|---|
| 1 | | | | | |
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000032

QUALITY CONTROL SAMPLE RESULTS
EQUIPMENT BLANK 4

LOCKHEED ANALYTICAL SERVICES

140238

DETN. OF GAS. BY PURGE AND TRAP GC-FID
P&T GAS

| | | | |
|-------------------|-------------|-----------------------|------------------|
| Client Sample ID: | EB04 (040H) | LAL Sample ID: | L7410-61 |
| Date Collected: | 11-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 17-JUL-96 | Analytical Batch ID: | 071596-PTGAS-M-3 |
| Date Extracted: | N/A | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |

| SURROGATE | RECOVERY | QC Limits |
|-----------|----------|-----------|
| TFT | 103% | 70-130 |
| BFB | 110% | 75-130 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER (S) |
|-------------|-----------|----------------|---|-----------------------|
| Gasoline | 8006-61-9 | <100 | 100 | |

LOCKHEED ANALYTICAL SERVICES

140239

TOTAL PETROLEUM HYDROCARBONS (TPH)
8015M - TPH

| | | | |
|-------------------|------------|-----------------------|-------------------|
| Client Sample ID: | EB04(040H) | LAL Sample ID: | L7410-85 |
| Date Collected: | 11-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 23-JUL-96 | Analytical Batch ID: | 071996-8015-L-5 |
| Date Extracted: | 14-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Preparation Dilution: | 1.0 |
| | | QC Group: | 8015M - TPH_38858 |

| SURROGATE | RECOVERY | QC Limits |
|---------------------|----------|-----------|
| DI-N-OCTYLPHTHALATE | 56% | 56-166 |

| CONSTITUENT | CAS NO. | RESULT mg/L | PRACTICAL QUANTITATION LIMIT mg/L | DATA QUALIFIED (S) |
|-------------|---------|----------------|---|-----------------------|
| C12-C24 | | <1.0 | 1.0 | |

LOCKHEED ANALYTICAL SERVICES

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | | | |
|-------------------|------------|-----------------------|----------------|
| Client Sample ID: | EB04(040H) | LAL Sample ID: | L7410-32 |
| Date Collected: | 11-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 18-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071796-8260-E1 |
| | | Preparation Dilution: | 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 95% | 84-122 |
| Toluene-d8 | 106% | 87-117 |
| Bromofluorobenzene | 109% | 83-118 |

| CONSTITUENT | CAS NO | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(S) |
|---------------------------|-------------|----------------|---|----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | 6.7 | 10. | J |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000033

LOCKHEED ANALYTICAL SERVICES

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

140243

Client Sample ID: EB04 (040H)
Date Collected: 11-JUL-96
Date Analyzed: 18-JUL-96
Matrix: Water

LAL Sample ID: L7410-32
Date Received: 12-JUL-96
Analytical Dilution: 1
Analytical Batch ID: 071796-8260-E1
Preparation Dilution: 1.00

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
| 1 | | | | | |
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000034

140244

QUALITY CONTROL SAMPLE RESULTS
TRIP BLANK 1

LOCKHEED ANALYTICAL SERVICES

149245

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | | | |
|-------------------|-----------|-----------------------|----------------|
| Client Sample ID: | 85349 | LAL Sample ID: | L7141-9 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 04-JUN-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 060496-8260-E1 |
| | | Preparation Dilution: | 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 117% | 84-122 |
| Toluene-d8 | 114% | 87-117 |
| Bromofluorobenzene | 115% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER (s) |
|---------------------------|-------------|----------------|---|-----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | <10. | 10. | |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

LOCKHEED ANALYTICAL SERVICES

140246

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

Client Sample ID: 85349
Date Collected: 29-MAY-96
Date Analyzed: 04-JUN-96
Matrix: Water

LAL Sample ID: L7141-9
Date Received: 31-MAY-96
Analytical Dilution: 1
Analytical Batch ID: 060496-8260-E1
Preparation Dilution: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

Number of TICs found: 0

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
| 1 | | | | | |
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140247

QUALITY CONTROL SAMPLE RESULTS
TRIP BLANK 2

LOCKHEED ANALYTICAL SERVICES

140248

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | |
|---------------------------|-------------------------------------|
| Client Sample ID: 85355 | LAL Sample ID: L7141-12 |
| Date Collected: 29-MAY-96 | Date Received: 31-MAY-96 |
| Date Analyzed: 04-JUN-96 | Analytical Dilution: 1 |
| Matrix: Water | Analytical Batch ID: 060496-8260-E1 |
| | Preparation Dilution: 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 116% | 84-122 |
| Toluene-d8 | 115% | 87-117 |
| Bromofluorobenzene | 114% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER (s) |
|---------------------------|-------------|----------------|---|-----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | <10. | 10. | |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

LOCKHEED ANALYTICAL SERVICES

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

140249

| | | | |
|-------------------|-----------|-----------------------|----------------|
| Client Sample ID: | 85355 | LAL Sample ID: | L7141-12 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 04-JUN-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 060496-8260-E1 |
| | | Preparation Dilution: | 1.00 |

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
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140250

QUALITY CONTROL SAMPLE RESULTS
TRIP BLANK 3

LOCKHEED ANALYTICAL SERVICES

140251

GC/MS FOR VOLATILE ORGANICS
8240. VOLATILES

| | |
|---------------------------|-------------------------------------|
| Client Sample ID: 85356 | LAL Sample ID: L7141-15 |
| Date Collected: 29-MAY-96 | Date Received: 31-MAY-96 |
| Date Analyzed: 04-JUN-96 | Analytical Dilution: 1 |
| Matrix: Water | Analytical Batch ID: 060496-8260-E1 |
| | Preparation Dilution: 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 116% | 84-122 |
| Toluene-d8 | 115% | 87-117 |
| Bromofluorobenzene | 113% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(s) |
|---------------------------|-------------|----------------|---|----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | <10. | 10. | |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

LOCKHEED ANALYTICAL SERVICES

140252

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

| | | | |
|-------------------|-----------|-----------------------|----------------|
| Client Sample ID: | 85356 | LAL Sample ID: | L7141-15 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 04-JUN-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 060496-8260-E1 |
| | | Preparation Dilution: | 1.00 |

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
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149253

QUALITY CONTROL SAMPLE RESULTS
TRIP BLANK 4

LOCKHEED ANALYTICAL SERVICES

140254

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | |
|-------------------------------|-------------------------------------|
| Client Sample ID: TB04 (004D) | LAL Sample ID: L7396-1 |
| Date Collected: 09-JUL-96 | Date Received: 11-JUL-96 |
| Date Analyzed: 16-JUL-96 | Analytical Dilution: 1 |
| Matrix: Water | Analytical Batch ID: 071696-8260-E1 |
| | Preparation Dilution: 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 95% | 84-122 |
| Toluene-d8 | 104% | 87-117 |
| Bromofluorobenzene | 104% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(a) |
|---------------------------|-------------|----------------|---|----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | 5.7 | 10. | JB |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | 1.1 | 5.0 | J |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000054

LOCKHEED ANALYTICAL SERVICES

140255

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

| | | | |
|-------------------|-------------|-----------------------|----------------|
| Client Sample ID: | TB04 (004D) | LAL Sample ID: | L7396-1 |
| Date Collected: | 09-JUL-96 | Date Received: | 11-JUL-96 |
| Date Analyzed: | 16-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071696-8260-E1 |
| | | Preparation Dilution: | 1.00 |

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
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140256

QUALITY CONTROL SAMPLE RESULTS
TRIP BLANK 5

LOCKHEED ANALYTICAL SERVICES

140257

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | | | |
|-------------------|------------|-----------------------|----------------|
| Client Sample ID: | TB05(005E) | LAL Sample ID: | L7410-7 |
| Date Collected: | 11-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 17-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071796-8260-E1 |
| | | Preparation Dilution: | 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 95% | 84-122 |
| Toluene-d8 | 111% | 87-117 |
| Bromofluorobenzene | 104% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(s) |
|---------------------------|-------------|----------------|---|----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | 6.0 | 10. | J |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000007

LOCKHEED ANALYTICAL SERVICES

140258

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

| | | | |
|-------------------|------------|-----------------------|----------------|
| Client Sample ID: | TB05(005E) | LAL Sample ID: | L7410-7 |
| Date Collected: | 11-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 17-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071796-8260-E1 |
| | | Preparation Dilution: | 1.00 |

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
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40259

QUALITY CONTROL SAMPLE RESULTS
TRIP BLANK 7

LOCKHEED ANALYTICAL SERVICES

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

140260

| | |
|------------------------------|-------------------------------------|
| Client Sample ID: TB07(007G) | LAL Sample ID: L7410-26 |
| Date Collected: 11-JUL-96 | Date Received: 12-JUL-96 |
| Date Analyzed: 17-JUL-96 | Analytical Dilution: 1 |
| Matrix: Water | Analytical Batch ID: 071796-8260-E1 |
| | Preparation Dilution: 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 96% | 84-122 |
| Toluene-d8 | 111% | 87-117 |
| Bromofluorobenzene | 105% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(s) |
|---------------------------|-------------|----------------|---|----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | 4.8 | 10. | J |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000027

LOCKHEED ANALYTICAL SERVICES

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

140261

Client Sample ID: TB07(007G)
Date Collected: 11-JUL-96
Date Analyzed: 17-JUL-96
Matrix: Water

LAL Sample ID: L7410-26
Date Received: 12-JUL-96
Analytical Dilution: 1
Analytical Batch ID: 071796-8260-E1
Preparation Dilution: 1.00

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
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149262

QUALITY CONTROL SAMPLE RESULTS
TRIP BLANK 8

LOCKHEED ANALYTICAL SERVICES

140263

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | |
|-------------------------------|-------------------------------------|
| Client Sample ID: TB08 (008H) | LAL Sample ID: L7410-34 |
| Date Collected: 11-JUL-96 | Date Received: 12-JUL-96 |
| Date Analyzed: 18-JUL-96 | Analytical Dilution: 1 |
| Matrix: Water | Analytical Batch ID: 071896-8260-E1 |
| | Preparation Dilution: 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 110% | 84-122 |
| Toluene-d8 | 109% | 87-117 |
| Bromofluorobenzene | 105% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER (s) |
|---------------------------|-------------|----------------|---|-----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | <10. | 10. | |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000035

LOCKHEED ANALYTICAL SERVICES

140264

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

| | | | |
|-------------------|-------------|-----------------------|----------------|
| Client Sample ID: | TB08 (008H) | LAL Sample ID: | L7410-34 |
| Date Collected: | 11-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 18-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071896-8260-E1 |
| | | Preparation Dilution: | 1.00 |

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
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140265

QUALITY CONTROL SAMPLE RESULTS
AMBIENT BLANK 1

LOCKHEED ANALYTICAL SERVICES

140266

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | |
|---------------------------|-------------------------------------|
| Client Sample ID: 85353 | LAL Sample ID: L7141-10 |
| Date Collected: 29-MAY-96 | Date Received: 31-MAY-96 |
| Date Analyzed: 04-JUN-96 | Analytical Dilution: 1 |
| Matrix: Water | Analytical Batch ID: 060496-8260-E1 |
| | Preparation Dilution: 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 115% | 84-122 |
| Toluene-d8 | 115% | 87-117 |
| Bromofluorobenzene | 113% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER (s) |
|---------------------------|-------------|----------------|---|-----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | 4.8 | 10. | BJ |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

LOCKHEED ANALYTICAL SERVICES

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

140267

| | | | |
|-------------------|-----------|-----------------------|----------------|
| Client Sample ID: | 85353 | LAL Sample ID: | L7141-10 |
| Date Collected: | 29-MAY-96 | Date Received: | 31-MAY-96 |
| Date Analyzed: | 04-JUN-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 060496-8260-E1 |
| | | Preparation Dilution: | 1.00 |

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
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140268

QUALITY CONTROL SAMPLE RESULTS
AMBIENT BLANK 2

LOCKHEED ANALYTICAL SERVICES

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

140269

| | |
|------------------------------|-------------------------------------|
| Client Sample ID: AB02(200E) | LAL Sample ID: L7410-5 |
| Date Collected: 09-JUL-96 | Date Received: 12-JUL-96 |
| Date Analyzed: 17-JUL-96 | Analytical Dilution: 1 |
| Matrix: Water | Analytical Batch ID: 071696-8260-E1 |
| | Preparation Dilution: 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 96% | 84-122 |
| Toluene-d8 | 111% | 87-117 |
| Bromofluorobenzene | 104% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(s) |
|---------------------------|-------------|----------------|---|----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | 6.2 | 10. | JB |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000005

LOCKHEED ANALYTICAL SERVICES

140270

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

Client Sample ID: AB02(200E)
Date Collected: 09-JUL-96
Date Analyzed: 17-JUL-96
Matrix: Water

LAL Sample ID: L7410-5
Date Received: 12-JUL-96
Analytical Dilution: 1
Analytical Batch ID: 071696-8260-E1
Preparation Dilution: 1.00

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
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140271

QUALITY CONTROL SAMPLE RESULTS
AMBIENT BLANK 3

LOCKHEED ANALYTICAL SERVICES

140272

GC/MS FOR VOLATILE ORGANICS
8240 VOLATILES

| | |
|------------------------------|-------------------------------------|
| Client Sample ID: AB03(300H) | LAL Sample ID: L7410-36 |
| Date Collected: 11-JUL-96 | Date Received: 12-JUL-96 |
| Date Analyzed: 19-JUL-96 | Analytical Dilution: 1 |
| Matrix: Water | Analytical Batch ID: 071896-8260-E1 |
| | Preparation Dilution: 1.00 |

| SURROGATE | RECOVERY | QC Limits |
|-----------------------|----------|-----------|
| 1,2-Dichloroethane-d4 | 112% | 84-122 |
| Toluene-d8 | 109% | 87-117 |
| Bromofluorobenzene | 106% | 83-118 |

| CONSTITUENT | CAS NO. | RESULT ug/L | PRACTICAL QUANTITATION LIMIT ug/L | DATA QUALIFIER(S) |
|---------------------------|-------------|----------------|---|----------------------|
| Chloromethane | 74-87-3 | <5.0 | 5.0 | |
| Vinyl Chloride | 75-01-4 | <5.0 | 5.0 | |
| Bromomethane | 74-83-9 | <5.0 | 5.0 | |
| Chloroethane | 75-00-3 | <5.0 | 5.0 | |
| Trichlorofluoromethane | 75-69-4 | <5.0 | 5.0 | |
| Acetone | 67-64-1 | 6.2 | 10. | JB |
| 1,1-Dichloroethene | 75-35-4 | <5.0 | 5.0 | |
| Carbon Disulfide | 75-15-0 | <5.0 | 5.0 | |
| Methylene Chloride | 75-09-2 | <5.0 | 5.0 | |
| trans-1,2-Dichloroethene | 156-60-5 | <5.0 | 5.0 | |
| Vinyl Acetate | 108-05-4 | <10. | 10. | |
| 1,1-Dichloroethane | 75-34-3 | <5.0 | 5.0 | |
| 2-Butanone | 78-93-3 | <10. | 10. | |
| cis-1,2-Dichloroethene | 156-59-2 | <5.0 | 5.0 | |
| Chloroform | 67-66-3 | <5.0 | 5.0 | |
| 1,1,1-Trichloroethane | 71-55-6 | <5.0 | 5.0 | |
| Carbon tetrachloride | 56-23-5 | <5.0 | 5.0 | |
| 1,2-Dichloroethane | 107-06-2 | <5.0 | 5.0 | |
| Benzene | 71-43-2 | <5.0 | 5.0 | |
| Trichloroethene | 79-01-6 | <5.0 | 5.0 | |
| 1,2-Dichloropropane | 78-87-5 | <5.0 | 5.0 | |
| Bromodichloromethane | 75-27-4 | <5.0 | 5.0 | |
| 2-Chloroethylvinylether | 110-75-8 | <20. | 20. | |
| 4-Methyl-2-Pentanone | 108-10-1 | <10. | 10. | |
| cis-1,3-Dichloropropene | 10061-01-5 | <5.0 | 5.0 | |
| Toluene | 108-88-3 | <5.0 | 5.0 | |
| trans-1,3-Dichloropropene | 10061-02-6 | <5.0 | 5.0 | |
| 2-Hexanone | 591-78-6 | <10. | 10. | |
| 1,1,2-Trichloroethane | 79-00-5 | <5.0 | 5.0 | |
| Tetrachloroethene | 127-18-4 | <5.0 | 5.0 | |
| Dibromochloromethane | 124-48-1 | <5.0 | 5.0 | |
| Chlorobenzene | 108-90-7 | <5.0 | 5.0 | |
| Ethylbenzene | 100-41-4 | <5.0 | 5.0 | |
| m,p-Xylene | 136777-61-2 | <5.0 | 5.0 | |
| o-Xylene | 95-47-6 | <5.0 | 5.0 | |
| Styrene | 100-42-5 | <5.0 | 5.0 | |
| Bromoform | 75-25-2 | <5.0 | 5.0 | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <5.0 | 5.0 | |
| 1,3-Dichlorobenzene | 541-73-1 | <5.0 | 5.0 | |
| 1,4-Dichlorobenzene | 106-46-7 | <5.0 | 5.0 | |
| 1,2-Dichlorobenzene | 95-50-1 | <5.0 | 5.0 | |

000037

LOCKHEED ANALYTICAL SERVICES

GC/MS FOR VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
8240 VOLATILES

140273

| | | | |
|-------------------|-------------|-----------------------|----------------|
| Client Sample ID: | AB03 (300H) | LAL Sample ID: | L7410-36 |
| Date Collected: | 11-JUL-96 | Date Received: | 12-JUL-96 |
| Date Analyzed: | 19-JUL-96 | Analytical Dilution: | 1 |
| Matrix: | Water | Analytical Batch ID: | 071896-8260-E1 |
| | | Preparation Dilution: | 1.00 |

Number of TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|----|------------|---------------|----|------------|---|
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140274

APPENDIX F
INVESTIGATION DERIVED WASTE SAMPLING

140276

ESSEX LABORATORY WASTE CHARACTERIZATION ANALYSIS

Lab Sales Sample # _____ Date Received 7-10-96
 Profile # 96-03172E Essex's Contact Brenda / Sheila
 Generator Name 23AFB 93004
 Waste Name Non Haz Soil
 Process Generating Waste _____

Documentation Received With Sample Y or N

PHYSICAL PROPERTIES

Liquid _____ Granular _____
 Solid 100 Crystal _____
 Sludge _____

| | | | |
|-------------|---------------------------|----------------|-----------------|
| PH | <u>5.0</u> | COLOR | <u>Mixed</u> |
| % WATER | <u>0</u> | PHYSICAL STATE | <u>Solid</u> |
| SP. GRAVITY | <u>>H₂O</u> | LAYERING | <u>1</u> |
| BTU/lb | <u>NT</u> | % TOP | <u>-</u> |
| CHLORINE | <u>NT</u> | % BOTTOM | <u>-</u> |
| FLASH POINT | <u>>150</u> | ODOR | <u>mild</u> |
| PCB SCREEN | <u>ND</u> | SOLUBILITY | |
| FREE LIQ. | <u>NO</u> | WATER | <u>Slightly</u> |
| POURABLE | <u>NO</u> | TOLUENE | <u>Slightly</u> |
| PUMPABLE | <u>NO</u> | | |
| Dumpable | <u>Yes</u> | | |

Comments: _____

I hereby certify that all information submitted on this document is complete and accurate to the best of my knowledge.

J. Martin Signature Lab Manager Title 7-13-96 Date

CERTIFICATE OF ANALYSIS

PAGE 1 OF 3

INVOICE NO 5419
 P O NO
 LAB REF NO 967-178
 PRODUCT ID 96-03172E
 DATE RECEIVED 7-15-96
 AUTHORIZED BY LISA
 MARTIN

| <u>PARAMETER</u> | <u>TEST METHOD</u> | <u>PREPARATION METHOD</u> | <u>METHOD DETECTION LIMIT MG/L</u> | <u>RESULTS MG/L</u> | <u>REGULATORY LEVEL MG/L</u> |
|---------------------------|--------------------|---------------------------|------------------------------------|---------------------|------------------------------|
| <u>TCLP METALS</u> | | | | | |
| Arsenic | S.W. 7061 | EPA-1311/S.W.3050 | 0.010 | ND | 5.000 |
| Barium | S.W. 7080 | EPA-1311/S.W.3050 | 0.100 | ND | 100.000 |
| Cadmium | S.W. 7131 | EPA-1311/S.W.3050 | 0.030 | ND | 1.000 |
| Chromium | S.W. 7190 | EPA-1311/S.W.3050 | 0.100 | ND | 5.000 |
| Lead | S.W. 7420 | EPA-1311/S.W.3050 | 0.040 | 0.20 | 5.000 |
| Mercury | S.W. 7470 | EPA-1311/S.W.3050 | 0.020 | ND | 0.200 |
| Selenium | S.W. 7741 | EPA-1311/S.W.3050 | 0.050 | ND | 1.000 |
| Silver | S.W. 7760 | EPA-1311/S.W.3050 | 0.030 | ND | 5.000 |

ND=NONE DETECTED


 DANIEL ZABIHI
 LAB MANAGER

PRECISION PETROLEUM LABS, INC S RESPONSIBILITY FOR THE ABOVE ANALYSIS.
 OPINIONS OR INTERPRETATIONS IS LIMITED TO THE INVOICE AMOUNT

CERTIFICATE OF ANALYSIS

INVOICE NO: 5419
 P O NO.
 LAB REF. NO 967-178
 PRODUCT I.D.: 96-03172E
 DATE RECEIVED: 7-15-96
 AUTHORIZED BY LISA
 MARTIN

| <u>PARAMETER</u> | <u>TEST METHOD</u> | <u>PREPARATION METHOD</u> | <u>METHOD DETECTION LIMIT MG/L</u> | <u>RESULT MG/L</u> | <u>REGULATORY LEVEL MG/L</u> |
|-----------------------|--------------------|---------------------------|------------------------------------|--------------------|------------------------------|
| TCLP VOLATILES | | | | | |
| Benzene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.001 | ND | 0.500 |
| Carbontetrachloride | EPA-8240 | EPA-1311/ S.W. 5030 | 0.005 | ND | 0.500 |
| Chlorobenzene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.005 | ND | 100.000 |
| Chloroform | EPA-8240 | EPA-1311/ S.W. 5030 | 0.002 | ND | 6.000 |
| 1,2-Dichloroethane | EPA-8240 | EPA-1311/ S.W. 5030 | 0.001 | ND | 0.500 |
| 1,1-Dichloroethylene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.004 | ND | 0.700 |
| Methyl Ethyl Ketone | EPA-8240 | EPA-1311/ S.W. 5030 | 0.001 | ND | 200.000 |
| Pyridine | EPA-8240 | EPA-1311/ S.W. 5030 | 0.050 | ND | 5.000 |
| Tetrachloroethylene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.005 | ND | 0.700 |
| Trichloroethylene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.003 | ND | 0.500 |
| Vinyl Chloride | EPA-8240 | EPA-1311/ S.W. 5030 | 0.004 | ND | 0.200 |

ND = NONE DETECTED


 DANIEL ZABIHI
 LAB MANAGER

PRECISION PETROLEUM LABS INC S RESPONSIBILITY FOR THE ABOVE ANALYSIS.
 OPINIONS OR INTERPRETATIONS IS LIMITED TO THE INVOICE AMOUNT

PRECISION
PETROLEUM LABS, INC.

140279

PAGE 3 OF 3

CERTIFICATE OF ANALYSIS

INVOICE NO 5419
P O NO
LAB REF NO 967-178
PRODUCT I.D. 96-03172E
DATE RECEIVED 7-15-96
AUTHORIZED BY LISA
MARTIN

| <u>PARAMETER</u> | <u>TEST METHOD</u> | <u>PREPARATION METHOD</u> | <u>METHOD DETECTION LIMIT, MG/L</u> | <u>RESULT MG/L</u> | <u>REGULATORY LEVEL, MG/L</u> |
|-----------------------------------|--------------------|---------------------------|-------------------------------------|--------------------|-------------------------------|
| <u>TCLP SEMI-VOLATILES</u> | | | | | |
| O-Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| M-Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| P-Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| 1,4-Dichlorobenzene | EPA-8270 | EPA-1311 | 0.005 | ND | 7.500 |
| 2,4-Dinitrotoluene | EPA-8270 | EPA-1311 | 0.004 | ND | 0.130 |
| Hexachlorobenzene | EPA-8270 | EPA-1311 | 0.010 | ND | 0.130 |
| Hexachlorobutadiene | EPA-8270 | EPA-1311 | 0.007 | ND | 0.500 |
| Hexachloroethane | EPA-8270 | EPA-1311 | 0.010 | ND | 3.000 |
| Nitrobenzene | EPA-8270 | EPA-1311 | 0.009 | ND | 2.000 |
| Pentachlorophenol | EPA-8270 | EPA-1311 | 0.050 | ND | 100.000 |
| 2,4,5-Trichloropheno | EPA-8270 | EPA-1311 | 0.100 | ND | 400.000 |
| 2,4,6-Trichlorophenol | EPA-8270 | EPA-1311 | 0.008 | ND | 2.000 |

ND=NONE DETECTED


DANIEL ZABIHI
LAB MANAGER

PRECISION PETROLEUM LABS, INC S RESPONSIBILITY FOR THE ABOVE ANALYSIS.
OPINIONS OR INTERPRETATIONS IS LIMITED TO THE INVOICE AMOUNT

140280

ESSEX LABORATORY WASTE CHARACTERIZATION ANALYSIS

Lab Sales Sample # _____ Date Received 7-10-96
 Profile # 96-03172-D Essex's Contact BW/SG
 Generator Name RAF B 93006
 Waste Name Non Haz Soil
 Process Generating Waste _____

Documentation Received With Sample Y or N

PHYSICAL PROPERTIES

Liquid < 1 Granular _____
 Solid > 99 Crystal _____
 Sludge _____

PH 5.5
 % WATER < 1
 SP. GRAVITY > H₂O
 BTU/lb NT
 CHLORINE NT
 FLASH POINT > 150
 PCB SCREEN NA
 FREE LIQ. NO
 POURABLE NO
 PUMPABLE NO

COLOR Brown
 PHYSICAL STATE Solid
 LAYERING 1
 % TOP -
 % BOTTOM -
 ODOR mild
 SOLUBILITY
 WATER Slightly
 TOLUENE neg.

Comments: _____

I hereby certify that all information submitted on this document is complete and accurate to the best of my knowledge.

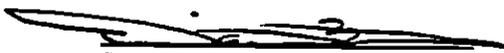
Martin _____ lab manager 7-15-96
 Signature Title Date

CERTIFICATE OF ANALYSIS

INVOICE NO. 5419
 P.O. NO.
 LAB REF. NO. 967-177
 PRODUCT I.D. 96-03172D
 DATE RECEIVED 7-15-96
 AUTHORIZED BY LISA MARTIN

| <u>PARAMETER</u> | <u>TEST METHOD</u> | <u>PREPARATION METHOD</u> | <u>METHOD DETECTION LIMIT MG/L</u> | <u>RESULTS MG/L</u> | <u>REGULATORY LEVEL MG/L</u> |
|---------------------------|--------------------|---------------------------|------------------------------------|---------------------|------------------------------|
| <u>TCLP METALS</u> | | | | | |
| Arsenic | S.W. 7061 | EPA-1311/S.W.3050 | 0.010 | ND | 5.000 |
| Barium | S.W. 7080 | EPA-1311/S.W.3050 | 0.100 | ND | 100.000 |
| Cadmium | S.W. 7131 | EPA-1311/S.W.3050 | 0.030 | ND | 1.000 |
| Chromium | S.W. 7190 | EPA-1311/S.W.3050 | 0.100 | ND | 5.000 |
| Lead | S.W. 7420 | EPA-1311/S.W.3050 | 0.040 | 0.12 | 5.000 |
| Mercury | S.W. 7470 | EPA-1311/S.W.3050 | 0.020 | ND | 0.200 |
| Selenium | S.W. 7741 | EPA-1311/S.W.3050 | 0.050 | ND | 1.000 |
| Silver | S.W. 7760 | EPA-1311/S.W.3050 | 0.030 | ND | 5.000 |

ND=NONE DETECTED


**DANIEL ZABIHI
 LAB MANAGER**

PRECISION PETROLEUM LABS, INC. S RESPONSIBILITY FOR THE ABOVE ANALYSIS.
 OPINIONS OR INTERPRETATIONS IS LIMITED TO THE INVOICE AMOUNT

PRECISION
PETROLEUM LABS, INC.

140282

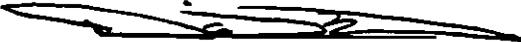
CERTIFICATE OF ANALYSIS

PAGE 2 OF 3

INVOICE NO 5419
P.O. NO
LAB REF. NO. 967-177
PRODUCT I.D.. 96-03172D
DATE RECEIVED 7-15-96
AUTHORIZED BY LISA
MARTIN

| <u>PARAMETER</u> | <u>TEST METHOD</u> | <u>PREPARATION METHOD</u> | <u>METHOD DETECTION LIMIT MG/L</u> | <u>RESULT MG/L</u> | <u>REGULATORY LEVEL MG/L</u> |
|-----------------------|--------------------|---------------------------|------------------------------------|--------------------|------------------------------|
| <u>TCLP VOLATILES</u> | | | | | |
| Benzene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.001 | ND | 0.500 |
| Carbontetrachloride | EPA-8240 | EPA-1311/ S.W. 5030 | 0.005 | ND | 0.500 |
| Chlorobenzene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.005 | ND | 100.000 |
| Chloroform | EPA-8240 | EPA-1311/ S W 5030 | 0.002 | ND | 6.000 |
| 1,2-Dichloroethane | EPA-8240 | EPA-1311/ S.W. 5030 | 0.001 | ND | 0.500 |
| 1,1-Dichloroethylene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.004 | ND | 0.700 |
| Methyl Ethyl Ketone | EPA-8240 | EPA-1311/ S.W. 5030 | 0.001 | ND | 200.000 |
| Pyridine | EPA-8240 | EPA-1311/ S.W. 5030 | 0.050 | ND | 5.000 |
| Tetrachloroethylene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.005 | ND | 0.700 |
| Tnchloroethylene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.003 | ND | 0.500 |
| Vinyl Chloride | EPA-8240 | EPA-1311/ S.W. 5030 | 0.004 | ND | 0.200 |

ND = NONE DETECTED


DANIEL ZABIHI
LAB MANAGER

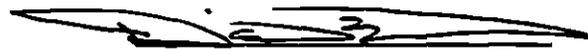
PRECISION PETROLEUM LABS INC S RESPONSIBILITY FOR THE ABOVE ANALYSIS.
OPINIONS OR INTERPRETATIONS IS LIMITED TO THE INVOICE AMOUNT

CERTIFICATE OF ANALYSIS

INVOICE NO. 5419
 P.O. NO
 LAB REF NO 967-177
 PRODUCT I.D. 96-03172D
 DATE RECEIVED. 7-15-96
 AUTHORIZED BY LISA
 MARTIN

| PARAMETER | TEST METHOD | PREPARATION METHOD | METHOD DETECTION LIMIT, MG/L | RESULT MG/L | REGULATORY LEVEL, MG/L |
|----------------------------|-------------|--------------------|------------------------------|-------------|------------------------|
| TCLP SEMI-VOLATILES | | | | | |
| O-Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| M-Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| P-Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| 1,4-Dichlorobenzene | EPA-8270 | EPA-1311 | 0.005 | ND | 7.500 |
| 2,4-Dinitrotoluene | EPA-8270 | EPA-1311 | 0.004 | ND | 0.130 |
| Hexachlorobenzene | EPA-8270 | EPA-1311 | 0.010 | ND | 0.130 |
| Hexachlorobutadiene | EPA-8270 | EPA-1311 | 0.007 | ND | 0.500 |
| Hexachloroethane | EPA-8270 | EPA-1311 | 0.010 | ND | 3.000 |
| Nitrobenzene | EPA-8270 | EPA-1311 | 0.009 | ND | 2.000 |
| Pentachlorophenol | EPA-8270 | EPA-1311 | 0.050 | ND | 100.000 |
| 2,4,5-Trichloropheno | EPA-8270 | EPA-1311 | 0.100 | ND | 400.000 |
| 2,4,6-Trichlorophenol | EPA-8270 | EPA-1311 | 0.008 | ND | 2.000 |

ND=NONE DETECTED


 DANIEL ZABIHI
 LAB MANAGER

PRECISION PETROLEUM LABS, INC'S RESPONSIBILITY FOR THE ABOVE ANALYSIS,
 OPINIONS OR INTERPRETATIONS IS LIMITED TO THE INVOICE AMOUNT

ESSEX LABORATORY WASTE CHARACTERIZATION ANALYSIS

Lab Sales Sample # _____ Date Received 7-10-96
 Profile # 96-03172 B Essex's Contact BW/SG
 Generator Name 23AFB GMMW605
 Waste Name Non Haz Soil
 Process Generating Waste _____

Documentation Received With Sample Y or N

PHYSICAL PROPERTIES

Liquid < 1 Granular _____
 Solid > 99 Crystal _____
 Sludge _____

| | | | |
|-------------|----------------------------|----------------|-----------------|
| PH | <u>5.0</u> | COLOR | <u>brown</u> |
| % WATER | <u>< 1</u> | PHYSICAL STATE | <u>Solid</u> |
| SP. GRAVITY | <u>> H₂O</u> | LAYERING | <u>1</u> |
| BTU/lb | <u>NT</u> | % TOP | <u>—</u> |
| CHLORINE | <u>NT</u> | % BOTTOM | <u>—</u> |
| FLASH POINT | <u>> 150</u> | ODOR | <u>mid</u> |
| PCB SCREEN | <u>ND</u> | SOLUBILITY | |
| FREE LIQ. | <u>NO</u> | WATER | <u>Slightly</u> |
| POURABLE | <u>NO</u> | TOLUENE | <u>neg.</u> |
| PUMPABLE | <u>NO</u> | | |

Comments: _____

I hereby certify that all information submitted on this document is complete and accurate to the best of my knowledge.

J. Martin lab manager 7-15-96
 Signature Title Date

CERTIFICATE OF ANALYSIS

INVOICE NO 5419
P O NO.
LAB REF NO. 967-175
PRODUCT ID 96-03172B
DATE RECEIVED 7-15-96
AUTHORIZED BY LISA
MARTIN

| <u>PARAMETER</u> | <u>TEST METHOD</u> | <u>PREPARATION METHOD</u> | <u>METHOD DETECTION LIMIT MG/L</u> | <u>RESULTS MG/L</u> | <u>REGULATORY LEVEL MG/L</u> |
|--------------------|--------------------|---------------------------|------------------------------------|---------------------|------------------------------|
| <u>TCLP METALS</u> | | | | | |
| Arsenic | S.W. 7061 | EPA-1311/S.W.3050 | 0.010 | ND | 5.000 |
| Barium | S.W. 7080 | EPA-1311/S.W.3050 | 0.100 | ND | 100.000 |
| Cadmium | S.W. 7131 | EPA-1311/S.W.3050 | 0.030 | ND | 1.000 |
| Chromium | S.W. 7190 | EPA-1311/S.W.3050 | 0.100 | ND | 5.000 |
| Lead | S.W. 7420 | EPA-1311/S.W.3050 | 0.040 | 0.16 | 5.000 |
| Mercury | S.W. 7470 | EPA-1311/S.W.3050 | 0.020 | ND | 0.200 |
| Selenium | S.W. 7741 | EPA-1311/S.W.3050 | 0.050 | ND | 1.000 |
| Silver | S.W. 7760 | EPA-1311/S.W.3050 | 0.030 | ND | 5.000 |

ND=NONE DETECTED


DANIEL ZABIHI
LAB MANAGER

PRECISION PETROLEUM LABS, INC S RESPONSIBILITY FOR THE ABOVE ANALYSIS.
OPINIONS OR INTERPRETATIONS IS LIMITED TO THE INVOICE AMOUNT

CERTIFICATE OF ANALYSIS

PAGE 2 OF 3

INVOICE NO 5419
P.O NO
LAB REF. NO: 967-175
PRODUCT I.D 96-03172B
DATE RECEIVED 7-15-96
AUTHORIZED BY LISA
 MARTIN

| <u>PARAMETER</u> | <u>TEST METHOD</u> | <u>PREPARATION METHOD</u> | <u>METHOD DETECTION LIMIT MG/L</u> | <u>RESULT MG/L</u> | <u>REGULATORY LEVEL MG/L</u> |
|-----------------------|--------------------|---------------------------|------------------------------------|--------------------|------------------------------|
| TCLP VOLATILES | | | | | |
| Benzene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.001 | ND | 0.500 |
| Carbontetrachloride | EPA-8240 | EPA-1311/ S.W. 5030 | 0.005 | ND | 0.500 |
| Chlorobenzene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.005 | ND | 100.000 |
| Chloroform | EPA-8240 | EPA-1311/ S.W. 5030 | 0.002 | ND | 6.000 |
| 1,2-Dichloroethane | EPA-8240 | EPA-1311/ S.W. 5030 | 0.001 | ND | 0.500 |
| 1,1-Dichloroethylene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.004 | ND | 0.700 |
| Methyl Ethyl Ketone | EPA-8240 | EPA-1311/ S.W. 5030 | 0.001 | ND | 200.000 |
| Pyridine | EPA-8240 | EPA-1311/ S.W. 5030 | 0.050 | ND | 5.000 |
| Tetrachloroethylene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.005 | ND | 0.700 |
| Trichloroethylene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.003 | ND | 0.500 |
| Vinyl Chloride | EPA-8240 | EPA-1311/ S.W. 5030 | 0.004 | ND | 0.200 |

ND = NONE DETECTED


DANIEL ZABIHI
LAB MANAGER

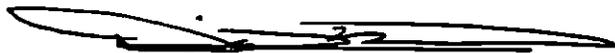
PRECISION PETROLEUM LABS, INC S RESPONSIBILITY FOR THE ABOVE ANALYSIS.
OPINIONS OR INTERPRETATIONS IS LIMITED TO THE INVOICE AMOUNT

CERTIFICATE OF ANALYSIS

INVOICE NO 5419
 P.O. NO:
 LAB REF NO 967-175
 PRODUCT I.D 96-03172B
 DATE RECEIVED 7-15-96
 AUTHORIZED BY LISA
 MARTIN

| <u>PARAMETER</u> | <u>TEST METHOD</u> | <u>PREPARATION METHOD</u> | <u>METHOD DETECTION LIMIT, MG/L</u> | <u>RESULT MG/L</u> | <u>REGULATORY LEVEL, MG/L</u> |
|-----------------------------------|--------------------|---------------------------|-------------------------------------|--------------------|-------------------------------|
| <u>TCLP SEMI-VOLATILES</u> | | | | | |
| O-Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| M-Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| P-Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| 1,4-Dichlorobenzene | EPA-8270 | EPA-1311 | 0.005 | ND | 7.500 |
| 2,4-Dinitrotoluene | EPA-8270 | EPA-1311 | 0.004 | ND | 0.130 |
| Hexachlorobenzene | EPA-8270 | EPA-1311 | 0.010 | ND | 0.130 |
| Hexachlorobutadiene | EPA-8270 | EPA-1311 | 0.007 | ND | 0.500 |
| Hexachloroethane | EPA-8270 | EPA-1311 | 0.010 | ND | 3.000 |
| Nitrobenzene | EPA-8270 | EPA-1311 | 0.009 | ND | 2.000 |
| Pentachlorophenol | EPA-8270 | EPA-1311 | 0.050 | ND | 100.000 |
| 2,4,5-Trichloropheno | EPA-8270 | EPA-1311 | 0.100 | ND | 400.000 |
| 2,4,6-Trichlorophenol | EPA-8270 | EPA-1311 | 0.008 | ND | 2.000 |

ND=NONE DETECTED


 DANIEL ZABIHI
 LAB MANAGER

PRECISION PETROLEUM LABS, INC S RESPONSIBILITY FOR THE ABOVE ANALYSIS,
 OPINIONS OR INTERPRETATIONS IS LIMITED TO THE INVOICE AMOUNT

140288

ESSEX LABORATORY WASTE CHARACTERIZATION ANALYSIS

Lab Sales Sample # _____ Date Received 7-10-96
 Profile # 96-03172A Essex's Contact BW/SG
 Generator Name RCAF B 99003
 Waste Name Non Haz Soil
 Process Generating Waste _____

Documentation Received With Sample Y or (N)

PHYSICAL PROPERTIES

Liquid _____ Granular _____
 Solid 100 Crystal _____
 Sludge _____

| | | | |
|-------------|---------------------------|----------------|-----------------|
| PH | <u>S.S</u> | COLOR | <u>brown</u> |
| % WATER | <u>0</u> | PHYSICAL STATE | <u>Solid</u> |
| SP. GRAVITY | <u>>H₂O</u> | LAYERING | <u>1</u> |
| BTU/lb | <u>NT</u> | % TOP | <u>-</u> |
| CHLORINE | <u>NT</u> | % BOTTOM | <u>-</u> |
| FLASH POINT | <u>>150</u> | ODOR | <u>mild</u> |
| PCB SCREEN | <u>ND</u> | SOLUBILITY | |
| FREE LIQ. | <u>NO</u> | WATER | <u>Slightly</u> |
| POURABLE | <u>NO</u> | TOLUENE | <u>neg.</u> |
| PUMPABLE | <u>NO</u> | | |

Comments: _____

I hereby certify that all information submitted on this document is complete and accurate to the best of my knowledge.

[Signature] _____ lab manager 7-15-96
 Signature Title Date

PRECISION
PETROLEUM LABS, INC.

140289

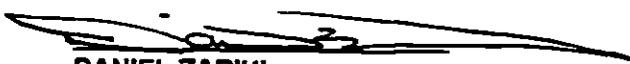
CERTIFICATE OF ANALYSIS

PAGE 1 OF 3

INVOICE NO 5419
P.O. NO
LAB REF NO: 967-174
PRODUCT I.D. 96-03172A
DATE RECEIVED 7-15-96
AUTHORIZED BY LISA
MARTIN

| <u>PARAMETER</u> | <u>TEST METHOD</u> | <u>PREPARATION METHOD</u> | <u>METHOD DETECTION LIMIT MG/L</u> | <u>RESULTS MG/L</u> | <u>REGULATORY LEVEL MG/L</u> |
|---------------------------|--------------------|---------------------------|------------------------------------|---------------------|------------------------------|
| <u>TCLP METALS</u> | | | | | |
| Arsenic | S.W. 7061 | EPA-1311/S.W.3050 | 0.010 | ND | 5.000 |
| Barium | S.W. 7080 | EPA-1311/S.W.3050 | 0.100 | ND | 100 000 |
| Cadmium | S.W. 7131 | EPA-1311/S.W.3050 | 0.030 | ND | 1.000 |
| Chromium | S.W. 7190 | EPA-1311/S.W.3050 | 0.100 | ND | 5.000 |
| Lead | S.W. 7420 | EPA-1311/S.W.3050 | 0.040 | 0.13 | 5 000 |
| Mercury | S.W. 7470 | EPA-1311/S.W.3050 | 0.020 | ND | 0.200 |
| Selenium | S.W. 7741 | EPA-1311/S.W.3050 | 0.050 | ND | 1.000 |
| Silver | S.W. 7760 | EPA-1311/S.W.3050 | 0.030 | ND | 5.000 |

ND=NONE DETECTED


DANIEL ZABIHI
LAB MANAGER

PRECISION PETROLEUM LABS, INC S RESPONSIBILITY FOR THE ABOVE ANALYSIS.
OPINIONS OR INTERPRETATIONS IS LIMITED TO THE INVOICE AMOUNT

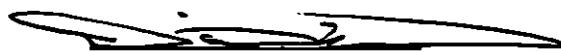
CERTIFICATE OF ANALYSIS

PAGE 2 OF 3

INVOICE NO 5419
 P.O. NO
 LAB REF NO 967-174
 PRODUCT I.D 96-03172A
 DATE RECEIVED 7-15-96
 AUTHORIZED BY LISA MARTIN

| <u>PARAMETER</u> | <u>TEST METHOD</u> | <u>PREPARATION METHOD</u> | <u>METHOD DETECTION LIMIT MG/L</u> | <u>RESULT MG/L</u> | <u>REGULATORY LEVEL MG/L</u> |
|-----------------------|--------------------|---------------------------|------------------------------------|--------------------|------------------------------|
| TCLP VOLATILES | | | | | |
| Benzene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.001 | ND | 0.500 |
| Carbontetrachloride | EPA-8240 | EPA-1311/ S.W. 5030 | 0.005 | ND | 0.500 |
| Chlorobenzene | EPA-8240 | EPA-1311/ S W. 5030 | 0.005 | ND | 100.000 |
| Chloroform | EPA-8240 | EPA-1311/ S.W. 5030 | 0.002 | ND | 6.000 |
| 1,2-Dichloroethane | EPA-8240 | EPA-1311/ S.W. 5030 | 0.001 | ND | 0.500 |
| 1,1-Dichloroethylene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.004 | ND | 0.700 |
| Methyl Ethyl Ketone | EPA-8240 | EPA-1311/ S.W. 5030 | 0.001 | ND | 200.000 |
| Pyridine | EPA-8240 | EPA-1311/ S.W. 5030 | 0.050 | ND | 5.000 |
| Tetrachloroethylene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.005 | ND | 0.700 |
| Trichloroethylene | EPA-8240 | EPA-1311/ S.W. 5030 | 0.003 | ND | 0.500 |
| Vinyl Chloride | EPA-8240 | EPA-1311/ S.W. 5030 | 0.004 | ND | 0.200 |

ND = NONE DETECTED


DANIEL ZABIHI
 LAB MANAGER

PRECISION PETROLEUM LABS, INC S RESPONSIBILITY FOR THE ABOVE ANALYSIS.
 OPINIONS OR INTERPRETATIONS IS LIMITED TO THE INVOICE AMOUNT

PRECISION
PETROLEUM LABS, INC.

149291

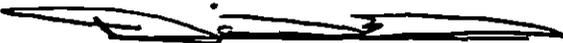
PAGE 3 OF 3

CERTIFICATE OF ANALYSIS

INVOICE NO 5419
P.O. NO
LAB REF NO 967-174
PRODUCT I.D. 96-03172A
DATE RECEIVED 7-15-96
AUTHORIZED BY LISA
MARTIN

| <u>PARAMETER</u> | <u>TEST METHOD</u> | <u>PREPARATION METHOD</u> | <u>METHOD DETECTION LIMIT, MG/L</u> | <u>RESULT MG/L</u> | <u>REGULATORY LEVEL, MG/L</u> |
|-----------------------------------|--------------------|---------------------------|-------------------------------------|--------------------|-------------------------------|
| <u>TCLP SEMI-VOLATILES</u> | | | | | |
| O-Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| M-Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| P-Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| Cresol | EPA-8270 | EPA-1311 | 0.010 | ND | 200.000 |
| 1,4-Dichlorobenzene | EPA-8270 | EPA-1311 | 0.005 | ND | 7.500 |
| 2,4-Dinitrotoluene | EPA-8270 | EPA-1311 | 0.004 | ND | 0.130 |
| Hexachlorobenzene | EPA-8270 | EPA-1311 | 0.010 | ND | 0.130 |
| Hexachlorobutadiene | EPA-8270 | EPA-1311 | 0.007 | ND | 0.500 |
| Hexachloroethane | EPA-8270 | EPA-1311 | 0.010 | ND | 3.000 |
| Nitrobenzene | EPA-8270 | EPA-1311 | 0.009 | ND | 2.000 |
| Pentachlorophenol | EPA-8270 | EPA-1311 | 0.050 | ND | 100.000 |
| 2,4,5-Trichloropheno | EPA-8270 | EPA-1311 | 0.100 | ND | 400.000 |
| 2,4,6-Trichlorophenol | EPA-8270 | EPA-1311 | 0.008 | ND | 2.000 |

ND=NONE DETECTED


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ESSEX LABORATORY WASTE CHARACTERIZATION ANALYSIS

Lab Sales Sample # _____ Date Received 7-10-96
 Profile # 96-03172 C Essex's Contact BW/SG
 Generator Name 23 AFB OW9704
 Waste Name Non Haz Soil / OW9704
 Process Generating Waste _____

Documentation Received With Sample Y or (N)

PHYSICAL PROPERTIES

Liquid < 1 Granular _____
 Solid > 99 Crystal _____
 Sludge _____

| | | | |
|-------------|----------------------------|----------------|-----------------|
| PH | <u>5.5</u> | COLOR | <u>brown</u> |
| % WATER | <u>< 1</u> | PHYSICAL STATE | <u>Solid</u> |
| SP. GRAVITY | <u>> H₂O</u> | LAYERING | <u>1</u> |
| BTU/lb | <u>NT</u> | % TOP | <u>-</u> |
| CHLORINE | <u>NT</u> | % BOTTOM | <u>-</u> |
| FLASH POINT | <u>> 150</u> | ODOR | <u>mild</u> |
| PCB SCREEN | <u>ND</u> | SOLUBILITY | |
| FREE LIQ. | <u>NO</u> | WATER | <u>Slightly</u> |
| POURABLE | <u>NO</u> | TOLUENE | <u>neg.</u> |
| PUMPABLE | <u>NO</u> | | |

Comments: _____

I hereby certify that all information submitted on this document is complete and accurate to the best of my knowledge.

Al Martin _____ lab manager 7-15-96
 Signature Title Date

PRECISION
PETROLEUM LABS, INC.

140293

CERTIFICATE OF ANALYSIS

PAGE 1 OF 3

INVOICE NO 5419
P O NO
LAB REF NO 967-176
PRODUCT ID: 96-03172C
DATE RECEIVED 7-15-96
AUTHORIZED BY LISA
MARTIN

| <u>PARAMETER</u> | <u>TEST METHOD</u> | <u>PREPARATION METHOD</u> | <u>METHOD DETECTION LIMIT MG/L</u> | <u>RESULTS MG/L</u> | <u>REGULATORY LEVEL MG/L</u> |
|---------------------------|--------------------|---------------------------|------------------------------------|---------------------|------------------------------|
| <u>TCLP METALS</u> | | | | | |
| Arsenic | S.W. 7061 | EPA-1311/S.W.3050 | 0.010 | ND | 5.000 |
| Barium | S.W. 7080 | EPA-1311/S.W.3050 | 0.100 | ND | 100.000 |
| Cadmium | S.W. 7131 | EPA-1311/S.W.3050 | 0.030 | ND | 1.000 |
| Chromium | S.W. 7190 | EPA-1311/S.W.3050 | 0.100 | ND | 5.000 |
| Lead | S.W. 7420 | EPA-1311/S.W.3050 | 0.040 | 0.06 | 5.000 |
| Mercury | S.W. 7470 | EPA-1311/S.W.3050 | 0.020 | ND | 0.200 |
| Selenium | S.W. 7741 | EPA-1311/S.W.3050 | 0.050 | ND | 1.000 |
| Silver | S.W. 7760 | EPA-1311/S.W.3050 | 0.030 | ND | 5.000 |

ND=NONE DETECTED


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PRECISION
PETROLEUM LABS, INC.

140294

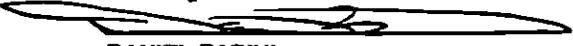
CERTIFICATE OF ANALYSIS

PAGE 2 OF 3

INVOICE NO 5419
P.O. NO.
LAB REF NO: 967-176
PRODUCT ID. 96-03172C
DATE RECEIVED 7-15-96
AUTHORIZED BY LISA
MARTIN

| <u>PARAMETER</u> | <u>TEST METHOD</u> | <u>PREPARATION METHOD</u> | <u>METHOD DETECTION LIMIT MG/L</u> | <u>RESULT MG/L</u> | <u>REGULATORY LEVEL MG/L</u> |
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