N62604.AR.000491
NCBC GULFPORT
5090.3a

GROUNDWATER MONITORING REPORT SITE 8 NCBC GULFPORT MS

12/1/1999

HARDING LAWSON ASSOCIATES

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI

Unit Identification No.: N62604

Contract No.: N62467-89-D-0317/150

Prepared by:

Harding Lawson Associates
2590 Executive Center Circle, East
Berkeley Building
Tallahassee, Florida 32301

Prepared for:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29418

Art Conrad, Code 1865, Remedial Project Manager

December 1999

FOREWORD

To meet its mission objectives, the U.S. Navy performs a variety of operations, some requiring the use, handling, storage, or disposal of hazardous materials. Through accidental spills and leaks and conventional methods of past disposal, hazardous materials may have entered the environment in ways unacceptable by today's standards. With growing knowledge of the long-term effects of hazardous materials on the environment, the Department of Defense initiated various programs to investigate and remediate conditions related to suspected past releases of hazardous materials at their facilities.

One of these programs is the Installation Restoration (IR) program. This program complies with the Comprehensive Environmental Response, Compensation, and Liability Act as amended by the Superfund Amendments and Reauthorization Act, the Resource Conservation and Recovery Act (RCRA), and the Hazardous and Solid Waste Amendments (HSWA) of 1984. These acts establish the means to assess and clean up hazardous waste sites for both private sector and Federal facilities.

The program that has been adopted to address present hazardous material management is RCRA and the HSWA (RCRA/HSWA) corrective action program. RCRA ensures that solid and hazardous wastes are managed in an environmentally sound manner. The law applies to facilities generating or handling hazardous waste. The HSWA corrective action program is designed to identify and clean up releases of hazardous substances at RCRA-permitted facilities.

The Southern Division, Naval Facilities Engineering Command manages and the U.S. Environmental Protection Agency and the Mississippi Department of Environmental Quality oversee the Navy environmental program at Naval Construction Battalion Center (NCBC), Gulfport, Mississippi. All aspects of the program are conducted in compliance with State and Federal regulations, as ensured by the participation of these regulatory agencies.

Questions regarding the delisting petition at NCBC Gulfport should be addressed to Mr. Art Conrad, Code 1865, at (843) 820-5520.

Executive Summary

This report contains the findings of a groundwater investigation at Naval Construction Battalion Center, Gulfport, Mississippi, conducted to determine the extent of dioxin and dioxin-related chemicals at Sites 4, 5, and 8. This investigation was completed in two phases. Phase 1, conducted in October 1998, utilized direct push technology (DPT) to collect groundwater samples. The resulting data was used to guide placement of permanent monitoring wells installed during Phase 2 in February and March 1999. This investigation was completed in accordance with requirements of the Agreed Order (AO) issued by the Mississippi Department of Environmental Quality in February 1996 and follows the work outlined in the *Groundwater Monitoring Workplan* (ABB Environmental Services, Inc. [ABB-ES], 1997d).

Phase 1 activities were focused on characterizing dioxin in the groundwater at Sites 4, 5, and 8 – sites either known to have stored Herbicide Orange (HO) or suspected to have disposed drums with HO. A total of 51 shallow samples and 4 intermediate samples were collected and analyzed for a full suite of analytes. At Site 4 the groundwater was found to contain widespread, low levels of dioxin below levels of concern. Further, the congeners present were not related to the occurrence of HO. Several VOCs were detected, including vinyl chloride, Dichloroethene (DCE), and Trichloroethene (TCE) – indicating the presence of a chlorinated solvent plume. HO-related dioxin was also absent at Site 5. Direct push groundwater samples collected at Site 8 (the HO storage area) were used to both characterize and delineate lateral and vertical extent of dioxin in the groundwater. The vertical extent is restricted to less than 20 feet below the ground surface and lateral extent is at or near the currently established site boundaries.

Additional activities conducted during Phase 1 include a determination of the basewide potentiometric surface and a study of the interaction between groundwater and surface water. The groundwater flow direction for most of the sites at the base is to the northwest. At Site 8, a groundwater divide trends northeast-southwest along the long axis of the site. Although steeper gradients are associated with this divide, the insoluble nature of dioxin and the lack of potential solvents should minimize migration of the dioxin contamination.

The results of the hydrologic study determined that there is a significant interaction between surface water and groundwater. The 6-month analysis shows that groundwater is at a higher elevation than the surface water in Canal No. 1 and indicates that groundwater may be discharging into the canal during part of the year. During short term precipitation events greater than 2 inches the canal may function as a losing stream and be discharging water into the groundwater.

Phase 2 activities included installation and sampling of permanent monitoring wells. Seven characterization and delineation wells were installed at Site 4, eight at Site 5 and ten at Site 8. Downgradient wells were installed at Sites 1, 2, 3, and 7 based on surficial aquifer flow directions. Replacement wells for wells lost during construction of the Pine Bayou Golf Course were installed at Sites 3 and 4. The replacement wells were not sampled. HO-related dioxins were not present at Sites 4 and 5. Site 8 wells were installed as delineation wells only and were used to determine that dioxin was not migrating from the site via groundwater. Downgradient wells at Sites 1, 2, and 3 contained no dioxins. One well at Site 7 contained 51.6 ppq dioxin with an estimated 25 ppq attributed to TCDD, the main HO dioxin congener.

Recommendations as a result of this groundwater study include: (1) no further study of groundwater at Sites 1, 2, 3, and 8; (2) investigation for dioxin in groundwater at Site 7; (3) delineation of the chlorinated solvent plume at Site 4; and (5) additional investigation of non-HO related dioxin at Site 5.

TABLE OF CONTENTS

Groundwater Monitoring Report
Naval Construction Battalion Center
Gulfport, Mississippi

TABLE OF CONTENTS (Continued)

Groundwater Monitoring Report
Naval Construction Battalion Center
Gulfport, Mississippi

APPENDICES

LIST OF FIGURES

Groundwater Monitoring Report
Naval Construction Battalion Center
Gulfport, Mississippi

LIST OF TABLES

GLOSSARY

AO	Agreed Order
bls	below land surface
CLP	Contract Laboratory Program
2,4-D	2,4-dichlorophenoxy-acetic acid
DCB	dichlorobenzene
DCE	dichloroethene
DDE	dichlorodiphenyldichloroethene
DDT	dichlorodiphenyltrichloroethane
DPT	direct-push testing
DQO	data quality objective
EMPC	estimated maximum potential contamination
FID	flame ionizing detector
HAZWRAP	Hazardous Waste Remedial Action Program
HLA	Harding Lawson Associates
HO	herbicide orange
HpCDD	heptachlorodibenzo-p-dioxin
HxCDD	hexachlorodibenzo-p-dioxin
I	intensity
IR	Installation Restoration
MCL	maximum contaminant level
MEK	methyl ethyl ketone
MSDEQ	Mississippi State Department of Environmental Quality
NCBC	Naval Construction Battalion Center
NCF	Naval Construction Force
ND	nondetect
NEESA	Naval Energy and Environmental Support Activity
NS	Not sampled
OCDD	octachlorodibenzodioxin
PARCC	Precision, accuracy, representativeness, comparability, and completeness
PCB	polychlorinated biphenyl
PeCDD	pentachlorodiphenodioxin
ppb	parts per billion
ppm	parts per million
ppq	parts per quadrillion
ppt	parts per trillion
PQL	practical quantitation limit

QC	quality control
RBC	risk-based concentration
RPD	relative percent difference
SCM	site conceptual model
SOUTHNAV-FACENGCOM	Southern Division, Naval Facilities Engineering Command
2,4,5-T	2,4,5-trichlorophenoxyacetic acid
T_c	time of concentration
TCA	trichloroethane
TCDD	tetrachlorodibenzo-p-dioxin
TCLP	toxicity characteristic leaching procedure
TEF	toxicity equivalency factor
TEQ	toxicity equivalence quotient
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection
VOC	volatile organic compound

1.0 INTRODUCTION

Under contract to the U.S. Department of the Navy, Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), this Groundwater Monitoring Report was prepared for the Naval Construction Battalion Center (NCBC) in Gulfport, Mississippi. This report was prepared under the Comprehensive Long-term Environmental Action, Navy, Contract No. N62467-89-D-0317, Contract Task Order No. 150.

On November 6, 1997, the Agreed Order (AO) No. 3466-97 was finalized by the U.S. Navy, the U.S. Air Force (USAF), and the Mississippi State Department of Environmental Quality (MSDEQ). The AO contained identical requirements for the Navy and USAF. These orders included the requirement of a Groundwater Monitoring Work Plan to be submitted to MSDEQ. The work plan described the field investigation to be performed to identify and delineate groundwater impacted by dioxin and dioxin-related contaminants associated with the storage and handling of herbicide orange (HO).

The purpose of the work plan was to guide the efforts to identify and delineate groundwater that potentially contained dioxin within the boundaries of NCBC Gulfport; related to the storage and handling of HO. The following sections provide the objectives, purpose, and scope of the *Groundwater Monitoring Work Plan*; site history; a conceptual model to facilitate an understanding of the existing conditions at the site; and a complete review of all data generated during the investigation.

1.1 OBJECTIVES AND SCOPE OF THE GROUNDWATER INVESTIGATION. The main objective of the investigation was to identify and delineate groundwater that may contain dioxin and dioxin-related compounds associated with Sites 4, 5, and 8 at NCBC Gulfport, as well as to install downgradient monitoring wells at Sites 1, 2, 3, and 7. As part of the process to identify and delineate these compounds in the groundwater, the interaction of surface water and groundwater and a basewide potentiometric surface (groundwater flow direction) were evaluated. This report presents a detailed summary and interpretation of all data collected during this investigation.

The field investigation, designed to assess the limits of dioxin-contaminated groundwater, was completed in two phases. These phases were implemented to limit the number of samples and permanent monitoring wells, thereby reducing the short-term and long-term costs of this program. The goals of the first phase were to delineate and characterize dioxin-contaminated groundwater at Sites 4, 5, and 8; install a piezometer network sufficient to develop a basewide potentiometric surface map; and to install a hydrologic monitoring station at Site 4 to assess the interaction between surface water in Canal No. 1 and groundwater. The first phase included direct-push testing (DPT) to collect groundwater samples at Sites 4, 5, and 8. These three sites were selected for DPT investigation because of known or suspected presence of dioxin in the soil or groundwater.

The results of the first phase of the work were used to refine site conceptual models and focus the installation of permanent monitoring wells in the second phase of these groundwater monitoring activities. The goals of the second phase of work were to (1) adequately characterize the groundwater conditions at Sites 4, 5, and 8 and (2) provide downgradient monitoring wells at Sites 1, 2, 3, and 7.

1.2 BASE HISTORY. NCBC Gulfport is located in the western part of Gulfport, Mississippi, in Harrison County, in the southeastern corner of the state, approximately 2 miles north of the Gulf of Mexico (Figure 1-1). The base is located on the north side of Gulfport (Figure 1-2) approximately 1 mile from Highway 49.

The primary mission of NCBC Gulfport is the support of four battalions of the Naval Construction Force (NCF) and the storage and maintenance of pre-positioned War Reserve Materiel Stock. The NCF support consists of both homeport services and deployed support. Approximately 4,000 military and 1,600 civilian personnel are assigned to, or employed by, the base.

The base occupies 1,100 acres and has an elevation averaging 30 feet above sea level (Figure 1-3), with the only significant exception being the linear piles of bauxite stored on the surface. These bauxite piles range from 30 to 40 feet above the grade of the base. Surface soils are primarily sand to sandy loam with minor clays (Hazardous Waste Remedial Action Program [HAZWRAP], 1991).

1.3 PREVIOUS GROUNDWATER INVESTIGATIONS.

Early HO Studies, 1977-1987. From 1968 through 1977, approximately 23 acres of the base (Site 8) were used for storage and handling of approximately 850,000 gallons of HO in 55-gallon drums. Spills and leaks of HO occurred during that period in the area later known as Site 8 (Areas A, B, and C) (Figure 1-4). Damaged drums of HO were removed from Site 8, although little documentation exists regarding the disposal of damaged drums. The magnitude of the release of HO and dioxin was initially investigated in 1977 and was known as the Initial HO Monitoring Program (Occupational and Environmental Health Laboratory, 1979). Follow up investigations from 1984 to 1987 delineated the horizontal and vertical extent of dioxin in soil to 1 part per billion (ppb). The results of these studies demonstrated that surface soil and sediment on Site 8 (Areas A, B, and C) were widely contaminated with TCDD above 100 ppb. The delineation work at Site 8 was followed by full-scale incineration of the soils contaminated above 1 ppb. The incineration was completed in 1988, and the resulting ash was stored in piles on Area A of Site 8 (HAZWRAP, 1991). While the reports from these investigations discuss the likelihood of groundwater containing TCDD at Site 8, no groundwater samples were collected from Site 8.

Verification Study, 1987. In 1987, Harding Lawson Associates (HLA) conducted a Verification Study (HLA, 1987) that included the geophysical and hydrologic studies at the Installation Restoration (IR) Sites 1 through 7. Site 8 was not included in this study.

The geophysical study determined the limits of the IR sites. The results of the hydrologic study were as follows:

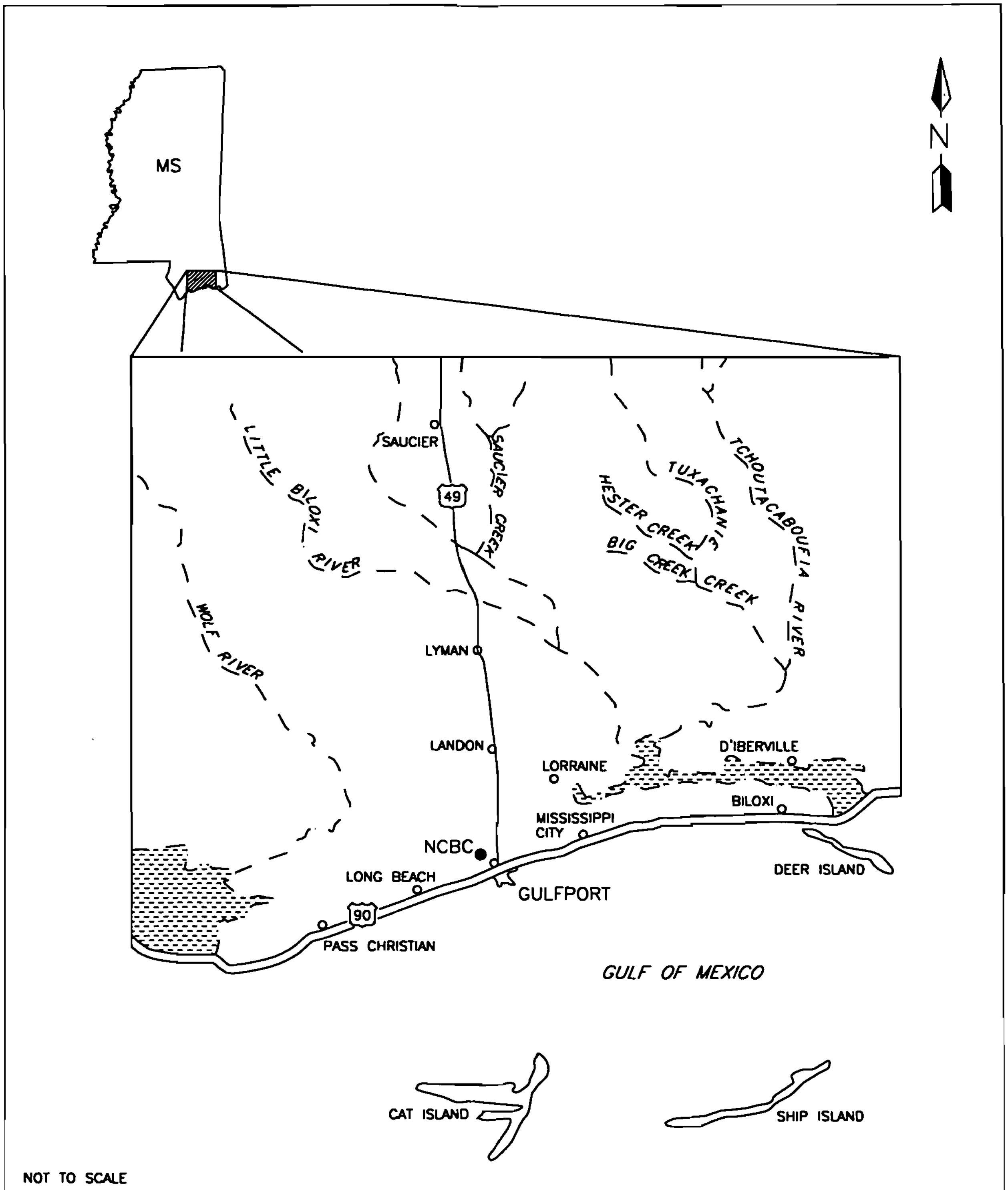
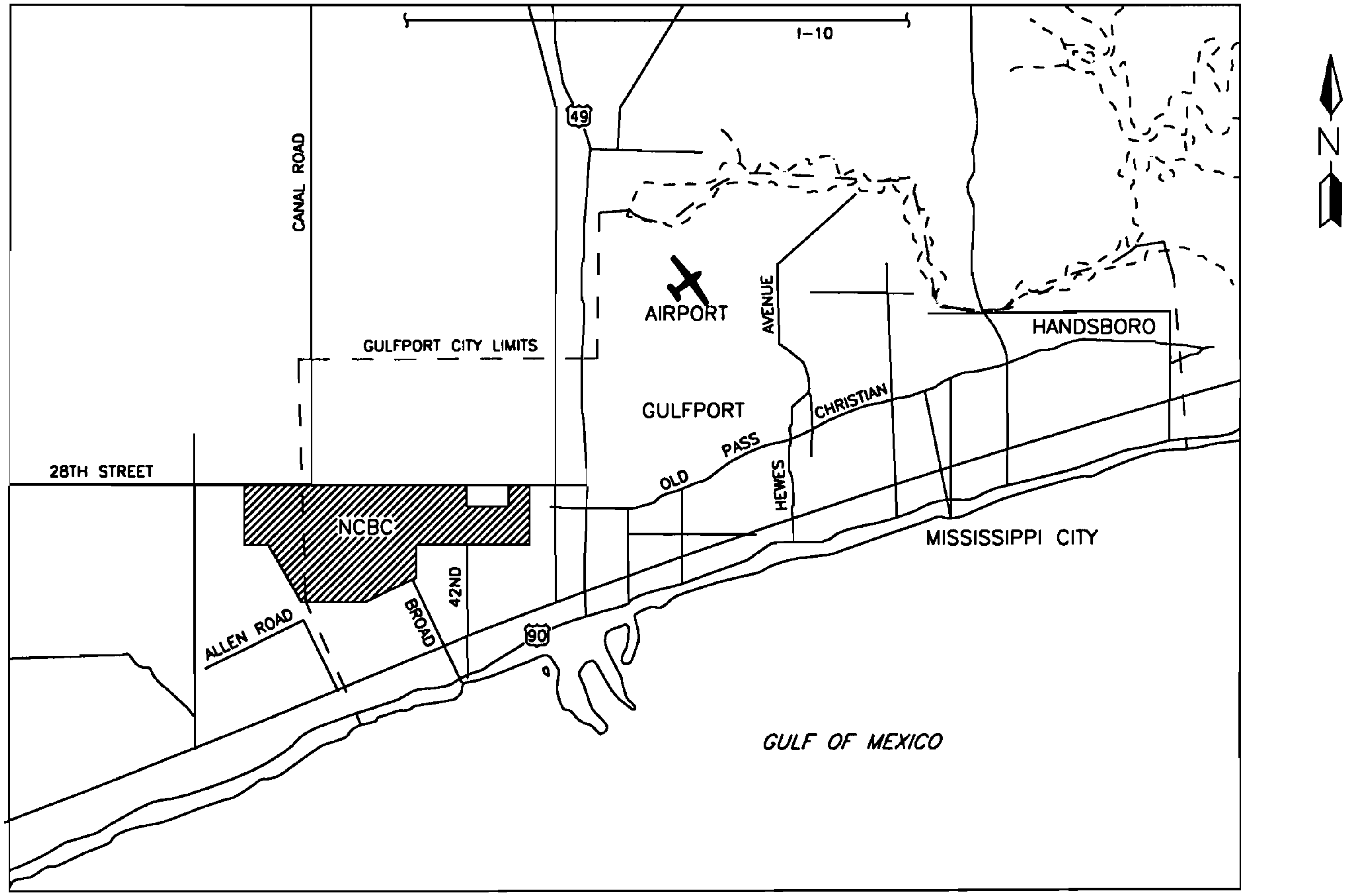


FIGURE 1-1

LOCATION MAP

GROUNDWATER MONITORING REPORT
NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

C:\DWG\HLA\02566-26\LOCATION MAP\DMF\990420



NOT TO SCALE

C:\DWG\HLA\02566-26\VICINITY\DMF\990921

FIGURE 1-2

VICINITY MAP

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATALLION CENTER

GULFPORT, MISSISSIPPI

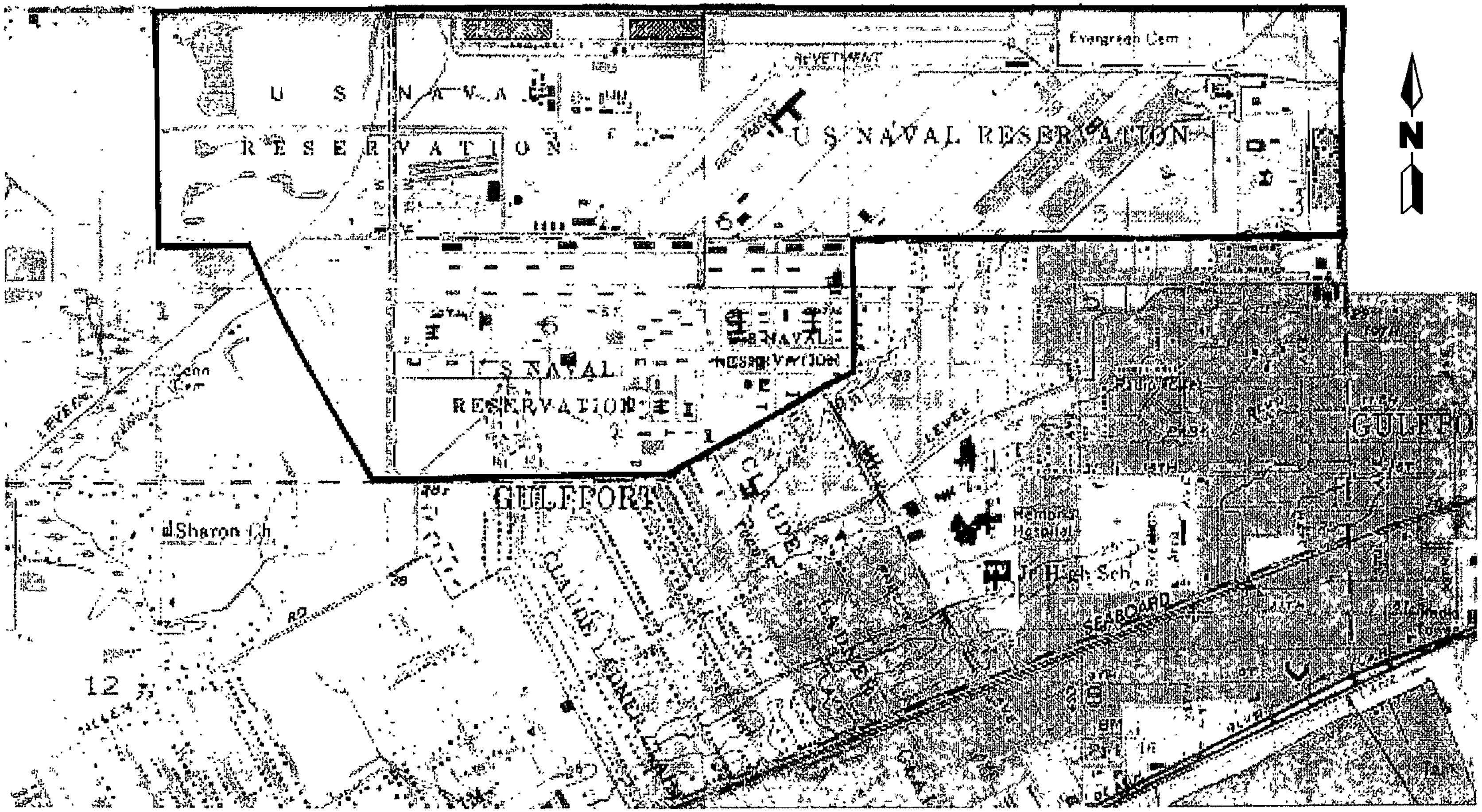


FIGURE 1-3

SITE VICINITY MAP

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI

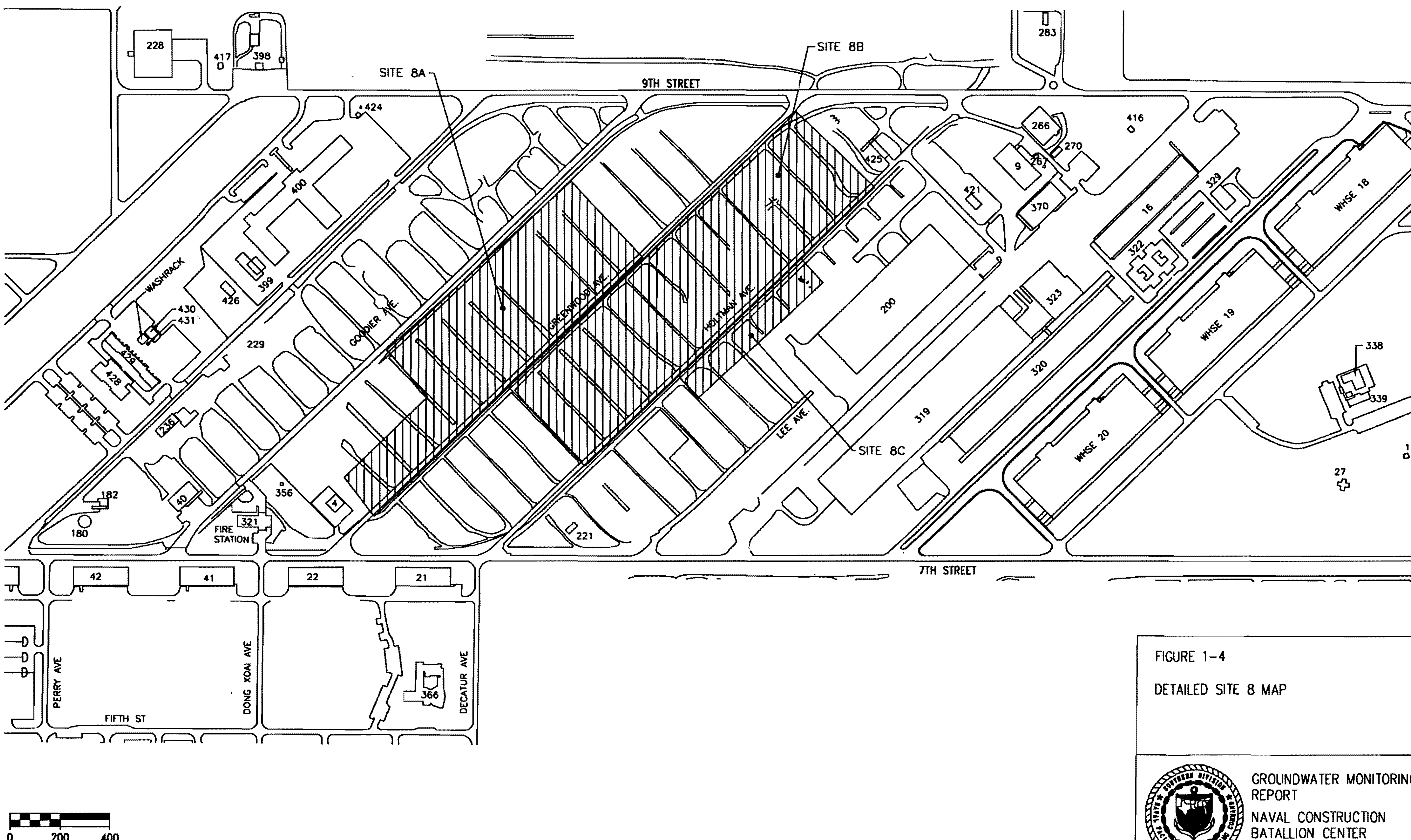


FIGURE 1-4

DETAILED SITE 8 MAP

GROUNDWATER MONITORING REPORT
NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

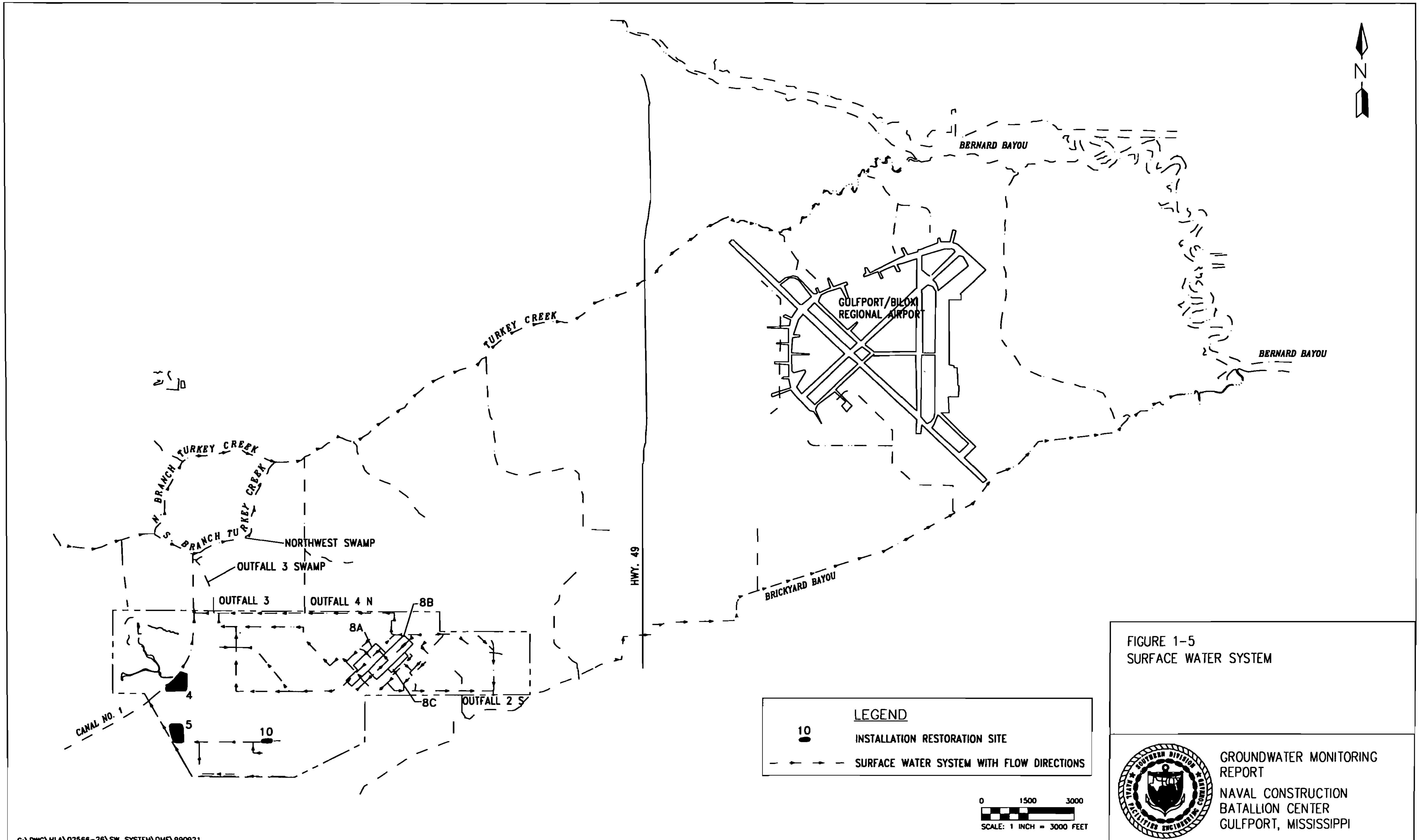


FIGURE 1-5
SURFACE WATER SYSTEM

GROUNDWATER MONITORING REPORT
NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

- Groundwater flow in the shallow aquifer is to the northwest.

- Surface water flow on and in the vicinity of NCBC Gulfport is to the north via Canal No. 1.

- The coincidence of surface water flow and groundwater potentiometric surface maps suggests a close interrelationship on the base.

- No significant chemical contamination was discovered in base potable wells or in the monitoring wells installed at Sites 1 through 7.

- The surficial aquifer consists of unconsolidated silty sand to a depth ranging from 15 to 30 feet below land surface (bls). A sandy fat clay was encountered below the silty sand.

The Verification Report (HLA, 1987) recommended additional monitoring wells in downgradient locations at Sites 1 through 7, as well as the resampling of monitoring wells at Sites 1 through 5.

Site 6 Fire-Fighting Training Pits/Basewide Resampling, 1994/1995. In 1994 and 1995 a groundwater study was undertaken at Site 6, former fire-fighting training pits, following the discovery in 1992 of nearly 3 feet of product in a monitoring well installed during the previous Verification Study (HLA, 1987). A direct push ground-water sampling study was completed, followed by the installation of additional permanent monitoring wells. The findings of this study confirmed the following:

- The presence of a free-phase plume of diesel fuel and heating oil at the site;

- The depth to a sandy clay at this site is approximately 30 feet bls; and,

- Shallow aquifer groundwater flow was to the west-northwest, although the gradient was relatively flat.

A product removal and groundwater remediation system that utilized an interceptor trench, oil/water separator, and air stripper technique was installed at Site 6 in 1996.

Site 8 Hydrologic Assessment, 1995. A hydrogeologic assessment at Site 8 was performed in 1994 and 1995 (ABB Environmental Services [ABB-ES], 1994a, 1995a, 1995b, 1995c, 1995d, and 1996a) as an addendum to the Versar (1990) Sampling and Analysis Plan (SAP) to determine the impact of HO storage on groundwater. Quarterly groundwater samples were collected from 4 monitoring wells along with 10 samples of ash. Below are findings from these monitoring and sampling activities.

- Ash sample results for TCDD ranged from nondetect to approximately 70 parts per trillion (ppt), although toxicity characteristic leaching procedure (TCLP) results on the samples with highest results were less than 3 ppt.

- Groundwater flow across Site 8 is generally to the west-northwest.

- TCDD was detected in groundwater samples collected from shallow monitoring wells at concentrations up to 60 ppq, which is above the maximum contaminant level of 30 ppq.

- TCDD concentrations fluctuated with groundwater levels. For example, during periods of higher groundwater elevations at monitoring well GPT-A-2, TCDD TEQs were approximately 60 ppq and during periods of lower groundwater elevations, TCDD TEQs were 0.15 ppq.

Also in 1995, all of the monitoring wells installed in 1987 Verification Study (HLA, 1987), were resampled including analyses for dioxin. The results of this study indicated the following.

- Dioxin was detected in at least one well from all the sites.

- A monitoring well from Site 4 (GPT-4-3) had the highest result (34.1 parts per quadrillion [ppq]), which exceeded the regulatory limit.

- No other significant levels of contaminants were discovered.

The results from this effort were used in the Delisting Petition Addendum (ABB-ES, 1997b). The hydrogeologic assessment did confirm the presence of dioxin-contaminated groundwater, which occurred as a result of the storage and handling of HO at Site 8. The dioxin congeners reported in the groundwater samples at Site 8 are proportionally similar to those found in HO. The extent of groundwater contamination was not the objective of the hydrologic investigation. This report recommended the delineation of the horizontal and vertical extent of dioxin-contaminated groundwater at Site 8.

Surface Water and Sediment Delineation Study, 1997. As part of the Surface Water and Sediment Delineation Study (ABB-ES, 1997c), four shallow monitoring wells were installed and sampled at Site 4, and three additional wells were installed at Site 5. These wells were installed along Canal No. 1 and were intended to investigate the condition of groundwater, and the potential impact to observed seeps along the bank of Canal No. 1. The results of the monitoring well sampling include the following. Figure 1-5 shows the surface water systems investigated during that study. References to these ditches will be made from time to time in this Groundwater Investigation Report.

- The dioxin results from Site 4 ranged from a low of 0.65 ppq to 26.4 ppq.

- The dioxin results from Site 5 were consistently higher than at Site 4 with a range of 39.1 ppq to 42.7 ppq.

- A seep sample from Site 4 produced a result of 82.9 ppq with a TCDD result of 14.1 ppq. The presence of TCDD and pentachlorodiphenodioxin (PeCDD) in the seeps can be a strong indication that HO (2,4,5-trichlorophenoxyacetic acid [2,4,5-T]) may be the source of the dioxins and furans in the samples. These results are of special concern since both seeps spill directly into Canal No. 1.

- The results from well GPT-4-5 indicated vinyl chloride at 37 ppb, 1,2-dichloroethene (DCE) (total) at 180 ppb, and trichloroethene at 4.7 ppb.

The recommendations from this investigation included additional investigation of the vinyl chloride and DCE at Site 4 due to the fact that these contaminants are known carcinogens, highly mobile in groundwater, and located within 1,000 feet (downgradient) of the base boundary.

1.4 REPORT ORGANIZATION. This report is organized into seven chapters: (1) Introduction to the program; (2) Phase 1 activities and results; (3) Phase 2 activities and results; (4) an interpretation and analysis of data; (5) presentation of data validation activities; (6) conclusions; and (7) recommendations.

The word "dioxin" will be used often in this document. Unless otherwise specified, such as the individual congener tetrachlorodibenzo-p-dioxin (TCDD), dioxin will be referring to the toxicity equivalence quotient (TEQ), which is a sum of the concentration of each of the dioxin and furan congeners with chlorine atoms at the 2, 3, 7, and 8 molecular positions multiplied by their individual toxic equivalency factor (TEF).

2.0 PHASE 1

The objective of the field investigation was to assess the extent of groundwater contamination associated with the storage and handling of HO on the base and to provide an understanding of a basewide potentiometric surface. The investigation encompassed a focused, two-phased approach to meet the goals of this project while controlling costs by limiting the number of samples and permanent monitoring wells.

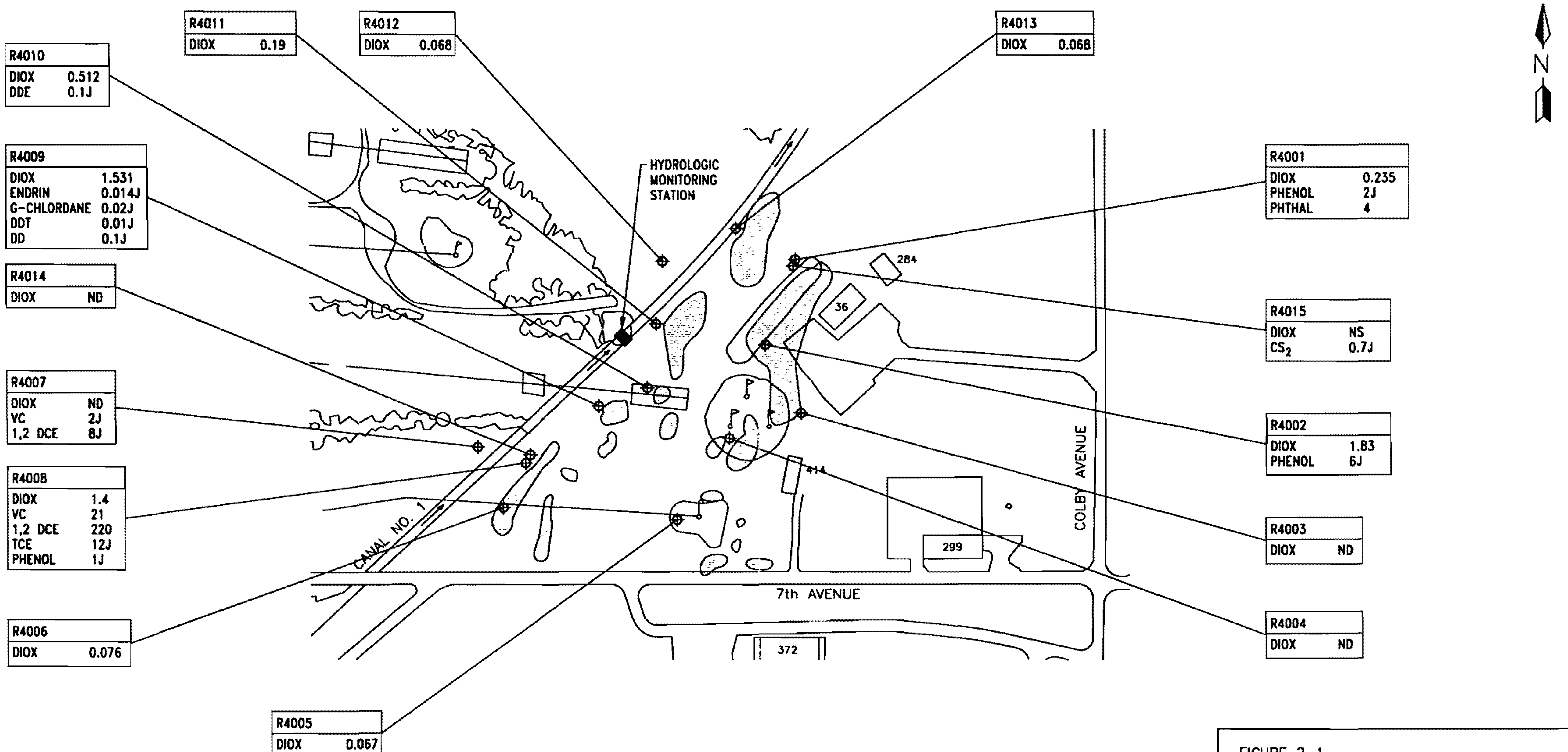
The first phase included using DPT to delineate dioxin-contaminated groundwater at Sites 4, 5, and 8; the installation of a hydrologic monitoring station at Site 4; and the installation of piezometers to determine the basewide potentiometric surface. The second phase included the installation of permanent monitoring wells.

This chapter provides an overview of the Phase 1 activities completed in October 1998 and reviews the results associated with this phase of the groundwater investigation. Phase 1 sampling activities and results were used to guide and improve the effectiveness of Phase 2 activities. The following sections present the Phase 1 data and recommendations used to guide Phase 2 activities (Chapter 3.0).

2.1 PHASE 1 ACTIVITIES. Phase 1 activities were focused on characterizing dioxin in the groundwater at Sites 4, 5, and 8. Characterization was performed using direct push groundwater collection. The Phase 1 sample locations were primarily based on the geophysical study conducted by Morrison Knudsen (MK) (1996). The results of their geophysical and DPT study indicated the presence of magnetic anomalies that approximate the locations of the disposal cells in each of the landfills (Figures 2-1, 2-2, and 2-3). These three figures show the locations of the initial DPT samples for Sites 4, 5 and 8, respectively. The initial DPT samples at these sites were concentrated in and around these disposal cells because dioxin is not very mobile in groundwater (ABB-ES, 1995e).

DPT groundwater samples were collected from were approximately the same depth as the bottom of the disposal cell(s) investigated during the geophysical investigation described in the work plan (ABB-ES 1997d) or 3 feet below the water table, whichever was deeper. Groundwater samples were collected at this depth to focus on potential dioxin source(s). Additional DPT groundwater samples were also collected at greater depths where the first occurrence of clay was encountered at each site. The following paragraphs describe the Phase 1 investigation at each site in more detail. A total of 55 groundwater samples were collected during the Phase 1 investigation. Table 2-1 presents the distribution of samples collected. Appendix A contains a comprehensive table of data collected during DPT sampling including sampling depth and analytical parameters. Groundwater samples collected at Sites 4 and 5 were analyzed for a full suite of analyses due to the wide variety of contaminants that potentially exist at these two sites. A full suite consists of:

This page intentionally left blank.



LEGEND

- MAGNETIC ANOMALY
- SHALLOW SAMPLE DEPTH
- INTERMEDIATE SAMPLE DEPTH

NOTE

DIOXIN RESULTS ARE SHOWN IN ppq (PARTS PER QUADRILLION). ALL OTHER RESULTS ARE IN ppb (PARTS PER BILLION).

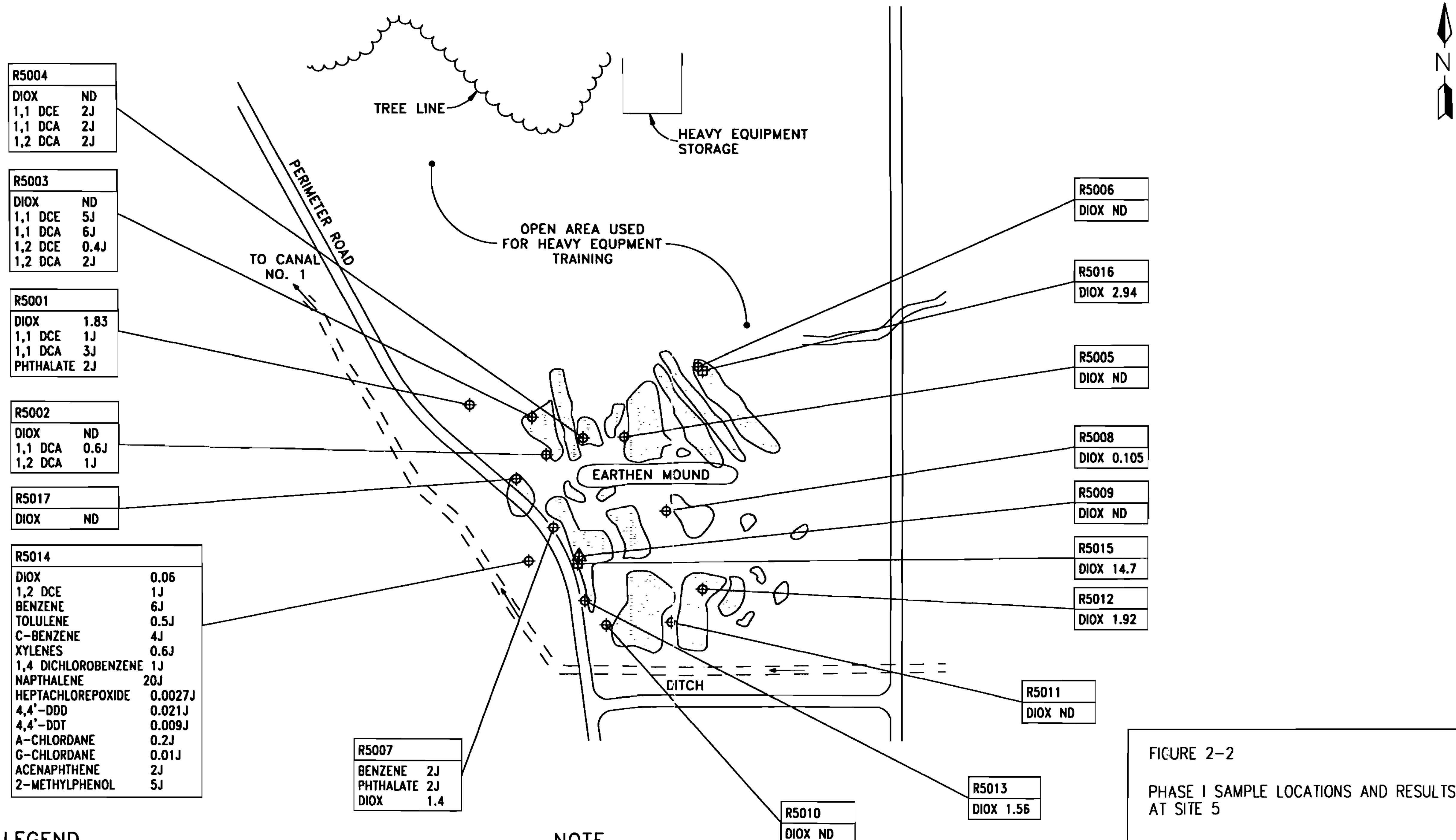
0 100 200
SCALE: 1" = 200'

FIGURE 2-1

PHASE I SAMPLE LOCATIONS AND RESULTS AT SITE 4

GROUNDWATER MONITORING REPORT
NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

C:\DWG\HLA\02566-26\4-results\DMF\990921



LEGEND

MAGNETIC ANOMALY

SHALLOW DEPTH SAMPLING LOCATION

INTERMEDIATE DEPTH SAMPLING DEPTH

NOTE

DIOXIN RESULTS ARE SHOWN IN ppq (PARTS PER QUADRILLION). ALL OTHER RESULTS ARE IN ppb (PARTS PER BILLION).

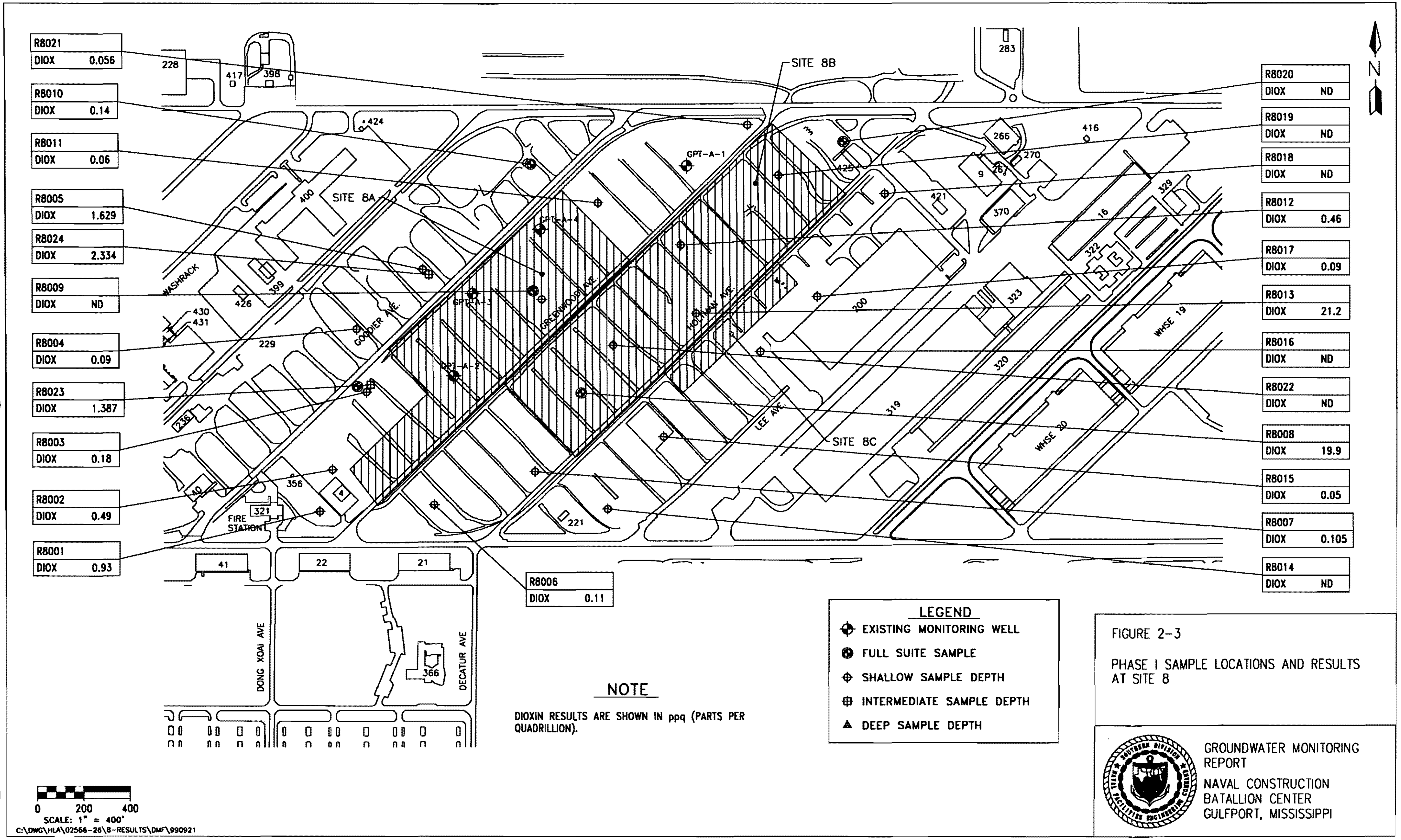
FIGURE 2-2

PHASE I SAMPLE LOCATIONS AND RESULTS AT SITE 5

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATALLION CENTER GULFPORT, MISSISSIPPI

C:\DWG\HLA\02566-26\5-RESULTS\DMF\990921



LEGEND

- EXISTING MONITORING WELL
- FULL SUITE SAMPLE
- SHALLOW SAMPLE DEPTH
- INTERMEDIATE SAMPLE DEPTH
- DEEP SAMPLE DEPTH

NOTE

DIOXIN RESULTS ARE SHOWN IN ppq (PARTS PER QUADRILLION).

FIGURE 2-3

PHASE I SAMPLE LOCATIONS AND RESULTS AT SITE 8

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

C:\DWG\HLA\02566-26\8-RESULTS\DMF\990921

- SW-846, 8290, dioxins and furans;

- SW-846, 8150B chlorinated pesticides;

- U.S. Environmental Protection (USEPA) Contract Laboratory Program (CLP) (1992), volatile organic compounds (VOCs);

- USEPA CLP, semivolatile organic compounds (SVOC); and

- USEPA CLP, organochlorine pesticides.

Table 2-1
Phase 1 DPT Samples

Groundwater Monitoring Report
Naval Construction Battalion Center
Gulfport, Mississippi

Site No.	Shallow	Intermediate	Deep	Total
1	--	--	--	0
2	--	--	--	0
3	--	--	--	0
4	14	--	--	[1]14
5	15	2	--	[1]17
7	--	--	--	0
8	22	2	--	[2]24
Total DPT Samples				55

[1] All samples were analyzed for full suite
[2] Five samples analyzed for full suite, remaining samples analyzed for dioxin and volatile organic compounds only

Notes: DPT = direct push testing.
--- = no data.

Site 4. The DPT investigation at Site 4 began around the disposal cells identified during the geophysical investigation described in the work plan (ABB-ES, 1997d). While the size and orientation of these cells have a great deal of variety, none of the cells could be excluded on that basis. Samples were analyzed for a full suite of analytes based on the wide array of disposal activities and, therefore, the wide variety of potential contaminants at this site.

The sampling strategy at Site 4 utilized the geophysical data, which outlined the potential disposal cells (shown on Figure 2-1 as magnetic anomalies), to guide the collection of discrete groundwater samples at the bottom of the disposal cells. All samples at Site 4 were collected from a depth of 20 feet or shallower. As stated in the work plan, samples were also to be collected from a greater depth at clay contact. Since a silty clay was encountered at a shallower depth (approximately 20 to 30 feet bls) than was anticipated, deeper samples were not collected. Appendix A contains water quality parameters collected during the Phase 1 direct-push study.

The direct-push equipment used to collect the groundwater samples was a GeoProbe® unit using 1 1/8-inch diameter hollow rods and 1-inch-diameter stainless-steel 0.005-inch slot screen. When deployed, the stainless-steel screen was 4 feet long opening to collect groundwater. Groundwater samples were collected inside the hollow rods with a peristaltic pump and Teflon© tubing. The tubing was disposed of after the collection of each sample. The direct-push rods and screens were thoroughly decontaminated between locations.

Fourteen groundwater samples were collected and analyzed for a full suite of analyses. At R4015, Figure 2-1, low aquifer yields only permitted the collection of enough volume for a volatile sample and analysis.

As expected, given that Site 4 was a landfill, large amounts of debris were encountered during DPT activities. The disposal cells appear to be covered by approximately 2 to 3 feet of sandy fill material. In some cases, the debris would not allow penetration to a depth sufficient for groundwater sample collection. The bottom of the disposal cells could not be determined using this equipment, although it is assumed to not extend significantly into the saturated zone – which was found to be 6 to 8 feet bls. Based on these observations, the greatest concentration of debris was to the west of Building 36, the current golf course club house. No debris was encountered west of Canal No. 1.

Flame ionizing detector (FID) readings of volatile organic vapors at the opening of the DPT hollow rods produced significant results (greater than 2,500 parts per million [ppm] filtered) at locations directly west of Building 36 and also at locations on the southwest part of the site (e.g., R4008 and R4010).

Site 5. The DPT investigation at Site 5 began around the disposal cells identified during the geophysical investigation described in the work plan (ABB-ES, 1997d). While the size and orientation of these cells have a great deal of variety none of the cells could be excluded on that basis. Samples were analyzed for a full suite of analytes based on the disposal of a wide variety of potential contaminants at this site.

The investigation at Site 5 was completed between October 8 and 11, 1998. The sampling strategy at Site 5 utilized the geophysical data, which outlined the potential disposal cells (shown as magnetic anomalies on Figure 2-2), to guide the collection of discrete groundwater samples at the bottom of the disposal cells. Appendix A contains the water quality parameters collected during the Phase 1 direct-push study. Groundwater samples at Site 5 were also collected using the GeoProbe® unit with 1 1/8-inch diameter hollow rods. Groundwater samples were collected inside the rods with a peristaltic pump and Teflon© tubing. The dedicated tubing was disposed of after the collection of each sample. The direct-push rods and screens were thoroughly decontaminated between locations.

Fourteen shallow groundwater samples (less than 25 feet bls) were collected from Site 5, and two intermediate depth samples were collected (29 to 50 feet bls) (R5015 and R5016). However, the deep (greater than 100 feet) sample collection was prevented by the thickness of a silty clay-rich zone. At Site 5, landfill debris was only encountered in the southwest part of the site – in the area of R5009, R5010, and

R5014. This same area produced the only significant FID readings, with R5014 yielding greater than 5,000 ppm at the DPT rod opening.

Site 8. The Phase 1 investigation at Site 8 was performed differently than at Sites 4 and 5 because the source release and transport mechanisms for groundwater contamination are different from those at Sites 4 and 5. At Site 8, potential contamination was released at the surface, not buried as at Sites 4 and 5. Therefore, groundwater samples were collected from the shallowest parts of the surficial aquifer. Additionally, the groundwater is known to contain low levels of dioxin (ABB-ES, 1995a through 1995e). Based on information from the existing four wells and the history of the site, the objective of groundwater sampling was to determine the outer extent of dioxin-contaminated groundwater, as well as the collection of a limited number of characterization samples within the site boundaries. 24 samples were collected at Site 8; five were analyzed for full suite, while the remaining samples were analyzed for dioxin and VOCs only. A total delineation of dioxin-contaminated groundwater within the site boundaries was not proposed at this site.

The location of Phase 1 samples are shown on Figure 2-3. Selection of the zone to be sampled was based on observations of depth versus dioxin levels in earlier studies. For example, during an observation of four monitoring wells in 1995 (ABB-ES, 1995a and 1995e), it was discovered that when water levels dropped by more than 2.5 feet, dioxin levels analyses were reduced to nearly nondetect from levels in the 40 to 60 ppq range. This indicates that dioxin contamination generally tends to remain within the upper 2 feet of the saturated zone.

Twenty-two shallow groundwater samples (less than 25 feet bls) were collected from Site 8; two intermediate depth samples were collected (28 to 50 feet bls) (R8023 and R8024); however the deep (greater than 100 feet) sample collection was prevented by the thickness of a silty/sandy clay-bearing zone.

Piezometer Installation. Piezometers were installed at eight locations around the base during Phase 1 activities. Three of the piezometer locations have paired piezometers, with one piezometer at the water table and the other screened at 40 to 50 feet bls. Piezometers PZ4, PZ7 and PZ9 are deep installations. The piezometers were installed for the purpose of collecting groundwater levels only, and not for collecting samples. Potentiometric data generated from these piezometers were used to properly place downgradient monitoring wells at the IR sites. In addition, the groundwater levels collected from these piezometers, as well as selected on-base monitoring wells, aided in the assessment of the potentiometric surface and groundwater flow directions. Groundwater measurements can be seen in Table 2-2, and a basewide potentiometric surface map can be seen in Figure 2-4.

Hydrologic Monitoring Station. The interaction between surface water and groundwater at Sites 4 and 5 is important in assessing pathways of contaminant transport, potential receptors, and the scope of any potential remedial action that may need to be taken. For instance, if dioxin-contaminated fluids are entering the ditches at either Site 4 or Site 5, that pathway would need to be removed or cut off before sediment remediation/ removal should take place.

To support evaluation of the interaction between the surface water and the groundwater in the surficial aquifer, a stream monitoring station was placed at Site 4 (Figure 2-1).

Table 2-2
Groundwater Measurement Data

Groundwater Monitoring Report
Naval Construction Battalion Center
Gulfport, Mississippi

Date	Time	Piezometer or well no.	Total Depth (feet)	TOC to Water (feet)	TOC Elevation (feet)	GW Elevation (feet)
10/24/98	14:43	PZ-01	20.41	2.53	22.50	19.97
10/24/98	15:09	PZ-02	20.08	4.41	29.73	25.32
10/24/98	16:42	PZ-03	20.04	5.09	32.99	27.90
10/24/98	16:44	PZ-04	51.31	7.47	33.24	25.77
10/24/98	16:51	PZ-05	20.29	4.52	32.95	28.43
10/24/98	16:58	PZ-06	20.10	6.84	29.92	23.08
10/24/98	17:00	PZ-07	51.75	9.49	30.35	20.86
10/24/98	17:06	PZ-08	20.26	5.85	30.67	24.82
10/24/98	17:09	PZ-09	51.54	3.86	31.36	27.50
10/24/98	17:14	PZ-10	20.50	4.65	27.79	23.14
10/24/98	17:57	GPT A-2	15.79	4.91	31.59	26.68
10/24/98	17:46	GPT A-4	14.40	6.77	33.71	26.94
10/24/98	16:05	GPT 1-2	29.72	6.34	28.72	22.38
10/24/98	16:16	GPT 2-2	20.59	6.27	24.75	18.48
10/24/98	15:00	GPT 3-2	31.80	6.55	24.89	18.34
10/24/98	15:37	GPT 4-1	21.48	3.18	24.17	20.99
10/24/98	18:06	GPT 4-3	24.66	9.70	30.41	20.71
10/24/98	15:30	GPT 5-3	23.24	9.72	30.13	20.41
10/24/98	16:30	GPT 6-2	24.58	7.72	31.26	23.54

Notes: TOC = top of well casing.
GW = groundwater.

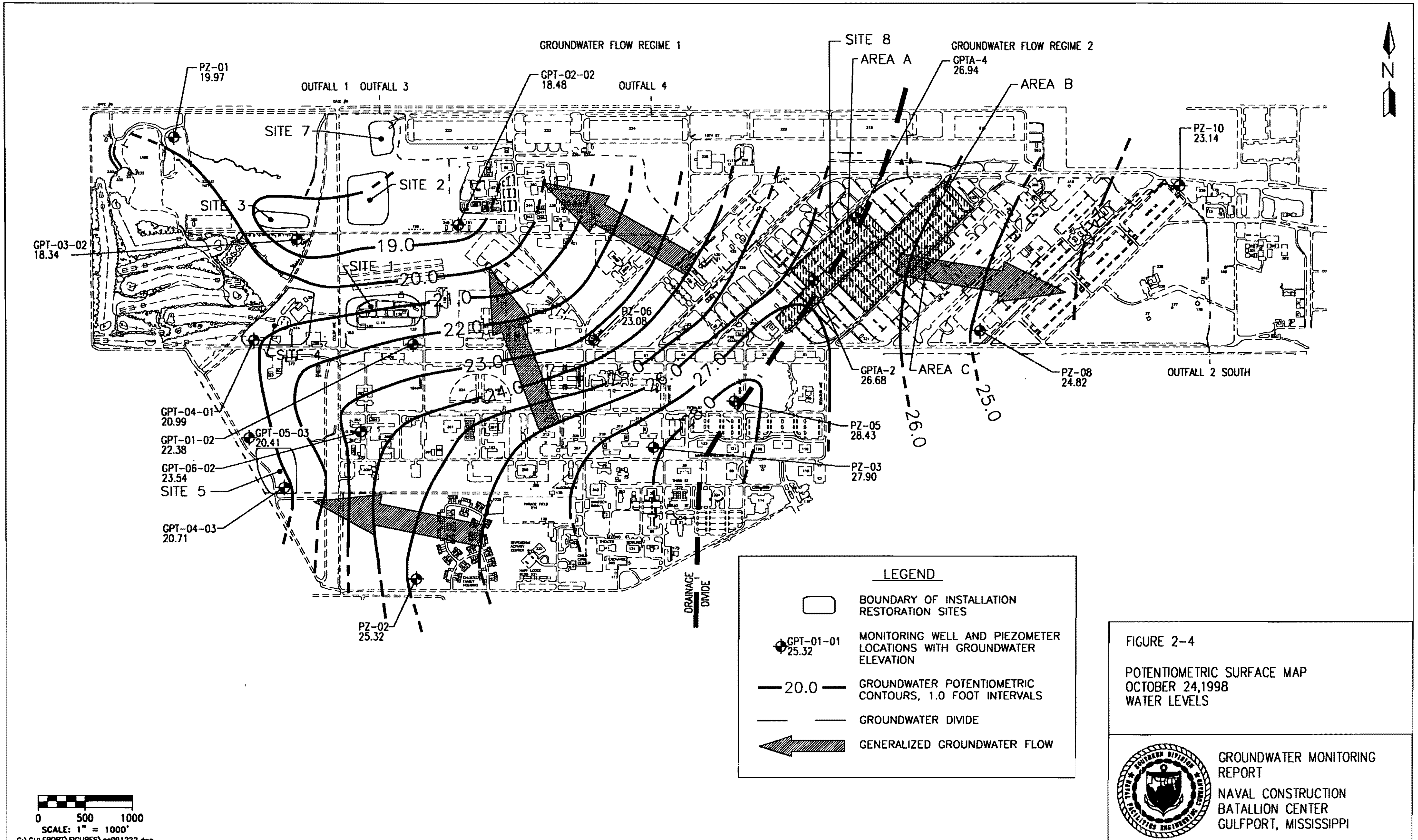


FIGURE 2-4

POTENTIOMETRIC SURFACE MAP
OCTOBER 24,1998
WATER LEVELS

The station consisted of three monitoring points: a still well installed in the ditch, a piezometer installed directly adjacent to the ditch in the surficial aquifer and a rainfall gauge.

The piezometers and rainfall gauge were instrumented with transducers that were linked to a data-logger to store data. The data-logger was connected, via a cell modem, so data could be obtained and processed remotely. This allowed access to data during normal flow conditions as well as peak flow and rainfall events. Remote access of flow conditions will also allow for an earlier and more efficient design process for activities placed in the *Interim Corrective Measures Workplan* (ABB-ES, 1996b).

2.2 PHASE 1 SAMPLING RESULTS. MSDEQ requires that the results presented in this report are evaluated against USEPA MCLs (USEPA, 1996). If an MCL is not listed for the compound, it is evaluated against USEPA Region III Risk-Based Concentration (RBC) values (USEPA, 1999). Comprehensive data tables for all Phase 1 sampling are in Appendix B.

2.2.1 Site 4 Phase 1 dioxin results at Site 4 indicated widespread, low levels of dioxin in the groundwater (Figure 2-1). Results ranged from nondetect (ND) to a high of 1.88 ppq (R4002), which is well below the maximum contaminant level (MCL) of 30 ppq established by the USEPA (1996). The main congeners observed in these samples were octachlorodibenzodioxin (OCDD) and heptachlorodibenzo-p-dioxin (HpCDD), indicating that herbicide orange is not a likely source. The types of congeners associated with HO include TCDD and PeCDD. When other more highly chlorinated congeners (HpCDD and OCDD) are reported, other sources (e.g., papermills, incineration and wood treatment) are suspected.

Several VOCs were reported above MCLs at Site 4. At sample R4008, vinyl chloride (result 21 ppb, MCL 2 ppb), 1,2-Dichloroethene (1,2-DCE) (result 220 ppb, MCL 70) and trichloroethene (TCE) (result 12 ppb, MCL 5 ppb) exceeded MCLs. Vinyl chloride was found at R4007 the MCL (result 2 ppb). The locations of R4007 and R4008 are near the monitoring well GPT-4-5, which had vinyl chloride and 1,2-DCE above MCLs in 1997 (ABB-ES, 1998).

Other organic compounds detected above practical quantitation limits (PQLs) yet below MCLs, include dichlorodiphenyldichloroethene (DDE) and dichlorodiphenyl-trichloroethane (DDT) at samples R4009 and R4010. Carbon disulfide was detected in R4015 at levels well below MCLs. Phthalates and acetone were detected in several samples at levels indicative of laboratory contamination, which is a common occurrence in these analyses.

2.2.2 Site 5 Phase 1 dioxin sample results at Site 5 showed widespread low-level dioxin in the groundwater (Figure 2-2). Results ranged from several NDs to a high of 18.57 ppq (R5015), which is below the MCL for dioxin (30 ppb) (USEPA, 1996). The primary congeners observed in these samples were OCDD and HpCDD – the absence of TCDD indicates that HO is not a likely source.

A large number of chemicals were detected in sample R5014 (Figure 2-2). One of the chemicals was above the MCL – benzene (6 ppb), and two of the chemicals were above RBC values – 1,4 dichlorobenzene (1 ppb) and total naphthalene (20 ppb). No other

Phase 1 groundwater samples at Site 5 produced results that exceeded either MCLs or RBC values.

Other organic compounds reported from groundwater samples at Site 5 include dichloroethane (DCA) and DCE in samples near disposal cells from the western part of the site. Organic compounds reported below MCLs include DDE and DDT at samples R5001 and R5014. Phthalates were detected in several samples at levels indicative of laboratory contamination, which is a common occurrence in semi-volatile analyses.

2.2.3 Site 8 Two types of groundwater samples were collected at Site 8: characterization and delineation (Figure 2-3). The characterization samples were collected within the boundaries of Site 8 and the delineation samples were collected around Site 8 approximately 100 to 200 feet from the site boundary.

The characterization samples produced results from nondetect (ND) to 21.2 ppq (R8013). At R8013 and R8008 (19.9 ppq), TCDD was the only congener detected – TCDD presence is a strong indication that HO was the source of dioxins.

The delineation samples had levels of dioxin significantly lower than the characterization samples, ranging from ND to 2.33 ppq (R8024). TCDD was not detected in any of the delineation samples. The localization of dioxin levels reflects the relative immobility of this compound in groundwater.

Samples collected from the intermediate zone (greater than 35 feet) showed no trend, increasing or decreasing, when compared to paired shallow samples. TCDD was not detected in any intermediate zone samples in Phase 1.

No other chemicals were detected in Phase 1 samples. The following section summarizes the Phase 1 conclusions and recommendations used to guide the implementation of Phase 2.

2.3 PHASE 1 CONCLUSIONS AND RECOMMENDATIONS. The conclusions drawn from Phase 1 results include the following.

- The Phase 1 data from Site 4 did not indicate high levels of dioxin contamination in the areas studied. Furthermore, the lack of TCDD and PeCDD reduce the potential that a significant source of HO derived from prior disposal operations at the site. However, other organic compounds were disposed of at the site, and a resulting plume of 1,2-DCE and vinyl chloride above MCLs exists at the southwest corner of the site - as indicated by several sampling points. Further investigative activities were continued in Phase 2 and potentially abatement/remedial activities may need to be implemented.

- The Phase 1 data from Site 5 supports similar conclusions as those from Site 4. Again, the types of dioxin congeners and low levels of observed dioxin TEQs, supports the conclusion that HO was not likely disposed of in significant quantities at Site 5. Unlike Site 4 however, contamination was encountered and observed near disposal cells that could not be sampled on the southwestern part of the site. These cells were scheduled to be more fully investigated in Phase 2. Other organic compounds at Site 5 included benzene, 1,4-DCE, and naphthalene above regulatory limits. Whether this is a larger plume or a small isolated zone of contamination has not been determined.

- The Phase 1 investigation at Site 8 successfully delineated dioxin contamination in the groundwater. Characterization samples inside Site 8 indicated that HO as the primary source based on the occurrence of TCDD. The delineation samples encircling the site did not produce any TCDD or PeCDD and all samples were below regulatory limits. Therefore, Phase 2 at Site 8 included the installation of permanent monitoring wells to comply with long-term monitoring of groundwater beneath this site.

3.0 PHASE 2

The objective of the field investigation was to determine the extent of groundwater contamination associated with the storage and handling of HO on the base and to provide a definitive basewide potentiometric surface. The Phase 2 investigation included the installation and sampling of permanent monitoring wells. The monitoring wells were installed to perform one of three goals: (1) downgradient wells to provide water quality data representative of downgradient conditions; (2) characterization wells to characterize extent (both horizontally and vertically) of contamination within the boundaries of the sites; and (3) upgradient wells to isolate individual sites with adjacent boundaries.

This chapter reviews the activities and results activities associated with the second phase of the groundwater investigation. Phase 1 sampling activities and results were used to guide and improve the effectiveness of Phase 2 activities. The following sections present a brief overview of the field investigation activities associated with this second phase and results and conclusions of data collection.

3.1 PHASE 2 ACTIVITIES. Based on the results of the Phase 1 study, locations for permanent monitoring well installation were established for Sites 4, 5, and 8. Downgradient wells were selected for Sites 1, 2, 3, and 7 based on the surficial aquifer flow directions identified during Phase 1, as discussed in Chapter 4.0. Finally, replacement wells were reinstalled at Sites 3 and 4 for wells that were damaged during the construction of Pine Bayou Golf Course. The new wells were not sampled and were numbered sequentially starting with the last existing well at the site. Table 3-1 outlines the number and type of wells installed at each site. Appendix C contains boring logs, well construction forms, and survey data. Also included in Appendix C are two sieve/hydrometer tests from samples collected from the subsurface at Site 8 during Phase 1.

Other Phase 2 activities included continued evaluation of hydrostation data at Site 4 and a civil survey of all new monitoring wells. The following subsections describe the activities at each site in greater detail.

Site 4. Phase 2 activities at Site 4 included the installation of five shallow (15 to 30 feet bls) and two intermediate (35 to 55 feet bls) depth monitoring wells (Figure 3-1). Of the shallow wells, GPT-04-09 and GPT-04-12 were installed to monitor upgradient conditions, GPT-04-10 and GPT-04-15 were located to monitor downgradient conditions, and GPT-04-13 was installed to characterize contaminant levels identified during Phase 1 activities. Intermediate wells GPT-04-11 and GPT-04-14 were installed to monitor the lower part of the surficial aquifer (vertical extent wells). One replacement well was also installed; GPT-04-07 was replaced and renamed GPT-04-08.

Site 5. Eight permanent monitoring wells were installed at Site 5 during Phase 2 (Figure 3-2), consisting of five shallow (15 to 30 feet bls) and three intermediate (35 to 45 feet bls) wells. Of the shallow wells, GPT-05-07 was installed to monitor

Table 3-1
Monitoring Well Installation Totals

Groundwater Monitoring Report
Naval Construction Battalion Center
Gulfport, Mississippi

Site	Shallow (15-30 feet bls)				Intermediate (35-55 feet bls)		Deep (100-200 feet bls)	Replacement
	Upgradient	Downgradient	Cross-gradient	Characterization	Downgradient	Vertical Extent	Downgradient	New Name *(Old name)*
1		GPT-01-04						
		GPT-01-05						
2		GPT-02-04						
3		GPT-03-06						GPT-03-04
		GPT-03-07						*(GPT-03-01)*
								GPT-03-05
								(GPT-03-02)
4	GPT-04-09	GPT-04-10		GPT-04-13		GPT-04-11		GPT-04-08
	GPT-04-12	GPT-04-15				GPT-04-14		*(GPT-04-07)*
5	GPT-05-07	GPT-05-11		GPT-05-08		GPT-05-10		
				GPT-05-09		GPT-05-12		
				GPT-05-13		GPT-05-14		
7		GPT-07-01						
8		GPT-08-05	GPT-08-14		GPT-08-13		GPT-08-11	
		GPT-08-06			GPT-08-10			
		GPT-08-07						
		GPT-08-08						
		GPT-08-09						
		GPT-08-12						
Totals	24				7		1	3
Note:	bls = below land surface.							

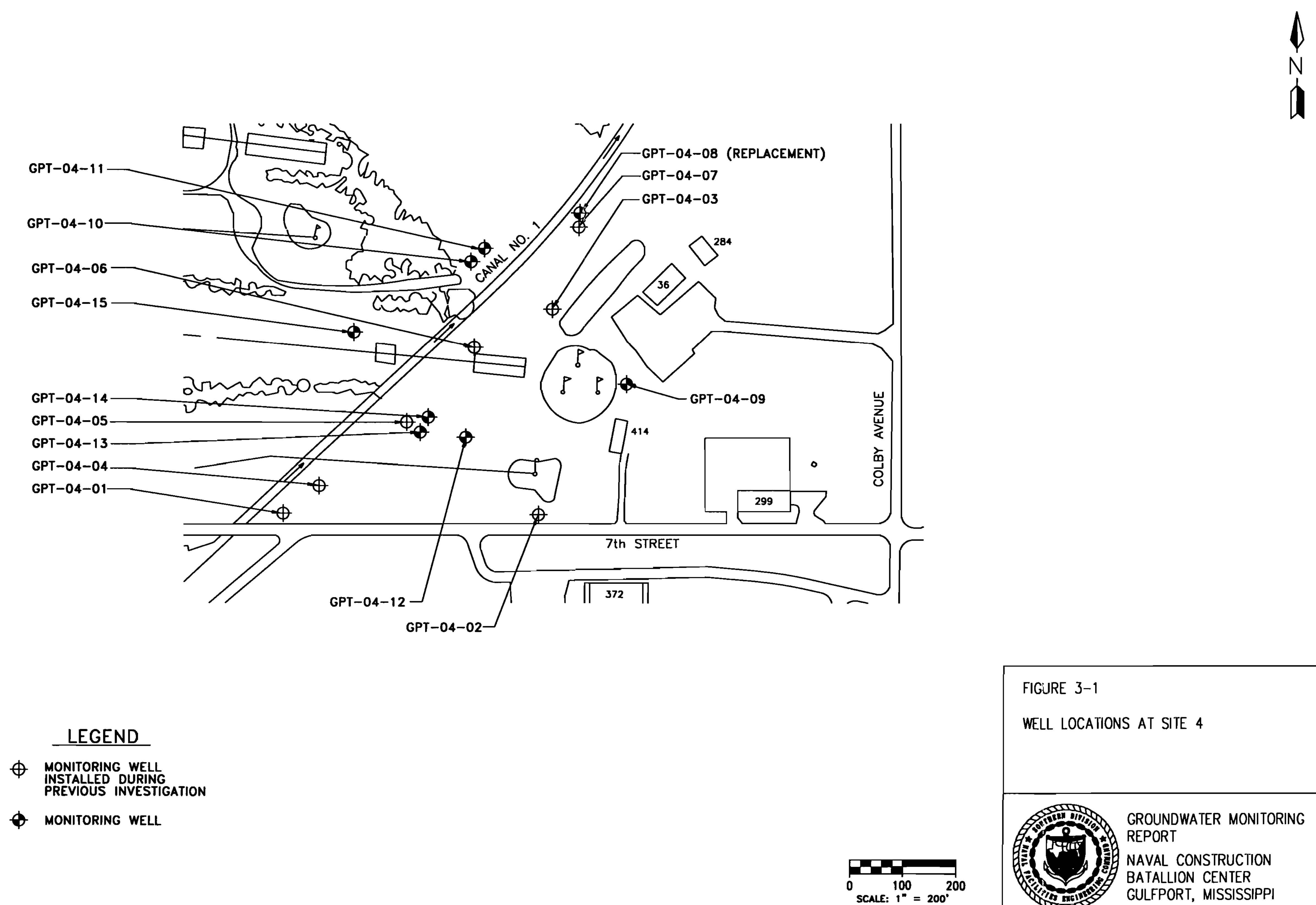


FIGURE 3-1

WELL LOCATIONS AT SITE 4

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

G:\GULFPORT\FIGURES\FIG_3-1.DWG

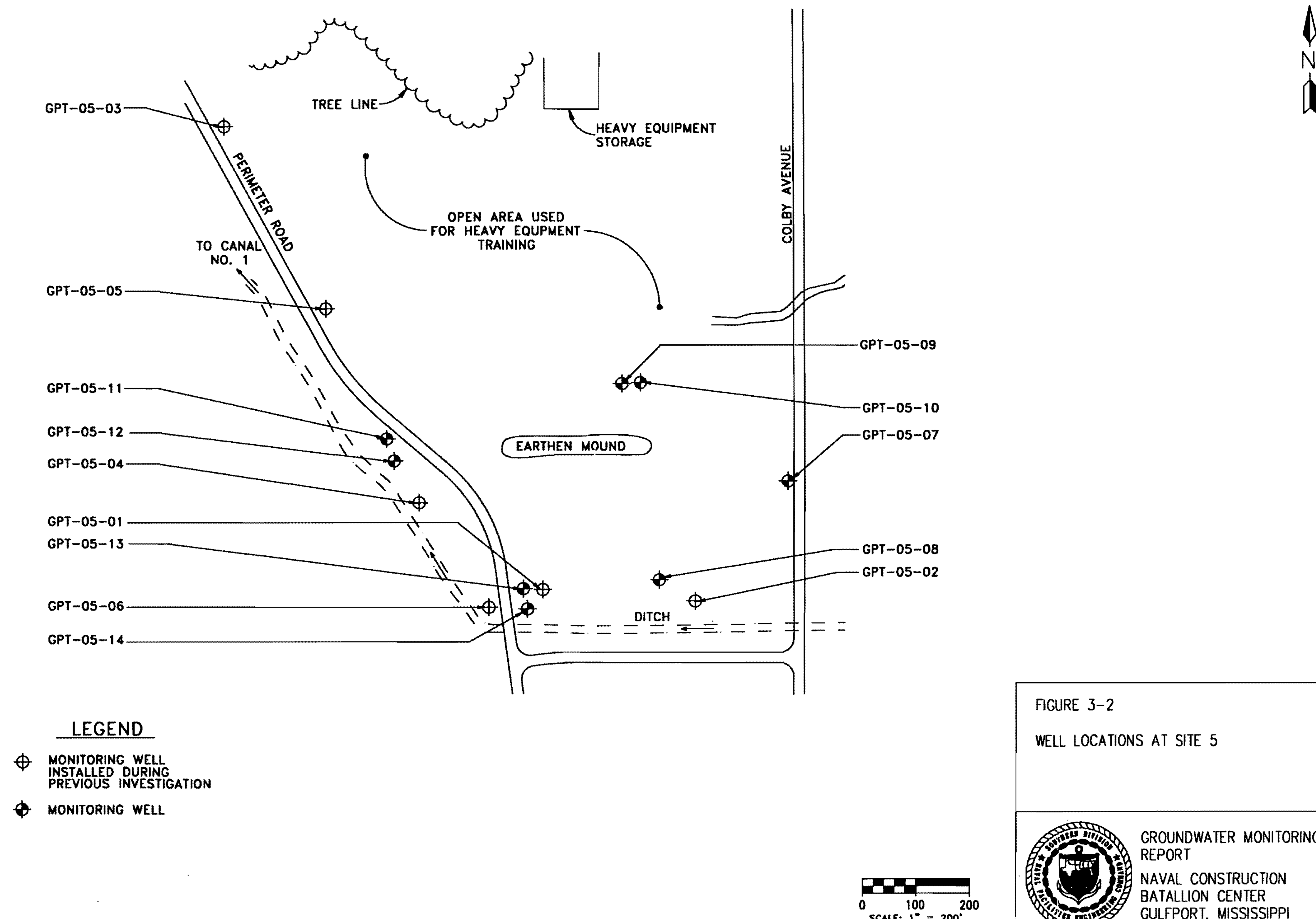


FIGURE 3-2

WELL LOCATIONS AT SITE 5

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATALLION CENTER GULFPORT, MISSISSIPPI

G:\GULFPORT\FIGURES\FIG_3-2.DWG

upgradient conditions, GPT-05-11 was installed to monitor downgradient groundwater quality, and GPT-05-08, GPT-05-09 and GPT-05-13 were installed as characterization wells intended to monitor groundwater conditions near large disposal cells. The three intermediate depth wells, GPT-05-10, GPT-05-12, and GPT-05-14, are vertical extent wells.

Site 8. Ten permanent monitoring wells were installed around Site 8 (Figure 3-3), consisting of five shallow (15 to 25 feet bls), two intermediate (35 to 55 feet bls), and one deep (100 t 200 feet bls) well. The wells were intended to ring Site 8 with cross-gradient and downgradient locations. Existing monitoring wells within the boundaries of Site 8 were sufficient to characterize contaminant levels within Site 8 without installing additional wells. Six shallow (GPT-08-05 through GPT 08-09, and GPT 08-12), two intermediate (GPT-08-10 to GPT-08-13), and one deep (GPT-08-11) well as installed downgradient of Site 8A, and one shallow well (GPT 08-14) was installed cross-gradient of Site 8A. A drainage divide exists at the site (Figure 3-3) running roughly along the boundary between Sites 8A and 8B, although the vertical extent wells were still located downgradient of Site 8A based on all previous data that clearly shows the highest levels of dioxin contamination exists at Site 8A.

Sites 1, 2, 3, and 7. Phase 2 activities at these sites included the installation of downgradient monitoring wells only (Figure 3-4). Phase 1 activities consisted of the development of a potentiometric surface map to best locate downgradient positions. No Phase 1 activities were conducted to identify potential groundwater contamination.

As shown on Table 3-1, six new monitoring wells (GPT-01-04, GPT-01-05, GPT-02-04, GPT-03-06, GPT-03-07 and GPT-07-01) were installed on Sites 1, 2, 3, and 7. GPT-02-04 was installed on the boundary of Sites 2 and 7. Two replacement wells were also installed; GPT-03-01 and GPT-03-02 were replaced and renamed GPT-03-04 and GPT-03-05.

3.2 PHASE 2 SAMPLING RESULTS. This section presents analytical results from the groundwater sampling program conducted during Phase 2. Comprehensive analytical data tables for Phase 2 samples are included in Appendix D. Samples were not collected from the replacement wells previously discussed in Section 3.1. An analysis of Phase 2 results is presented in Section 4.2.

Site 4. Groundwater samples from Site 4 produced only low level dioxin results that were all well below the MCLs. The levels were all below 7.8 ppq (GPT-04-11), and no TCDD was reported from any of the samples.

The upgradient well at Site 4, GPT-04-09, (Figure 3-5) contained numerous pesticides at levels well below either MCLs (USEPA, 1996) or RBC values (USEPA, 1999).

Groundwater samples from the area of the DCE and vinyl chloride plume identified during Phase 1 confirmed levels of vinyl chloride (65 ppb), 1,2-DCE (540 ppb), TCE (22 ppb), and 1,1,2-TCA (9 ppb) - all above MCLs (USEPA, 1996). GPT-04-14 was set in this plume area. Interestingly, the screen of well GPT-04-14 was set at a depth of 35 feet, which is on top of silty/sandy clay-bearing strata. The shallower well paired with GPT-04-14, GPT-04-13, did not produce similar VOC compounds, but did produce numerous SVOC compounds including carbazole (5 ppb) which is above the RBC value.

This page intentionally left blank.

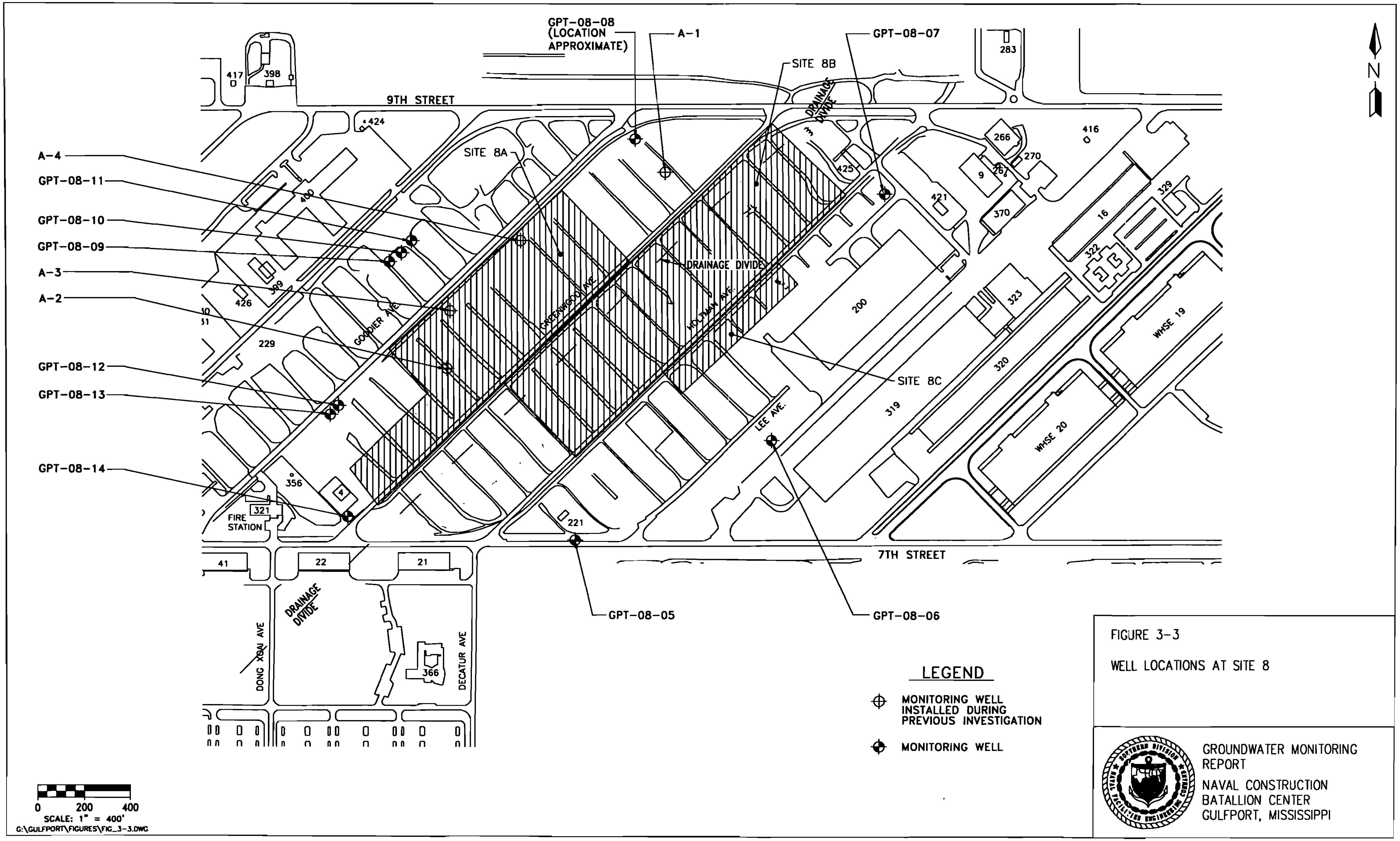


FIGURE 3-3

WELL LOCATIONS AT SITE 8

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

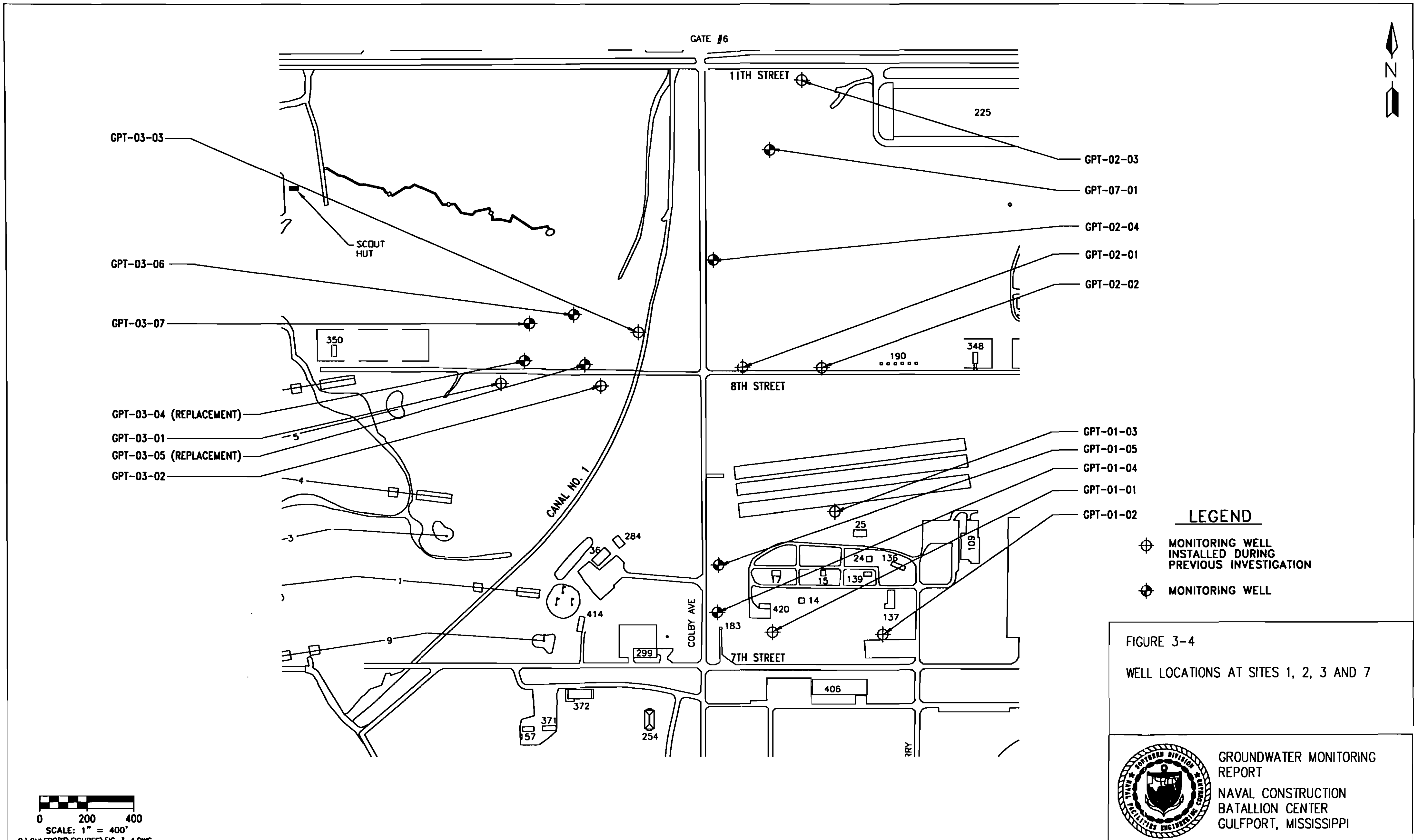
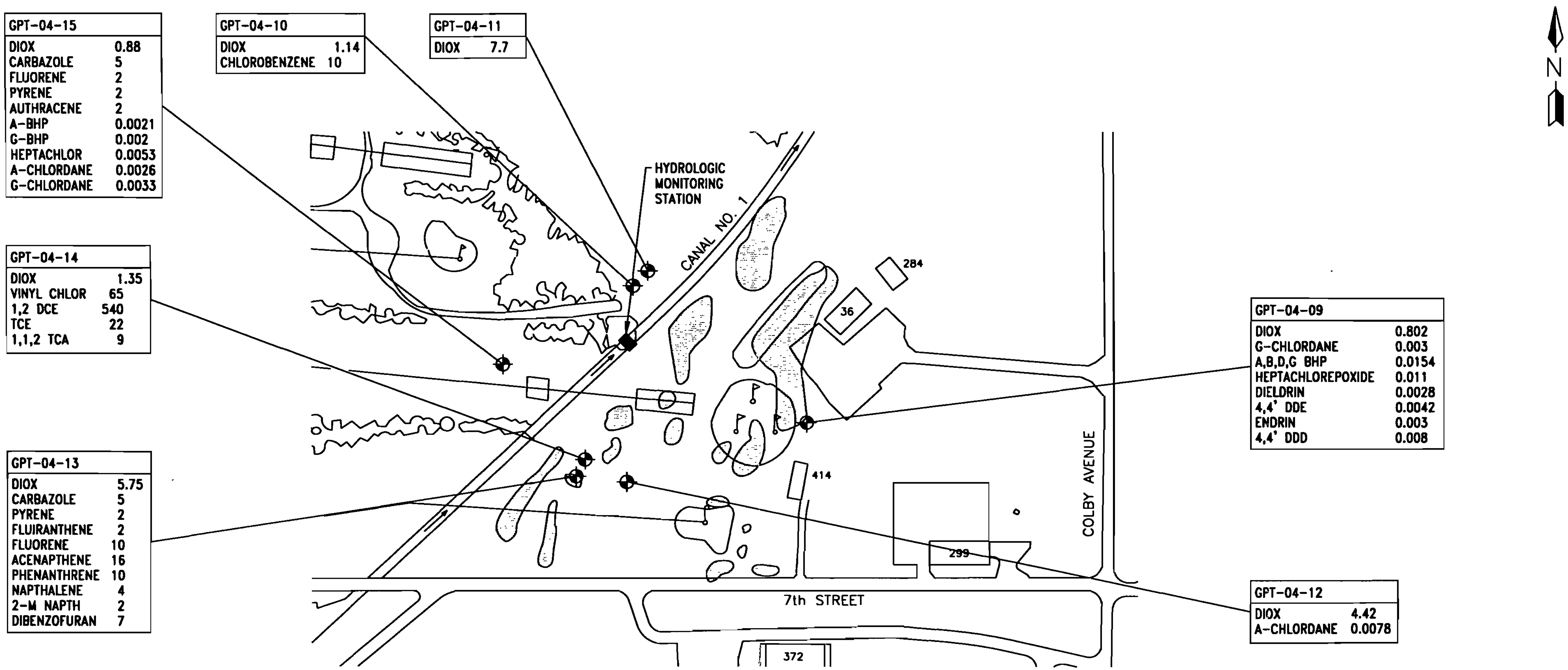


FIGURE 3-4

WELL LOCATIONS AT SITES 1, 2, 3 AND 7

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI



LEGEND

MAGNETIC ANOMALY

MONITORING WELL

NOTE

DIOXIN RESULTS ARE SHOWN IN ppq (PARTS PER QUADRILLION). ALL OTHER RESULTS ARE IN ppb (PARTS PER BILLION).

0 100 200
SCALE: 1" = 200'

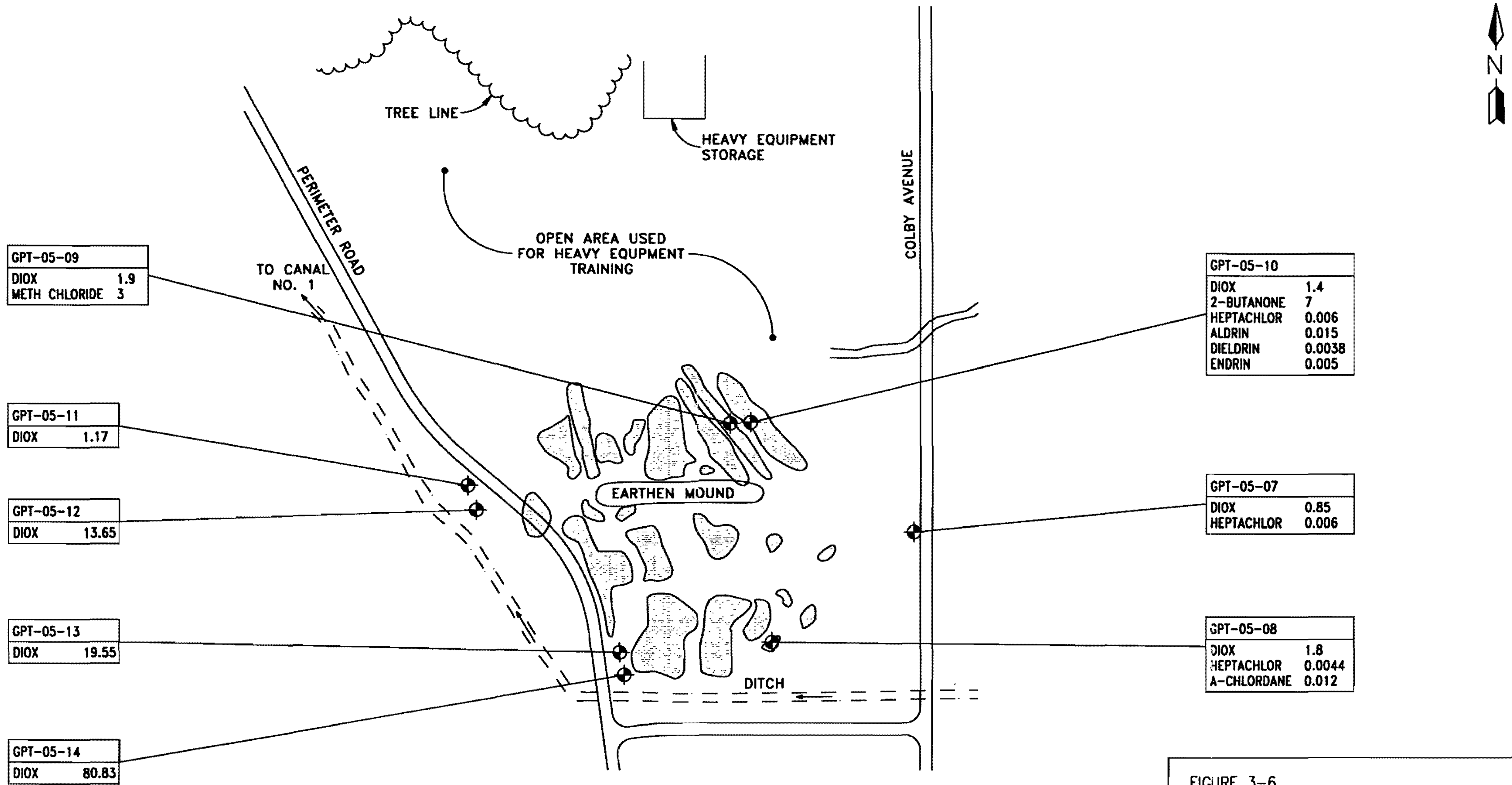
FIGURE 3-5

PHASE 2 GROUNDWATER RESULTS AT SITE 4

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

C:\DWG\HLA\02566-26\4-PII-RESULTS\DMF\990921



LEGEND

MAGNETIC ANOMALY

MONITORING WELL

NOTE

DIOXIN RESULTS ARE SHOWN IN ppq (PARTS PER QUADRILLION). ALL OTHER RESULTS ARE IN ppb (PARTS PER BILLION).

0 100 200
SCALE: 1" = 200'

FIGURE 3-6

PHASE 2 GROUNDWATER RESULTS AT SITE 5

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

C:\DWG\HLA\02566-26\5-PII-RESULTS\DMF\990921

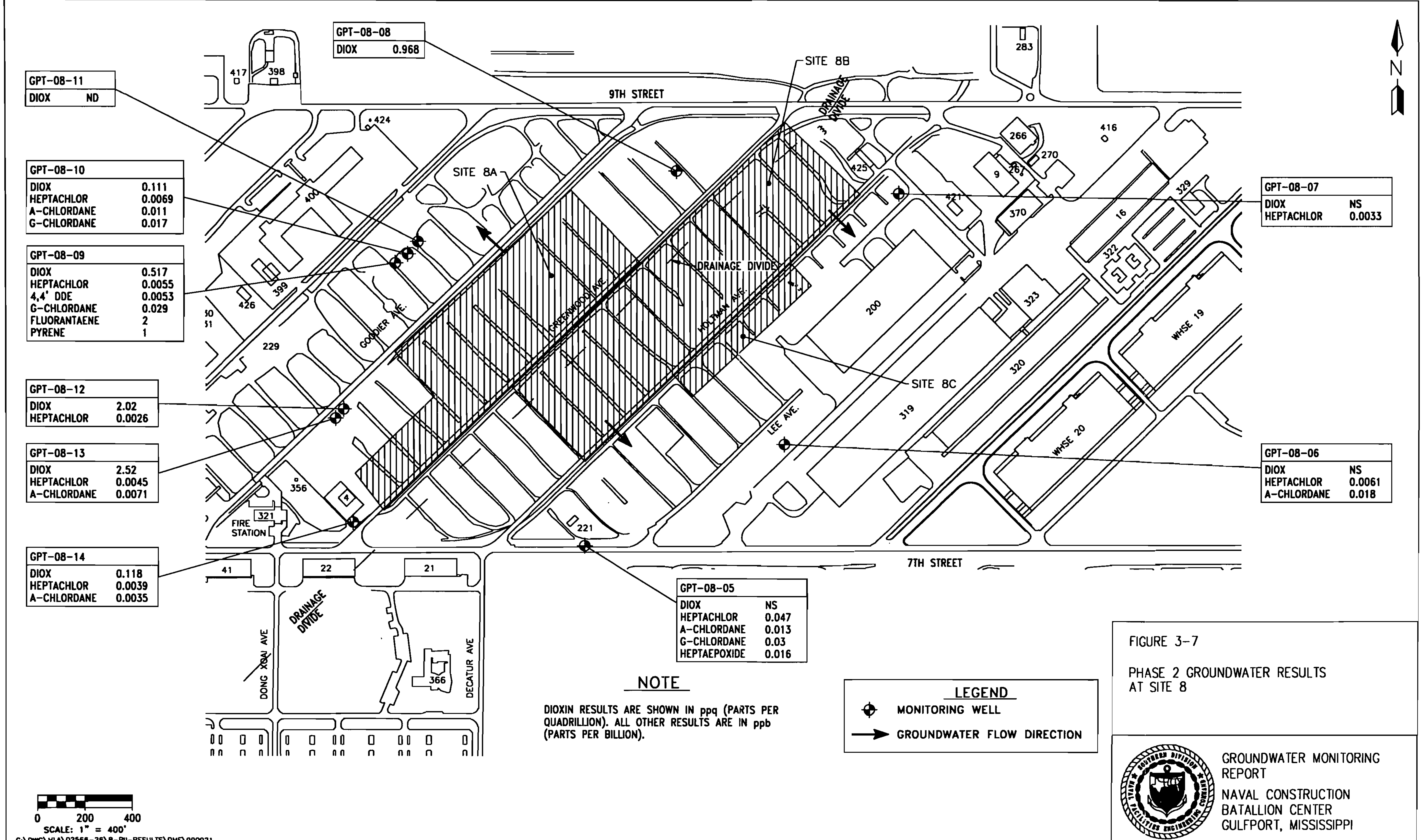


FIGURE 3-7

PHASE 2 GROUNDWATER RESULTS AT SITE 8

GROUNDWATER MONITORING REPORT
NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

Site 5. The dioxin sample results were below MCLs at all but one monitoring well at Site 5 (Figure 3-6). Well GPT-05-14 produced a groundwater sample with 80.83 ppq dioxin, which is well above the MCL of 30 ppq. The congeners responsible for this result included OCDD, HpCDD, and heptachlorodibenzo-p-dioxin (HxCDD). TCDD was not discovered in this sample or any other wells at the site – reducing the likelihood that HO was disposed of at this site.

One interesting trend is the increasing levels of dioxin and the appearance of HxCDD in the southwest part of the site in samples GPT-05-12, GPT-05-13, and GPT-05-14. This may indicate that the surface water part of Site 5 was more often used for incineration activities, as well as for the general disposal of fluids.

Several pesticides were found in samples from the shallow wells GPT-05-07, GPT-05-08, and GPT-05-10. The levels were all below MCLs and RBC values.

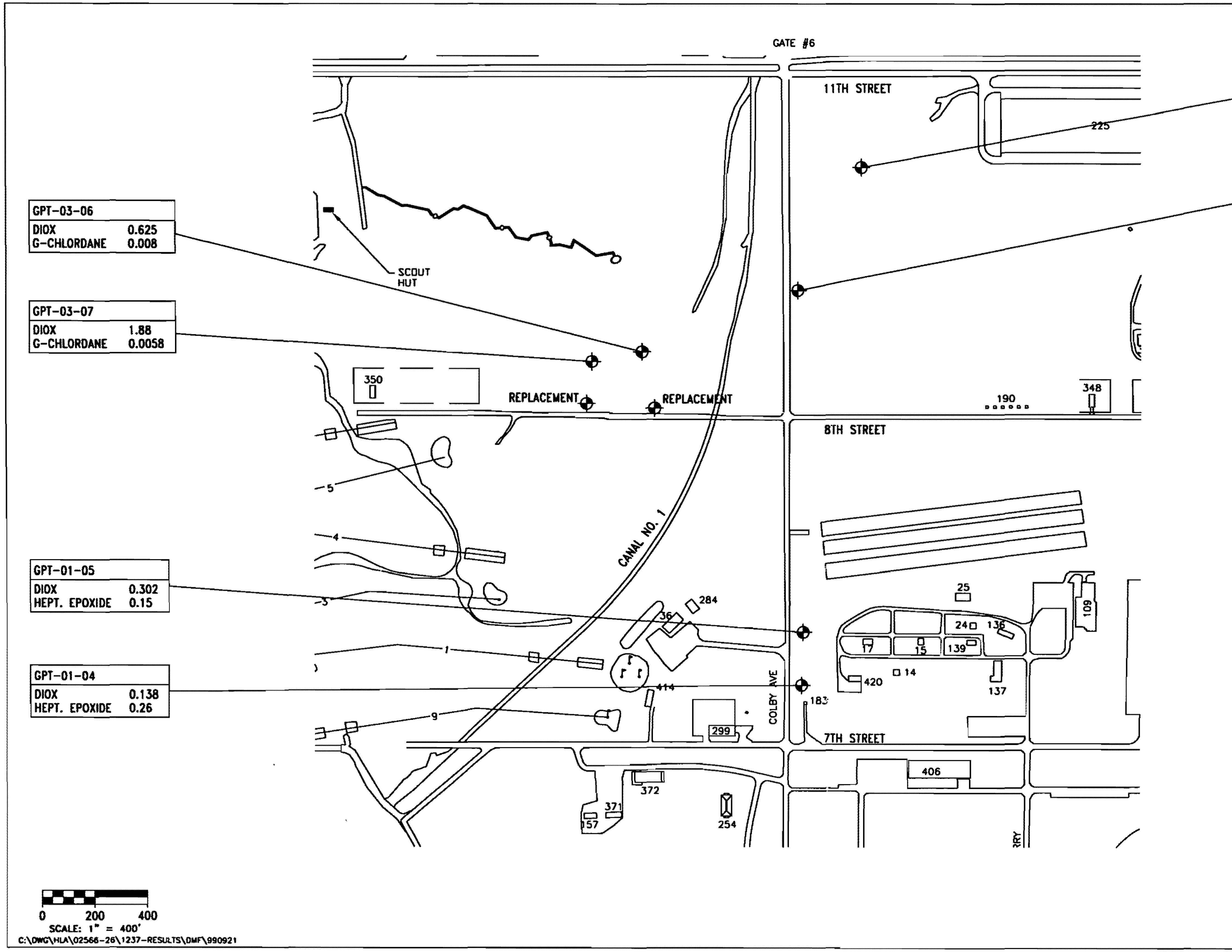
Site 8. Phase 2 dioxin monitoring well locations were selected to confirm the line of delineation established by Phase 1 direct-push sampling (Figure 3-7). The monitoring well sampling results were all below 2.6 ppq, and no TCDD was reported in any of the samples. These results confirmed that HO-related dioxin contamination is limited to the original boundaries of Sites 8a, 8b, and 8.

Sites 1,2,3, and 7. Dioxin levels at Sites 1,2, and 3 were all low without any TCDD reported (Figure 3-8). However, at Site 7, the sample collected from GPT-07-01 contained 51.6 ppq dioxin with 25.4 ppq attributed to TCDD. The TEQ for this sample exceeds the MCL, and the level of TCDD suggests the potential for HO contamination. It should also be noted that while this monitoring well was designated as a Site 7 well, Sites 2 and 7 commingle in this area. However, Site 2 was closed in 1966, and HO was not stored on the base until 1968.

While full suite (excluding inorganics) samples were collected at all of the wells at these sites, the only other organic compounds reported were pesticides. All reported levels of pesticides were below the established MCLs and RBCs.

Further analyses of these sample results are discussed in Chapter 4.0, Data Analysis, including contaminant trends, limits of contamination, and potential sources. Chapter 4.0 also provides an updated set of data for the conceptual models including chemical data, geologic conditions, and hydrogeologic results.

This page intentionally left blank



N

LEGEND

MONITORING WELL

NOTE

DIOXIN RESULTS ARE SHOWN IN ppq (PARTS PER QUADRILLION). ALL OTHER RESULTS ARE IN ppb (PARTS PER BILLION).

FIGURE 3-8

PHASE 2 GROUNDWATER RESULTS AT SITES 1, 2, 3 AND 7

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

4.0 DATA ANALYSIS

The data analysis chapter is divided into four sections starting with a review of the site conceptual models (SCM) (Section 4.1); continuing with a presentation of new data (Section 4.2), an analysis of hydrostation data (Section 4.3), and refined conceptual model data (Section 4.4).

4.1 SITE CONCEPTUAL MODELS. Based on the original intent of this investigation, to evaluate the extent of groundwater contamination associated with the storage and handling of HO, SCMs were developed to identify sites and target compounds. The information used to develop the conceptual models included (1) the disposal practices of HO and other chemicals on the base; (2) the physical and chemical nature of dioxin; and (3) the hydrogeologic setting to address transport mechanisms, migration, and potentially affected media.

The sites identified in this process are Sites 4, 5, and 8. The installation of monitoring wells at Sites 1, 2, 3, and 7 was conducted to provide a means to monitor downgradient groundwater conditions at these sites. The following paragraphs describe the information used to refine the SCMs. The original conceptual model figures are shown in the *Groundwater Monitoring Workplan* (ABB-ES, 1997d).

Source: Disposal Practices. From 1942 until 1976, virtually all solid and most liquid wastes generated by the base were disposed of in on-site trench-and-fill facilities (Naval Energy and Environmental Support Activity [NEESA], 1985). The operation generally consisted of incinerating the solid and liquid wastes and pushing the ash and noncombustible material into the trenches. Disposal operations like this occurred within a several acre area for several years, then the operations would move to a new location.

From 1942 until 1976, five locations were used for these operations: Sites 1 through 5. Aside from the solid wastes, these sites received liquid wastes that included oils, fuels, paints, paint strippers, solvents, and cleaning compounds. Starting in 1972, much of the solid wastes generated by the base were disposed of at off-base facilities, although the practice of burning and disposing of liquid wastes on-base continued until 1976. Site 7 was reportedly in operation from 1978 to 1982 and was used for the disposal of construction rubble. HO was stored at Site 8 from 1968 to 1977. Of these eight IR sites, only three were considered as primary areas for investigation based on operational timeframes that coincide with the storage and handling of HO at NCBC Gulfport. They are Site 4, Golf Course (former Landfill); Site 5, Heavy Equipment Training Area (former landfill); and Site 8, HO Storage Area.

Source/Release Mechanisms: Chemical and Physical Nature of Dioxin. The following discussion of the chemical and physical nature of dioxin also provides some of the basic terminology and conventions associated with toxicity equivalents for dioxin. The compound 2,3,7,8-TCDD is created as an incidental contaminant in the manufacturing process for HO. The process to manufacture of HO involves combining a mixture of 2,4-dichlorophenoxy-acetic acid (2,4-D) and 2,4,5-T in which 2,3,7,8-TCDD may be created at levels up to 2 ppm. 2,3,7,8-TCDD is considered to be the most toxic of the polychlorinated dibenzodioxin and dibenzofuran families. Individual polychlorinated dibenzodioxins and polychlorinated dibenzofurans, called congeners, with chlorine atoms at the 2, 3, 7, and 8 molecular positions (2,3,7,8-substituted compounds) can mimic the toxic properties of 2,3,7,8-TCDD. The USEPA (1989) developed toxicity equivalency factors (TEFs) for each of the congeners with 2,3,7,8-substituted chlorine atoms to quantify the toxicity of these congeners relative to 2,3,7,8-TCDD, which is assigned a TEF of one.

To determine the TEQ of a particular sample result, the laboratory result of each congener is multiplied by the assigned TEF to determine a 2,3,7,8-TCDD equivalent concentration. The equivalent total concentrations are then summed to obtain the toxicity equivalent or TEQ. Those congeners without substitutions at the 2,3,7,8 molecular positions were not considered toxic, at least in terms of carcinogenic potency, and were assigned a TEF of zero.

Dioxin is a colorless and odorless solid at room temperature, has a very low aqueous solubility (octanol-water partition coefficient equals 1.93×10^{-5}), and is not likely to be dissolved in water at concentrations above 20 ppt (Arienti and others, 1988). However, dioxin is soluble in oils, fats, and organic solvents. For instance, dioxin solubility in organic nonpolar solvents such as benzene, xylene, and toluene ranges from 500 to 1,800 ppm. Dioxin has a specific gravity greater than water (1.827 cc/gm @ 25°c, estimated) and a strong affinity for organic carbon.

Dioxin is known to have a long half life (low rate of biodegradation) in nature before breaking down. Some recent studies have found degradation rates for dioxin in soil at nearly zero for a 12-year test period (Arienti and others, 1988). Ultraviolet light has little impact on the molecular structure of dioxin in nature. Thermal decomposition of the dioxin molecule does not begin until temperatures reach between 1,200 and 1,400 degrees Celsius (Arienti and others, 1988). The components of HO (2,4-D and 2,4,5-T) have much shorter half lives in nature than dioxin does and are readily broken down by ultraviolet light.

Typically, HO was mixed with diesel fuel and was stored as a mixture at Site 8 (Arienti and others, 1988). This diesel fuel mixture has potentially made the dioxin particles more mobile in the soil and groundwater.

As stated earlier, the fate of dioxin in nature is generally that the stable dioxin molecule remains unchanged and normally attached to soil particles (ABB-ES, 1994a). The lack of naturally occurring processes that attack or break the molecular bonds in dioxin results in a chemical that may be hindered or even completely bound up in a soil or sediment matrix, but not one that can be reasonably expected to degrade significantly over time (Arienti and others, 1988).

Transport Mechanisms. The transport of dioxin at the base has been observed through sediment and surface water following the erosion of soil containing dioxin at Site 8. The dioxin molecules are primarily attached to fine-grained soil particles or organic matter (ABB-ES, 1995).

Another potential transportation mechanism, but one that has not yet been quantified, is the movement of dioxin through groundwater. The confirmed presence of dioxin creates the potential for groundwater transportation of dioxin. However, no groundwater at these sites have been found to contain significant nonpolar solvents to mobilize dioxin.

At Site 8, there are no apparent biological receptors for potential dioxin-contaminated groundwater. But Sites 4 and 5 both have large stormwater control ditches running along the downgradient sides of both landfills. If dioxin has been mobilized in either of those sites by the organic solvents, then seeps that are present along the ditches of both landfills could potentially be transporting dioxin directly into the surface water and sediment of these ditches.

Hydrogeologic Setting: Migration Pathways and Affected Media. A complex relationship exists between surface water and groundwater in the vicinity of NCBC Gulfport. Depending on precipitation quantity, intervals, and intensity, a stream or ditch system may be losing (surface water seeps into groundwater) or gaining (groundwater seeps into ditch). This relationship was observed at Site 6 during an investigation of two burn pits (ABB-ES, 1994b). The relationship is compounded because there is no evidence of a continuous confining layer that isolates the surface water and shallow groundwater from deeper aquifer units.

Surface water and groundwater interaction is important to this investigation because of the nature of potential contaminants that exist at the sites on this base. Of particular interest in this investigation is the dioxin remaining from the storage and handling of HO, but a wide range of solvents and fuels were also handled and disposed of on this base. These fuels and solvents tend to increase the mobility of dioxin.

Ultimately, the relationship between surface water, sediment, surface soil, and groundwater dictates the transportation and depositional patterns of the contaminants that exist on base. Understanding this relationship allows for predictive assumptions that will focus the investigation toward migration and ultimately remediation, activities in a faster, more cost-effective manner. A focused look at the surface water and groundwater hydrology relationships precedes the presentation of the SCMs.

Surficial Aquifer System. NCBC Gulfport is underlain by several thick, unconsolidated aquifer systems. These systems are Holocene (uppermost), underlain by the Pleistocene, and the Miocene aquifers. The (Holocene) alluvium at NCBC Gulfport is the primary unit of focus for this investigation because the primary contaminants of concern are not likely to migrate vertically into the Pliocene or Miocene aquifer units up to 100 feet bls (Shows, 1970).

At the surface, the Holocene alluvium deposits consist of discontinuous layers of sand, silt, clay, and minor amounts of gravel. Depth to groundwater is variable depending on precipitation, but generally ranges from 4 to 7 feet bls. The thickness of these alluvial deposits is up to approximately 80 feet.

A clay-bearing zone comprised of varying amounts of silt and sand was observed at the base of the alluvial deposits. The depth to the clay-bearing zone ranged from 17 feet to nearly 50 feet and dipped slightly in the direction of the Gulf. Two deep borings were drilled, and within these borings the thickness of the clay-bearing zone was at least 150 feet.

Groundwater in the alluvial deposits at the NCBC is shallow (4 to 7 feet bls), typically has a low pH and has a general horizontal flow component to the west-northwest (Figure 4-1) (ABB-ES, 1995e). Localized flow directions may be influenced by proximity to surface water bodies. The vertical component of groundwater flow has been investigated at Site 6 (ABB-ES, 1994b). The results of that study indicated a downward component of flow, although the magnitude of the downward component has varied seasonally and with precipitation patterns.

Below the Holocene alluvial deposits, Pleistocene terrace deposits consisting of thick lenticular sand and gravel layers separated by thinner clay layers, range for approximately another 100 feet. The Citronelle aquifer is part of this geologic section and is used extensively for domestic water supplies around the base. Water levels vary depending on proximity to surface water bodies and amount of groundwater production from water supply wells (Shows, 1970).

The aquifer of greatest importance to the area lies below the Pleistocene terrace deposits. These Miocene units consist of thick beds of sand and gravel with minor clay layers. These units are generally lenticular and discontinuous over the area (Shows, 1970). The contacts of the Miocene units are often difficult to distinguish from one another, which is the reason they have been collectively referred to as the "Miocene" aquifers. These units include the Graham Ferry, Pascagoula, Hattiesburg, and Catahoula. These aquifers are the primary source for municipal and industrial water supplies, including NCBC Gulfport.

Surface Water. Surface water in the region of the NCBC is abundant. Average annual mean rainfall in the area is approximately 65 inches per year (Shows, 1970). Individual storms are often intense with large 24-hour totals. The 10-year, 24-hour rainfall is approximately 10 inches (U.S. Soil Conservation Service, 1986); this rate is one of the highest totals for the entire continental United States. These large storms tend to be accompanied by small stream and ditch flooding and flow velocities that scour out streambed loads of sediment. Previous investigations have shown that dioxin-contaminated sediment is mobile and leaving the base through the ditch systems that capture and transmit stormwater and surface water from the former HO storage area (ABB-ES, 1995e). These storms both increase the volume and rate of migration of this dioxin-contaminated sediment relative to normal flow conditions.

In the area around the base, surface water generally flows to the north or northeast (away from the Gulf of Mexico) towards Bernard Bayou and the Back Bay of Biloxi. Figure 1-5 displays the major ditches and streams entering and leaving the base, and their flow directions are also displayed. As shown on Figure 1-5, the primary sites of concern (Sites 4, 5, and 8) are located adjacent to or are drained by ditches that leave the base. Major surface water bodies that drain the base are Canal No. 1, Turkey Creek, and Bernard Bayou.

While potential surface water and sediment contamination is not the focus of this investigation (ABB-ES, 1996 and 1996), the interaction of surface water and groundwater in areas contiguous with – or bisected by – Sites 4, 5, and 8 is important. It is necessary to develop an understanding of the migration pathways of contamination so that future engineering controls can be designed to isolate potential groundwater contamination from surface water contamination.

Conceptual Model Conclusions. Based on the information provided in the preceding paragraphs, three primary sites were selected: Site 4, Site 5, and Site 8. The target compounds identified were based on the chemicals potentially disposed of along with HO and those chemicals known to affect the transport of dioxin in groundwater.

As outlined in the AO, the target analytes during this investigation are the dioxin and furan congeners; the constituents that make up HO (2,4-D and 2,4,5-T); and other chemicals (volatiles, semivolatiles, etc.) that may affect dioxin fate and transport in the subsurface. The phenoxy-herbicides 2,4-D and 2,4,5-T are combined to create HO in which the dioxin congeners form as a trace impurity. Groundwater and soil samples will be analyzed for high resolution dioxin and furan analysis as well as the phenoxy-herbicides.

4.2 ANALYSIS OF DATA: SCM REFINEMENT

The following subsections describe recent data generated during the investigation activities that was incorporated into the refined SCMs.

4.2.1 Migration Pathway: Groundwater Flow Significant data generated during this investigation was the basewide potentiometric surface map (Figure 4-1). This potentiometric surface map differs from other historical maps by incorporating groundwater elevation data from temporary piezometers installed at strategic locations throughout the base. The most significant result of this map is the identification of a drainage divide, this groundwater flow divide is oriented northeast to southwest across Site 8.

To the east of this divide (flow regime 2 – see Figure 4-1), shallow groundwater flows to the east-southeast; to the west of this divide (flow regime 1 – which includes all of the sites) groundwater flow is generally to the northwest and north-northwest. The hydraulic head difference on this divide is nearly 5 feet to the east and approximately 10 feet to the west.

The potentiometric contours closely follow the orientation of the mapped soil units (USDA, 1975) shown on Figure 4-2. That the potentiometric contour lines follow the mapped soil units suggest a relationship. The depositional environment for each soil unit contributed to the relative elevations and soil types at the base. In turn, groundwater flow within the surficial aquifer unit is influenced by the drainage characteristics and permeabilities associated with each soil type.

The surficial aquifer hydraulic gradients are greatest in the central part of the base, southwest of Site 8. This is fortunate since the sites with groundwater contamination are primarily located in areas with low or flatter gradients in the western and southwestern areas of the base. Specifically, the steeper hydraulic gradients are 0.005 foot per foot (ft/ft) and 0.006 ft/ft in the central part of the base. The lower gradients found near Sites 2, 4, and 5 range from 0.001 to 0.002 ft/ft (Figure 4-1). However, the vertical gradients, as observed in well and piezometer pairs throughout the base, are much higher than the horizontal gradients with a range of 0.06 to 0.08 ft/ft (downward). Hydraulic gradient in the eastern area of the base, east of the drainage divide, are 0.001 to 0.002 ft/ft.

This page intentionally left blank.

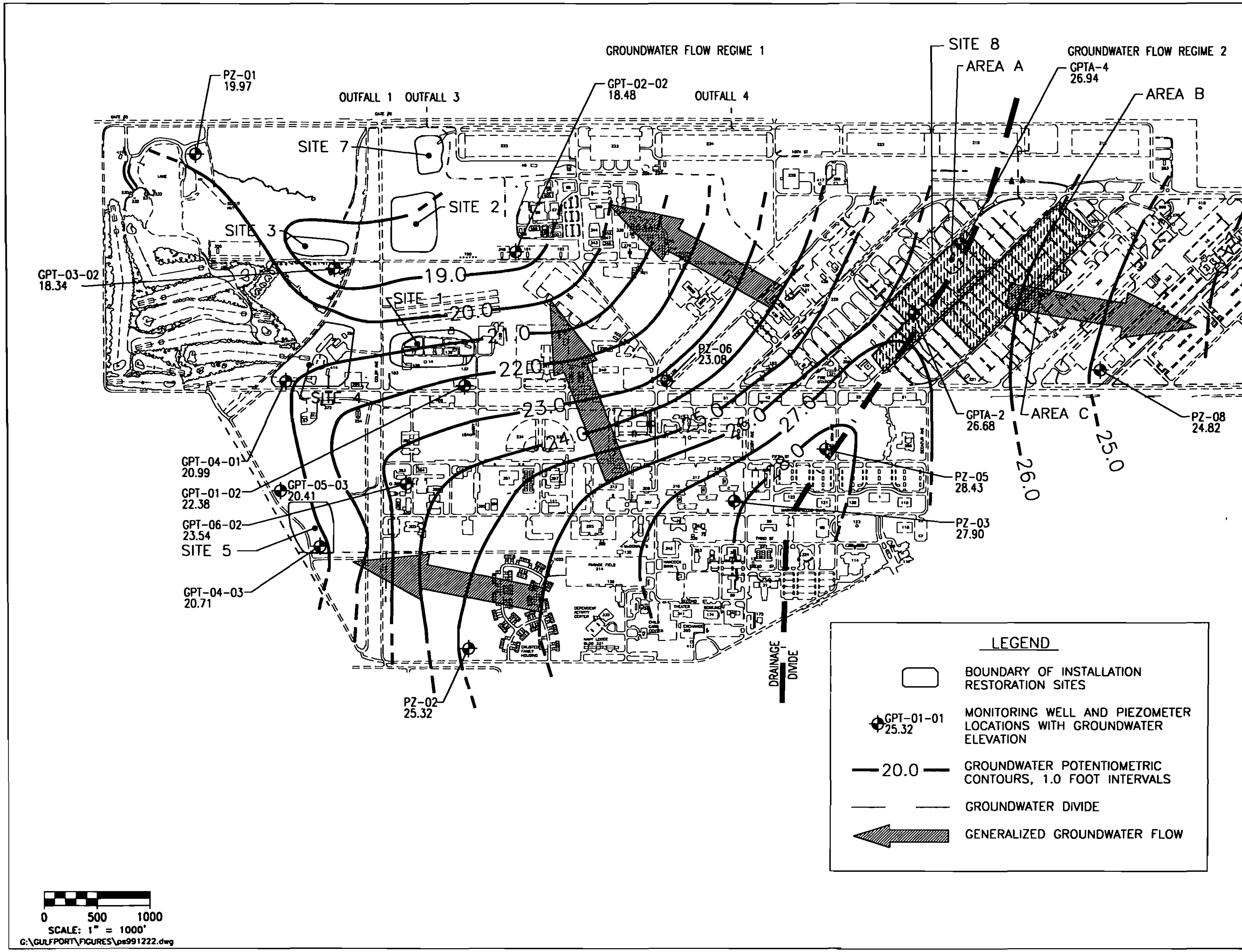
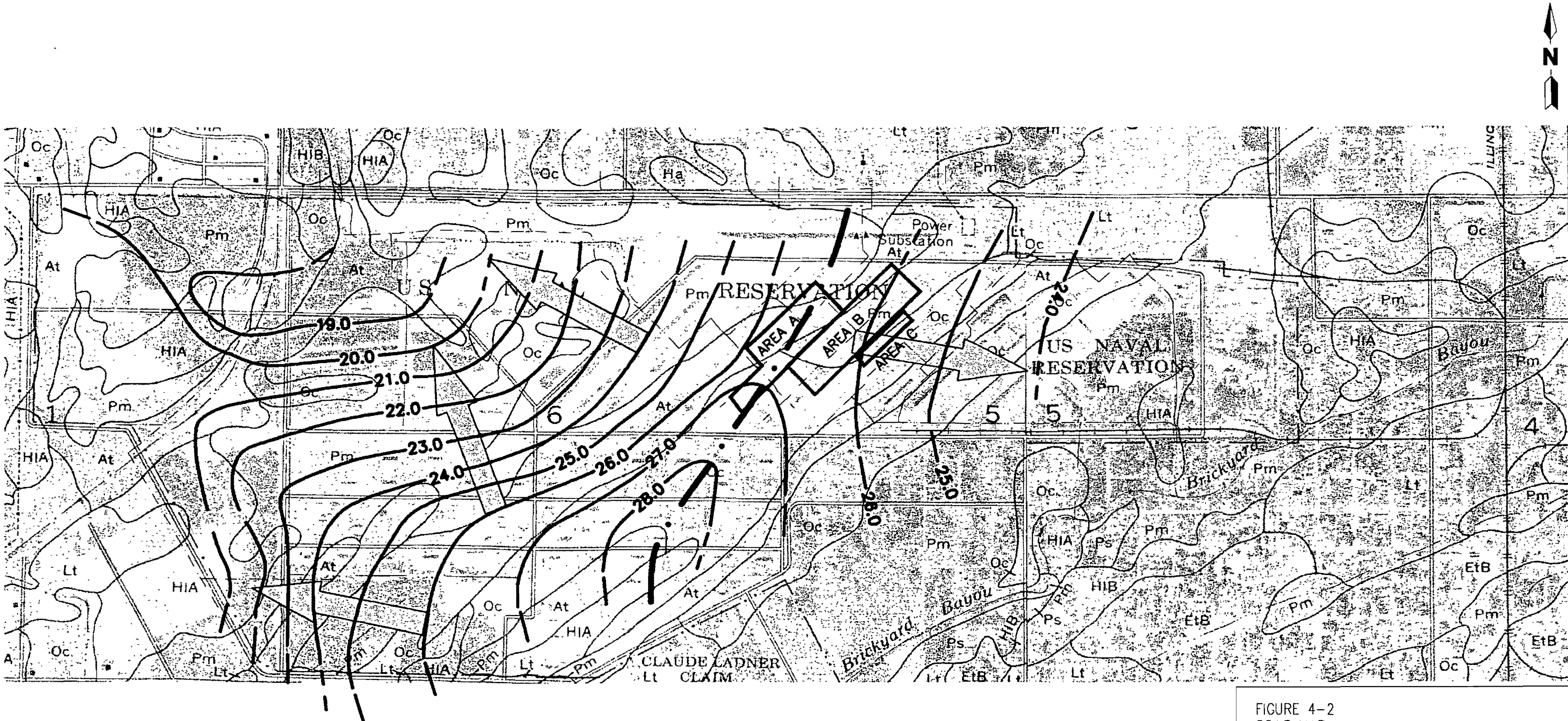


FIGURE 4-1

POTENTIOMETRIC SURFACE MAP
OCTOBER 24,1998
WATER LEVELS

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI



SOURCE OF SOIL DATA:

SOIL CONSERVATION SERVICE. 1975.
SOIL SURVEY OF HARRISON COUNTY, MISSISSIPPI.
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE AND FOREST SERVICE. JUNE.

LEGEND

- AREAS A,B, OR C
- 20.0 — GROUNDWATER POTENTIOMETRIC CONTOURS, 1.0 FOOT INTERVALS
- GROUNDWATER DIVIDE
- GENERALIZED GROUNDWATER FLOW

0 500 1000
SCALE: 1" = 1000'

FIGURE 4-2
SOILS MAP
NCBC LOCATIONS

GROUNDWATER INVESTIGATION REPORT
NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

T:\SILVIA

4.2.2 Clay-Bearing Zone Clay-bearing strata composed of varying amounts of sand and silt were encountered at different elevations throughout the base, at depths ranging from 17 to 50 feet bls (see Appendix C – soil boring logs). The clay-bearing strata, as shown on the updated conceptual model diagrams (see Section 4.4) appear to dip slightly to the south, toward the Gulf of Mexico. Twelve borings, widely spaced throughout the base, encountered the silty clay-rich zone. The deepest borings during this study, GPT-05-13 at Site 5 and GPT-08-11 at Site 8, were sampled continuously to 256 and 186 feet bls respectively. At both locations, over 150 feet of stiff, green clay with varying amounts of sand and silt was encountered. The borings were discontinued prior to encountering the coarser Miocene sediments.

4.2.3 Analysis of Sampling Results This subsection analyzes the sampling results presented in Chapter 3.0. Included in this discussion will be (1) review of results above MCLs and RBCs, (2) discussion of potential sources, and (3) identification of data gaps that may require further study.

The recommendations to assess data gaps and longer term monitoring will be presented in the continued monitoring work plan, due to be completed following this report.

Site 8 Results Analysis. Based on historical data, (ABB-ES 94a,95 a-d, and 96a) the DPT Phase 1 groundwater sampling, and Phase 2 groundwater sampling in the monitoring wells at Site 8, the following observations were made: (1) the presence of TCDD in samples collected within the site indicate an HO origin; (2) dioxin levels in the groundwater at Site 8 exceed the MCLs in some of the wells (historical data); and (3) these elevated levels of dioxins are limited to the shallowest part of the surficial aquifer and do not extend significantly beyond the existing borders of the site (Phase 1 and 2). During this investigation, dioxin was not found to exceed MCLs at Site 8.

At this time, the vertical and horizontal extent of dioxin has been defined at the site, no data gaps have been identified, and future groundwater sampling activities will be discussed in the continued monitoring work plan.

Site 4 Results Analysis. Phase 1 and Phase 2 sampling results indicate that nearly all of the pre-investigation objectives were met. Most importantly, the lack of significant dioxin results, no TCDD, and the complete lack of 2,4-D or 2,4,5-T indicate that it is unlikely that HO was disposed of at Site 4. These congeners are consistent with the reported activities of incineration.

Phase 1 and 2 sampling in the area of GPT-04-14 indicated the presence of a VOC plume including vinyl chloride, 1,2-DCE, TCE, and 1,1,2-trichloroethane (TCA) – all of which were above the MCLs established for those chemicals. The VOC plume is in the lower reaches (20 to 35 feet bls) of the surficial aquifer near the clay-bearing zone. In this area, the gradient of the surficial aquifer is nearly flat. The stronger vertical gradient is not likely to aid the downward migration of contamination significantly deeper due to the presence of the clay-bearing strata. The presence of these VOC are likely due to the disposal of chlorinated cleaning compounds reported to have taken place at this landfill. The age of these activities (1966-1972) and the ratios of breakdown chemicals (vinyl chloride) to parent chemicals (1,1,2-TCA) suggest that significant degradation has taken place.

At wells GPT-04-13 and GPT-04-15, carbazole was reported at 5 ppb, which is at the RBC value. GPT-04-15 is downgradient of the reported limits of landfill activities of this site, so some migration of carbazole, along with several other polynuclear aromatic hydrocarbons compounds, appears possible.

The other compounds reported in groundwater samples collected at this site include a variety of pesticides and semivolatile compounds at levels below MCL and RBC values. The types and levels of the pesticides found are consistent with a long-term landscape maintenance program associated with a golf course. The SVOC compounds reported in the groundwater samples is also consistent with the disposal practice of diesel and fuel oil burning and disposal.

Based on the analysis of Site 4 findings, the plume of VOCs — including vinyl chloride, 1,2-DCE, TCE, and 1,1,2-TCA — that are above MCLs has not been completely defined laterally, and future activities to more fully assess the plume are recommended. However, the objective of locating upgradient and downgradient monitoring wells to gain an approximate size of the plume was successful and shows that the plume probably does not extend more than 250 feet downgradient.

Site 5 Results Analysis. An analysis of Site 5 results indicates that dioxin levels exceed MCLs in the southwestern part of the base. These levels, up to 80.83 ppq in GPT-05-14, were mostly attributable to OCDD and HxCDD; a good indication that HO is not likely the source. A trend of increasing dioxin levels has been noted as the samples were collected towards the southwestern part of the site. The congener types and the total (TEQ) dioxin reported is consistent with the disposal and burning of chlorinated solvents and pesticides as reported in the site history (ABB-ES, 1987).

Other chemicals that were reported at Site 5 included numerous VOC and SVOC results in the direct-push sample R5014 during Phase 1; including benzene above the MCL and 1,4-dichlorobenzene (DCB) above the RBC value. In addition, low levels of VOCs were reported from DPT samples along the western side of the site during Phase 1, but Phase 2 wells downgradient of the Phase 1 sample locations did not yield VOCs or SVOCs, indicating that the contamination is not widespread.

The dioxin levels at monitoring well GPT-05-14 and the VOCs and SVOCs from DPT sample R5014 indicate a potential data gap along the southwestern part of this site. While the lack of TCDD makes HO an unlikely source, the fact that dioxin and benzene levels are above MCLs for groundwater require additional activities to define the extent of contamination south and west of GPT-05-14 and to understand the source of these dioxin congeners.

Site 7 Results Analysis. The only well at Site 7, GPT-07-01, contained dioxin at 77.01 ppq. Interestingly, 25.4 ppq (estimated maximum potential contamination [EMPC]) of that TEQ was attributable to TCDD. The EMPC indicates that TCDD was present, but that the exact level could not be quantified. Since TCDD is a strong indicator of HO, this level does cause concern for this site. The presence of TCDD in this well is consistent with HO contamination found at Site 8. Additionally, it should be noted that the operations at Site 7 coincide with the activities associated with removing HO from the drums at Site 8.

It is likely that future activities will be required to define the extent of dioxin above 30 ppq at this site.

Sites 1, 2, and 3 Data Analysis. The results of the Phase 2 monitoring well samples at these sites indicated low levels of both dioxin (predominantly OCDD) and pesticides. All results were below the MCLs. The downgradient locations of these wells at these sites along with historical cross-gradient data (ABB-ES, 1995e) suggest that no large-scale contamination is migrating off of these sites in the groundwater. At this time no data gaps have been identified and any future groundwater sampling activities at these sites will be discussed in the continuous monitoring work plan.

4.3 HYDROSTATION DATA AND ANALYSIS. The main objective to installing the hydrologic monitoring station at Site 4 was to determine the interaction of surface water in Canal No. 1 and the adjacent groundwater. From the resulting analysis, the hydrologic conditions (e.g., whether Canal No. 1 was a gaining or losing stream) could be determined, and the resulting effects on potential groundwater contamination could be determined.

Previous studies at Site 6 (ABB-ES, 1994b) had shown that the interaction between surface water and groundwater at a site could have an influence on contaminant migration. At Site 6, the migration of the free-phase diesel fuel plume was shown to migrate away from the local ditch system when the ditches were discharging to groundwater. However, the opposite was true when the ditch was experiencing "gaining" conditions or when discharge from the ditch was enhanced by groundwater. Determining the hydrologic balance between surface water and groundwater at Site 4 was important because of known chlorinated solvent contamination and the potential for dioxin contamination in groundwater. The following paragraphs describe the results of the analysis of the data acquired using the hydrologic station at Site 4 between November 1998 and May 1999.

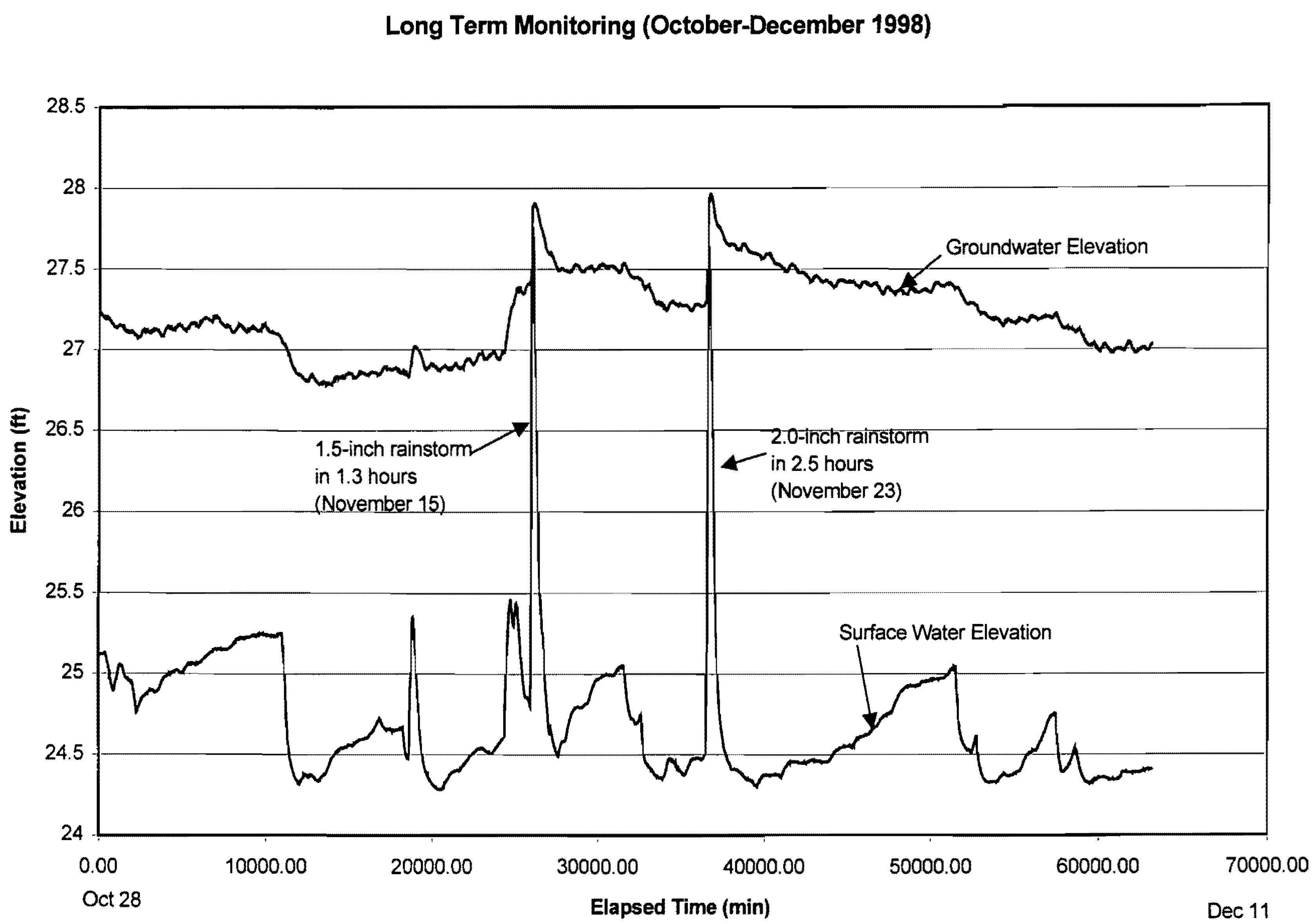
Long-Term Analysis. Analysis of hydrologic data during the nearly 6-month interval period between November 1998 and May 1999 of this study was performed to reveal the balance between the surficial aquifer and surface water in Canal No. 1. The two long-term monitoring charts, shown on Figure 4-3, reveal several interesting trends. They include the following.

1. Groundwater levels are consistently about 2.5 feet greater elevation than surface water elevations in Canal No. 1 during the 6-month monitoring period, which indicates that groundwater at Site 4 is likely discharging into the canal during significant portions of the year. The trend may change during drier summer months.

2. Surface water and groundwater respond quickly to storm events, even events as small as a 0.25 inch.

3. The change in groundwater elevation is approximately only one-fourth that of the change observed in the canal for any given event. The lag times from precipitation initiation to canal response to aquifer response will be discussed in the short-term analysis.

This page intentionally left blank.



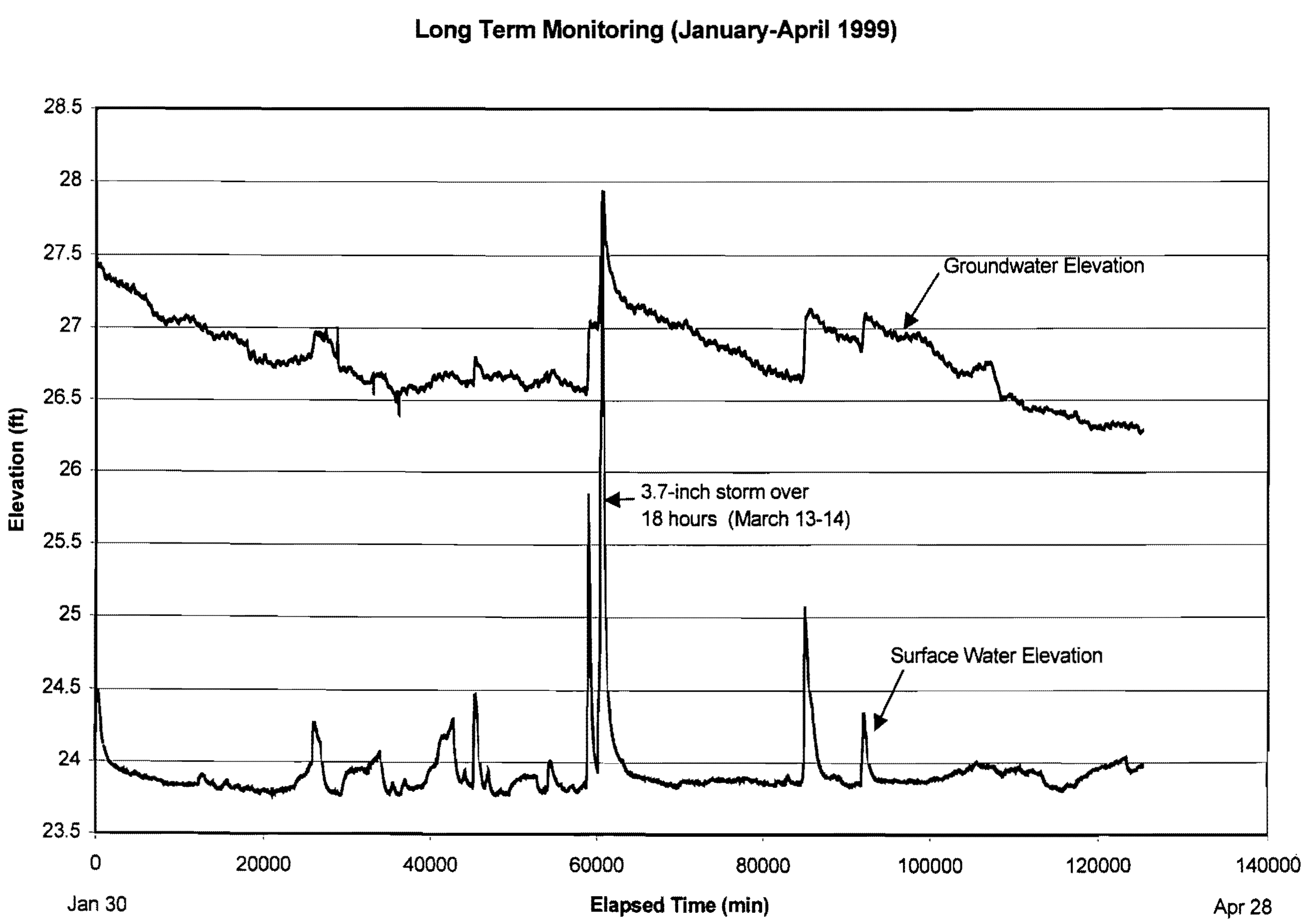


FIGURE 4-3

LONG TERM MONITORING
SITE 4 HYDROSTATION

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI

4. Groundwater and surface water elevations were highest in November and trended downward until early May. This is likely part of the yearly cycle for this region and is directly related to varying precipitation and evapotranspiration.

5. The storm event on March 15 created a 4.25-foot rise in surface water (the highest recorded during this period) and a corresponding 1.3-foot rise in groundwater elevation. As shown on the long-term charts, surface water levels recover to pre-event levels within 8 hours, while groundwater levels take up to a week to recover.

The long-term monitoring demonstrated that groundwater from Site 4 could potentially seep into Canal No. 1 during at least 6 months of the year and potentially more. These conditions create the potential for contamination in the shallow aquifer to migrate directly into Canal No. 1. Additionally, these results indicate that the surficial aquifer is unconfined and consists primarily of coarser sediments that allow rapid infiltration.

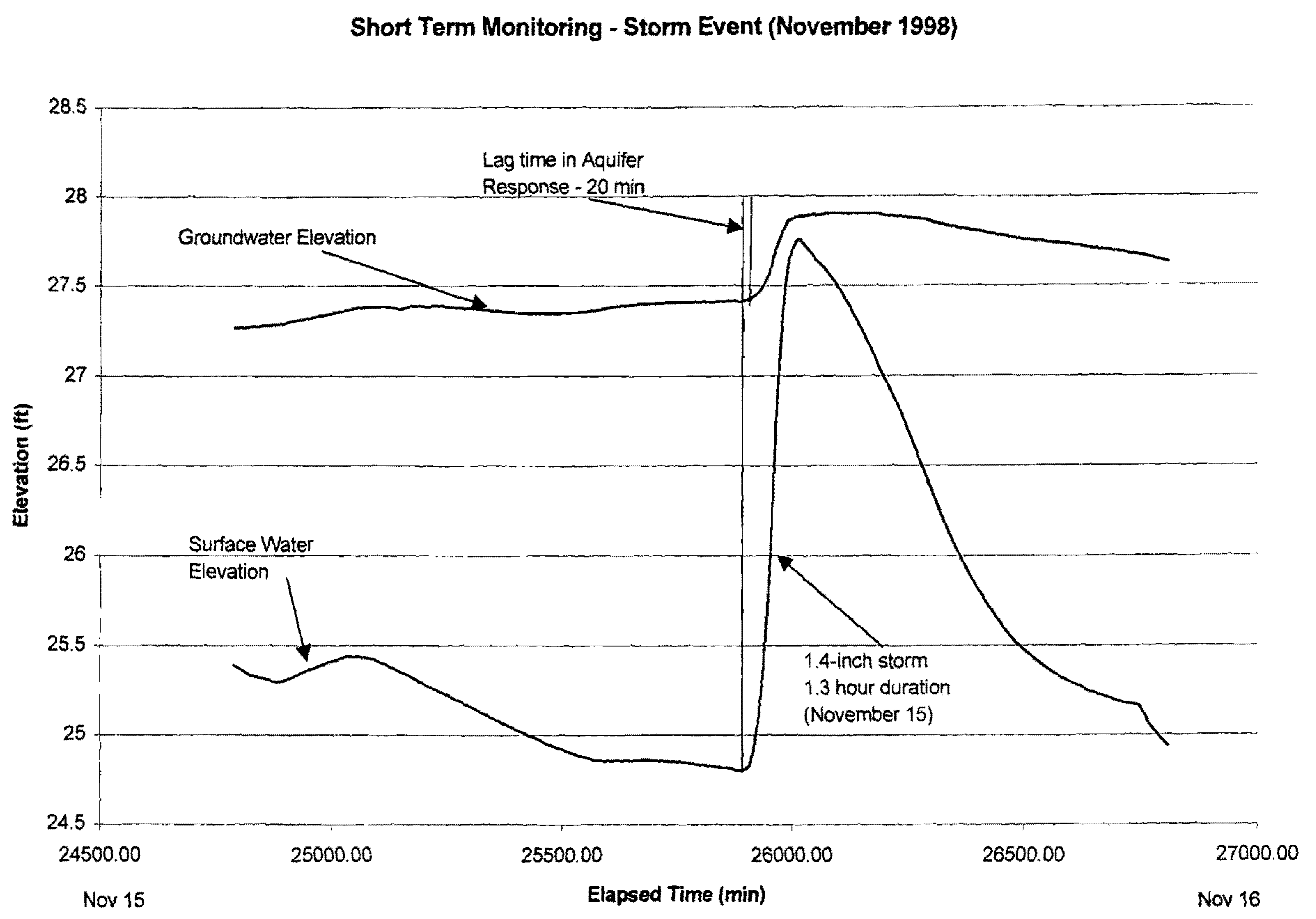
Short-Term Analysis. The short-term monitoring charts, shown on Figure 4-4, allow a closer examination of individual storm events. The two events selected for discussion here occurred in mid-November and late May. The November event resulted in a nearly 4-foot rise in surface water in Canal No. 1, while the surficial aquifer responded by approximately 0.5 foot. The lag time between the initiation of the precipitation event and a response in Canal No. 1 was only 5 minutes. The lag time between the rise of surface water in Canal No. 1 and the response of the aquifer was approximately 20 minutes. Relatively short lag time between surficial aquifer and Canal No. 1 demonstrates the interconnection of the surface water and groundwater. Following this event, surface water levels in Canal No. 1 abated to pre-event levels in just over 8 hours.

The May event was actually two storms that occurred within the same day. The May event demonstrates that Canal No. 1 surface water levels can achieve elevations above the level of groundwater. Also, the shape of the groundwater response peaks may indicate additional recharge coming from Canal No. 1. Note how the groundwater peaks in May are more rounded than the November peak, which decays more gradually. And that the groundwater levels drops more quickly in May as Canal No. 1 levels drop below groundwater levels than the November peak where the groundwater levels remained higher than Canal No. 1 levels.

The hydrologic monitoring station continues to collect data at Site 4 and – since the system operates on solar power – should continue with little or no maintenance until turned off. Recommendations for continued operation of this station are provided in Chapter 7.0.

Basin Analysis. The following analysis of the drainage basin includes Sites 4 and 5 downstream to the hydrostation at Site 4. In the Surface Water Sediment Report (HLA 1998), this basin was referred to as Drainage Basin 5. The analysis is divided into two parts and analyzes the types and frequencies of storm events required to transport sediment (bedload) that may contain dioxin. The first part will present the hydraulic characteristics of the drainage basin and the theoretical storms

This page intentionally left blank.



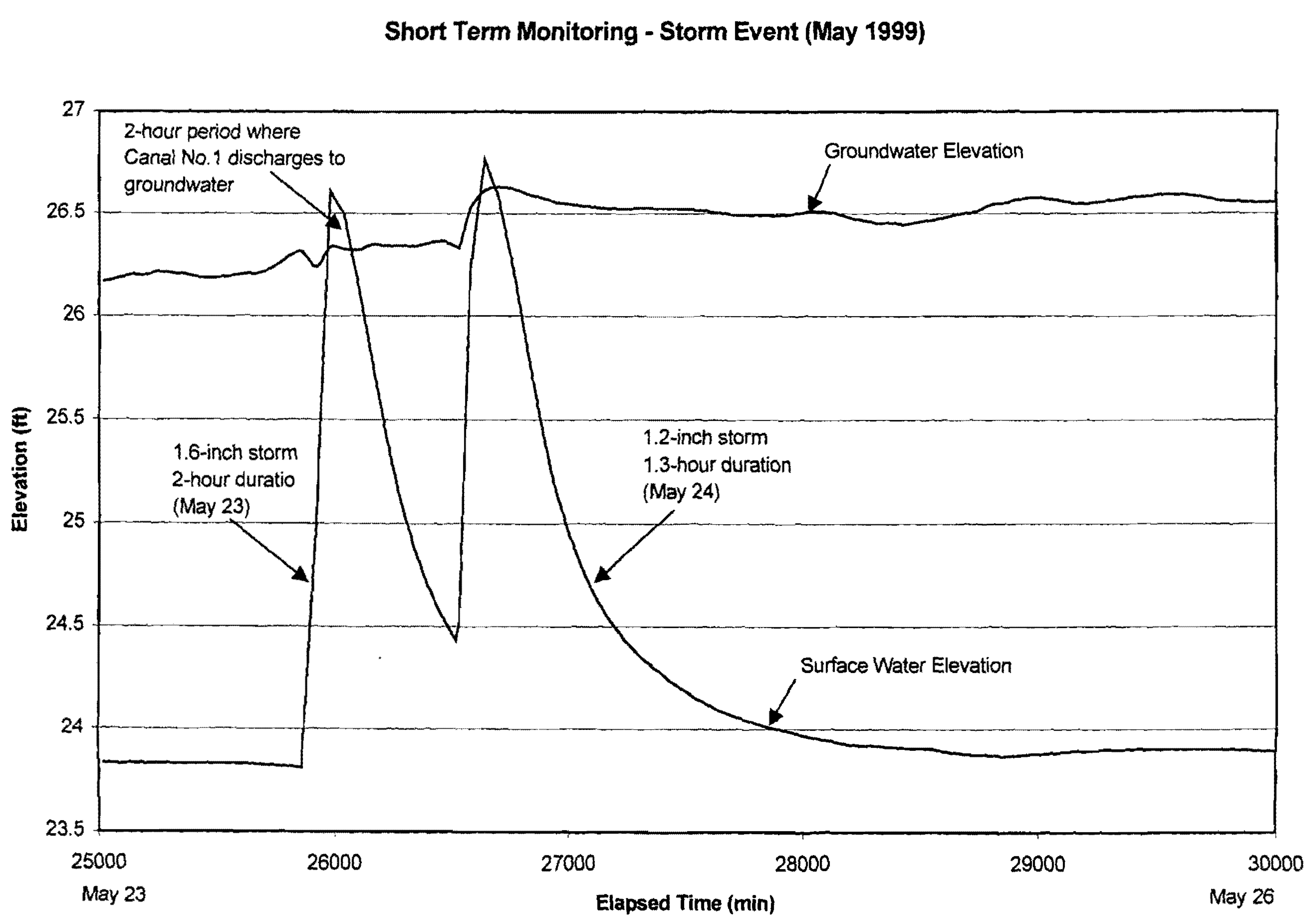


FIGURE 4-4 SHORT TERM MONITORING SITE 4 HYDROSTATION	GROUNDWATER MONITORING REPORT NAVAL CONSTRUCTION BATTALION CENTER GULFPORT, MISSISSIPPI

required to mobilize sediments (clay through fine sand in size), and the second part will compare the theoretical storm to the storm hydrographs obtained between November 1998 and May 1999. While this analysis is specific to Drainage Basin 5, the information is correlative to Drainage Basin 1, which includes Site 8, based on similar area and hydraulic characteristics.

The most important factors in determining the ability of surface water to scour and redeposit contaminated sediment are the peak flow and maximum velocity. For a drainage basin of this size (less than 200 acres), the peak flow can be determined using the rational equation (Maidmont, 1993). The rational equation is

$$Q = CIA$$

where

Q is the peak runoff rate (discussed here in cubic feet per second)
I is the average rainfall intensity (inches per hour)
A is the drainage area size (acres)
C is the runoff coefficient (unitless)

The maximum velocity of the water in Canal No. 1 is related to flow rate (Q) by the following equation.

$$V = Q/A$$

where

V is the maximum velocity in feet per second and
A is the cross section of the wetted area of the canal.

The ability of the runoff to scour and transport sediment can be evaluated after the maximum velocity is determined. Given the fact that dioxin tends to be associated with finer grained particles, the following correlation table will show only fine sand and smaller particles. These values are taken from Hjulstrom's Diagram (Prothero, 1996).

Particle Size	Minimum Scour Velocity (feet per second)	Minimum Transport Velocity (feet per second)
Fine Sand	1.5	0.7
Very Fine Sand	2.5	0.7
Course Silt	2.8	0.7
Fine Silt	5.0	0.7
Clay	16.5	0.7

This table clearly demonstrates that the velocity necessary to scour compacted clay size particles from the bedload is significantly higher than for fine sands. However, after the particles are mobilized, the velocity for continued transport is about the same.

The following calculations were performed to determine how effectively storm events could scour and transport dioxin-contaminated sediment. The average intensity (I) given for the design flood in this area for a 25-year storm is 5.0 inches per hour, the acreage of the drainage area to the hydrostation is approximately 180 acres, and the composite runoff coefficient based on the land use types is 0.44. Multiplying these, the peak flow for a 25-year storm would be approximately 288 cubic feet per second at the hydrostation.

Given a wetted cross-section area of approximately 85 square feet in the canal at peak flow (from the storm hydrographs), the velocity is approximately 3.4 feet per second. Surface water with this velocity easily scours and transports sands and silts. However, compacted fine silts and clays will not readily scour at this velocity, which may explain the field observations (confirmed by sampling) of dioxin-contaminated deposits that remain in place even following major storm events.

The 25-year storm is not necessary to generate peak flows. Storms with shorter duration but equivalent intensities could generate similar peak flows and maximum velocities if the duration is longer than the time of concentration. The time of concentration is the theoretical time for a given drop of water to flow from the divide (top) of the drainage basin to the observation point. For this basin the time of concentration T_c is given as

$$T_c = (0.0078)\ (L^{0.77})\ (S^{-0.385})$$

where

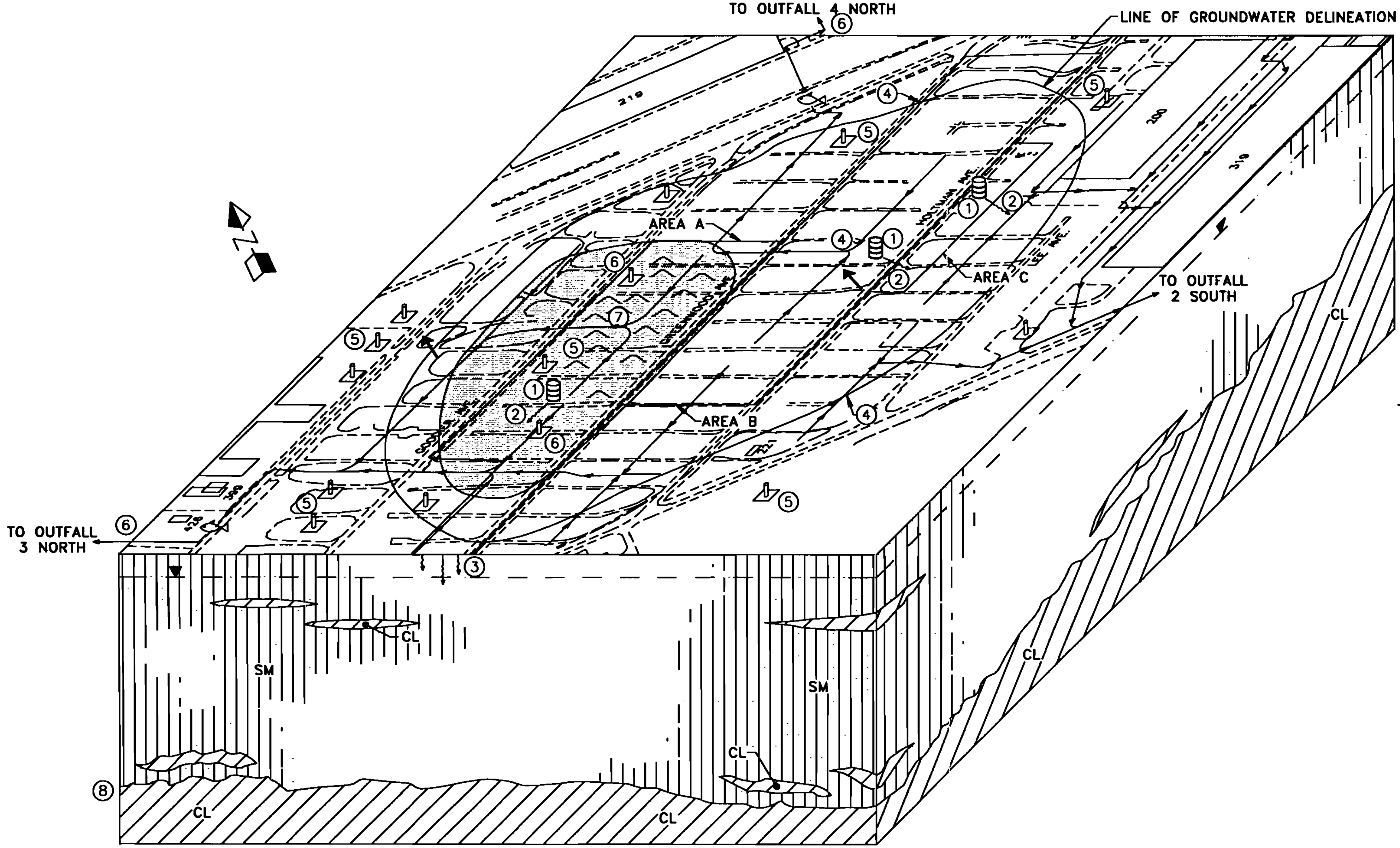
L = is the length of the channel from the divide to the observation point (feet)

S = is the average channel slope (feet per foot)

Given the low slope and relatively short length of the channel, the T_c is approximately 36 minutes. Therefore, intense storms that have a duration greater than 36 minutes are capable of generating peak flows in Canal No. 1. Storms of this intensity occurred several times during the monitoring period. The storm event on March 15 was such an event.

In summary, storm events capable of scouring and transporting dioxin-contaminated sediment occurred several times during the monitoring period and likely have occurred several times a year during the course of a normal year since introduction of HO and dioxin into the environment in the late 1960s. While these numbers are specific to Drainage Area 5, they are applicable to Drainage Area 1 (which includes Site 8), which covers a similar area and has similar land use characteristics. It appears that the maximum velocities calculated for this basin are not sufficient to scour the finest (clay and fine silt) fraction of the bedload once they are compacted or rootbound. This is fortunate, and may account for the numerous pockets of dioxin-contaminated sediment in Drainage Basin 1 that are associated with clay and silt-size particles.

4.4 REFINED SCMS. Two components of a conceptual model are provided in this section — a three-dimensional schematic keyed to a narrative description for Sites 8, 4, 5, and 7. These conceptual models represent the sum of information currently known or understood about the sites. Note, the numbered text cues on Figures 4-5 through 4-8 correspond to the numbered paragraphs below.



EXPLANATION

- MONITORING WELLS
- HERBICIDE ORANGE DRUMS (STORED FROM 1968 TO 1977)
- ASH PILES
- SURFACE WATER FLOW DIRECTIONS
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER LEVEL
- CL — INORGANIC CLAY OF LOW TO MEDIUM PLASTICITY WITH VARYING AMOUNTS OF SAND AND SILT
- SM — FINE AND MEDIUM SAND WITH SOME SILT
- AREA OF KNOWN GROUNDWATER CONTAMINATION
- BIOTA
- 9 — TEXT CUE

NOTE: GENERALIZED SOIL PROFILE NOT TO SCALE

FIGURE 4-5

CONCEPTUAL MODEL
SITE 8

SOURCES AND POTENTIAL RELEASE

* DRUMS OF HERBICIDE ORANGE (1968–1977) (PRIMARY SOURCE)
* DIOXIN CONTAINING SOIL, SEDIMENT, AND GROUNDWATER (SECONDARY SOURCE)
* ASH PILES CONTAINING LOW LEVELS OF DIOXIN (TERTIARY SOURCE)

CONTAMINANT MIGRATION PATHWAYS

* EROSION AND MIGRATION OF DIOXIN CONTAINING SURFACE SOILS
* MIGRATION OF DIOXIN-CONTAINING SEDIMENT THROUGH DITCH SYSTEM
* HERBICIDE ORANGE AND DIOXIN-SEEPING THROUGH SOIL INTO GROUNDWATER
* MIGRATION OF DIOXIN THROUGH GROUNDWATER
* WIND-BLOWN SOIL PARTICLES CONTAINING DIOXIN
* MECHANICAL REMOVAL OF DIOXIN CONTAINING SEDIMENT, SOIL, AND ASH

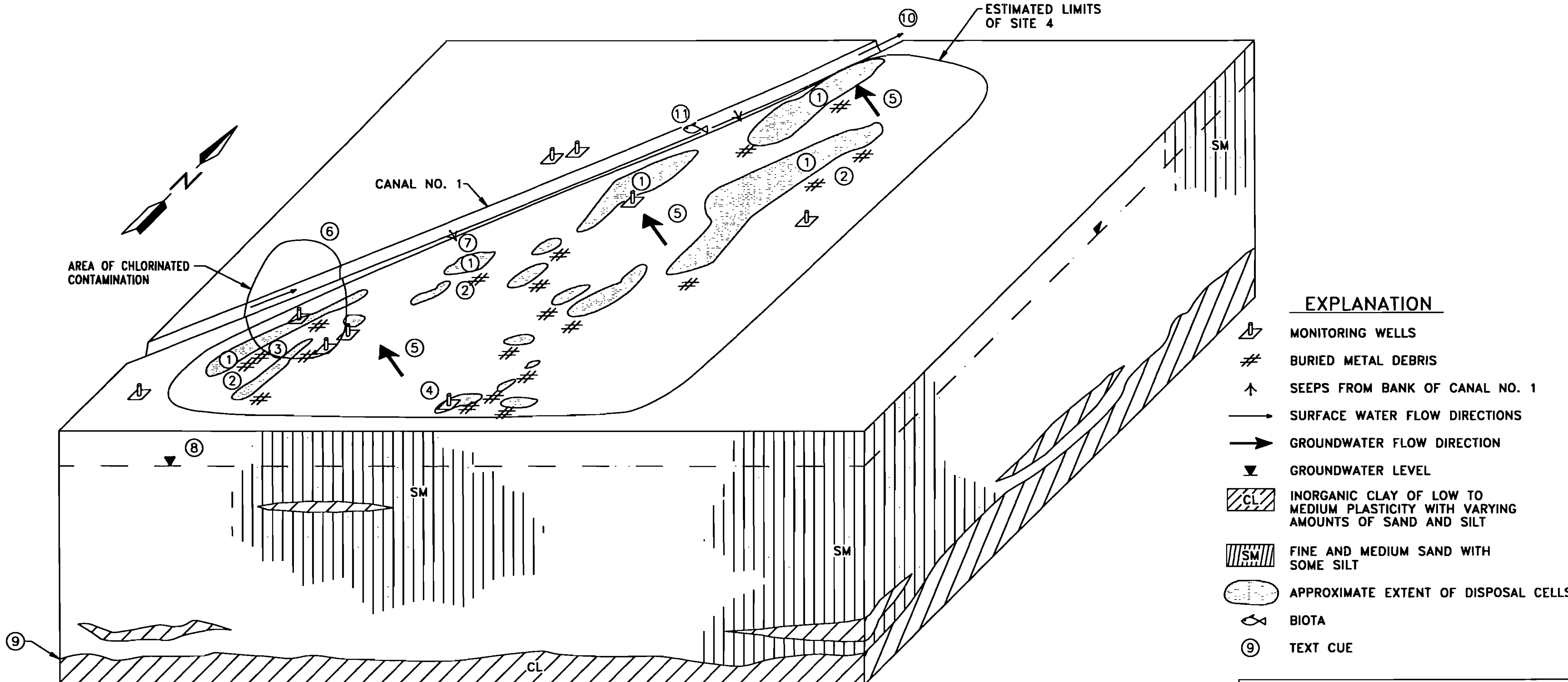
RECEPTORS (PHYSICAL AND BIOLOGICAL)

* SOIL, ESPECIALLY ORGANIC RICH
* SEDIMENT, ESPECIALLY IF ORGANIC RICH
* BIOTA LIVING OR FEEDING AT SITE 8 OR IN AFFECTED DITCH SYSTEMS

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

C:\DWG\HLA\02568-26\CONCEPT 8\DMF\990924



SOURCES AND POTENTIAL RELEASE

* SOLID WASTE FROM BASE DUMPSTERS
* LIQUID WASTES GENERATED ON BASE
  - FUELS, OILS, SOLVENTS (MEK, TOLUENE, XYLENE), PAINTS, AND PAINT THINNERS
* DRUMMED LIQUID WASTES
  - ABOVE LISTED LIQUIDS
  - POTENTIALLY, DAMAGED HERBICIDE ORANGE DRUMS
* HURRICANE CAMILLE DEBRIS

CONTAMINANT MIGRATION PATHWAYS

* POTENTIALLY CONTAMINATED GROUNDWATER FLOWING TO THE WEST-NORTHWEST
* SEEPS AT THE EDGE OF THE LANDFILL CARRYING POTENTIALLY CONTAMINATED FLUIDS INTO CANAL NO. 1
* SURFACE WATER AND SEDIMENT IN CANAL NO. 1 FLOWING NORTH, EXITING THE BASE AT OUTFALL 1 NORTH

RECEPTORS (PHYSICAL AND BIOLOGICAL)

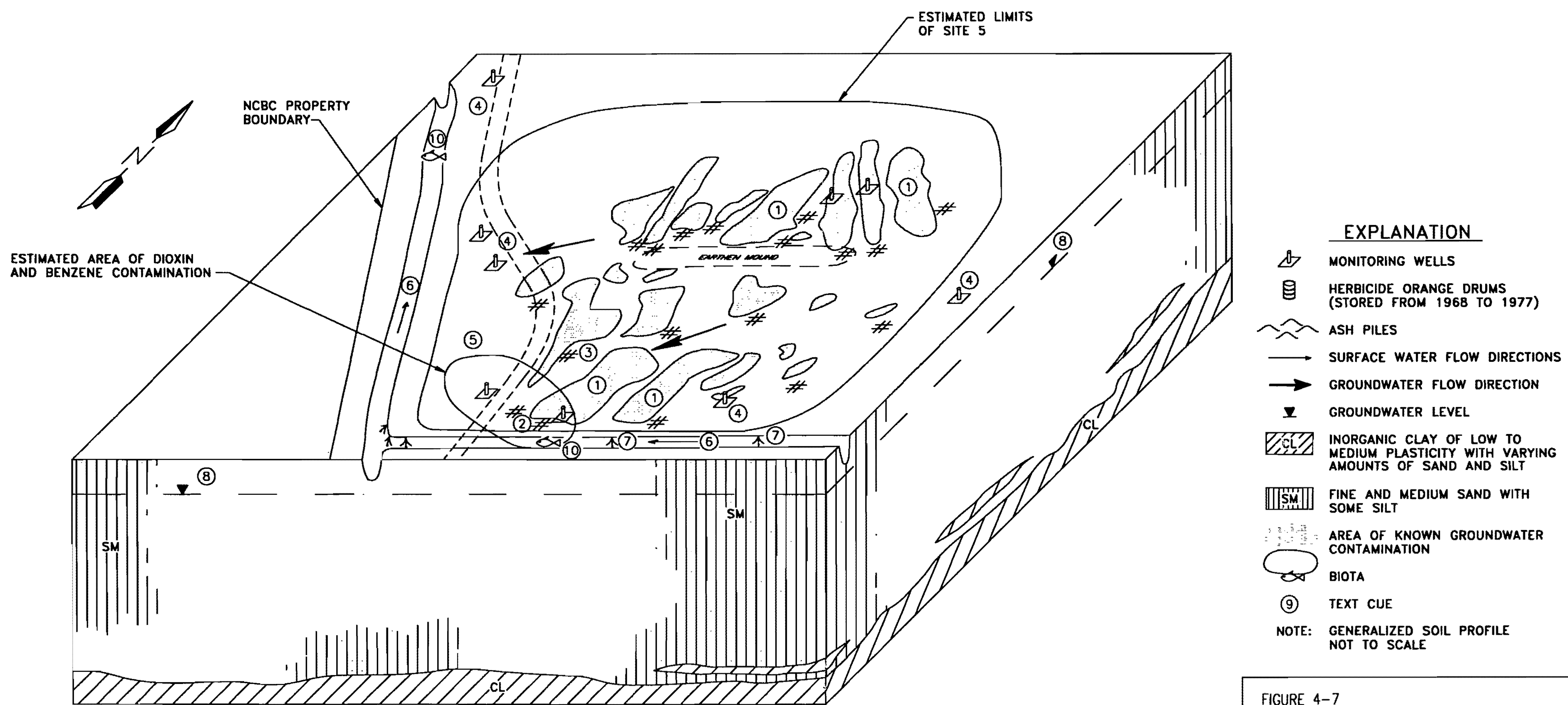
* SOIL AND GROUNDWATER AT SITE 4
* SURFACE WATER AND SEDIMENT IN CANAL NO. 1
* SOIL THAT RECEIVES OVERFLOW FROM CANAL NO. 1
* ORGANISMS THAT LIVE OR FEED IN CANAL NO. 1

FIGURE 4-6

CONCEPTUAL MODEL
SITE 4

GROUNDWATER MONITORING REPORT
NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

C:\DWG\HLA\02566-26\CONCEPT 4\DMF\990923



SOURCES AND POTENTIAL RELEASE

* SOME BASE SOLID WASTE, 12 LBS. OF POWDERED DDT
* LIQUID WASTES (DRUMMED AND UNDRUMMED)
  - FUELS, OILS, SOLVENTS (MEK, TOLUENE, XYLENE), PAINTS, AND PAINT THINNERS
  - 50 TO 100 55-GALLON DRUMS OF DDT
  - REPORTEDLY 55-GALLON DRUMS OF HERBICIDE ORANGE

CONTAMINANT MIGRATION PATHWAYS

* POTENTIALLY CONTAMINATED GROUNDWATER FLOWING TO THE WEST-SOUTHWEST
* SEEPS AT THE EDGE OF THE LANDFILL FLOWING INTO CANAL NO. 1
* SURFACE WATER AND SEDIMENT IN DITCHES FLOWING NORTH INTO CANAL NO. 1

RECEPTORS (PHYSICAL AND BIOLOGICAL)

* SOIL AND GROUNDWATER AT SITE 4
* SURFACE WATER AND SEDIMENT IN DITCHES LEADING AWAY FROM SITE
* ORGANISMS THAT LIVE OR FEED IN THE DITCHES

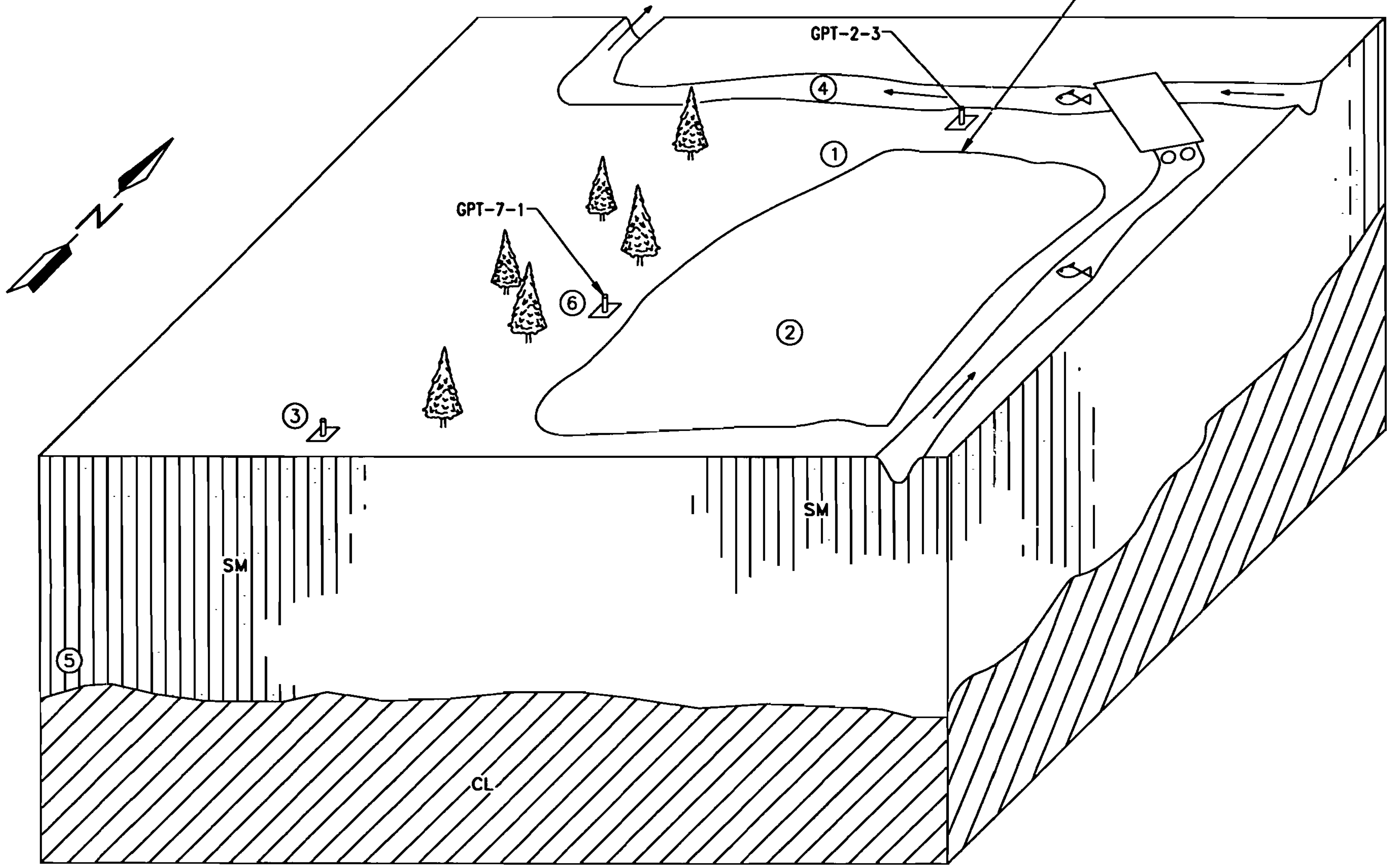
FIGURE 4-7

CONCEPTUAL MODEL
SITE 5

GROUNDWATER MONITORING REPORT

NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

C:\DWG\HLA\02566-26\CONCEPT 5\OMF\990923



EXPLANATION

- MONITORING WELLS
- SURFACE WATER FLOW DIRECTIONS
- CL — INORGANIC CLAY OF LOW TO MEDIUM PLASTICITY WITH VARYING AMOUNTS OF SAND AND SILT
- SM — FINE AND MEDIUM SAND WITH SOME SILT
- BIOTA
- 9 — TEXT CUE

NOTE: GENERALIZED SOIL PROFILE NOT TO SCALE

SOURCES

* SAMPLE RESULTS IN GPT-7-1 INDICATES THAT HERBICIDE ORANGE MAY BE A SOURCE

CONTAMINANT MIGRATION PATHWAYS

* GROUNDWATER MIGRATION
* SEEPS GROM GROUNDWATER INTO DITCHES

RECEPTORS

* SOIL (ESPECIALLY IF ORGANIC RICH)
* SEDIMENT (ESPECIALLY IF ORGANIC RICH)
* BIOTA LIVING OR FEEDING IN DITCHES

FIGURE 4-8

CONCEPTUAL MODEL
SITE 7

GROUNDWATER MONITORING REPORT
NAVAL CONSTRUCTION BATALLION CENTER
GULFPORT, MISSISSIPPI

C:\DWG\HLA\02566-26\CONCEPT 7\DMF\990924

Site 8, Former HO Storage Area. Figure 4-5 is a schematic view provided to support the conceptual model for Site 8. The numbered text items that appear on that figure are expanded upon in this accompanying site conceptual model text page.

1. HO was stored in 55-gallon drums on Areas A, B, and C from 1968 to 1977. The drums were stacked on their sides, and spills were a common occurrence. The herbicide in the drums was mixed with diesel fuel (Arienti and others, 1988), which aided application. Dioxin, particularly TCDD, occurs as a contaminant when 2,4,5-T (one of the components of HO) is manufactured.

2. When spills occurred, HO seeps into the sandy soil. No attempts were made to contain or remove spilled material. Since diesel fuel is a solvent for dioxin, dioxin molecules migrated down through the unsaturated soil zone. However, the levels of dioxin contamination in the surface soil were investigated prior to the excavation and incineration and were shown to decrease with increasing depth. The highest levels of dioxin contamination at Site 8 was 1,000 ppb. That sample was collected from the stabilized surface soil layer during the early delineation activities in 1986 (EG&G, 1988).

3. Although dioxin levels have been shown to decrease with depth, dioxin-contaminated groundwater was discovered at Site 8. The highest detected dioxin TEQ sample result was 60 ppq (ABB-ES, 1995e).

4. Although dioxin levels have been shown to decrease with depth, dioxin-contaminated groundwater was discovered at Site 8. The highest detected dioxin TEQ sample result was 60 ppq (ABB-ES, 1995e).

5. Although dioxin levels have been shown to decrease with depth, dioxin-contaminated groundwater was discovered at Site 8. The highest detected dioxin TEQ sample result was 60 ppq (ABB-ES, 1995e).

6. During Phases 1 and 2, groundwater samples were collected from locations that completely encircled Site 8. Permanent monitoring wells were installed to monitor the line of delineation established during this program.

7. Erosion and transportation of dioxin-contaminated soil and sediment has been observed through Outfalls 1, 3, and 4 north. The highest dioxin sample results have been obtained from organic-rich sediment in the lower energy environments in the ditch system that flows off of Site 8. The highest dioxin TEQ from sediment is 150 ppt at Outfall 3

8. Dioxin-contaminated soils above 1 ppb at Site 8 were removed and incinerated in 1987 and 1988. The resulting ash was piled on Site 8, Area A. Confirmation sampling indicated that the cleanup goal of 1 ppb was reached. The regulatory standards for dioxin-contaminated soil were made more stringent in 1989.

9. Clay-bearing Zone — The top of a clay-bearing zone was encountered at 30 to 40 feet bls, and the zone appears to dip slightly to the south.

Site 4, Golf Course Landfill. Figure 4-6 is schematic view provided to support the conceptual model for Site 4. The numbered text items that appear on that figure are expanded upon in this accompanying site conceptual model text page.

1. Figure 4-6 shows the locations and orientations of the magnetic anomalies resulting from a geophysical survey conducted in 1995. An E-31® was used to identify shallow buried metals and conductive soils. The EM-34 was used to identify conductive zones below 20 feet, and an EM-61 was used to identify buried metal debris. The outlines shown on this figure are a combination of all of the identification techniques and should roughly depict the original disposal areas that contained metal debris (including 55-gallon drums). Obviously, many of these anomalies, which may correspond to buried cells, lie directly under the golf course.

2. Virtually all liquid and solid wastes generated on base from 1966 to 1972 were disposed of in the landfill. This time period coincides with the storage of HO on base and Hurricane Camille. There have been reports that drums damaged in Hurricane Camille were disposed of in this landfill.

3. Liquid wastes known to be disposed of in this landfill include fuels, oils, solvents (methyl ethyl ketone [MEK], toluene, and xylene), paints, and paint thinners. Many of these liquids, especially the solvents, will mobilize dioxin in the groundwater.

4. Three monitoring wells were installed during the Initial Assessment Study (ABB-ES, 1987). Unfortunately, the two wells intended for downgradient locations are actually in cross-gradient positions.

5. Well GPT-4-3 is located within the boundary of the landfill. Groundwater samples from this monitoring well resulted in detections of pesticides, PCBs, herbicides, and dioxin (34 ppq TEQ) (ABB-ES, 1995e).

5. Groundwater flow direction at this site is west and northwest towards Canal No. 1. The locations of the new monitoring are shown in relation to the major disposal cells.

6. The approximate location of the chlorinated solvent plume is shown.

7. Seeps from the east bank (landfill side) of Canal No. 1 are evident during most of the year, although they only discharge during periods of elevated groundwater levels. These seeps can be of varying colors, and they produce a noticeable sheen on the water where they empty into Canal No. 1. Neither the seeps or surface water in the vicinity has been sampled.

8. Groundwater depths are up to 10 feet bls at this site. The increased depth to water is the result of landfill and cover material.

9. Clay-bearing Zone — The top of a sandy/silty clay-bearing zone, which appears to dip slightly to the south, was encountered at 20 to 26 feet bls.

Site 5, Former Landfill, Heavy Equipment Training Area Landfill. Figure 4-7 is the conceptual model for Site 5. The numbered text items that appear on that figure are expanded upon in this accompanying site conceptual model text page.

1. Figure 4-7 shows the locations and orientations of the magnetic anomalies resulting from a geophysical survey conducted in 1995. An EM-31 was used to identify buried metals and conductive soils. The EM-34 was used to identify conductive zones below 20 feet, and an EM-61 was used to identify buried metal debris. The outlines shown on this figure are a combination of all of the techniques and should roughly depict the original disposal areas that contained metal debris (including 55-gallon drums). While the shapes and sizes of the individual cells and magnetic anomalies vary, either analytical data or direct observation (trenching) is required to accurately determine which cell(s) contain the 55-gallon drums of DDT.

2. Reports indicate that drums of DDT and other liquid wastes were disposed of in this landfill. The operation of this landfill coincided with the storage of HO at Site 8.

3. The solid wastes disposed of in this landfill include some of the solid dumpster waste and 12 pounds of powder DDT. Liquid wastes included 50 to 100 55-gallon drums of liquid DDT, fuels, oils, solvents (MEK, toluene, and xylene), paints, and paint thinners.

4. Three existing monitoring wells were installed around Site 5, although only one is downgradient of the disposal cells within the landfill. Seven of the eight additional monitoring wells installed during Phase 2 are located downgradient of major disposal cells. Additional wells were added during this program.

5. The area with elevated benzene and dioxin levels is outlined as shown on Figure 4-7.

6. Drainage ditches run along the side the landfill on the south and west. The flow directions are to the west and north, where the ditch eventually drains into Canal No. 1. A sediment sample collected in the ditch that drains off Site 5 contained TCDD and had a TEQ of 74. While this result does not confirm disposal of HO in Site 5, it does indicate that this potential source and contaminant migration pathway needs to be addressed.

7. Seeps have been observed emanating from the north (landfill) side of the drainage ditch that runs along the south side of Site 5. These seeps have a visible sheen, although to date, no samples have been collected for analysis.

8. Like Site 4, the groundwater is a little deeper than the surrounding area due to several feet of landfill cover. Reportedly, the cover material is a fine to medium sand with little silt. Therefore, the cover does not prevent infiltration or seepage into the landfill.

9. Clay-bearing Zone — The top a silty/sandy clay-bearing zone was encountered at 26 to 36 feet bls.

Site 7, Construction Debris Landfill. Figure 4-8 is the conceptual model for Site 7. The numbered text items that appear on Figure 4-8 are expanded upon in this accompanying site conceptual model text page.

1. The initial geophysical assessment at Site 7 concentrated on locating the boundaries of the site only. Therefore, the individual disposal cells are not known at this time. One interesting note to the geophysical study was that it showed that Sites 2 and 7 commingle along the southern boundary of Site 7. However, Site 2 was closed nearly 20 years before operations at Site 7 began.

2. The reported disposal practices at Site 7 include rubble disposal from construction activities. No chemical wastes were reportedly disposed of at this site.

3. Two wells now exist near the boundaries of Site 7. The older (GPT-02-01) along the northern boundary of the site contained low levels of dioxin and TCDD (less than 5 ppq) in a sample collected in 1995. The monitoring well installed and sampled during Phase 2 (GPT-07-01) produced 51.6 ppq including an estimated 25 ppq of TCDD. Groundwater potential across Site 7 is nearly flat.

4. A ditch bounds Site 7 on the east and north. This ditch, which drains much of the runoff from Site 8, contains dioxin-contaminated sediment up to nearly 200 ppt.

5. Clay-bearing strata may be discontinuous. The top of the silty/sandy clay-bearing zone was encountered at 17 feet bls. The clayey zone is shallowest at this site because it is further north, and the clay-bearing zone appears to dip slightly to the south.

6. Until further evidence is available for the presence of TCDD, no individual potential source for the dioxins at Site 7 will be assumed.

5.0 DATA VALIDATION

This chapter summarizes the analytical program for groundwater samples collected during the Phase 1 and Phase 2 Groundwater Monitoring Investigation activities at NCBC Gulfport, Mississippi.

5.1 CHEMICAL ANALYSES. Sampling activities during Phase 1 and Phase 2 included the collection of groundwater samples. All environmental samples and associated quality control (QC) samples (including source blanks, rinsate blanks, field duplicates, and matrix spike/matrix spike duplicate samples) were collected in accordance with the procedures outlined in the *Groundwater Monitoring Plan* (ABB-ES, 1997d).

Samples that were collected for VOC analysis, SVOC analysis, and pesticide/PCBs analysis were analyzed in conformance with CLP protocols (USEPA, 1990, 1991a, and 1991b). These samples were validated according to NEESA (1988) Level D Data Quality Objectives (DQOs). In accordance with Level D DQOs, the *USEPA National Functional Guidelines for Organic Data Review* (USEPA, 1991c) and USEPA *Draft Pesticide/Aroclor Data Review Guidelines* (USEPA, 1991d) were used to validate the laboratory data. Samples that were collected for dioxin/furan and herbicides analysis were analyzed according to SW-846 Methodology (USEPA, 1986) and validated to NEESA Level D DQOs. Level D data validation was perform by evaluating conformance to QC criteria established for each analytical method in conjunction with the USEPA *National Functional Guidelines for Organic Data Review* (USEPA, 1991c), where applicable.

Analytical data collected during this investigation was generated by two different laboratories. Groundwater samples submitted for VOCs, SVOCs, pesticides/PCBs, and herbicide analyses were analyzed by Quanterra, Inc. in North Canton, Ohio. The groundwater samples submitted for dioxin/furan analyses were analyzed by Maxxam Analytics, Inc. located in Ontario, Canada.

Tables 5-1 and Table 5-2 lists the samples collected and analyses performed during Phase 1 and Phase 2 of the Groundwater Investigation.

5.2 DATA QUALITY ASSESSMENT SUMMARY. The data quality assessment of the analytical data generated during Phase 1 and Phase 2 of the groundwater investigation was performed by Environmental Data Services, Inc. and Heartland Environmental Services, Inc. All analyses, excluding dioxin/furan, were validated by Environmental Data Services, Inc. The dioxin/furan data was validated by Heartland Environmental Services, Inc.

During the data review and validation, data quality indicators were evaluated for all data generated during the investigations. Precision, accuracy, representativeness, comparability, and completeness (PARCC) were assessed to determine data usability. Listed below are the definitions of the data quality indicators.

Table 5-1
Phase 1 Samples

Groundwater Monitoring Report
Naval Construction Battalion Center
Gulfport, Mississippi

Analyses	Sample IDs		
	Site 4	Site 5	Site 8
Full Suite includes: Dioxin/Furans (Method 8290) VOCs (CLP) SVOCs (CLP) Pesticide/PCBs (CLP) Chlorinated herbicides (8150b)	R4001G1P1, R4002G1P1, R4003G1P1, R4003G1D1, R4004G1P1, R4005G1P1, R4006G1P1, R4007G1P1, R4008G1P1, R4009G1P1, R4010G1P1, R4011G1P1, R4012G1P1, R4013G1P1, R4014G1P1	R5001G1P1, R5001G1D1, R5002G1P1, R5003G1P1, R5004G1P1, R5005G1P1, R5006G1P1, R5007G1P1, R5008G1P1, R5009G1P1, R5010G1P1, R5011G1P1, R5012G1P1, R5013G1P1, R5014G1P1, R5015G1P1, R5015G1D1, R5016G1P1, R5017G1P1	R8003G1P1, R8008G1P1, R8009G1P1, R8010G1P1, R8020G1P1
Dioxin/Furans (Method 8290) VOCs (CLP)	R4002G1D1, R4015G1P1		R8001G1P1, R8002G1P1, R8004G1P1, R8004G1D1, R8005G1P1, R8006G1P1, R8007G1P1, R8011G1P1, R8012G1P1, R8013G1P1, R8014G1P1, R8014G1D1, R8015G1P1, R8016G1P1, R8017G1P1, R8018G1P1, R8019G1P1, R8021G1P1, R8022G1P1, R8023G1P1, R8024G1P1

Notes: ID = identification.
VOC = volatile organic compound.
CLP = Contract Laboratory Program.
SVOC = semivolatile organic compound.
Pesticide/PCBs = pesticides and polychlorinated biphenyls.

Table 5-2
Phase 2 Samples

Groundwater Monitoring Report
Naval Construction Battalion Center
Gulfport, Mississippi

Analyses	Well IDs	Sample IDs
Full Suite includes:	GPT-01-04	GPT14G1P1
Dioxin/Furans (Method 8290)	GPT-01-05	GPT15G1P1
VOCs (CLP)	GPT-02-04	GPT24G1P1
SVOCs (CLP)	GPT-03-06	GPT36G1D1
Pesticide/PCBs (CLP)	GPT-03-06	GPT36G1P1
Chlorinated herbicides (8150b)	GPT-03-07	GPT37G1P1
	GPT-04-10	GPT410G1P1
	GPT-04-11	GPT411G1P1
	GPT-04-12	GPT412G1P1
	GPT-04-13	GPT413G1P1
	GPT-04-14	GPT414G1P1
	GPT-04-15	GPT415G1P1
	GPT-04-09	GPT49G1D1
	GPT-04-09	GPT49G1P1
	GPT-05-10	GPT510G1P1
	GPT-05-11	GPT511G1P1
	GPT-05-12	GPT512G1P1
	GPT-05-13	GPT513G1P1
	GPT-05-14	GPT514G1P1
	GPT-05-07	GPT57G1D1
	GPT-05-07	GPT57G1P1
	GPT-05-08	GPT58G1P1
	GPT-05-09	GPT59G1P1
	GPT-07-01	GPT71G1P1
	GPT-08-10	GPT810G1P1
	GPT-08-11	GPT811G1P1
	GPT-08-12	GPT812G1P1
	GPT-08-13	GPT813G1P1
	GPT-08-14	GPT814G1P1
	GPT-08-05	GPT85G1D1
	GPT-08-05	GPT85G1P1
	GPT-08-06	GPT86G1P1
	GPT-08-07	GPT87G1P1
	GPT-08-08	GPT88G1P1
	GPT-08-09	GPT89G1P1

Notes: ID = identification.
CLP = Contract Laboratory Program.
VOC = volatile organic compound.
SVOC = semivolatile organic compound.
Pesticide/PCBs = pesticides and polychlorinated biphenyls.

Precision. Precision measures the ability to reproduce a value under certain conditions. It is a quantitative measurement based on the differences between two values. Precision was evaluated using the relative percent difference (RPD) of matrix spike and matrix spike duplicate sample pairs, laboratory duplicate pairs, and field duplicate pairs.

Accuracy. Accuracy measurements identify any bias in a given measurement system (i.e., laboratory conditions, environmental matrix, and sampling conditions). The laboratory, sampling, and media effects on accuracy were assessed by reviewing instrument calibration results, the percent recoveries of spiked analytes for matrix spike/matrix spike duplicate pairs, laboratory control spikes, surrogate recoveries and by evaluating contamination in field and laboratory blank samples.

Representativeness. Representativeness refers to the extent to which a measurement accurately and precisely represents a given population within the accepted variation of laboratory and sampling measurements. Representativeness was evaluated using field blanks, trip blanks, and equipment rinsate blanks, method blanks, and conformance with requirements for analytical methods, such as extraction and analysis holding times.

Completeness. Completeness refers to the percentage of useable, valid values obtained through data validation. Completeness was determined by the number of analytical results that are considered acceptable after review of QC parameters.

Comparability. Comparability reflects the confidence with which one data set can be compared with other measurements and the expression of results consistent with other organizations reporting similar data. Comparability for this investigation was accomplished through the use of standard, USEPA-approved techniques and procedures for sample collection, handling, analysis, validation, and reporting.

Based on the data quality reviews and assessment of the PARCC of the data sets, data qualifiers were added to the results to indicate limitations to the usability of the results. The following qualifiers were used to annotate data:

U – Indicates the compound was analyzed for, but not detected or found at a concentration less than five times the associated blank concentration. The associated value shown for the parameter is the sample-specific quantitation limit.

J – Estimated value. One or more QC parameters were outside control limits, or the value is estimated because the reported concentrations is less than the method quantitation limit.

UJ – Undetected and Estimated. The compound or analyte was analyzed for, but not detected, and the quantitation limit value was considered estimated because one or more QC parameters were outside the method QC limits.

R - Unusable Data. One or more QC parameters grossly exceeded control limits.

The data tables presented in Appendix A for samples collected during the Phase 1 and Phase 2 Groundwater Monitoring Investigation contain validation qualifiers applied to the data in accordance with the *USEPA National Functional Guidelines for Organic Data Review* (USEPA, 1991c). Detailed PARCC reports for Phase 1 and Phase 2 of the investigation were submitted by the validating parties and are presented in Appendix C.

6.0 CONCLUSIONS

All three of the primary objectives stated in Chapter 1.0 were successfully completed. The following paragraphs review each objective and describe how each objective was accomplished.

The first objective – to assess the extent of groundwater contamination related to the storage and handling of HO at Sites 4, 5, and 8 – was completed in two phases. These sites were selected as the focus of the groundwater investigation based on site histories, previous investigations, and the SCMs developed in the *Groundwater Investigation Workplan* (ABB-ES, 1997d). The results confirm dioxin levels in the groundwater at Site 8. The levels did not exceed USEPA MCLs, but the presence of TCDD in groundwater samples was an indicator of past HO storage handling or disposal activities and indicates that HO is the likely source. The effort to delineate dioxin in the groundwater on and near Site 8 was successful.

The direct-push samples and permanent monitoring wells encircling Site 8 confirm that dioxin contamination in the groundwater does not extend more than 100 feet laterally from the currently established site boundaries (see Figure 4-8). The vertical extent of dioxin contamination, as demonstrated in previous investigations and Phase 2 intermediate depth monitoring wells, appears to be restricted to less than 20 feet below the ground surface.

The investigation did not produce results that would suggest that HO was handled or disposed of in significant volumes at either Site 4 or Site 5. Neither phase, including a total of 45 groundwater samples from these sites, produced dioxin results with TCDD or PeCDD. The lack of these congeners strongly supports the exclusion of HO as potential source.

Samples from Sites 4 and 5 did produce significant results for other organic compounds. A chlorinated solvent plume was confirmed and characterized at Site 4. Levels of vinyl chloride, 1,2-DCE, TCE, and 1,1,2-TCA were above action levels and will require further delineation and will be discussed in Chapter 7.0. At Site 5, dioxin (without TCDD or PeCDD) and benzene levels in the southwestern part of the site were above action levels and will require additional focused delineation.

The second objective of this study was to evaluate groundwater flow based on (1) development of an understanding of the potentiometric surface and (2) an assessment of the interaction between surface water and shallow groundwater. Also, generation of a basewide potentiometric surface map was necessary to accurately place downgradient monitoring wells at Sites 1, 2, 3, and 7, as well as to aid in the placement of Phase 2 characterization wells at Sites 4, 5, and 8.

By installing a network of piezometers across the base and measuring their water levels, analysis of the potentiometric surface map produced several significant new findings. First, localized groundwater flow at the base appears to be closely related to the mapped surface soil units. For the western half of the base, which includes most of the sites discussed in this report, groundwater flow is to the northwest. Low gradient conditions exist at Sites 2, 3, and 7.

The groundwater flow divide located at Site 8 is associated with some of the steepest gradients on the base. However, the insoluble nature of dioxin, and the lack of potential solvents at Site 8, should minimize migration of dioxin contamination.

The hydrologic monitoring station installed at Site 4 was designed to support assessment of the interaction between surface water and groundwater along Canal No. 1. This relationship is important because large volumes of wastes were disposed of near the canal at Site 4 and Site 5, and the degree that groundwater could discharge into the canal could significantly impact the recommendations of this report and potentially future remedial options.

The results of the hydrologic study determined that there is a significant interaction between surface water and groundwater. In both long- and short-term analyses, the water levels in the canal and adjacent groundwater moved in tandem with one another, mimicking response with only short (less than 0.5 hour) delays in hydraulic head response for groundwater. The 6-month analysis shows that groundwater from Site 4 is at a higher elevation than the surface water in Canal No. 1, which indicates that some of the groundwater is discharging into the canal during a significant part of the year.

The analysis of shorter term data near large (greater than 2 inches) precipitation events, indicate that the canal may periodically function as a losing stream discharging water into the groundwater, as bank storage. This apparently occurs only during short intervals, as indicated by the limited duration of the monitoring period.

The significance of these findings is that shallow (above the bottom of the canal) contamination at Sites 4 and 5 could be discharging into Canal No. 1 repeatedly during the year. It should be noted that the chlorinated solvent contamination at Site 4 was detected from a well that was screened below the level of the canal.

The third objective was to install downgradient permanent monitoring wells at Sites 1, 2, 3, and 7. These wells were installed during Phase 2 activities at locations determined by use of the potentiometric surface map. Sample results from Sites 1, 2, and 3 demonstrated that no significant levels of contamination appear to be migrating from these sites. Additional monitoring activities for these sites will be discussed in Chapter 7.0.

However, at Site 7 the dioxin results at GPT-07-01 were well above MCLs, and TCDD was reported at approximately 25 ppq. If confirmed, the TCDD congener may indicate HO handling or disposal at this site. Before that determination can be made, several steps need to be taken, including the resampling of this well. Recommendations for Site 7 are discussed in Chapter 7.0.

While not part of this program, the seep sampling conducted by MK (1999) has yielded results at low levels (near nondetectable/PQLs). These results more likely represent the effectiveness of activated charcoal to filter out dioxins than the groundwater conditions, but they are significant in the context of future remedial options.

7.0 RECOMMENDATIONS

The Groundwater Monitoring Workplan addressed the collection of environmental data, its evaluation, and the generation of two documents: the groundwater monitoring report and the continued monitoring work plan. The recommendations in this report are general in nature; specifics relative to these general recommendations will be provided in the continued monitoring work plan. These specific recommendations will include selection of monitoring wells for periodic sampling, monitoring parameters, and timeframes for analyses.

At Site 8, no additional installation of monitoring wells is necessary. Both the horizontal and vertical extent of contamination has been defined. At Sites 1, 2, and 3, no additional study within the boundary of the sites is necessary until the Remedial Investigation and Feasibility Study is initiated. The specifics of future monitoring at Sites 1, 2, 3, and 8 will be contained within the continued monitoring work plan.

Additional delineation activities should be planned for Sites 4 and 5 to define the extent of the chlorinated solvent plume at Site 4 and the elevated levels of dioxin (of non-HO origin) in the southwestern part of Site 5 near family housing. The levels of these contaminants are above MCLs and are located near Canal No. 1. The delineation could be performed using a DPT groundwater sampling methodology and may require the installation of two or three additional wells to validate the proposed DPT sampling program findings. These delineation activities should include the collection of VOC analytes, natural attenuation parameters, and the development of a model of the chlorinated solvent plume at Site 4. Such data will support the use of the USEPA's Monitored Natural Attenuation Screening Model that is designed to address the timeframe and applicability of natural attenuation. These data may also be used to evaluate other biologically enhanced remediation techniques for the plume, if necessary.

Based on the proximity of the family housing area and Canal No. 1 to the contamination (above MCLs) associated with Site 5, additional study at the southwestern extent of the site is recommended. A limited DPT groundwater sampling program, followed by the installation of two or three monitoring wells to validate findings, should complete delineation activities at this site. Also, the hydrologic monitoring station, currently at Site 4, should be moved and installed at Site 5. The installation of the station at Site 5 will be used to evaluate the potential for the dioxin and benzene contaminated groundwater entering Canal No. 1 or the drainage ditch along the southside of the site. This information may be used to support prioritization and scheduling of mitigation activities for these compounds.

At Site 7, GPT-07-01 should be resampled as soon as possible to confirm the levels of TCDD reported in Phase 2. If TCDD and total dioxin levels are confirmed above MCLs, a detailed geophysical study of Site 7 and the northern part of Site 2 (the two sites overlap/commingle) to evaluate the size, location, and orientation of disposal cells/subsurface anomalies. Activities designed to assess the limit and source of the dioxins in monitoring well GPT-07-01 may then require implementation, if necessary.

Outside of general recommendations for Sites 4, 5, and 7, periodic monitoring details will be provided in the continued monitoring work plan.

Also, seep samples collected at Site 4 (two rounds) have confirmed that the organic carbon bed has contained the low level dioxin contamination before it enters Canal No. 1. Seep sampling should be discontinued. Groundwater samples should be periodically collected from wells adjacent to the seep to monitor the groundwater conditions.

REFERENCES

ABB Environmental Services, Inc. (ABB-ES). 1994a. *Technical Memorandum No. 1, Site A, Former Herbicide Orange Storage Area, Groundwater Sampling Event No. 1, NCBC, Gulfport, Mississippi.* Prepared for SOUTHNAVFACENGCOM, Charleston, South Carolina, Contract No. N62467-89-D-0317.

ABB-ES. 1994b. *Free-Phase Product Assessment Report, Site 6 - Fire Fighting Training Area, Naval Construction Battalion Center, Gulfport, Mississippi.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (June).

ABB-ES. 1995a. *Technical Memorandum No. 2, Former Herbicide Orange Storage Area, Gulfport, Mississippi.* Prepared for SOUTHNAVFACENGCOM, Contract No. N62467-89-D-0317/096.

ABB-ES. 1995b. *Technical Memorandum No. 3, Former Herbicide Orange Storage Area, Gulfport, Mississippi.* Prepared for SOUTHNAVFACENGCOM, Contract No. N62467-89-D-0317/096.

ABB-ES. 1995c. *Technical Memorandum No. 4, Former Herbicide Orange Storage Area, Gulfport, Mississippi.* Prepared for SOUTHNAVFACENGCOM, Contract No. N62467-89-D-0317/096.

ABB-ES. 1995d. *Technical Memorandum No. 5, Former Herbicide Orange Storage Area, Gulfport, Mississippi.* Prepared for SOUTHNAVFACENGCOM, Contract No. N62467-89-D-0317/096.

ABB-ES. 1995e. *Letter Report: Basewide Groundwater, Surface Water and Sediment Sampling Field Program and Analytical Results, NCBC, Gulfport, Mississippi.* Prepared for SOUTHNAVFACENGCOM, Contract No. N62467-89-D-0317 (March 24).

ABB-ES. 1996a. *Technical Memorandum No. 6, Former Herbicide Orange Storage Area, Gulfport, Mississippi.* Prepared for SOUTHNAVFACENGCOM, Contract No. N62467-89-D-0317/096.

ABB-ES. 1996b. *Interim Corrective Measure Study Workplan, Site A, Former Herbicide Orange Storage Area, NCBC, Gulfport, Mississippi.* Prepared for SOUTHNAVFACENGCOM, Charleston, South Carolina, Contract No. N62467-89-D-0317/092 (September).

ABB-ES. 1996c. *Onsite Delineation Workplan, Site 8, Herbicide Orange Storage Areas, Naval Construction Battalion Center, Gulfport, Mississippi.* Prepared for SOUTHNAVFACENGCOM, Contract No. N62467-89-D-0317/096 (September).

ABB-ES. 1996d. *Offsite Delineation Workplan, Site A, Former Herbicide Orange Storage Area, NCBC, Gulfport, Mississippi.* Prepared for SOUTHNAVFACENGCOM, Charleston, South Carolina. Contract No. N62467-89-D-0317/092 (September).

ABB-ES. 1997a. AO No. 3466-97 (November 6).

ABB-ES. 1997b. *Addendum to Delisting Petition 0759, Area A, Former Herbicide Orange Storage Area, NCBC, Gulfport, Mississippi.* Prepared for SOUTHNAVFACENGCOM. Contract No. N62467-89-D-0317/092 (August).

ABB-ES. 1997c. *Surface Water And Sediment Dioxin Delineation Report, NCBC, Gulfport, Mississippi.* Prepared for SOUTHNAVFACENGCOM. Contract No. N62467-89-D-0317 (draft, May).

ABB-ES. 1997d. *Groundwater Monitoring Workplan, NCBC, Gulfport, Mississippi.* Prepared for SOUTHNAVFACENGCOM. Contract No. N62467-89-D-0317/128 (November).

ABB-ES. 1998. *Phase 1 Summary Report for Onsite and Off-site Delineation Activities, Naval Construction Battalion Center (NCBC), Gulfport, Mississippi;* Comprehensive Long-Term Environmental Action, Navy District I, Contract No. N62467-89-D-0317/128 (January 7).

Arienti, M., L. Wilk, M. Jasinski, and N. Prominski. 1988. "Dioxin-Containing Wastes Treatment Technologies." Pollution Technology Review, No. 160. Park Ridge, New Jersey, USA: Noyes Data Corporation, Park Ridge, New Jersey, USA.

EG&G. 1988. *Comprehensive Soil Study of Naval Construction Battalion Center, Gulfport, Mississippi.*

Hazardous Waste Remedial Action Program. 1991. U.S. Air Force installation Restoration Program, *Summary Report Remedial Characterization and Soil Remediation Technology Review for the Former Herbicide Storage Site at the Naval Construction Battalion Center, Gulfport, Mississippi.* Prepared for U.S. Air Force/CEVV under contract DE-AC05-84OR21400.

Harding Lawson Associates (HLA). 1987. *Draft Final Verification Report, Naval Construction Battalion Center, Gulfport Mississippi.* Prepared for SOUTHNAVFACENGCOM, Houston, Texas (November).

Maidment, David R. 1993. *Handbook of Hydrology.* David R. Maidment, editor in chief. McGraw-Hill, Inc; New York. ISBN 0-07-039732-5.

Mississippi Department of Environmental Quality. 1997. Agreed Order between MSDEQ, U.S. Air Force, and the U.S. Navy. Order no. 3466-97 (November 6).

Morrison Knudson (MK). 1996. *Work Plan, CBC Gulfport, Sites 1, 4 and 5, Appendix C.* pp. 22-23. Contract N62467-98-D-1106, Delivery Order No. 0002, Statement of Work No. 009, Revision 0 (September).

MK. 1999. Letter to SOUTHNAVFACENGCOM of second quarterly seep sampling results. MKC/SD-134. Contract N62467-93-D-1106, delivery order 0002, statement of work 009, CBC Gulfport, Mississippi (January 12).

Naval Energy and Environmental Support Activity (NEESA). 1987. *Initial Assessment Study of Naval Construction Battalion Center,* Gulport, Mississippi. NEESA 13-064. Port Hueneme, California,

NEESA. 1988. *Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program.* NEESA 20.2-47B. Port Hueneme, California.

Occupational and Environmental Health Laboratory. 1979. *Initial Herbicide Orange Monitoring Program* (1-3).

Prothero, Donald, R., Fred Schwab. 1996. *Sedimentary Geology: An Introduction to Sedimentary Rocks and Stratigraphy*. W.H. Freeman and Company; New York. ISBN 0-7167-2726-9.

Shows, Thad N. 1970. *Water Resources of Mississippi: Mississippi Geological, Economic, and Topographic Survey, Bulletin*. 113, 106-21; 151-60; 161. Mississippi Geological, Economic and Topographical Survey, Jackson, Mississippi.

U.S. Soil Conservation Service. 1986. Urban Hydrology for Small Watersheds,. Revised Technical Release 55. U.S. Department of Agriculture, Washington, D.C.

U.S. Department of Agriculture. 1975. Soil survey map of Harrison County, Mississippi.

U.S. Environmental Protection Agency (USEPA). 1986. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)*. 3rd Edition.

USEPA. 1989. *Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and -Dibenzofurans (CDDs and CDFs) and 1989 Update*. EPA 625/3-89/016 (March).

USEPA. 1990. *Contract Laboratory Program, Statement of Work for Organics Analysis*. USEPA Document No. ILM02.0 (Revised January 1991).

USEPA. 1991a. *Contract Laboratory Program, Statement of Work for Organics Analysis*. USEPA Document No. ILM02.0 (Revised January 1991).

USEPA. 1991b. *Contract Laboratory Program, Statement of Work for Inorganics Analysis*. USEPA Document No. ILM01.0.

USEPA. 1991c. *National Functional Guidelines for Organic Data Review*. Office of Energy and Remedial Response, Washington, D.C. (June).

USEPA. 1991d. *Draft Pesticide/Aroclor Data Review Guidelines*

USEPA. 1992. *Contract Laboratory Program, Statement of Work for Organic Analysis*. USEPA Document No. OLC01.6, Washington, D.C. (October).

USEPA. 1996. *Drinking Water Regulations and Health Advisories*. EPA 822-B-96-002. Office of Water, Washington, D.C. (October).

USEPA. 1999. *Risk-Based Concentration Table*. USEPA Region III, Philadelphia, PA. www.epa.gov/reg3hwmd/ risk/riskmenu.htm (April 12).

Versar. 1990. *Ground-Water Monitoring Program Plan, Naval Construction Battalion Center, Gulfport, Mississippi* (November 20).

APPENDIX A

DIRECT PUSH DATA

Table A-1
Direct Push Parameters and Analyses

Sample Number	Date	Sample Depth (ft)	Volume (L)	Parameters					Analytical Parameters
				pH	Cond. (µs/cm)	Turb. (ntu)	DO (mg/L)	Temp. (°C)	
<u>Site 4 Direct Push</u>									
R4001	10/21/98	28	3.5	5.81	0.140	>999	1.39	26.1	FS
			6.25	5.82	0.135	>999	1.76	25.6	
			9.25	5.79	0.131	655	2.15	25.2	
R4002	10/21/98	18	4.5	5.73	0.495	>999	0.61	23.8	
			7.5	6.01	0.490	>999	0.59	24.3	
			11.0	6.19	0.496	>999	1.00	24.3	
			13.5	6.30	0.501	879	1.33	24.3	
			17.0	6.39	0.508	824	1.35	24.5	
R4003	10/26/8	20	3.6	6.22	0.753	>999	1.43	25.7	FS
			6.6	6.14	0.754	>999	0.84	25.0	
			9.0	6.18	0.755	820	1.50	24.7	
			10.8	6.04	0.752	669	1.58	24.6	
			13.2	5.99	0.747	424	1.57	24.5	
			16.2	5.94	0.743	272	1.52	24.5	
R4004	10/26/98	20	2.4	5.12	0.363	>999	0.44	25.9	FS
			4.8	5.04	0.355	905	0.80	25.2	
			8.4	4.96	0.353	609	0.90	25.0	
			10.8	4.88	0.353	608	0.91	24.7	
			13.2	4.78	0.352	504	0.90	24.4	
			16.2	4.53	0.350	310	1.01	24.4	
			18.6	4.50	0.348	228	1.22	24.4	
R4005	10/25/98	20	2.5	5.47	0.233	>999	0.43	25.6	FS
			5.0	5.21	0.221	753	0.56	24.6	
			7.5	5.08	0.217	510	0.76	24.4	
			10.0	5.01	0.213	343	0.92	24.3	
			12.5	4.98	0.212	255	1.02	24.3	
			14.0	5.00	0.213	234	0.92	24.2	
R4006	10/25/98	20	3.0	6.21	1.40	657	1.02	23.6	FS
			5.4	6.28	1.39	430	1.20	23.8	
			7.8	6.29	1.39	375	1.21	23.9	
			10.2	6.29	1.38	392	1.01	24.0	
			12.6	6.29	1.39	300	1.19	23.9	
			15.6	6.32	1.39	268	1.21	23.8	
R4007	10/23/98	16	4.0	6.23	1.85	199	1.13	23.8	FS
			8.0	6.22	1.86	199	0.59	24.3	
			12.0	6.25	1.88	75	0.69	24.2	
			16.0	6.26	1.89	68	0.98	24.5	
R4008	10/23/98	20	3.6	6.57	1.71	>999	0.82	23.5	FS
			6.4	6.57	1.70	920	0.74	23.2	
			8.4	6.59	1.69	494	1.84	23.4	
			11.2	6.64	1.67	305		23.2	
R4009	10/22/98	18	2.0	6.59	0.179	>999	0.04	21.7	FS
			6.5	5.78	0.126	>999	0.46	22.2	
			14.0	5.70	0.122	>999	1.59	22.6	
			16.0	5.62	0.110	>999	1.42	22.7	
R4010	10/22/98	16	2.0	6.01	0.773	>999	0.03	22.4	FS
			4.0	5.91	0.779	>999	0.04	22.5	
			6.0	5.88	0.778	>999	0.06	21.9	
			10.0	5.72	0.787	785	0.31	21.7	
			13.5	5.91	0.776	570	0.56	21.6	
			15.5	6.01	0.778	560	0.58	22.0	

See notes at end of table.

Sample Number	Date	Sample Depth (ft)	Volume (L)	Parameters					Analytical Parameters
				pH	Cond. (µs/cm)	Turb. (ntu)	DO (mg/L)	Temp. (°C)	
R4011	10/25/98	14	6.0	5.69	0.515	650	1.34	25.3	FS
			12.0	5.66	0.515	525	1.05	24.8	
			16.0	5.61	0.510	402	1.13	24.5	
			21.0	5.45	0.511	321	1.21	24.5	
			24.0	5.37	0.510	256	1.20	24.4	
			28.0	5.34	0.512	245	1.21	24.4	
R4012	10/23/98	17	6.0	5.92	0.496	659	1.12	22.7	FS
			10.0	5.80	0.507	310	1.00	23.1	
			13.0	5.86	0.517	164	1.07	23.3	
			16.0	5.98	0.525	64	1.29	23.4	
			20.0	6.01	0.531	44	1.27	23.1	
R4013	10/26/98	20	12.6	5.65	0.326	686	1.21	23.2	FS
			16.1	5.56	0.321	649	0.99	23.1	
			19.6	5.53	0.320	527	0.90	23.0	
			23.1	5.56	0.318	502	0.89	23.0	
			26.6	5.67	0.317	430	1.63	23.0	
R4014	10/27/98	24	3.2	6.35	1.69	>999	0.00	23.2	FS
			7.2	6.41	1.69	700	0.17	23.2	
			10.4	6.50	1.69	368	0.60	23.5	
			12.8	6.54	1.68	62	0.88	23.5	
			17.6	6.57	1.68	5	0.98	23.5	
R4015	10/26/98								VOC
<u>Site 5 Direct Push Samples</u>									
R5001	10/08/98	ND							FS
R5002	10/08/98	ND							FS
R5003	10/08/98	ND							FS
R5004	10/8/98	8	1.0	4.43	0.118	918	0.01	25.0	FS
			3.0	4.32	0.083	>999	1.40	24.6	
R5005	10/8/98	20	1.0	6.39	0.057	940	1.68	24.2	FS
			3.0	5.30	0.027	398	2.17	24.3	
R5006	10/8/98	20	1.0	5.19	0.04	>999	2.28	25.2	FS
			3.0	4.58	0.06	670	1.64	24.9	
R5007	10/8/98	12	2.0	5.02	0.239	508	0.87	25.7	FS
R5008	10/10/98	ND							FS
R5009	10/10/98	20	1.0	5.02	0.82	481	1.73	24.5	FS
R5010	10/10/98	20	1.5	5.50	0.91	>999	0.42	26.1	FS
			3.0	5.21	0.75	880	1.45	26.8	
			4.0	4.60	0.64	88	2.16	25.3	
R5011	10/10/98	20	1.0	6.51	0.087	>999	0.04	23.7	FS
			2.0	5.57	0.71	>999	1.72	24.1	
			3.0	5.59	0.068	926	1.96	23.2	
			4.0	5.56	0.069	813	2.09	23.8	
R5012	10/10/98	30	1.0	5.45	0.072	>999	0.01	25.1	FS
			2.0	5.25	0.064	>999	0.09	24.3	
			3.0	5.10	0.063	>999	0.20	24.3	
			4.0	5.10	0.063	>999	0.22	24.3	
			5.0	5.09	0.063	>999	0.30	24.3	

See notes at end of table.

Sample Number	Date	Sample Depth (ft)	Volume (L)	Parameters					Analytical Parameters
				pH	Cond. (µs/cm)	Turb. (ntu)	DO (mg/L)	Temp. (°C)	
R5013	10/10/98	30	1.0	5.31	0.066	>999	0.01	27.5	FS
			2.0	5.09	0.057	>999	0.71	25.8	
			3.0	5.02	0.057	>999	0.65	25.6	
			4.0	5.04	0.057	>999	0.21	25.2	
R5014	10/10/98	20	1.0	5.51	0.164	>999	-0.02	26.6	FS
			2.0	5.58	0.123	>999	0.09	25.3	
			3.0	5.42	0.098	365	1.89	25.2	
			4.0	5.14	0.090	64	1.40	24.9	
			5.0	5.09	0.089	35	2.14	24.5	
R5015	10/10/98	ND							FS
R5016	10/9/98	50	2.0	5.36	0.102	999	9.25	24.3	FS
			4.0	5.24	0.097	999	0.85	23.9	
R5017	10/10/98	20	1.0	5.23	0.051	>999	0.00	25.4	FS
			2.0	5.24	0.047	814	0.74	24.8	
			3.0	5.16	0.045	453	0.58	24.8	
			4.0	5.03	0.042	268	0.75	24.7	
			5.0	5.05	0.043	322	0.64	24.5	
<u>Site 8 Direct Push Samples</u>									
R8001	10/11/98	14							Diox, VOC
R8002	10/11/98	ND							Diox, VOC
R8003	10/11/98	ND							FS
R8004	10/27/98	20	7.0	5.40	0.085	>999	0.64	25.6	FS
			11.9	5.31	0.079	>999	0.88	25.4	
			14.7	5.27	0.077	812	1.11	25.4	
			20.3	5.21	0.076	512	1.17	25.6	
			27.3	5.09	0.074	220	1.13	25.4	
R8005	10/11/98	ND							Diox, VOC
R8006	10/12/98	ND							Diox, VOC
R8007	10/12/98	20	1.0	5.71	0.109	>999	0.00	24.4	Diox, VOC
			2.0	4.89	0.079	325	1.30	24.8	
			3.0	5.11	0.077	401	1.66	24.7	
			4.0	5.24	0.078	550	1.52	24.2	
			5.0	5.24	0.078	586	1.50	24.6	
R8008	10/12/98	ND							FS
R8009	10/12/98	10	2.0	5.82	0.046	>999	0.56	25.8	FS
			3.5	5.90	0.047	887	0.31	25.4	
			4.5	5.92	0.048	846	0.22	25.6	
			5.5	5.93	0.048	677	0.27	25.8	
			6.5	5.94	0.047	515	0.22	25.8	
			7.5	5.91	0.047	522	0.35	25.7	
			8.5	5.94	0.047	543	0.28	25.8	
R8010	10/12/98	18	3.0	5.83	0.116	>999	0.20	27.2	FS
			6.0	5.48	0.114	>999	0.23	26.1	
			7.0	5.52	0.115	>999	0.22	26.5	
			8.5	5.65	0.112	>999	0.81	25.9	
			10.0	5.63	0.112	>999	0.96	26.1	
			11.0	5.68	0.111	>999	1.21	26.2	

See notes at end of table.

Sample Number	Date	Sample Depth (ft)	Volume (L)	Parameters					Analytical Parameters
				pH	Cond. (µs/cm)	Turb. (ntu)	DO (mg/L)	Temp. (°C)	
R8011	10/12/98	ND							Diox, VOC
R8012	10/12/98	ND							Diox, VOC
R8013	10/12/98	18	1.5	5.63	0.052	788	0.55	26.2	Diox, VOC
			3.0	5.51	0.065	618	0.92	25.7	
			4.5	5.41	0.064	564	0.90	25.4	
			6.0	5.26	0.063	502	0.70	25.6	
			7.0	5.15	0.063	495	0.75	25.3	
			9.0	5.01	0.062	420	1.02	25.2	
			11.0	4.72	0.062	370	0.80	25.2	
			14.0	4.89	0.062	336	0.83	25.3	
			15.0	4.82	0.061	316	1.07	25.3	
R8014	10/13/98	ND							Diox, VOC
R8015	10/13/98	18	5.0	4.77	0.065	289	0.40	24.1	Diox, VOC
			7.0	4.95	0.062	300	0.87	24.3	
			9.0	5.02	0.061	310	0.92	24.3	
R8016	10/13/98	18	2.0	5.24	0.094	>999	0.97	26.6	Diox, VOC
			4.0	5.09	0.091	520	1.31	26.8	
			6.0	5.02	0.090	379	0.98	26.6	
			8.0	4.97	0.089	281	1.06	26.5	
			10.0	4.94	0.088	239	1.04	26.5	
			12.0	4.92	0.088	199	1.02	26.4	
			14.0	4.91	0.088	226	1.06	26.4	
R8017	10/13/98	18	2.0	4.99	0.207	793	1.02	27.8	Diox, VOC
			3.5	5.06	0.207	730	1.37	27.5	
			4.0	5.07	0.206	551	1.35	27.2	
			6.0	5.13	0.206	605	1.63	27.1	
			7.0	5.16	0.206	554	1.20	26.9	
			8.5	5.16	0.205	479	1.13	27.0	
			10.0	5.14	0.204	376	1.33	26.8	
			12.0	5.14	0.204	396	1.13	26.8	
			14.0	5.11	0.205	321	1.42	26.9	
			15.5	5.11	0.206	293	1.24	26.7	
			16.5	5.11	0.205	323	1.29	26.9	
R8018	10/13/98	18	3.0	5.15	0.085	>999	1.49	26.5	Diox, VOC
			5.0	5.07	0.080	730	1.41	26.5	
			6.0	5.06	0.079	660	1.37	26.4	
			9.0	5.03	0.078	350	1.58	26.2	
			13.0	5.02	0.079	315	1.52	26.1	
			15.0	4.99	0.078	213	1.66	26.0	
			17.0	4.96	0.078	215	1.55	26.1	
			18.0	4.97	0.078	220	1.60	26.1	
R8019	10/13/98	18	3.0	5.15	0.057	727	0.87	26.0	Diox, VOC
			6.5	5.02	0.055	546	1.17	25.8	
			8.0	5.01	0.054	471	1.14	25.2	
			9.0	5.07	0.054	389	1.14	25.1	
			10.0	5.04	0.054	348	1.11	24.9	
			11.0	5.09	0.054	364	1.09	24.9	
			12.0	5.14	0.055	409	1.02	24.8	
			14.0	5.13	0.054	411	1.02	24.8	

See notes at end of table.

Sample Number	Date	Sample Depth (ft)	Volume (L)	Parameters					Analytical Parameters
				pH	Cond. (µs/cm)	Turb. (ntu)	DO (mg/L)	Temp. (°C)	
R8020	10/20/98	18	3.0	5.58	0.090	>999	0.06	25.2	FS
			5.0	5.77	0.083	>999	0.14	25.2	
			7.5	5.65	0.080	>999	0.32	25.3	
			11.0	5.64	0.076	>999	0.82	25.4	
			14.0	5.62	0.077	>999	0.70	25.4	
R8021	10/20/98	18	2.0	5.77	0.093	>999	0.03	27.6	Diox, VOC
			5.5	5.68	0.089	>999	0.01	26.9	
			8.0	5.79	0.093	>999	0.35	26.8	
			12.0	5.64	0.084	>999	1.30	26.4	
R8022	10/20/98	18	2.5	5.54	0.113	>999	1.19	28.3	Diox, VOC
			6.0	5.46	0.114	>999	2.16	26.9	
			9.0	5.25	0.114	>999	6.85	26.5	
			11.5	4.91	0.114	>999	3.07	26.2	
			14.0	5.03	0.113	>999	1.03	25.9	
R8023	10/27/98	34	2.4	6.88	0.137	>999	0.04	23.9	Diox, VOC
			5.4	6.64	0.129	>999	0.31	23.6	
			7.8	6.57	0.125	>999	0.65	23.5	
			10.2	6.51	0.122	>999	0.57	23.5	
			13.8	6.48	0.121	>999	0.85	23.4	
			16.2	6.48	0.120	>999	0.95	23.4	
			19.8	6.43	0.119	842	0.96	23.4	
R8024	10/20/98	18	4.5	6.36	0.142	>999	0.04	27.7	Diox, VOC
			7.5	5.92	0.136	>999	0.51	27.1	
			11.5	5.64	0.135	>999	0.04	26.6	
			15.0	5.71	0.130	>999	0.71	26.4	

Notes:

L = liter.
Cond. = conductivity.
µs/cm = microsecond per centimeter.
Turb. = turbidity.
ntu = nephelometric turbidity units
DO = dissolved oxygen.
mg/L = milligrams per liter.
Temp. = temperature.
°C = degrees Celsius.
FS = full suite
ND = no data

APPENDIX B

COMPREHENSIVE DATA TABLES FOR PHASE 1 DPT SAMPLING

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in pg/L)	SITE	R4001	R4002	R4002	R4003	R4003	R4004
	SAMPLE ID	R4001G1P1	R4002G1P1	R4002G1D1	R4003G1P1	R4003G1D1	R4004G1P1
	DATE	10/21/98	10/20/98	10/20/98	10/26/98	10/26/98	10/26/98
	RESULT TYPE	Primary	Primary	Duplicate 1	Primary	Duplicate 1	Primary
2,3,7,8-TCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDD		25 U	89.2	97.4	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDD		235	938	906	50 U	50 U	50 U
2,3,7,8-TCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
2,3,4,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,7,8,9-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDF		50 U	50 U	50 U	50 U	50 U	50 U
Total TCDD		51.4	10 U	10 U	10 U	10 U	10 U
Total PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDD		41	46	43.3	25 U	25 U	25 U
Total HpCDD		44.6	202	209	25 U	25 U	25 U
Total TCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total TEQ		0.235	1.83	1.88	0	0	0

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in pg/L)	SITE SAMPLE ID DATE RESULT TYPE	R4005 R4005G1P1 10/25/98 Primary	R4006 R4006G1P1 10/25/98 Primary	R4007 R4007G1P1 10/23/98 Primary	R4008 R4008G1P1 10/23/98 Primary	R4009 R4009G1P1 10/22/98 Primary	R4010 R4010G1P1 10/22/98 Primary
2,3,7,8-TCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDD		25 U	25 U	25 U	80	73.4	27.5
1,2,3,4,6,7,8,9-OCDD		67.2	75.6	50 U	502	797	237
2,3,7,8-TCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
2,3,4,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,7,8,9-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDF		50 U	50 U	50 U	86.9	50 U	50 U
Total TCDD		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDD		25 U	25 U	25 U	25 U	33.5	25 U
Total HpCDD		25 U	25 U	25 U	142	169	66.8
Total TCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDF		25 U	25 U	25 U	48.4	25 U	25 U
Total TEQ		0.067	0.076	0	1.389	1.531	0.512

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in pg/L)	SITE	R4011	R4012	R4013	R4014	R5001	R5001
	SAMPLE ID	R4011G1P1	R4012G1P1	R4013G1P1	R4014G1P1	R5001G1P1	R5001G1D1
	DATE	10/25/98	10/23/98	10/26/98	10/27/98	10/08/98	10/08/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Duplicate 1
2,3,7,8-TCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDD		25 U	25 U	25 U	25 U	79.3	66.4
1,2,3,4,6,7,8,9-OCDD		186	67.9	68.1	50 U	1035 J	756 J
2,3,7,8-TCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
2,3,4,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,7,8,9-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDF		50 U	50 U	50 U	50 U	50 U	50 U
Total TCDD		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDD		25 U	25 U	25 U	25 U	69.1	63.1
Total HpCDD		25 U	25 U	25 U	25 U	158	135
Total TCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total TEQ		0.186	0.068	0.068	0	1.828	1.42

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in pg/L)	SITE SAMPLE ID DATE RESULT TYPE	R5002 R5002G1P1 10/08/98 Primary	R5003 R5003G1P1 10/08/98 Primary	R5004 R5004G1P1 10/08/98 Primary	R5005 R5005G1P1 10/09/98 Primary	R5006 R5006G1P1 10/09/98 Primary	R5007 R5007G1P1 10/09/98 Primary
2,3,7,8-TCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDD		25 U	25 U	25 U	25 U	25 U	52.7
1,2,3,4,6,7,8,9-OCDD		50 U	50 U	50 U	50 U	50 U	870
2,3,7,8-TCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
2,3,4,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,7,8,9-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDF		50 U	50 U	50 U	50 U	50 U	50 U
Total TCDD		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDD		25 U	25 U	25 U	25 U	25 U	111
Total TCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total TEQ		0	0	0	0	0	1.397

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in pg/L)	SITE	R5008	R5009	R5010	R5011	R5012	R5013
	SAMPLE ID	R5008G1P1	R5009G1P1	R5010G1P1	R5011G1P1	R5012G1P1	R5013G1P1
	DATE	10/10/98	10/10/98	10/10/98	10/11/98	10/11/98	10/11/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
2,3,7,8-TCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDD		25 U	25 U	25 U	25 U	58	46.5
1,2,3,4,6,7,8,9-OCDD		105	50 U	50 U	50 U	1340	1100
2,3,7,8-TCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
2,3,4,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,7,8,9-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDF		50 U	50 U	50 U	50 U	50 U	50 U
Total TCDD		10 U	10 U	10 U	10 U	63.9	37.8
Total PeCDD		10 U	10 U	10 U	10 U	17.3	33.6
Total HxCDD		25 U	25 U	25 U	25 U	230	181
Total HpCDD		25 U	25 U	25 U	25 U	308	237
Total TCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total TEQ		0.105	0	0	0	1.917	1.564

Values represent total concentrations unless noted   < = Not detected at indicated reporting limit   --- = Not analyzed

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in pg/L)	SITE SAMPLE ID DATE RESULT TYPE	R5014 R5014G1P1 10/13/98 Primary	R5015 R5015G1P1 10/10/98 Primary	R5015 R5015G1D1 10/10/98 Duplicate 1	R5016 R5016G1P1 10/09/98 Primary	R5017 R5017G1P1 10/11/98 Primary	R8001 R8001G1P1 10/11/98 Primary
2,3,7,8-TCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDD		25 U	28.3	30.4	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDD		25 U	362	474	63.9	25 U	42.1
1,2,3,4,6,7,8,9-OCDD		58.9	8210	10800	2300	50 U	511
2,3,7,8-TCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
2,3,4,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,7,8,9-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDF		50 U	50 U	50 U	50 U	50 U	50 U
Total TCDD		10 U	94.1	150	54	10 U	116
Total PeCDD		10 U	35.6	86.9	10 U	10 U	39
Total HxCDD		25 U	552	694	113	25 U	78.7
Total HpCDD		25 U	1110	1410	256	25 U	131
Total TCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total TEQ		0.059	14.657	18.57	2.939	0	0.932

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in pg/L)	SITE / SAMPLE ID / DATE / RESULT TYPE	R8002	R8003	R8004	R8004	R8005	R8006
	SAMPLE ID	R8002G1P1	R8003G1P1	R8004G1P1	R8004G1D1	R8005G1P1	R8006G1P1
	DATE	10/11/98	10/11/98	10/27/98	10/27/98	10/11/98	10/12/98
	RESULT TYPE	Primary	Primary	Primary	Duplicate 1	Primary	Primary
2,3,7,8-TCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDD		25 U	25 U	25 U	25 U	53.7	25 U
1,2,3,4,6,7,8,9-OCDD		494	177	89.9	89.1	1092	112
2,3,7,8-TCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
2,3,4,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,7,8,9-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDF		50 U	50 U	50 U	50 U	50 U	50 U
Total TCDD		10 U	10 U	10 U	10 U	20.5	10 U
Total PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDD		30.6	25 U	25 U	25 U	118	25 U
Total HpCDD		50.7	25 U	25 U	25 U	234	25 U
Total TCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total TEQ		0.494	0.177	0.09	0.09	1.629	0.112

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in pg/L)	SITE	R8007	R8008	R8009	R8010	R8011	R8012
	SAMPLE ID	R8007G1P1	R8008G1P1	R8009G1P1	R8010G1P1	R8011G1P1	R8012G1P1
	DATE	10/12/98	10/12/98	10/12/98	10/12/98	10/12/98	10/12/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
2,3,7,8-TCDD		10 U	19.9	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDD		105	50 U	50 U	141	58.2	461
2,3,7,8-TCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
2,3,4,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,7,8,9-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDF		50 U	50 U	50 U	50 U	50 U	50 U
Total TCDD		10 U	19.9	10 U	10 U	10 U	10 U
Total PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDD		25 U	25 U	25 U	25 U	25 U	33.2
Total TCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total TEQ		0.105	19.9	0	0.141	0.058	0.461

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in pg/L)	SITE / SAMPLE ID / DATE / RESULT TYPE	R8013 R8013G1P1 10/12/98 Primary	R8014 R8014G1P1 10/13/98 Primary	R8014 R8014G1D1 10/13/98 Duplicate 1	R8015 R8015G1P1 10/13/98 Primary	R8016 R8016G1P1 10/13/98 Primary	R8017 R8017G1P1 10/13/98 Primary
2,3,7,8-TCDD		21.2	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDD		50 U	50 UJ	114 J	50	50 U	89.7
2,3,7,8-TCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
2,3,4,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,7,8,9-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDF		50 U	50 U	50 U	50 U	50 U	50 U
Total TCDD		21.2	10 U	10 U	10 U	10 U	10 U
Total PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDD		25 U	25 U	25 U	25 U	25 U	25 U
Total TCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total TEQ		21.2	0	0.114	0.05	0	0.09

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in pg/L)	SITE SAMPLE ID DATE RESULT TYPE	R8018 R8018G1P1 10/13/98 Primary	R8019 R8019G1P1 10/13/98 Primary	R8020 R8020G1P1 10/20/98 Primary	R8021 R8021G1P1 10/20/98 Primary	R8022 R8022G1P1 10/20/98 Primary	R8023 R8023G1P1 10/27/98 Primary
2,3,7,8-TCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDD		25 U	25 U	25 U	25 U	25 U	64
1,2,3,4,6,7,8,9-OCDD		50 U	50 U	50 U	55.6	50 U	747
2,3,7,8-TCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
2,3,4,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,7,8,9-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDF		50 U	50 U	50 U	50 U	50 U	50 U
Total TCDD		10 U	10 U	10 U	10 U	10 U	111
Total PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDD		25 U	25 U	25 U	25 U	25 U	148
Total HpCDD		25 U	25 U	25 U	25 U	25 U	203
Total TCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total TEQ		0	0	0	0.056	0	1.387

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in pg/L)	SITE / SAMPLE ID / DATE / RESULT TYPE	R8024 / R8024G1P1 / 10/20/98 / Primary
2,3,7,8-TCDD		10 U
1,2,3,7,8-PeCDD		10 U
1,2,3,4,7,8-HxCDD		25 U
1,2,3,6,7,8-HxCDD		25 U
1,2,3,7,8,9-HxCDD		25 U
1,2,3,4,6,7,8-HpCDD		82.5
1,2,3,4,6,7,8,9-OCDD		1510
2,3,7,8-TCDF		10 U
1,2,3,7,8-PeCDF		10 U
2,3,4,7,8-PeCDF		10 U
1,2,3,4,7,8-HxCDF		25 U
1,2,3,6,7,8-HxCDF		25 U
2,3,4,6,7,8-HxCDF		25 U
1,2,3,7,8,9-HxCDF		25 U
1,2,3,4,6,7,8-HpCDF		25 U
1,2,3,4,7,8,9-HpCDF		25 U
1,2,3,4,6,7,8,9-OCDF		50 U
Total TCDD		182
Total PeCDD		16.1
Total HxCDD		259
Total HpCDD		313
Total TCDF		10 U
Total PeCDF		10 U
Total HxCDF		25 U
Total HpCDF		25 U
Total TEQ		2.334

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

HERBICIDE RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R4001 R4001G1P1 10/21/98 Primary	R4002 R4002G1P1 10/21/98 Primary	R4003 R4003G1P1 10/26/98 Primary	R4003 R4003G1D1 10/26/98 Duplicate 1	R4004 R4004G1P1 10/26/98 Primary	R4005 R4005G1P1 10/25/98 Primary
2,4-D		4 U	4 U	4 U	4 U	4 U	4 U
2,4,5-TP (Silvex)		1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-T		1 U	1 U	1 U	1 U	1 U	1 U

Values represent total concentrations unless noted   < = Not detected at indicated reporting limit   --- = Not analyzed

HERBICIDE RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R4006	R4007	R4008	R4009	R4010	R4011
	SAMPLE ID	R4006G1P1	R4007G1P1	R4008G1P1	R4009G1P1	R4010G1P1	R4011G1P1
	DATE	10/25/98	10/23/98	10/23/98	10/22/98	10/22/98	10/25/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
2,4-D		4 U	4 U	4 U	4 U	4 U	4 U
2,4,5-TP (Silvex)		1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-T		1 U	1 U	1 U	1 U	1 U	1 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

HERBICIDE RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R4012 R4012G1P1 10/23/98 Primary	R4013 R4013G1P1 10/26/98 Primary	R4014 R4014G1P1 10/27/98 Primary	R5001 R5001G1P1 10/08/98 Primary	R5001 R5001G1D1 10/08/98 Duplicate 1	R5002 R5002G1P1 10/08/98 Primary
2,4-D		4 U	4 U	4 U	4 U	4 U	4 U
2,4,5-TP (Silvex)		1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-T		1 U	1 U	1 U	1 U	1 U	1 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

HERBICIDE RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R5003 R5003G1P1 10/08/98 Primary	R5004 R5004G1P1 10/08/98 Primary	R5005 R5005G1P1 10/09/98 Primary	R5006 R5006G1P1 10/09/98 Primary	R5007 R5007G1P1 10/09/98 Primary	R5008 R5008G1P1 10/10/98 Primary
2,4-D		4 U	4 UJ	4 U	4 U	4 U	4 U
2,4,5-TP (Silvex)		1 U	1 UJ	1 U	1 U	1 U	1 U
2,4,5-T		1 U	1 UJ	1 U	1 U	1 U	1 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

HERBICIDE RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R5009 R5009G1P1 10/10/98 Primary	R5010 R5010G1P1 10/10/98 Primary	R5011 R5011G1P1 10/11/98 Primary	R5012 R5012G1P1 10/11/98 Primary	R5013 R5013G1P1 10/11/98 Primary	R5014 R5014G1P1 10/13/98 Primary
2,4-D		4 U	4 U	4 U	4 U	4 U	4 U
2,4,5-TP (Silvex)		1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-T		1 U	1 U	1 U	1 U	1 U	1 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

HERBICIDE RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R5015 R5015G1P1 10/10/98 Primary	R5015 R5015G1D1 10/10/98 Duplicate 1	R5016 R5016G1P1 10/09/98 Primary	R5017 R5017G1P1 10/11/98 Primary	R8003 R8003G1P1 10/11/98 Primary	R8008 R8008G1P1 10/12/98 Primary
2,4-D		4 U	4 U	4 U	4 U	4 U	4 UJ
2,4,5-TP (Silvex)		1 U	1 U	1 U	1 U	1 U	1 UJ
2,4,5-T		1 U	1 U	1 U	1 U	1 U	1 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

HERBICIDE RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE / SAMPLE ID / DATE / RESULT TYPE	R8009 / R8009G1P1 / 10/12/98 / Primary	R8010 / R8010G1P1 / 10/12/98 / Primary	R8010 / R8010G1D1 / 10/12/98 / Duplicate 1	R8020 / R8020G1P1 / 10/20/98 / Primary
2,4-D		4 U	4 UJ	4 U	4 U
2,4,5-TP (Silvex)		1 U	1 UJ	1 U	1 U
2,4,5-T		1 U	1 UJ	1 U	1 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R4001	R4002	R4003	R4003	R4004	R4005
	SAMPLE ID	R4001G1P1	R4002G1P1	R4003G1P1	R4003G1D1	R4004G1P1	R4005G1P1
	DATE	10/21/98	10/21/98	10/26/98	10/26/98	10/26/98	10/25/98
	RESULT TYPE	Primary	Primary	Primary	Duplicate 1	Primary	Primary
alpha-BHC		1 UJ	1 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
beta-BHC		1 U	1 U	0.05 U	0.05 UJ	0.05 U	0.05 U
delta-BHC		1 UJ	1 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
gamma-BHC(Lindane)		1 U	1 U	0.05 U	0.05 UJ	0.05 U	0.05 U
Heptachlor		1 U	1 U	0.05 U	0.05 UJ	0.05 U	0.05 U
Aldrin		1 U	1 U	0.05 U	0.05 UJ	0.05 U	0.05 U
Heptachlor epoxide		1 U	1 U	0.05 U	0.05 UJ	0.05 U	0.05 U
Endosulfan I		1 U	1 U	0.05 U	0.05 UJ	0.05 U	0.05 U
Dieldrin		2 U	2 U	0.1 U	0.1 UJ	0.1 U	0.1 U
4,4'-DDE		2 U	2 U	0.1 U	0.1 UJ	0.1 U	0.1 U
Endrin		2 U	2 U	0.1 U	0.1 UJ	0.1 U	0.1 U
Endosulfan II		2 U	2 U	0.1 U	0.1 UJ	0.1 U	0.1 U
4,4'-DDD		2 U	2 U	0.1 U	0.1 UJ	0.1 U	0.1 U
Endosulfan sulfate		2 U	2 U	0.1 U	0.1 UJ	0.1 U	0.1 U
4,4'-DDT		2 U	2 U	0.1 U	0.1 UJ	0.1 U	0.1 U
Methoxychlor		10 U	10 U	0.5 U	0.5 UJ	0.5 U	0.5 U
Endrin ketone		2 U	2 U	0.1 U	0.1 UJ	0.1 U	0.1 U
Endrin aldehyde		2 U	2 U	0.1 U	0.1 UJ	0.1 U	0.1 U
alpha-Chlordane		1 U	1 U	0.05 U	0.05 UJ	0.05 U	0.05 U
gamma-Chlordane		1 U	1 U	0.05 U	0.05 UJ	0.05 U	0.05 U
Toxaphene		100 U	100 U	5 U	5 UJ	5 U	5 U
Aroclor-1016		20 U	20 U	1 U	1 UJ	1 U	1 U
Aroclor-1221		40 U	40 U	2 U	2 UJ	2 U	2 U
Aroclor-1232		20 U	20 U	1 U	1 UJ	1 U	1 U
Aroclor-1242		20 U	20 U	1 U	1 UJ	1 U	1 U
Aroclor-1248		20 U	20 U	1 U	1 UJ	1 U	1 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R4001 R4001G1P1 10/21/98 Primary	R4002 R4002G1P1 10/21/98 Primary	R4003 R4003G1P1 10/26/98 Primary	R4003 R4003G1D1 10/26/98 Duplicate 1	R4004 R4004G1P1 10/26/98 Primary	R4005 R4005G1P1 10/25/98 Primary
Aroclor-1254		20 U	20 U	1 U	1 UJ	1 U	1 U
Aroclor-1260		20 U	20 U	1 U	1 UJ	1 U	1 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R4006	R4007	R4008	R4009	R4010	R4011
	SAMPLE ID	R4006G1P1	R4007G1P1	R4008G1P1	R4009G1P1	R4010G1P1	R4011G1P1
	DATE	10/25/98	10/23/98	10/23/98	10/22/98	10/22/98	10/25/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
alpha-BHC		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	<0.05 R	0.05 UJ
beta-BHC		0.05 UJ	0.05 U	0.05 U	0.05 UJ	<0.05 R	0.05 UJ
delta-BHC		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	<0.05 R	0.05 UJ
gamma-BHC(Lindane)		0.05 UJ	0.05 U	0.05 U	0.05 UJ	<0.05 R	0.05 UJ
Heptachlor		0.05 UJ	0.05 U	0.05 U	0.05 UJ	<0.05 R	0.05 UJ
Aldrin		0.05 UJ	0.05 U	0.05 U	0.05 UJ	<0.05 R	0.05 UJ
Heptachlor epoxide		0.05 UJ	0.05 U	0.05 U	0.05 UJ	<0.05 R	0.05 UJ
Endosulfan I		0.05 UJ	0.05 U	0.05 U	0.05 UJ	<0.05 R	0.05 UJ
Dieldrin		0.1 UJ	0.1 U	0.1 U	0.1 UJ	<0.1 R	0.1 UJ
4,4'-DDE		0.1 UJ	0.1 U	0.1 U	0.1 UJ	0.01 J	0.1 UJ
Endrin		0.1 UJ	0.1 U	0.1 U	0.1 UJ	<0.1 R	0.1 UJ
Endosulfan II		0.1 UJ	0.1 U	0.1 U	0.1 UJ	<0.1 R	0.1 UJ
4,4'-DDD		0.1 UJ	0.1 U	0.1 U	0.01 J	<0.1 R	0.1 UJ
Endosulfan sulfate		0.1 UJ	0.1 U	0.1 U	0.1 UJ	<0.1 R	0.1 UJ
4,4'-DDT		0.1 UJ	0.1 U	0.1 U	0.1 UJ	<0.1 R	0.1 UJ
Methoxychlor		0.5 UJ	0.5 U	0.5 U	0.5 UJ	<0.5 R	0.5 UJ
Endrin ketone		0.1 UJ	0.1 U	0.1 U	0.1 UJ	<0.1 R	0.1 UJ
Endrin aldehyde		0.1 UJ	0.1 U	0.1 U	0.1 UJ	<0.1 R	0.1 UJ
alpha-Chlordane		0.05 UJ	0.05 U	0.05 U	0.014 J	<0.05 R	0.05 UJ
gamma-Chlordane		0.05 UJ	0.05 U	0.05 U	0.02 J	<0.05 R	0.05 UJ
Toxaphene		5 UJ	5 U	5 U	5 UJ	<5 R	5 UJ
Aroclor-1016		1 UJ	1 U	1 U	1 UJ	<1 R	1 UJ
Aroclor-1221		2 UJ	2 U	2 U	2 UJ	<2 R	2 UJ
Aroclor-1232		1 UJ	1 U	1 U	1 UJ	<1 R	1 UJ
Aroclor-1242		1 UJ	1 U	1 U	1 UJ	<1 R	1 UJ
Aroclor-1248		1 UJ	1 U	1 U	1 UJ	<1 R	1 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R4006	R4007	R4008	R4009	R4010	R4011
	SAMPLE ID	R4006G1P1	R4007G1P1	R4008G1P1	R4009G1P1	R4010G1P1	R4011G1P1
	DATE	10/25/98	10/23/98	10/23/98	10/22/98	10/22/98	10/25/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Aroclor-1254		1 UJ	1 U	1 U	1 UJ	<1 R	1 UJ
Aroclor-1260		1 UJ	1 U	1 U	1 UJ	<1 R	1 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE / SAMPLE ID / DATE / RESULT TYPE	R4012 / R4012G1P1 / 10/23/98 / Primary	R4013 / R4013G1P1 / 10/26/98 / Primary	R4014 / R4014G1P1 / 10/27/98 / Primary	R5001 / R5001G1P1 / 10/08/98 / Primary	R5001 / R5001G1D1 / 10/08/98 / Duplicate 1	R5002 / R5002G1P1 / 10/08/98 / Primary
alpha-BHC		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
beta-BHC		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
delta-BHC		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
gamma-BHC(Lindane)		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
Heptachlor		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
Aldrin		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
Heptachlor epoxide		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
Endosulfan I		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
Dieldrin		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
4,4'-DDE		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
Endrin		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
Endosulfan II		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
4,4'-DDD		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.014 J	0.1 UJ
Endosulfan sulfate		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
4,4'-DDT		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
Methoxychlor		0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
Endrin ketone		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
Endrin aldehyde		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
alpha-Chlordane		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
gamma-Chlordane		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
Toxaphene		5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
Aroclor-1016		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Aroclor-1221		2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
Aroclor-1232		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Aroclor-1242		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Aroclor-1248		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R4012 R4012G1P1 10/23/98 Primary	R4013 R4013G1P1 10/26/98 Primary	R4014 R4014G1P1 10/27/98 Primary	R5001 R5001G1P1 10/08/98 Primary	R5001 R5001G1D1 10/08/98 Duplicate 1	R5002 R5002G1P1 10/08/98 Primary
Aroclor-1254		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Aroclor-1260		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R5003	R5004	R5005	R5006	R5007	R5008
	SAMPLE ID	R5003G1P1	R5004G1P1	R5005G1P1	R5006G1P1	R5007G1P1	R5008G1P1
	DATE	10/08/98	10/08/98	10/09/98	10/09/98	10/09/98	10/10/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
alpha-BHC		0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ
beta-BHC		0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ
delta-BHC		0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ
gamma-BHC(Lindane)		0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ
Heptachlor		0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ
Aldrin		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
Heptachlor epoxide		0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ
Endosulfan I		0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ
Dieldrin		0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ
4,4'-DDE		0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ
Endrin		0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ
Endosulfan II		0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ
4,4'-DDD		0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ
Endosulfan sulfate		0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ
4,4'-DDT		0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ
Methoxychlor		0.5 U	0.5 UJ	0.5 U	0.5 UJ	0.5 U	0.5 UJ
Endrin ketone		0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ
Endrin aldehyde		0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ
alpha-Chlordane		0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ
gamma-Chlordane		0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ
Toxaphene		5 U	5 UJ	5 U	5 UJ	5 U	5 UJ
Aroclor-1016		1 U	1 UJ	1 U	1 UJ	1 U	1 UJ
Aroclor-1221		2 U	2 UJ	2 U	2 UJ	2 U	2 UJ
Aroclor-1232		1 U	1 UJ	1 U	1 UJ	1 U	1 UJ
Aroclor-1242		1 U	1 UJ	1 U	1 UJ	1 U	1 UJ
Aroclor-1248		1 U	1 UJ	1 U	1 UJ	1 U	1 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R5003	R5004	R5005	R5006	R5007	R5008
	SAMPLE ID	R5003G1P1	R5004G1P1	R5005G1P1	R5006G1P1	R5007G1P1	R5008G1P1
	DATE	10/08/98	10/08/98	10/09/98	10/09/98	10/09/98	10/10/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Aroclor-1254		1 U	1 UJ	1 U	1 UJ	1 U	1 UJ
Aroclor-1260		1 U	1 UJ	1 U	1 UJ	1 U	1 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R5009	R5010	R5011	R5012	R5013	R5014
	SAMPLE ID	R5009G1P1	R5010G1P1	R5011G1P1	R5012G1P1	R5013G1P1	R5014G1P1
	DATE	10/10/98	10/10/98	10/11/98	10/11/98	10/11/98	10/13/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
alpha-BHC		0.05 U	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U
beta-BHC		0.05 U	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U
delta-BHC		0.05 U	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U
gamma-BHC(Lindane)		0.05 U	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U
Heptachlor		0.05 U	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U
Aldrin		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
Heptachlor epoxide		0.05 U	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.0027 J
Endosulfan I		0.05 U	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U
Dieldrin		0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U
4,4'-DDE		0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U
Endrin		0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U
Endosulfan II		0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U
4,4'-DDD		0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.021 J
Endosulfan sulfate		0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U
4,4'-DDT		0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.0085 J
Methoxychlor		0.5 U	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U
Endrin ketone		0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U
Endrin aldehyde		0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U
alpha-Chlordane		0.05 U	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.017 J
gamma-Chlordane		0.05 U	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.014 J
Toxaphene		5 U	5 U	5 UJ	5 UJ	5 UJ	5 U
Aroclor-1016		1 U	1 U	1 UJ	1 UJ	1 UJ	1 U
Aroclor-1221		2 U	2 U	2 UJ	2 UJ	2 UJ	2 U
Aroclor-1232		1 U	1 U	1 UJ	1 UJ	1 UJ	1 U
Aroclor-1242		1 U	1 U	1 UJ	1 UJ	1 UJ	1 U
Aroclor-1248		1 U	1 U	1 UJ	1 UJ	1 UJ	1 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R5009 R5009G1P1 10/10/98 Primary	R5010 R5010G1P1 10/10/98 Primary	R5011 R5011G1P1 10/11/98 Primary	R5012 R5012G1P1 10/11/98 Primary	R5013 R5013G1P1 10/11/98 Primary	R5014 R5014G1P1 10/13/98 Primary
Aroclor-1254		1 U	1 U	1 UJ	1 UJ	1 UJ	1 U
Aroclor-1260		1 U	1 U	1 UJ	1 UJ	1 UJ	1 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R5015	R5015	R5016	R5017	R8003	R8008
	SAMPLE ID	R5015G1P1	R5015G1D1	R5016G1P1	R5017G1P1	R8003G1P1	R8008G1P1
	DATE	10/10/98	10/10/98	10/09/98	10/11/98	10/11/98	10/12/98
	RESULT TYPE	Primary	Duplicate 1	Primary	Primary	Primary	Primary
alpha-BHC		0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ
beta-BHC		0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 UJ
delta-BHC		0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ
gamma-BHC(Lindane)		0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 UJ
Heptachlor		0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 UJ
Aldrin		0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ
Heptachlor epoxide		0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 UJ
Endosulfan I		0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 UJ
Dieldrin		0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ
4,4'-DDE		0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ
Endrin		0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ
Endosulfan II		0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ
4,4'-DDD		0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ
Endosulfan sulfate		0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ
4,4'-DDT		0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ
Methoxychlor		0.5 UJ	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 UJ
Endrin ketone		0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ
Endrin aldehyde		0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ
alpha-Chlordane		0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 UJ
gamma-Chlordane		0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 UJ
Toxaphene		5 UJ	5 UJ	5 U	5 U	5 U	5 UJ
Aroclor-1016		1 UJ	1 UJ	1 U	1 U	1 U	1 UJ
Aroclor-1221		2 UJ	2 UJ	2 U	2 U	2 U	2 UJ
Aroclor-1232		1 UJ	1 UJ	1 U	1 U	1 U	1 UJ
Aroclor-1242		1 UJ	1 UJ	1 U	1 U	1 U	1 UJ
Aroclor-1248		1 UJ	1 UJ	1 U	1 U	1 U	1 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R5015 R5015G1P1 10/10/98 Primary	R5015 R5015G1D1 10/10/98 Duplicate 1	R5016 R5016G1P1 10/09/98 Primary	R5017 R5017G1P1 10/11/98 Primary	R8003 R8003G1P1 10/11/98 Primary	R8008 R8008G1P1 10/12/98 Primary
Aroclor-1254		1 UJ	1 UJ	1 U	1 U	1 U	1 UJ
Aroclor-1260		1 UJ	1 UJ	1 U	1 U	1 U	1 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)					
	SITE	R8009	R8010	R8010	R8020
	SAMPLE ID	R8009G1P1	R8010G1P1	R8010G1D1	R8020G1P1
	DATE	10/12/98	10/12/98	10/12/98	10/20/98
	RESULT TYPE	Primary	Primary	Duplicate 1	Primary
alpha-BHC		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
beta-BHC		0.05 UJ	0.05 UJ	0.05 U	0.05 UJ
delta-BHC		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
gamma-BHC(Lindane)		0.05 UJ	0.05 UJ	0.05 U	0.05 UJ
Heptachlor		0.05 UJ	0.05 UJ	0.05 U	0.05 UJ
Aldrin		0.05 UJ	0.05 UJ	0.05 U	0.05 UJ
Heptachlor epoxide		0.05 UJ	0.05 UJ	0.05 U	0.05 UJ
Endosulfan I		0.05 UJ	0.05 UJ	0.05 U	0.05 UJ
Dieldrin		0.1 UJ	0.1 UJ	0.1 U	0.1 UJ
4,4'-DDE		0.1 UJ	0.1 UJ	0.1 U	0.1 UJ
Endrin		0.1 UJ	0.1 UJ	0.1 U	0.1 UJ
Endosulfan II		0.1 UJ	0.1 UJ	0.1 U	0.1 UJ
4,4'-DDD		0.1 UJ	0.1 UJ	0.1 U	0.1 UJ
Endosulfan sulfate		0.1 UJ	0.1 UJ	0.1 U	0.1 UJ
4,4'-DDT		0.1 UJ	0.1 UJ	0.1 U	0.1 UJ
Methoxychlor		0.5 UJ	0.5 UJ	0.5 U	0.5 UJ
Endrin ketone		0.1 UJ	0.1 UJ	0.1 U	0.1 UJ
Endrin aldehyde		0.1 UJ	0.1 UJ	0.1 U	0.1 UJ
alpha-Chlordane		0.05 UJ	0.05 UJ	0.05 U	0.05 UJ
gamma-Chlordane		0.05 UJ	0.05 UJ	0.05 U	0.05 UJ
Toxaphene		5 UJ	5 UJ	5 U	5 UJ
Aroclor-1016		1 UJ	1 UJ	1 U	1 UJ
Aroclor-1221		2 UJ	2 UJ	2 U	2 UJ
Aroclor-1232		1 UJ	1 UJ	1 U	1 UJ
Aroclor-1242		1 UJ	1 UJ	1 U	1 UJ
Aroclor-1248		1 UJ	1 UJ	1 U	1 UJ

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R8009 R8009G1P1 10/12/98 Primary	R8010 R8010G1P1 10/12/98 Primary	R8010 R8010G1D1 10/12/98 Duplicate 1	R8020 R8020G1P1 10/20/98 Primary
Aroclor-1254		1 UJ	1 UJ	1 U	1 UJ
Aroclor-1260		1 UJ	1 UJ	1 U	1 UJ

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R4001	R4002	R4003	R4003	R4004	R4005
	SAMPLE ID	R4001G1P1	R4002G1P1	R4003G1P1	R4003G1D1	R4004G1P1	R4005G1P1
	DATE	10/21/98	10/21/98	10/26/98	10/26/98	10/26/98	10/26/98
	RESULT TYPE	Primary	Primary	Primary	Duplicate 1	Primary	Primary
Phenol		2 J	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethyl)ether		10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodinpropylamine		10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		25 U	25 U	25 U	25 U	25 U	25 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R4001	R4002	R4003	R4003	R4004	R4005
	SAMPLE ID	R4001G1P1	R4002G1P1	R4003G1P1	R4003G1D1	R4004G1P1	R4005G1P1
	DATE	10/21/98	10/21/98	10/26/98	10/26/98	10/26/98	10/25/98
	RESULT TYPE	Primary	Primary	Primary	Duplicate 1	Primary	Primary
2-Chloronaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
Dimethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene		10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
Acenaphthene		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol		25 UJ	25 UJ	25 U	25 U	25 U	25 UJ
4-Nitrophenol		25 U	25 U	25 U	25 U	25 U	25 U
Dibenzofuran		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U
Fluorene		10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol		25 U	25 U	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine (1)		10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene		10 U	10 U	10 U	10 U	10 U	10 U
Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Carbazole		10 U	10 U	10 U	10 U	10 U	10 U
Di-n-Butylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Pyrene		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R4001	R4002	R4003	R4003	R4004	R4005
	SAMPLE ID	R4001G1P1	R4002G1P1	R4003G1P1	R4003G1D1	R4004G1P1	R4005G1P1
	DATE	10/21/98	10/21/98	10/26/98	10/26/98	10/26/98	10/26/98
	RESULT TYPE	Primary	Primary	Primary	Duplicate 1	Primary	Primary
Butylbenzylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Chrysene		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-ethylhexyl)Phthalate		4 J	6 J	10 U	10 U	10 U	10 U
Di-n-octylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R4006	R4007	R4008	R4009	R4010	R4011
	SAMPLE ID	R4006G1P1	R4007G1P1	R4008G1P1	R4009G1P1	R4010G1P1	R4011G1P1
	DATE	10/25/98	10/23/98	10/23/98	10/22/98	10/22/98	10/25/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Phenol		10 U	10 U	1 J	10 U	10 U	10 U
bis(2-chloroethyl)ether		10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodinpropylamine		10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		25 U	25 U	25 U	25 U	25 U	25 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)						
SITE	R4006	R4007	R4008	R4009	R4010	R4011
SAMPLE ID	R4006G1P1	R4007G1P1	R4008G1P1	R4009G1P1	R4010G1P1	R4011G1P1
DATE	10/25/98	10/23/98	10/23/98	10/22/98	10/22/98	10/26/98
RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
2-Chloronaphthalene	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	25 U	25 U	25 U	25 U	25 U	25 U
Dimethylphthalate	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	25 U	25 U	25 U	25 U	25 U	25 U
Acenaphthene	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	25 UJ	25 UJ	25 UJ	25 UJ	25 UJ	25 UJ
4-Nitrophenol	25 U	25 U	25 U	25 U	25 U	25 U
Dibenzofuran	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	25 U	25 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol	25 U	25 U	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine (1)	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-Butylphthalate	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted   < = Not detected at indicated reporting limit   --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R4006	R4007	R4008	R4009	R4010	R4011
	SAMPLE ID	R4006G1P1	R4007G1P1	R4008G1P1	R4009G1P1	R4010G1P1	R4011G1P1
	DATE	10/25/98	10/23/98	10/23/98	10/22/98	10/22/98	10/25/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Butylbenzylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Chrysene		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-ethylhexyl)Phthalate		4 J	10 U	10 U	10 U	10 U	10 U
Di-n-octylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted   < =Not detected at indicated reporting limit   --- =Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R4012	R4013	R4014	R5001	R5001	R5002
	SAMPLE ID	R4012G1P1	R4013G1P1	R4014G1P1	R5001G1P1	R5001G1D1	R5002G1P1
	DATE	10/23/98	10/26/98	10/27/98	10/08/98	10/08/98	10/08/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Duplicate 1	Primary
Phenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethyl)ether		10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodinpropylamine		10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		25 U	25 U	25 U	25 U	25 U	25 U

Values represent total concentrations unless noted   < = Not detected at indicated reporting limit   --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R4012	R4013	R4014	R5001	R5001	R5002
	SAMPLE ID	R4012G1P1	R4013G1P1	R4014G1P1	R5001G1P1	R5001G1D1	R5002G1P1
	DATE	10/23/98	10/26/98	10/27/98	10/08/98	10/08/98	10/08/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Duplicate 1	Primary
2-Chloronaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		25 U	25 U	25 U	25 UJ	25 UJ	25 UJ
Dimethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene		10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
Acenaphthene		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol		25 UJ	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol		25 U	25 U	25 U	25 U	25 U	25 U
Dibenzofuran		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U
Fluorene		10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol		25 U	25 U	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine (1)		10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene		10 U	10 U	10 U	10 U	10 U	10 U
Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Carbazole		10 U	10 U	10 U	10 U	10 U	10 U
Di-n-Butylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Pyrene		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted   < = Not detected at indicated reporting limit   --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R4012	R4013	R4014	R5001	R5001	R5002
	SAMPLE ID	R4012G1P1	R4013G1P1	R4014G1P1	R5001G1P1	R5001G1D1	R5002G1P1
	DATE	10/23/98	10/26/98	10/27/98	10/08/98	10/08/98	10/08/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Duplicate 1	Primary
Butylbenzylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Chrysene		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-ethylhexyl)Phthalate		10 U	10 U	10 U	2 J	10 U	10 U
Di-n-octylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R5003	R5004	R5005	R5006	R5007	R5008
	SAMPLE ID	R5003G1P1	R5004G1P1	R5005G1P1	R5006G1P1	R5007G1P1	R5008G1P1
	DATE	10/08/98	10/08/98	10/09/98	10/09/98	10/09/98	10/10/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Phenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethyl)ether		10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodinpropylamine		10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		25 U	25 U	25 U	25 U	25 U	25 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R5003	R5004	R5005	R5006	R5007	R5008
	SAMPLE ID	R5003G1P1	R5004G1P1	R5005G1P1	R5006G1P1	R5007G1P1	R5008G1P1
	DATE	10/08/98	10/08/98	10/09/98	10/09/98	10/09/98	10/10/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
2-Chloronaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		25 UJ	25 UJ	25 UJ	25 UJ	25 UJ	25 U
Dimethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene		10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
Acenaphthene		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol		25 U	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol		25 U	25 U	25 U	25 U	25 U	25 U
Dibenzofuran		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U
Fluorene		10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol		25 U	25 U	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine (1)		10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene		10 U	10 U	10 U	10 U	10 U	10 U
Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Carbazole		10 U	10 U	10 U	10 U	10 U	10 U
Di-n-Butylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Pyrene		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R5003	R5004	R5005	R5006	R5007	R5008
	SAMPLE ID	R5003G1P1	R5004G1P1	R5005G1P1	R5006G1P1	R5007G1P1	R5008G1P1
	DATE	10/08/98	10/08/98	10/09/98	10/09/98	10/09/98	10/10/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Butylbenzylphthalate		10 U	10 U	10 U	10 U	10 U	10 UJ
3,3'-Dichlorobenzidine		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Chrysene		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-ethylhexyl)Phthalate		10 U	10 U	10 U	10 U	2 J	10 U
Di-n-octylphthalate		10 U	10 U	10 U	10 U	10 U	10 UJ
Benzo(b)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R5009 R5009G1P1 10/10/98 Primary	R5010 R5010G1P1 10/10/98 Primary	R5011 R5011G1P1 10/11/98 Primary	R5012 R5012G1P1 10/11/98 Primary	R5013 R5013G1P1 10/11/98 Primary	R5014 R5014G1P1 10/13/98 Primary
Phenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethyl)ether		10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	1 J
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodinpropylamine		10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene		10 U	10 U	10 U	10 U	10 U	13
4-Chloroaniline		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U	5 J
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		25 U	25 U	25 U	25 U	25 U	25 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R5009	R5010	R5011	R5012	R5013	R5014
	SAMPLE ID	R5009G1P1	R5010G1P1	R5011G1P1	R5012G1P1	R5013G1P1	R5014G1P1
	DATE	10/10/98	10/10/98	10/11/98	10/11/98	10/11/98	10/13/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
2-Chloronaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		25 U	25 UJ	25 UJ	25 UJ	25 U	25 UJ
Dimethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene		10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
Acenaphthene		10 U	10 U	10 U	10 U	10 U	2 J
2,4-Dinitrophenol		25 U	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol		25 U	25 U	25 U	25 U	25 U	25 U
Dibenzofuran		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U
Fluorene		10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol		25 U	25 U	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine (1)		10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		25 U	25 U	25 U	25 U	25 U	25 UJ
Phenanthrene		10 U	10 U	10 U	10 U	10 U	10 U
Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Carbazole		10 U	10 U	10 U	10 U	10 U	10 U
Di-n-Butylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Pyrene		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R5009	R5010	R5011	R5012	R5013	R5014
	SAMPLE ID	R5009G1P1	R5010G1P1	R5011G1P1	R5012G1P1	R5013G1P1	R5014G1P1
	DATE	10/10/98	10/10/98	10/11/98	10/11/98	10/11/98	10/13/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Butylbenzylphthalate		10 UJ	10 U	10 U	10 U	10 UJ	10 U
3,3'-Dichlorobenzidine		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Chrysene		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-ethylhexyl)Phthalate		10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octylphthalate		10 UJ	10 U	10 U	10 U	10 UJ	10 UJ
Benzo(b)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R5015	R5015	R5016	R5017	R8003	R8008
	SAMPLE ID	R5015G1P1	R5015G1D1	R5016G1P1	R5017G1P1	R8003G1P1	R8008G1P1
	DATE	10/10/98	10/10/98	10/09/98	10/11/98	10/11/98	10/12/98
	RESULT TYPE	Primary	Duplicate 1	Primary	Primary	Primary	Primary
Phenol		10 U	10 U	10 U	10 U	10 U	10 UJ
bis(2-chloroethyl)ether		10 U	10 U	10 U	10 U	10 U	10 UJ
2-Chlorophenol		10 U	10 U	10 U	10 U	10 U	10 UJ
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 UJ
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 UJ
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 UJ
2-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 UJ
2,2'-oxybis(1-Chloropropane)		10 U	10 U	10 U	10 U	10 U	10 UJ
N-Nitrosodinpropylamine		10 U	10 U	10 U	10 U	10 U	10 UJ
4-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 UJ
Hexachloroethane		10 U	10 U	10 U	10 U	10 U	10 UJ
Nitrobenzene		10 U	10 U	10 U	10 U	10 U	10 UJ
Isophorone		10 U	10 U	10 U	10 U	10 U	10 UJ
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U	10 UJ
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 U	10 UJ
bis(2-chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U	10 UJ
2,4-Dichlorophenol		10 U	10 U	10 U	10 U	10 U	10 UJ
1,2,4-Trichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 UJ
Naphthalene		10 U	10 U	10 U	10 U	10 U	10 UJ
4-Chloroaniline		10 U	10 U	10 U	10 U	10 U	10 UJ
Hexachlorobutadiene		10 U	10 U	10 U	10 U	10 U	10 UJ
4-Chloro-3-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 UJ
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U	10 UJ
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	10 U	10 UJ
2,4,6-Trichlorophenol		10 U	10 U	10 U	10 U	10 U	10 UJ
2,4,5-Trichlorophenol		25 U	25 U	25 U	25 U	25 U	25 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R5015	R5015	R5016	R5017	R6003	R6008
	SAMPLE ID	R5015G1P1	R5015G1D1	R5016G1P1	R5017G1P1	R6003G1P1	R6008G1P1
	DATE	10/10/98	10/10/98	10/09/98	10/11/98	10/11/98	10/12/98
	RESULT TYPE	Primary	Duplicate 1	Primary	Primary	Primary	Primary
2-Chloronaphthalene		10 U	10 U	10 U	10 U	10 U	10 UJ
2-Nitroaniline		25 U	25 UJ	25 UJ	25 U	25 U	25 UJ
Dimethylphthalate		10 U	10 U	10 U	10 U	10 U	10 UJ
Acenaphthylene		10 U	10 U	10 U	10 U	10 U	10 UJ
2,6-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 UJ
3-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 UJ
Acenaphthene		10 U	10 U	10 U	10 U	10 U	10 UJ
2,4-Dinitrophenol		25 U	25 U	25 U	25 U	25 U	25 UJ
4-Nitrophenol		25 U	25 U	25 U	25 U	25 U	25 UJ
Dibenzofuran		10 U	10 U	10 U	10 U	10 U	10 UJ
2,4-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 UJ
Diethylphthalate		10 U	10 U	10 U	10 U	10 U	10 UJ
4-Chlorophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 UJ
Fluorene		10 U	10 U	10 U	10 U	10 U	10 UJ
4-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 UJ
4,6-Dinitro-2-methylphenol		25 U	25 U	25 U	25 U	25 U	25 UJ
N-Nitrosodiphenylamine (1)		10 U	10 U	10 U	10 U	10 U	10 UJ
4-Bromophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 UJ
Hexachlorobenzene		10 U	10 U	10 U	10 U	10 U	10 UJ
Pentachlorophenol		25 U	25 U	25 U	25 U	25 U	25 UJ
Phenanthrene		10 U	10 U	10 U	10 U	10 U	10 UJ
Anthracene		10 U	10 U	10 U	10 U	10 U	10 UJ
Carbazole		10 U	10 U	10 U	10 U	10 U	10 UJ
Di-n-Butylphthalate		10 U	10 U	10 U	10 U	10 U	10 UJ
Fluoranthene		10 U	10 U	10 U	10 U	10 U	10 UJ
Pyrene		10 U	10 U	10 U	10 U	10 U	10 UJ

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R5015 R5015G1P1 10/10/98 Primary	R5015 R5015G1D1 10/10/98 Duplicate 1	R5016 R5016G1P1 10/09/98 Primary	R5017 R5017G1P1 10/11/98 Primary	R8003 R8003G1P1 10/11/98 Primary	R8008 R8008G1P1 10/12/98 Primary
Butylbenzylphthalate		10 UJ	10 U	10 U	10 UJ	10 UJ	10 UJ
3,3'-Dichlorobenzidine		10 U	10 U	10 U	10 U	10 U	10 UJ
Benzo(a)Anthracene		10 U	10 U	10 U	10 U	10 U	10 UJ
Chrysene		10 U	10 U	10 U	10 U	10 U	10 UJ
bis(2-ethylhexyl)Phthalate		10 U	10 U	10 U	10 U	10 U	10 UJ
Di-n-octylphthalate		10 UJ	10 U	10 U	10 UJ	10 UJ	10 UJ
Benzo(b)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 UJ
Benzo(k)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 UJ
Benzo(a)pyrene		10 U	10 U	10 U	10 U	10 U	10 UJ
Indeno(1,2,3-cd)pyrene		10 U	10 U	10 U	10 U	10 U	10 UJ
Dibenzo(a,h)anthracene		10 U	10 U	10 U	10 U	10 U	10 UJ
Benzo(g,h,i)perylene		10 U	10 U	10 U	10 U	10 U	10 UJ

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R8009	R8010	R8010	R8020
	SAMPLE ID	R8009G1P1	R8010G1P1	R8010G1D1	R8020G1P1
	DATE	10/12/98	10/12/98	10/12/98	10/20/98
	RESULT TYPE	Primary	Primary	Duplicate 1	Primary
Phenol		10 U	10 U	10 U	10 U
bis(2-chloroethyl)ether		10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		10 U	10 U	10 U	10 U
N-Nitrosodinpropylamine		10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U
bis(2-chloroethoxy)methane		10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	10 U	10 U
Naphthalene		10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol		10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		25 U	25 U	25 U	25 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R8009	R8010	R8010	R8020
	SAMPLE ID	R8009G1P1	R8010G1P1	R8010G1D1	R8020G1P1
	DATE	10/12/98	10/12/98	10/12/98	10/20/98
	RESULT TYPE	Primary	Primary	Duplicate 1	Primary
2-Chloronaphthalene		10 U	10 U	10 U	10 U
2-Nitroaniline		25 U	25 U	25 U	25 U
Dimethylphthalate		10 U	10 U	10 U	10 U
Acenaphthylene		10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 U	10 U	10 U	10 U
3-Nitroaniline		25 U	25 U	25 U	25 U
Acenaphthene		10 U	10 U	10 U	10 U
2,4-Dinitrophenol		25 U	25 U	25 U	25 UJ
4-Nitrophenol		25 U	25 U	25 U	25 U
Dibenzofuran		10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		10 U	10 U	10 U	10 U
Diethylphthalate		10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether		10 U	10 U	10 U	10 U
Fluorene		10 U	10 U	10 U	10 U
4-Nitroaniline		25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol		25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine (1)		10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether		10 U	10 U	10 U	10 U
Hexachlorobenzene		10 U	10 U	10 U	10 U
Pentachlorophenol		25 U	25 U	25 U	25 U
Phenanthrene		10 U	10 U	10 U	10 U
Anthracene		10 U	10 U	10 U	10 U
Carbazole		10 U	10 U	10 U	10 U
Di-n-Butylphthalate		10 U	10 U	10 U	10 U
Fluoranthene		10 U	10 U	10 U	10 U
Pyrene		10 U	10 UJ	10 U	10 U

Values represent total concentrations unless noted   < = Not detected at indicated reporting limit   --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L) SITE	R8009	R8010	R8010	R8020
SAMPLE ID	R8009G1P1	R8010G1P1	R8010G1D1	R8020G1P1
DATE	10/12/98	10/12/98	10/12/98	10/20/98
RESULT TYPE	Primary	Primary	Duplicate 1	Primary
Butylbenzylphthalate	10 UJ	10 UJ	10 UJ	10 U
3,3'-Dichlorobenzidine	10 U	10 U	10 U	10 U
Benzo(a)Anthracene	10 U	10 U	10 U	10 U
Chrysene	10 U	10 U	10 U	10 U
bis(2-ethylhexyl)Phthalate	10 U	10 U	10 U	10 U
Di-n-octylphthalate	10 UJ	10 UJ	10 UJ	10 U
Benzo(b)fluoranthene	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R4001 R4001G1P1 10/21/98 Primary	R4002 R4002G1P1 10/21/98 Primary	R4002 R4002G1D1 10/21/98 Duplicate 1	R4003 R4003G1P1 10/26/98 Primary	R4003 R4003G1D1 10/26/98 Duplicate 1	R4004 R4004G1P1 10/26/98 Primary
Chloromethane		10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane		10 UJ	10 UJ	10 UJ	10 U	10 U	10 U
Vinyl chloride		10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 UJ	10 UJ	10 UJ
Methylene chloride		10 U	10 U	10 U	10 U	10 U	10 U
Acetone		10 U	10 U	10 U	10 UJ	10 UJ	10 UJ
Carbon disulfide		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone		10 U	10 U	10 U	10 UJ	10 UJ	10 UJ
1,1,1-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride		10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Benzene		10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Bromoform		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 UJ	10 UJ	10 UJ

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R4001	R4002	R4002	R4003	R4003	R4004
	SAMPLE ID	R4001G1P1	R4002G1P1	R4002G1D1	R4003G1P1	R4003G1D1	R4004G1P1
	DATE	10/21/98	10/21/98	10/21/98	10/26/98	10/26/98	10/26/98
	RESULT TYPE	Primary	Primary	Duplicate 1	Primary	Duplicate 1	Primary
Tetrachloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Toluene		10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene		10 U	10 U	10 U	10 U	10 U	10 U
Styrene		10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R4005 R4005G1P1 10/25/98 Primary	R4006 R4006G1P1 10/25/98 Primary	R4007 R4007G1P1 10/23/98 Primary	R4008 R4008G1P1 10/23/98 Primary	R4009 R4009G1P1 10/22/98 Primary	R4010 R4010G1P1 10/22/98 Primary
Chloromethane		10 U	10 U	10 U	14 U	10 U	10 U
Bromomethane		10 U	10 U	10 UJ	14 UJ	10 UJ	10 UJ
Vinyl chloride		10 U	10 U	2 J	21	10 U	10 U
Chloroethane		10 UJ	10 UJ	10 U	14 U	10 U	10 U
Methylene chloride		10 U	10 U	10 U	14 U	10 U	10 U
Acetone		10 UJ	10 UJ	10 U	14 U	10 U	10 U
Carbon disulfide		10 U	10 U	10 U	14 U	10 U	10 U
1,1-Dichloroethene		10 U	10 U	10 U	14 U	10 U	10 U
1,1-Dichloroethane		10 U	10 U	10 U	14 U	10 U	10 U
1,2-Dichloroethene (total)		10 U	10 U	8 J	220	10 U	10 U
Chloroform		10 U	10 U	10 U	14 U	10 U	10 U
1,2-Dichloroethane		10 U	10 U	10 U	14 U	10 U	10 U
2-Butanone		10 UJ	10 UJ	10 U	14 U	10 U	10 U
1,1,1-Trichloroethane		10 U	10 U	10 U	14 U	10 U	10 U
Carbon tetrachloride		10 U	10 U	10 U	14 U	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	14 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	14 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	14 U	10 U	10 U
Trichloroethene		10 U	10 U	10 U	12 J	10 U	10 U
Dibromochloromethane		10 U	10 U	10 U	14 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	14 U	10 U	10 U
Benzene		10 U	10 U	10 U	14 U	10 U	10 U
trans-1,3-Dichloropropene		10 U	10 U	10 U	14 U	10 U	10 U
Bromoform		10 U	10 U	10 U	14 U	10 U	10 U
4-Methyl-2-pentanone		10 U	10 U	10 U	14 U	10 U	10 U
2-Hexanone		10 UJ	10 UJ	10 U	14 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R4005 R4005G1P1 10/25/98 Primary	R4006 R4006G1P1 10/25/98 Primary	R4007 R4007G1P1 10/23/98 Primary	R4008 R4008G1P1 10/23/98 Primary	R4009 R4009G1P1 10/22/98 Primary	R4010 R4010G1P1 10/22/98 Primary
Tetrachloroethene		10 U	10 U	10 U	14 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	14 U	10 U	10 U
Toluene		10 U	10 U	10 U	14 U	10 U	10 U
Chlorobenzene		10 U	10 U	10 U	14 U	10 U	10 U
Ethylbenzene		10 U	10 U	10 U	14 U	10 U	10 U
Styrene		10 U	10 U	10 U	14 U	10 U	10 U
Xylenes (total)		10 U	10 U	10 U	14 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE / SAMPLE ID / DATE / RESULT TYPE	R4011 / R4011G1P1 / 10/25/98 / Primary	R4012 / R4012G1P1 / 10/23/98 / Primary	R4013 / R4013G1P1 / 10/26/98 / Primary	R4014 / R4014G1P1 / 10/27/98 / Primary	R4015 / R4015G1P1 / 10/26/98 / Primary	R5001 / R5001G1P1 / 10/08/98 / Primary
Chloromethane		10 U	10 U	10 U	20 U	10 U	10 U
Bromomethane		10 U	10 UJ	10 U	20 U	10 U	10 U
Vinyl chloride		10 U	10 U	10 U	90	10 U	10 U
Chloroethane		10 UJ	10 U	10 UJ	20 UJ	10 UJ	10 U
Methylene chloride		10 U	10 U	10 U	20 U	10 U	10 U
Acetone		10 UJ	10 U	10 UJ	20 UJ	14 UJ	10 UJ
Carbon disulfide		10 U	10 U	10 U	20 U	0.7 J	10 U
1,1-Dichloroethene		10 U	10 U	10 U	20 U	10 U	1 J
1,1-Dichloroethane		10 U	10 U	10 U	20 U	10 U	3 J
1,2-Dichloroethene (total)		10 U	10 U	10 U	460	10 U	10 U
Chloroform		10 U	10 U	10 U	20 U	10 U	10 U
1,2-Dichloroethane		10 U	10 U	10 U	20 U	10 U	3 J
2-Butanone		10 UJ	10 U	10 UJ	20 UJ	10 UJ	10 UJ
1,1,1-Trichloroethane		10 U	10 U	10 U	20 U	10 U	10 U
Carbon tetrachloride		10 U	10 U	10 U	20 U	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	20 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	20 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	20 U	10 U	10 U
Trichloroethene		10 U	10 U	10 U	23	10 U	10 U
Dibromochloromethane		10 U	10 U	10 U	20 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	20 U	10 U	10 U
Benzene		10 U	10 U	10 U	20 U	10 U	10 U
trans-1,3-Dichloropropene		10 U	10 U	10 U	20 U	10 U	10 U
Bromoform		10 U	10 U	10 U	20 U	10 U	10 U
4-Methyl-2-pentanone		10 U	10 U	10 U	20 U	10 U	10 UJ
2-Hexanone		10 UJ	10 U	10 UJ	20 UJ	10 UJ	10 UJ

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R4011 R4011G1P1 10/25/98 Primary	R4012 R4012G1P1 10/23/98 Primary	R4013 R4013G1P1 10/26/98 Primary	R4014 R4014G1P1 10/27/98 Primary	R4015 R4015G1P1 10/26/98 Primary	R5001 R5001G1P1 10/08/98 Primary
Tetrachloroethene		10 U	10 U	10 U	20 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	20 U	10 U	10 U
Toluene		10 U	10 U	10 U	20 U	10 U	10 U
Chlorobenzene		10 U	10 U	10 U	20 U	10 U	10 U
Ethylbenzene		10 U	10 U	10 U	20 U	10 U	10 U
Styrene		10 U	10 U	10 U	20 U	10 U	10 U
Xylenes (total)		10 U	10 U	10 U	20 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)						
SITE	R5001	R5002	R5003	R5004	R5005	R5006
SAMPLE ID	R5001G1D1	R5002G1P1	R5003G1P1	R5004G1P1	R5005G1P1	R5006G1P1
DATE	10/08/98	10/08/98	10/08/98	10/08/98	10/09/98	10/09/98
RESULT TYPE	Duplicate 1	Primary	Primary	Primary	Primary	Primary
Chloromethane	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Carbon disulfide	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	1 J	10 U	5 J	2 J	10 U	10 U
1,1-Dichloroethane	3 J	0.6 J	6 J	2 J	10 U	10 U
1,2-Dichloroethene (total)	10 U	10 U	0.4 J	10 U	10 U	10 U
Chloroform	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	3 J	1 J	2 J	2 J	10 UJ	10 UJ
2-Butanone	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
1,1,1-Trichloroethane	10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
2-Hexanone	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R5001	R5002	R5003	R5004	R5005	R5006
	SAMPLE ID	R5001G1D1	R5002G1P1	R5003G1P1	R5004G1P1	R5005G1P1	R5006G1P1
	DATE	10/08/98	10/08/98	10/08/98	10/08/98	10/09/98	10/09/98
	RESULT TYPE	Duplicate 1	Primary	Primary	Primary	Primary	Primary
Tetrachloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Toluene		10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene		10 U	10 U	10 U	10 U	10 U	10 U
Styrene		10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R5007	R5008	R5009	R5010	R5011	R5012
	SAMPLE ID	R5007G1P1	R5008G1P1	R5009G1P1	R5010G1P1	R5011G1P1	R5012G1P1
	DATE	10/09/98	10/10/98	10/10/98	10/10/98	10/11/98	10/11/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Chloromethane		10 U	10 U	10 UJ	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride		10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 UJ	10 U	10 U	10 U
Methylene chloride		10 U	10 U	10 U	10 U	10 U	10 U
Acetone		10 UJ	10 UJ	10 U	10 UJ	10 UJ	10 UJ
Carbon disulfide		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane		0.9 J	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		0.7 J	10 U	10 U	10 U	10 U	10 U
Chloroform		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
2-Butanone		10 UJ	10 UJ	10 U	10 UJ	10 UJ	10 UJ
1,1,1-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride		10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Benzene		2 J	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene		10 U	10 U	10 UJ	10 U	10 U	10 U
Bromoform		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		10 UJ	10 UJ	10 U	10 UJ	10 UJ	10 UJ
2-Hexanone		10 UJ	10 UJ	10 U	10 UJ	10 UJ	10 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R5007	R5008	R5009	R5010	R5011	R5012
	SAMPLE ID	R5007G1P1	R5008G1P1	R5009G1P1	R5010G1P1	R5011G1P1	R5012G1P1
	DATE	10/09/98	10/10/98	10/10/98	10/10/98	10/11/98	10/11/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Tetrachloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Toluene		10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene		10 U	10 U	10 U	10 U	10 U	10 U
Styrene		10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R5013 R5013G1P1 10/11/98 Primary	R5014 R5014G1P1 10/13/98 Primary	R5015 R5015G1P1 10/10/98 Primary	R5015 R5015G1D1 10/10/98 Duplicate 1	R5016 R5016G1P1 10/09/98 Primary	R5017 R5017G1P1 10/11/98 Primary
Chloromethane		10 UJ	10 U	10 U	10 U	10 U	10 UJ
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride		10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 UJ	10 U	10 U	10 U	10 U	10 UJ
Methylene chloride		10 U	10 U	10 U	10 U	10 U	10 U
Acetone		10 U	17 UJ	10 UJ	10 UJ	10 UJ	10 U
Carbon disulfide		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		10 U	1 J	10 U	10 U	10 U	10 U
Chloroform		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane		10 UJ	10 U	10 UJ	10 UJ	10 UJ	10 UJ
2-Butanone		10 U	10 U	10 UJ	10 UJ	10 UJ	10 U
1,1,1-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride		10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Benzene		10 U	6 J	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene		10 UJ	10 U	10 U	10 U	10 U	10 UJ
Bromoform		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		10 U	10 U	10 UJ	10 UJ	10 UJ	10 U
2-Hexanone		10 U	10 U	10 UJ	10 UJ	10 UJ	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R5013	R5014	R5015	R5015	R5016	R5017
	SAMPLE ID	R5013G1P1	R5014G1P1	R5015G1P1	R5015G1D1	R5016G1P1	R5017G1P1
	DATE	10/11/98	10/13/98	10/10/98	10/10/98	10/09/98	10/11/98
	RESULT TYPE	Primary	Primary	Primary	Duplicate 1	Primary	Primary
Tetrachloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Toluene		10 U	0.5 J	10 U	10 U	10 U	10 U
Chlorobenzene		10 U	4 J	10 U	10 U	10 U	10 U
Ethylbenzene		10 U	10 U	10 U	10 U	10 U	10 U
Styrene		10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)		10 U	0.6 J	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R8001	R8002	R8003	R8004	R8004	R8005
	SAMPLE ID	R8001G1P1	R8002G1P1	R8003G1P1	R8004G1P1	R8004G1D1	R8005G1P1
	DATE	10/11/98	10/11/98	10/11/98	10/11/98	10/11/98	10/11/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Duplicate 1	Primary
Chloromethane		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride		10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Methylene chloride		10 U	10 U	10 U	10 U	10 U	10 U
Acetone		10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride		10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Benzene		10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Bromoform		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R8001	R8002	R8003	R8004	R8004	R8005
	SAMPLE ID	R8001G1P1	R8002G1P1	R8003G1P1	R8004G1P1	R8004G1D1	R8005G1P1
	DATE	10/11/98	10/11/98	10/11/98	10/11/98	10/11/98	10/11/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Duplicate 1	Primary
Tetrachloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Toluene		10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene		10 U	10 U	10 U	10 U	10 U	10 U
Styrene		10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE / SAMPLE ID / DATE / RESULT TYPE	R8006 R8006G1P1 10/12/98 Primary	R8007 R8007G1P1 10/12/98 Primary	R8008 R8008G1P1 10/12/98 Primary	R8009 R8009G1P1 10/12/98 Primary	R8010 R8010G1P1 10/12/98 Primary	R8011 R8011G1P1 10/12/98 Primary
Chloromethane		10 UJ	10 UJ	10 UJ	10 U	10 UJ	10 UJ
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride		10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 UJ	10 UJ	10 UJ	10 U	10 UJ	10 UJ
Methylene chloride		10 U	10 U	10 U	10 U	10 U	10 U
Acetone		10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride		10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Benzene		10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Bromoform		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R8006 R8006G1P1 10/12/98 Primary	R8007 R8007G1P1 10/12/98 Primary	R8008 R8008G1P1 10/12/98 Primary	R8009 R8009G1P1 10/12/98 Primary	R8010 R8010G1P1 10/12/98 Primary	R8011 R8011G1P1 10/12/98 Primary
Tetrachloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Toluene		10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene		10 U	10 U	10 U	10 U	10 U	10 U
Styrene		10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R8012	R8013	R8014	R8014	R8015	R8016
	SAMPLE ID	R8012G1P1	R8013G1P1	R8014G1P1	R8014G1D1	R8015G1P1	R8016G1P1
	DATE	10/12/98	10/12/98	10/13/98	10/13/98	10/13/98	10/13/98
	RESULT TYPE	Primary	Primary	Primary	Duplicate 1	Primary	Primary
Chloromethane		10 UJ	10 UJ	10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride		10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 UJ	10 UJ	10 U	10 U	10 U	10 U
Methylene chloride		10 U	10 U	10 U	10 U	10 U	10 U
Acetone		10 U	10 U	10 UJ	10 UJ	10 UJ	10 UJ
Carbon disulfide		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane		10 UJ	10 UJ	10 U	10 U	10 U	10 U
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride		10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Benzene		10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene		10 UJ	10 UJ	10 U	10 U	10 U	10 U
Bromoform		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R8012	R8013	R8014	R8014	R8015	R8016
	SAMPLE ID	R8012G1P1	R8013G1P1	R8014G1P1	R8014G1D1	R8015G1P1	R8016G1P1
	DATE	10/12/98	10/12/98	10/13/98	10/13/98	10/13/98	10/13/98
	RESULT TYPE	Primary	Primary	Primary	Duplicate 1	Primary	Primary
Tetrachloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Toluene		10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene		10 U	10 U	10 U	10 U	10 U	10 U
Styrene		10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R8017	R8018	R8019	R8020	R8021	R8022
	SAMPLE ID	R8017G1P1	R8018G1P1	R8019G1P1	R8020G1P1	R8021G1P1	R8022G1P1
	DATE	10/13/98	10/13/98	10/13/98	10/20/98	10/20/98	10/20/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Chloromethane		10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 UJ	10 UJ	10 UJ
Vinyl chloride		10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride		10 U	10 U	10 U	10 U	10 U	10 U
Acetone		10 UJ	10 UJ	10 UJ	10 U	10 U	10 U
Carbon disulfide		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride		10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Benzene		10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Bromoform		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R8017	R8018	R8019	R8020	R8021	R8022
	SAMPLE ID	R8017G1P1	R8018G1P1	R8019G1P1	R8020G1P1	R8021G1P1	R8022G1P1
	DATE	10/13/98	10/13/98	10/13/98	10/20/98	10/20/98	10/20/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Tetrachloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Toluene		10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene		10 U	10 U	10 U	10 U	10 U	10 U
Styrene		10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	R8023 R8023G1P1 10/27/98 Primary	R8024 R8024G1P1 10/20/98 Primary
Chloromethane		10 U	10 U
Bromomethane		10 U	10 UJ
Vinyl chloride		10 U	10 U
Chloroethane		10 UJ	10 U
Methylene chloride		10 U	10 U
Acetone		10 UJ	10 U
Carbon disulfide		10 U	10 U
1,1-Dichloroethene		10 U	10 U
1,1-Dichloroethane		10 U	10 U
1,2-Dichloroethene (total)		10 U	10 U
Chloroform		10 U	10 U
1,2-Dichloroethane		10 U	10 U
2-Butanone		10 UJ	10 U
1,1,1-Trichloroethane		10 U	10 U
Carbon tetrachloride		10 U	10 U
Bromodichloromethane		10 U	10 U
1,2-Dichloropropane		10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U
Trichloroethene		10 U	10 U
Dibromochloromethane		10 U	10 U
1,1,2-Trichloroethane		10 U	10 U
Benzene		10 U	10 U
trans-1,3-Dichloropropene		10 U	10 U
Bromoform		10 U	10 U
4-Methyl-2-pentanone		10 U	10 U
2-Hexanone		10 UJ	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

For RCL VOA

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 1

CONSTITUENT (Units in ug/L)	SITE	R8023	R8024
	SAMPLE ID	R8023G1P1	R8024G1P1
	DATE	10/27/98	10/20/98
	RESULT TYPE	Primary	Primary
Tetrachloroethene		10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U
Toluene		10 U	10 U
Chlorobenzene		10 U	10 U
Ethylbenzene		10 U	10 U
Styrene		10 U	10 U
Xylenes (total)		10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

For RCL VOA

APPENDIX C

BORING LOGS, WELL CONSTRUCTION FORMS, PARTICLE SIZE ANALYSIS, WELL SURVEY DATA

Boring No.: GPT-01-04	Date Drilled: 2/17/99
Logged By: R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 26 Ft.
Ground Elevation not surveyed	

Depth (ft)	Sample Despcription		USCS Symbol	Graphic Log
	0-0.5	Grass, soil, high organic content	PT	
2	0.5-3'	Light brown, fine sand with silt and pieces of pine tree branches	SM	
4	3-5'	Dark brown, fine grained sand with some silt	SM	
6	5-7'	Light brown, fine to medium sand with little silt	SM/SP	
8	7-10.5'	Light brown, fine grained sand with some silt	SM	
10				
12	10.5-15'	Light brown, fine to medium sand	SM	
14				
16	15-16'	Dark brown, fine to medium sand with fine gravel and silt	SM	
18	16-20.5'	Light brown, medium to fine sand with fine gravel and silt	SM	
20				
22	20.5-26'	Light brown, medium to fine sand with some fine gravel and silt	SM	
24				
26				
28				
30				

Boring No.: GPT-01-05	Date Drilled: 2/17/99
Logged By: R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth ~25 Ft.
Ground Elevation not surveyed	

Depth (ft)	Sample Despcription		USCS Symbol	Graphic Log
	0-0.5'	Grass, soil, high organic content	PT	
2	0.5-3'	Light brown, fine sand with silt	SM	
4	3-4.5'	Dark brown, fine grained sand with some silt	SM	
6	4.5-6'	Light brown, fine to medium sand with very little silt	SM/SP	
8	6-10'	Light brown, fine grained sand with some silt	SM	
10				
12	10-14'	Light brown, fine to medium sand	SP	
14				
16	14-16'	Dark brown, fine to medium sand with fine gravel and some silt	SM	
18	16-20'	Light brown, medium to fine sand with fine gravel and some silt	SM	
20				
22	20-~25'	Light brown, medium to fine sand with some fine gravel and silt	SM	
24				
26				
28				
30				

Boring No.: GPT-02-04	Date Drilled: 2/17/99
Logged By: R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 26 Ft.
Ground Elevation 22.12' msl	

Depth (ft)	Sample Despcription		USCS Symbol	Graphic Log
	0-1'	Grass, soil with some organic content	PT	
2	1-4'	Light brown, fine grained sand with silt, marbled with orange fine sand/silt	SM	
4				
6	4-6'	Light brown, fine silty sand	SM	
8	6-9'	Tan, fine to medium sand with some silt	SM	
10	9-14'	Buff, fine to medium sand with very little silt	SM/SP	
12				
14				
16	14-16'	Light gray, fine to medium sand with very little silt	SP	
18	16-22'	Light gray, fine to medium sand with silt	SM	
20				
22				
24	22-26'	Gray, very silty sand with some clay	SM/SC	
26				
28				
30				

Boring No.: GPT-03-06	Date Drilled: 2/16/99
Logged By: R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth ~26 Ft.
Ground Elevation not surveyed	

Depth (ft)	Sample Despcription	USCS Symbol	Graphic Log
2	0-2' Light brown/orange/tan, fine grained sand with fine gravel	SW	
4	2-4.5' Light brown, fine sand with wood chips, particle board, pieces of aluminum	SW	
6	4.5-12' Buff, fine to medium sand	SP	
8			
10			
12			
14	12-16' Light orange, fine to medium sand	SP	
16			
18	16-21' Light orange/tan fine to medium sand	SP	
20			
22	21-26' Light brown, fine to medium sand	SP	
24			
26			
28			
30			

Boring No.: GPT-03-07	Date Drilled: 2/16/99
Logged By: R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 26 Ft.
Ground Elevation not surveyed	

Depth (ft)	Interval	Sample Despcription	USCS Symbol	Graphic Log
2	0-2'	Brown/orange, silty sand with some fine gravel	SP	
	2-3'	Dark brown, fine silty sand with ~8" of wood chips, debris	SM	
4	3-6'	Light brown, silty sand (fine sand)	SM	
6				
8	6-11'	Buff, fine to medium sand, no silt	SP	
10				
12	11-16'	Light brown, fine to medium sand, very little silt to no silt	SP	
14				
16				
	16-17'	Light brown, fine to medium sand	SP	
18	17-26'	Gray, silty clay, high plasticity	CH	
20				
22				
24				
26				
28				
30				

Boring No.: GPT-04-09	Date Drilled: 2/18/99
Logged By: R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 26 Ft.
Ground Elevation 28.44' msl	

Depth (ft)	Sample Despcription		USCS Symbol	Graphic Log
	0-1.5'	Soil, medium organic content	PT	
2	1.5-3'	Brown, fine grained sand	SW	
4	3-5'	Black silt with some very fine sand, fine gravel	ML	
6	5-9'	Fill material, medium to fine gravel	GP	
8				
10	9-21'	Light gray/brown, fine sand with some silt	SM	
12				
14				
16				
18				
20				
22	21-23'	Brown, fine to medium sand with fine gravel, very little silt	SP	
24	23-26'	Brown, fine to medium sand, no gravel, very little silt	SP	
26				
28				
30				

Boring No.: GPT-04-10	Date Drilled: 2/18/99
Logged By: R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 16 Ft.
Ground Elevation 21.86' msl	

Depth (ft)		Sample Despcription	USCS Symbol	Graphic Log
	0-1.5'	Grass, soil, fine gravel	PT	
2	1.5-3'	Orange and dark brown, fine sand with some silt	SM	
4	3-4.5'	Dark brown/black, silt with root material	ML	
6	4.5-9'	Light brown, fine sand with silt and clay	SM	
8				
10	9-13'	Gray/buff, medium to fine sand	SP	
12				
14	13-16'	Light gray/buff, fine to medium sand with fine gravel - gray silty clay with very fine sand at the bottom of the core	SM	
16			SC	
18				
20				

Boring No.: GPT-04-11	Date Drilled: 2/18/99
Logged By: R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 50 Ft.
Ground Elevation 21.96' msl	

Depth (ft)	Sample Despcription		USCS Symbol	Graphic Log
	0-1'	Grass, soil, fine gravel	PT	
2	1-3'	Orange mottled with dark brown, fine sand with silt	SM	
4	3-4'	Dark brown/black, silt with plant roots	ML	
6	4-8.5'	Light brown, fine sand with silt and clay	SM	
8				
	8.5-9.5'	Thin layer of pine bark mulch	PT	
10	9.5-12'	Gray/buff, medium to fine sand	SP	
12				
14	12-16'	Light gray/buff, fine to medium sand with fine gravel	SM	
16				
	16-17'	Medium gray, silty clay with very fine sand, high plasticity with wood chips	SC	
18	17-45'	Medium gray, silty clay with very fine sand, high plasticity	SC	
20				
22				
24				
26				
28				
30				
32				
34				
36				
38				
40				
42				
44				
46	45-50'	Green/gray clay, medium plasticity with some silt		
48				
50				

Boring No.: GPT-04-12	Date Drilled: 2/18/99
Logged By: R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 26 Ft.
Ground Elevation 27.94' msl	

Depth (ft)		Sample Despcription	USCS Symbol	Graphic Log
2	0-2'	Grass, soil, medium organics, fine gravel	PT	
4	2-4.5'	Dark brown, fine sand with fine gravel, wood pieces	SW	
6	4.5-9'	Black, fine to medium sand, landfill debris - asphalt, glass, pallett pieces, fine gravel	SP	
8				
10	9-16'	Tan/buff, fine grained sand with some silt, wood chunks	SM	
12				
14				
16				
18	16-21'	Tan/buff, fine sand with some silt	SM	
20				
22	21-26'	Medium gray, silty clay with some very fine sand	CL	
24				
26				
28				
30				

Boring No.: GPT-04-13	Date Drilled: 2/18/99
Logged By: R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth ~16 Ft.
Ground Elevation 27.28' msl	

Depth (ft)	Interval	Sample Despcription	USCS Symbol	Graphic Log
	0-1.5'	Grass, high organic soil, fine gravel	PT	
2	1.5-5'	Dark brown, fine sand with medium to fine gravel, landfill debris, glass metal	SW	
4				
6	5-8'	Black, fine to medium sand with silt, asphalt, fine gravel, wood pieces	SM	
8				
10	8-16'	Tan/buff, fine grained sand with very little silt, large chunks of wood	SW	
12				
14				
16				
18				
20				

Boring No.: GPT-04-14	Date Drilled: 2/18/99
Logged By: R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Dept 52 Ft.
Ground Elevation 27.26' msl	

Depth (ft)	Sample Despcription		USCS Symbol	Graphic Log
2	0-2'	Grass, soil, high organic content, fine gravel	PT	
4	2-5'	Dark brown, fine sand with medium to fine gravel, landfill debris - glass, rubber, metal	SW	
6	5-8'	Black, fine to medium sand with silt, pieces of asphalt and wood pieces (possibly pallet)	SP	
8				
10	8-21'	Tan/buff, fine grained sand with very little silt	SW	
12				
14				
16				
18				
20				
22	21-39'	Medium gray, silty clay with very fine sand	SC	
24				
26				
28				
30				
32				
34				
36				
38				
40	39-42'	Dark brown, clay, high plasticity	CH	

42			
44	42-52' Green/gray clay with some silt, medium plasticity	CL	
46			
48			
50			
52			
54			
56			
58			
60			

Boring No.: GPT-04-15	Date Drilled: 2/18/99
Logged By: R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth ~26 Ft.
Ground Elevation 21.02' msl	

Depth (ft)	Sample Despcription		USCS Symbol	Graphic Log
	0-1.5'	Grass, soil, orange fine grained sand with fine gravel (fill material)	PT/SM	
2	1.5-3'	Dark brown/black, silt with some fine sand	ML	
4	3-8'	Light brown, fine grained sand with silt	SM	
6				
8				
10	8-14'	Light gray, medium to fine sand with fine gravel	SP	
12				
14				
	14-15'	Pine bark mulch	PT	
16	15-16'	Gray, fine to medium sand with some fine gravel, very little to no silt	SP	
18	16-26'	Medium gray, silty clay, high plasticity	SC	
20				
22				
24				
26				
28				
30				

Boring No.: GPT-05-07	Date Drilled: 2/6/99
Logged By: R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 26 Ft.
Ground Elevation 27.03' msl	

Depth (ft)	Sample Despcription		USCS Symbol	Graphic Log
2	0-6'	Orange, buff, tan (mottled), fine to medium sand with some silt, some clay	SP	
4				
6				
	6-7'	Tan, fine to medium sand with some silt	SP	
8	7-8'	Light brown, fine sand	SW	
10	8-16'	Dark brown find sand with some silt and very few fine gravel	SP	
12				
14				
16				
18	16-20'	Brown fine sand with some silt	SW	
20				
	20-21'	Gray medium to fine sand with some coarse sand and fine to medium gravel	SP	
22	21-23'	Gray silty clay with fine sand	CL	
24	23-26'	Gray fine sand	SW	
26				
28				
30				

Boring No.: GPT-05-08	Date Drilled: 2/6/99 - 2/7/99
Logged By: D. Carigan/R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 26 Ft.
Ground Elevation 29.85' msl	

Depth (ft)	Sample Despcription		USCS Symbol	Graphic Log
2	0-5'	Fill material, medium brown, fine sand, silt, wood, landfill material	SM	
4				
6	5-6.5'	Yellow/orange with some tan mixed throughout, fine-grained sand, silt	SM	
8	6.5-9'	Grading from light gray to light brown, fine sand, silt	SM	
10	9-12'	Medium brown grading to dark brown, fine sand with few medium grains, silt	SM	
12				
14	12-16'	Medium/light brown fine sand with silt	SM	
16				
18	16-22.5'	Medium/light brown fine sand with silt	SM	
20				
22				
	22.5-23'	Gray fine to medium sand with some coarse sand and fine gravel	SP	
24	23-24.5'	Medium gray silty clay with fine sand	CL	
26	24.5-26'	Light gray fine sand with some silt	SM	
28				
30				

Boring No.: GPT-05-09	Date Drilled: 2/6/99
Logged By: D. Carigan/R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 26 Ft.
Ground Elevation 29.82' msl	

Depth (ft)	Sample Despcription		USCS Symbol	Graphic Log
2	0-2'	Dark brown fine to medium sand with silt and fine gravel	SM/SP	
4	2-6'	Dark brown fine sand with silt, fine to medium gravel	SM/SP	
6				
8	6-10'	Dark brown fine sand with silt and chunks of wood	SM	
10				
12	10-16'	Brown fine silty sand with fine gravel	SP	
14				
16				
18	16-20'	Brown fine to medium sand with silt	SP	
20				
	20-20.5'	Gray silty clay intermixed with gray fine sand	CL	
22	20.5-26'	Gray fine to medium sand with some coarse sand	SP	
24				
26				
28				
30				

Boring No.: GPT-05-10	Date Drilled: 2/6/99
Logged By: D. Carigan	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 56 Ft.
Ground Elevation 29.81' msl	

Depth (ft)	Interval	Sample Despcription	USCS Symbol	Graphic Log
	0-1.5'	Dark brown, fine to medium sand, silt, fine to medium gravel	SP	
2	1.5-4.75'	Dark brown, dry, fine sand, silt, small to coarse gravel, metal and rubber pieces	SW	
4				
	4.75-5.25'	Medium gray, medium to fine sand, silt, some clay particles	SM	
6	5.25-6.75'	Light brown, medium to fine sand, silt	SM	
8	6.75-10'	Very dark brown, fine sand, silt, some wood fragments	SM	
10				
12	10-14'	Medium brown, fine sand, silt, fine gravel	SW	
14				
16	14-16'	Medium brown, fine sand, silt	SM	
18	16-19'	Medium brown, fine to medium sand, silt	SM	
20	19-19.5'	Medium gray clay with silt, fine to medium sand, medium plasticity	CL	
22	19.5-24'	Medium gray, medium to fine sand, silt, fine sub-rounded to well-rounded gravel	SP	
24				
26	24-25.5'	Medium gray, medium to fine sand, silt, fine to medium sub- to well-rounded gravel	SP	
28	25.5-30'	Medium gray clay with silt, fine sand, some fine sub-rounded gravel	CL	
30				
32	30-36'	Medium/light gray, medium to fine sand, silt	SM	
34				
36				
38	36-38.5'	Medium gray/brown, fine sand, silt	SM	
	38.5-39'	Dark brown and black, medium to fine sand, wood fragments, fine sub-rounded gravel	SP	
40	39-41'	Medium brown/gray grading to medium gray, fine to medium sand, silt, a lot of wood	SM	

42	41-45.5'	Medium gray, medium to fine sand, silt	SM	
44				
46	45.5-46'	Medium gray, medium-, fine-, and coarse-grained sand, a lot of wood, fine gravel	SM	
	46-52'	Medium gray, fine to medium gravel, silt	GM	
48				
50				
52				
	52-56'	Light gray, clay with silt, stiff, low plasticity	CL	
54				
56				
58				
60				

Boring No.: GPT-05-11	Date Drilled: 2/10/99
Logged By: R. Fields/D. Carigan	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 16 Ft.
Ground Elevation 29.60' msl	

Depth (ft)	Interval	Sample Despcription	USCS Symbol	Graphic Log
	0-1'	Tan, fine sand, small to medium gravel, sub-angular to sub-rounded	SM	
2	1-5'	Medium brown/gray, fine sand, silt, some small rounded gravel, odor-possibly sulfur or methane	SM	
4				
6	5-6'	Tan/yellow, fine sand, silt, fine rounded gravel	SM	
	6-7'	Medium gray with a slight pink tint, fine sand, silt	SM	
8	7-9'	Dark brown, fine sand, a few fine gravel	SW	
10	9-10.5'	Dark brown, fine sand, fine rounded gravel	SW	
	10.5-16'	Dark brown fine sand	SW	
12				
14				
16				
18				
20				

Boring No.: GPT-05-12	Date Drilled: 2/10/99
Logged By: D. Carigan	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 46 Ft.
Ground Elevation 29.72' msl	

Depth (ft)	Interval	Sample Despcription	USCS Symbol	Graphic Log
	0-1.5'	Concreted sand, fine to medium gravel	SM	
2	1.5-2'	Dark brown, fine sand, silt	SM	
	2-3'	Dark brown, fine sand, fine to medium gravel	SW	
4	3-16'	Dark brown grading to medium brown, fine sand, silt	SM	
6				
8				
10				
12				
14				
16				
	16-22'	Medium brown grading to medium gray, medium to fine sand, some medium rounded to subrounded gravel, silt	SM	
18				
20				
22				
	22-22.5'	Medium gray, fine to medium sand, clay	SC	
24	22.5-26'	Medium gray clay, fine sand, silt	CL	
26				
	26-35'	Medium gray, fine to medium sand, silt	SP	
28				
30				
32				
34				
36	35-36'	Medium gray, fine sand, silt, clay particles	SC	
	36-46'	Medium gray clay, fine sand, silt	CL	
38				
40				
42				
44				
46				
48				
50				

Boring No.:	~~GPT-05-13~~ abandoned	Date Drilled: 2/7/99 - 2/9/99	
Logged By:	D. Carigan/R. Fields	Checked By:	
Contractor:	Alliance	Rig:	
Method:	Rotasonic	Completion Depth	256 Ft.
Ground Elevation:	approximately 31.06' msl (based on elevation of relocated GPT-05-13)		

Depth (ft)	Interval	Sample Despcription	USCS Symbol	Graphic Log
	0-1.5'	Concreted sand and fine to medium gravel	GC	
2	1.5-4.5'	Dark brown, fine silty sand with some medium grained sand	SM	
4				
6	4.5-6.5'	Wood, debris, pallet material		
8	6.5-18'	Dark brown, fine silty sand	SM	
10				
12				
14				
16				
18				
20	18-20'	Brown, fine to medium sand with silt, metal foreign object	SM	
22	20-23'	Gray, medium to fine sand with coarse sand and fine gravel	SM	
24	23-24'	Gray, silty clay with fine sand	CL	
26	24-36'	Light gray fine to medium sand	CL	
28				
30				
32				
34				
36				
38	36-38'	Gray silty clay, fine sand	SC	
40	38-40.5'	Gray fine sand with some silt	SM	
	40.5-42'	Pallet wood, debris		

42				
	42-42.5'	Gray fine sand with some silt	SM	
44	42.5-46'	Gray, medium to fine sand with some coarse sand and fine gravel	SP	
46				
	46-56'	Gray clay with some silt, with wood pieces at ~ 47-48'. Clay has high plasticity	CH	
48				
50				
52				
54				
56				
	56-61.5'	Medium gray clay, some silt, firm, low plasticity	CL	
58				
60				
62	61.5-76'	Medium green/gray clay, very stiff, dense, very low plasticity, silt	CL	
64				
66				
68				
70				
72				
74				
76				
	76-76.5'	Medium/light gray clay, high plasticity, silt	CH	
78	76.5-80.5'	Medium/light green/gray clay, very stiff, very dense, silt	CL	
80				
	80.5-86'	Medium green/gray fine sand and silt	SM	
82				
84				
86				
	86-87'	Medium gray silt, fine sand, some clay	SC	
88	87-88'	Medium gray silty clay	ML	
	88-96'	Medium gray with a slight green tint, dense clay, medium plasticity, silt	CL	
90				
92				
94				
96				

98	96-98.5'	Green/gray grading to medium gray silty clay, medium to high plasticity	CH	
	98.5-99'	Green/gray lumpy clay (the lumps are sand pockets), high plasticity, sand	CL	
100	99-100'	Dark gray silty clay, low plasticity	CL	
102	100-102.5'	Green/gray clay with silt, stiff, dense	CL	
104	102.5-106	Green/gray clay, very dense, very stiff, silty	CL	
106				
108	106-116'	Medium gray grading to green/gray, clay, very dense, very stiff, silt	CL	
110				
112				
114				
116				
118	116-122.5'	Green/gray clay, very stiff, low plasticity, silt	CL	
120				
122				
124	122.5-126'	Green/gray silt with clay particles, dense	CL	
126				
	126-127'	Green/gray silt, fine sand	SW	
128	127-134.5'	Green/gray grading to gray/green, very dense, very stiff silty clay	CL	
130				
132				
134				
136	134.5-136'	Same as above, only slightly more gray	CL	
138	136-138'	Green/gray silty clay, very stiff	CL	
	138-139'	Medium gray silty clay, very stiff	CL	
140	139-140.5'	Medium gray, silty clay, stiff	ML	
142	140.5-144'	Medium gray silt, dense	ML	
144				
146	144-146'	Medium/dark gray, very stiff, clayey silt	CL	
148	146-148'	Medium gray, stiff, dense, silty clay	CL	
150	148-156'	Green/gray, very stiff, very dense, low moisture, brittle clay	CL	

152				
154				
156				
158	156-164'	Medium gray clay, dense, very stiff, silt	CL	
160				
162				
164				
166	164-166'	Medium gray sitly clay, dense, very stiff, less moisture than above section	CL	
168	166-168.5'	Medium/light gray clay, some silt, dense, very stiff	CL	
170	168.5-176'	Medium gray silt with interbedding of shells and shell fragments that are softened and decayed somewhat. The fragments are off-white with a very slight pink tint.	ML	
172				
174				
176				
178	176-180'	Same as above with less shell fragments	ML	
180				
182	180-196'	Medium gray silty clay, very stiff	CL	
184				
186				
188				
190				
192				
194				
196				
198	196-206'	Medium green/gray silty clay, very stiff	CL	
200				
202				

Depth	Interval	Description	USCS	
204				
206				
208	206-213'	Medium gray silty clay, very stiff	CL	
210				
212				
214	213-216'	Green/gray silt	ML	
216				
218	216-233'	Medium gray silty clay, very stiff	CL	
220				
222				
224				
226				
228				
230				
232				
234	233-236'	Gray silt with some fine sand, very little clay	ML	
236				
238	236-240'	Medium gray silt, fine sand, clay particles	ML	
240				
242	240-242'	Medium gray silt, fine sand	SM	
244	242-251'	Medium gray silt, fine sand, clay	SM	
246				
248				
250				
252	251-256'	Green/gray grading to medium gray, silty clay	CL	
254				
256				
258				
260				

Boring No.: GPT-05-13	Date Drilled: 2/7/99
Logged By: D. Carigan	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 26 Ft.
Ground Elevation 31.06' msl	

Depth (ft)	Sample Despcription		USCS Symbol	Graphic Log
2	0-2'	Medium brown, fine sand, silt, some coarse sand and fine sub-rounded gravel	SP	
	2-2.75'	Yellowish-brown, fine sand, silt,clay particles	SM/SC	
4	2.75-5.5 '	Dark brown, fine sand, silt, some clay particles, fine pieces of orange-red packed clay and sand	SM/SC	
6	5.5-6'	Yellowish-brown, fine sand, silt	SM	
	6-7'	Medium brown with lavender/gray tint, fine sand, silt	SM	
8	7-16'	Dark brown, fine sand, silt	SM	
10				
12				
14				
16				
18	16-22.5'	Dark brown grading to medium brown, fine to medium sand, silt, with a small band from 19-19.25' containing fine to medium rounded, sub-rounded, and sub-angular gravel	SP	
20				
22				
	22.5-23.2'	Medium gray, fine-grained sand and silt grading to silty clay, low plasticity	SM/CL	
24	23.2-24'	Medium gray, medium grained sand, silt, fine rounded gravel, some clay particles	SM/SC	
	24-25'	Brown/gray, fine sand, silt, coarse sand, fine sub- to well-rounded gravel	SP	
26	25-26'	Medium gray, fine to coarse sand, silt, fine well-rounded and a few subangular gravel	SP	
28				
30				

Boring No.: GPT-05-14	Date Drilled: 2/7/99
Logged By: D. Carigan/ R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Dept 56 Ft.
Ground Elevation 30.98' msl	

Depth (ft)	Interval	Description	USCS Symbol	Graphic Log
2	0-2'	Tan, fine to medium sand	SM	
4	2-5'	Brown/gray, fine to medium sand with some silt	SM	
6	5-6.5'	Orange/brown/gray mottled, fine to medium sand	SM	
	6.5-7.5'	White fine sand, no silt	SW	
8	7.5-10'	Light gray, fine sand with silt	SM	
10				
12	10-16'	Dark brown fine silty sand with some fine gravel	SM	
14				
16				
18	16-20'	Medium brown grading to tan/medium brown, fine to medium sand, silt	SM	
20				
22	20-23'	Medium brown, medium to fine sand, silt, some fine sub-rounded gravel	SM	
24	23-24'	Medium gray clay, silt, fine sand, some fine sub-rounded gravel	SC	
26	24-26'	Medium gray, fine sand, silt, fine sub-rounded gravel	SM	
28	26-28'	Medium gray clay, medium plasticity, fine sand, silt, fine sub-rounded gravel	CL	
30	28-36'	Medium gray, fine to medium sand, silt	SM	
32				
34				
36				
38	36-41'	Medium gray silty clay (sample dropped)	CL	
40				

42	41-46'	Medium gray clay, high plasticity, fine sand, silt	CH	
44				
46				
	46-47.5'	Light gray, fine sand, silt, some clay	SM/SC	
48	47.5-56'	Medium gray, medium sand with some coarse sand, some fine rounded and sub-angular gravel	SP	
50				
52				
54				
56				
58				
60				

Boring No.: GPT-07-01	Date Drilled: 2/16/99
Logged By: R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth ~26 Ft.
Ground Elevation 25.04' msl	

Depth (ft)	Interval	Sample Despcription	USCS Symbol	Graphic Log
2	0-2'	Fill material, orange fine to medium sand with silt, some fine gravel	SP	
	2-3'	Concreted conglomerate, asphalt with mixed dark brown fine sand, silt	SM	
4	3-9'	Light brown, fine sand, some silt	SM	
6				
8				
10	9-13'	Light brown/tan, fine silty sand, some plant roots	SM	
12				
14	13-16'	Gray, fine to medium sand	SP	
16				
	16-17'	Tan/gray, fine to medium sand	SP	
18	17-26'	Gray, silty clay	CL	
20				
22				
24				
26				
28				
30				

Boring No.: GPT-08-05	Date Drilled: 2/2/99
Logged By: D. Carigan/R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 25 Ft.
Ground Elevation 31.99' msl	

Depth (ft)	Interval	Sample Despcription	USCS Symbol	Graphic Log
	0-1'	Fill material, brown/orange silty sand	SM	
2	1-3'	Medium brown, fine- to medium-grained sand, some silt	SM	
4	3-5'	Medium gray grading to orange/tan, fine- to medium-grained sand with some silt	SM	
6	5-6'	Very light tan, medium to fine sand with small amount of silt	SM	
	6-7'	Light tan, medium to fine sand with some silt	SP	
8	7-8'	Medium gray/tan, medium to fine sand with some silt	SP	
10	8-12'	Medium brown/dark dray, medium to fine sand with some silt	SP	
12				
14	12-14'	Dark brown, medium to fine sand with some silt	SP	
16	14-16'	Dark brown grading to medium brown/gray, medium to fine sand, some fine gravel	SP	
	16-17'	Light brown, fine to medium sand with some silt, hydrated	SW	
18	17-23'	Light gray/brown grading to medium gray, fine to medium sand, silt, some fine gravel	GW	
20				
22				
24	23-25'	Fell back into hole		
26				
28				
30				

Boring No.: GPT-08-06	Date Drilled: 2/2/99
Logged By: D. Carigan/R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 26 Ft.
Ground Elevation 31.81' bgs	

Depth (ft)	Sample Despcription		USCS Symbol	Graphic Log
2	0-3.5'	Fill material, orange, fine to medium silty sand with some clay	SM/SC	
4	3.5-6'	Gray, fine to medium silty sand with debris, wood, gravel	SM	
6				
8	6-8'	Tan/gray, fine to medium sand with some silt	SM	
10	8-16'	Dark brown, fine to medium sand with some silt	SP	
12				
14				
16				
18	16-21'	Medium/dark brown, fine to medium sand with some silt, fine gravel	SM	
20				
22	21-22'	Medium brown, fine to medium sand with some gravel	SM	
	22-23'	Medium gray, fine to medium clayey sand with silt	CL	
24	23-24'	Medium/dark gray, fine to medium sand, some gravel, 4-inch band of clay	SP	
26	24-26'	Medium gray soft clay with some fine sand and silt	CL	
28				
30				

Boring No.: GPT-08-07	Date Drilled: 2/2/99
Logged By: D. Carigan/R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 26 Ft.
Ground Elevation 31.86' msl	

Depth (ft)	Sample Despcription	USCS Symbol	Graphic Log
	0-1.5' Fill material, brown, fine to medium silty sand, fine gravel	SP	
2	1.5-2.5' Fill material, orange, medium to fine sand, coarse and fine gravel	SM	
4	2.5-4' Medium gray, fine to medium silty sand	SM	
6	4-6' Very light gray, fine to medium sand	SP	
	6-7' Light tan, fine to medium sand with some silt	SM	
8	7-9' Medium/light tan, fine to medium sand with some silt	SP	
10	9-17.5' Dark brown, fine to medium sand with some silt, fine gravel	SM	
12			
14			
16			
18	17.5-20' Medium to dark brown, fine to medium grained silty sand	SM	
20			
22	20-23' Light brown grading to medium brown then to tan, fine to medium sand with some silt	SM	
24	23-25' Light gray, fine to medium sand, gravel, with a 4-inch band of clay	SM/SC	
26	25-26' Medium gray clay	CH	
28			
30			

Boring No.: GPT-08-08	Date Drilled: 2/2/99
Logged By: D. Carigan/R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 26 Ft.
Ground Elevation 31.72' msl	

Depth (ft)	Sample Despcription		USCS Symbol	Graphic Log
2	0-2'	Fill material, mixed browns, oranges, and grays. Fine to medium sand with silt	SM	
	2-3'	Dark brown, fine to medium sand	SM	
4	3-3.5'	Black, organic-rich, fine sand, silt, some clay	SM/PT	
6	3.5-6'	Dark gray, silty clay with fine sand	SC	
8	6-10'	Brown grading to light gray, fine to medium sand	SM	
10				
12	10-14.5'	Medium gray grading to gray/tan then back to medium gray, fine to medium sand	SM	
14				
16	14'5-16'	Same as above with some fine to medium gravel	SM	
18	16-22'	Light gray, medium to fine sand with some fine gravel	SM	
20				
22	22-24'	Medium/dark gray, fine to medium sand, silt	SM	
24				
26	24-26'	Same as above with small amounts of clay	SM/SC	
28				
30				

Boring No.: GPT-08-09	Date Drilled: 2/4/99
Logged By: D. Carigan	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 15 Ft.
Ground Elevation 28.00' msl	

Depth (ft)		Sample Despcription	USCS Symbol	Graphic Log
	0-0.25'	Fill material, medium brown, fine gravel	SM	
2	0.25-4'	Medium brown with pockets of orange, fine sand with silt	SM	
4				
6	4-8'	Medium to light gray, medium to fine sand with silt	SM	
8				
10	8-15'	Medium to light gray, medium to fine sand, silt	SM	
12				
14				
16				
18				
20				

Boring No.: GPT-08-10	Date Drilled: 2/4/99
Logged By: D. Carigan	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 46 Ft.
Ground Elevation 28.22' msl	

Depth (ft)	Interval	Sample Despcription	USCS Symbol	Graphic Log
	0-0.5'	Fill material, brown medium to fine sand, silt, fine to medium gravel	SP	
2	0.5-2.5'	Dark brown, fine to medium sand, silt, some clay particles	SM	
4	2.5-6'	Gray/tan grading to light gray, fine to medium sand, silt. Slight odor at 5' - possible sulfur or methane	SM	
6				
8	6-10.5'	Medium brown, fine to medium sand, silt, fine to medium gravel	SM	
10				
12	10.5-16'	Light gray, medium to fine sand, silt, fine gravel	SP	
14				
16				
18	16-21.5'	Medium gray, fine to medium sand with some silt, some fine gravel, and occasional medium gravel	SM	
20				
22	21.5-26'	Medium gray, fine to medium sand, silt	SM	
24				
26				
28	26-29'	Dark gray, silt with fine sand, some clay particles	SM/SC	
30	29-29.5'	Dark gray, silty clay, medium plasticity	CL	
32	29.5-36'	Dark gray clay with silt, high plasticity	CH	
34				
36				
	36-37'	Dark gray silty clay with medium plasticity, wood fragments	CL	
38	37-38'	Dark gray, medium to fine sand with silt and some clay, wood fragments	SM/SC	
40	38-40'	Dark gray clay, stiff, low plasticity, silt and fine sand, wood fragments	CL	
42	40-42'	Dark gray, dense, stiff clay with silt, fine sand, wood fragments	CL	
44	42-46'	Medium gray, very stiff sandy clay	CL	
46				
48				
50				

Boring No.:	GPT-08-11	Date Drilled:	2/2/99 - 2/4/99
Logged By:	D. Carigan/R. Fields	Checked By:	
Contractor:	Alliance	Rig:	Sonic
Method:	Rotasonic	Completion Depth	186 Ft.
Ground Elevation:	28.42' msl		

Depth (ft)	Sample Despcription		USCS Symbol	Graphic Log
	0-1'	Fill material, dark gray/brown, fine to medium silty sand	SM	
2	1-3'	Gray, fine to medium sand, some clay	SM	
4	3-6'	Medium gray grading to light gray, fine to medium sand, pieces of wood, debris, fine gravel, odor - possibly sulfur or methane	SP	
6				
8	6-16'	Medium gray, fine to medium sand, fine to medium gravel	SM	
10				
12				
14				
16				
18	16-19'	Light gray, fine to medium sand with small to medium sub- to well-rounded gravel	SM	
20	19-26'	Dark gray, silty clay, grading into sandy clay, shell particles from 19-23'	CL	
22				
24				
26				
28	26-28'	Dark gray, fine to medium silty sand with small shell fragments	CL	
30	28-32'	Dark gray silty clay, some small shell fragments, grading into higher density and elasticity. Around 31' grades back into silty clay with some wood fragments	CL	
32				
34	32-36'	Dark gray, fine to medium silty sand with some clay particles	SM/SC	
36				
38	36-38'	Dark gray, soft, silty clay	CL	
	38-44'	Dark gray clay, very stiff, some wood fragments	CL	

40				
42				
44				
46	44-49'	Medium gray, silty clay, very stiff	CL	
48				
50	49-53'	Brown/gray marbled with orange, clay, very stiff	CL	
52				
54	53-56'	Brown/gray clay, very stiff	CL	
56				
58	56-66'	Light gray grading into green/gray clay, very stiff, very small amount of silt	CL	
60				
62				
64				
66				
68	66-76'	Green/gray clay, very stiff, trace amount of silt	CL	
70				
72				
74				
76				
78	76-86'	Green/gray clay, very stiff, trace amount of silt	CL	
80				
82				
84				
86				
88	86-96'	Same as above except at 94-95' there were some rock fragments	CL	

90				
92				
94				
96				
98	96-106'	Green/gray clay, very stiff, trace amount of silt	CL	
100				
102				
104				
106				
108	106-116'	Medium gray grading to green/gray silt and some clay, very stiff, low moisture brittle, very dense	CL	
110				
112				
114				
116				
118	116-126'	Medium gray, dense silt with some clay particles, higher moisture than above section	CL	
120				
122				
124				
126				
	126-127.5'	Medium/light gray, silty clay, low to moderate moisture content, medium plasticity	CL	
128	127.5-129.5'	Medium gray clay, silt	CL	
130	129.5-136'	Medium gray with some gray/brown, grading to medium gray, fine to medium sand, some silt	SM	
132				
134				
136				
138	136-141.5'	Dark gray, fine to medium sand with small particles of green sandy clay. At 137.5-138.5' there are wood fragments	SM	
140				

142	141.5-143'	Dark gray sand, fine to medium with some silt	SM	
144	143-144.5'	Dark gray, dense, silty sand with green clay	SC	
146	144.5-146'	Dark gray silty clay, low plasticity, dense, stiff	CL	
148	146-152'	Medium gray, very stiff clay, low moisture	CL	
150				
152				
154	152-154'	Medium/light gray, stiff clay, low moisture but slightly higher than that above	CL	
156	154-164'	Medium gray, very stiff clay, low moisture	CL	
158				
160				
162				
164				
	164-164.5'	Medium gray silty sand	SM	
166	164.5-166'	Medium gray, very stiff clay, low moisture	CL	
168	166-186'	Medium/dark gray, fine sand with some silt	SM	
170				
172				
174				
176				
178				
180				
182				
184				
186				
188				
190				

Boring No.: GPT-08-12	Date Drilled: 2/6/99
Logged By: D. Carigan	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 15 Ft.
Ground Elevation 31.14' msl	

Depth (ft)		Sample Despcription	USCS Symbol	Graphic Log
	0-1'	Fill material, medium brown, medium to fine sand, silt, fine gravel	SM	
2	1-4.5'	Medium brown with some orange, fine to medium sand, silt	SM	
4				
6	4.5-9'	Light brown grading to medium/light brown, medium to fine sand, silt	SM	
8				
10	9-15'	Dark brown, fine to medium sand, silt, fine to medium sub-rounded gravel	SM	
12				
14				
16				
18				
20				

Boring No.: GPT-08-13	Date Drilled: 2/5/99
Logged By: R. Fields	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Dept 37 Ft.
Ground Elevation 30.96' msl	

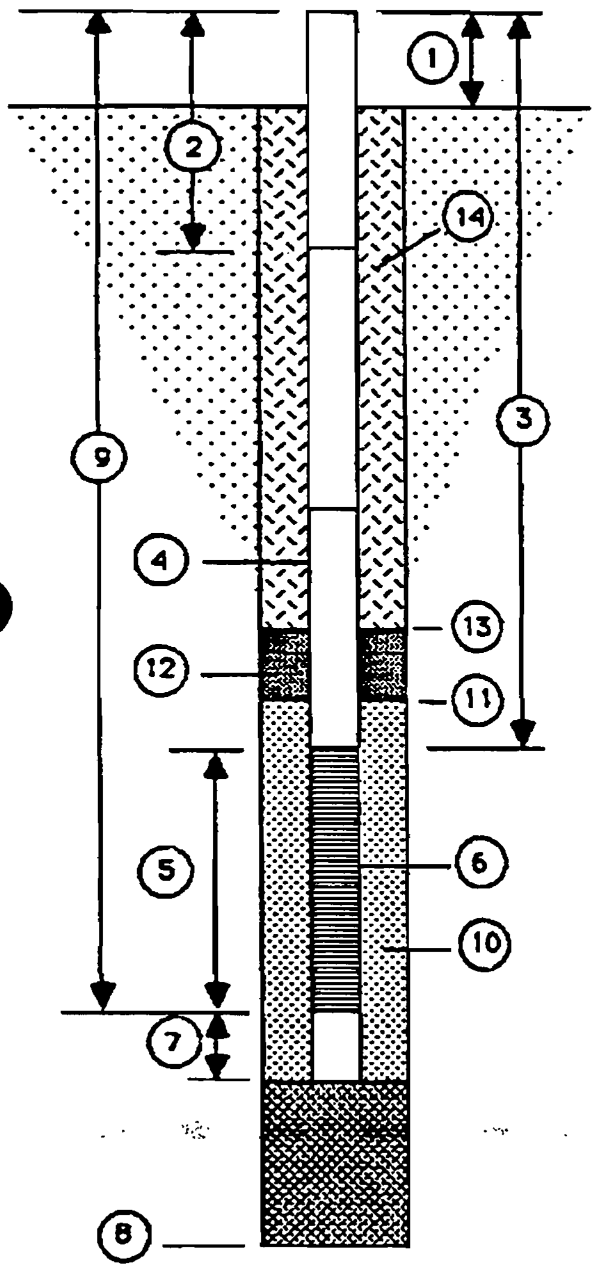
Depth (ft)	Sample Despcription	USCS Symbol	Graphic Log
	0-1' Fill material with fine gravel, brown fine to medium silty sand	GW	
2	1-2' Brown/orange, fine to medium silty sand	SM	
4	2-7' Brown, fine to medium sand	SP	
6			
8	7-13' Tan/buff, fine to medium sand	SP	
10			
12			
14	13-17' Brown, fine to medium sand	SP	
16			
18	17-22' Brown, fine to medium grained sand	SP	
20			
22			
24	22-24' Light brown, fine to medium grained sand	SP	
26	24-29' Light gray, fine, silty sand	SM	
28			
30	29-35' Gray, fine silty sand	SM	
32			
34			
36	35-37' Gray, silty clay	CL	
38			
40			

Boring No.: GPT-08-14	Date Drilled: 2/2/99
Logged By: R. Fisher/D. Carigan	Checked By:
Contractor: Alliance	Rig: Sonic
Method: Rotasonic	Completion Depth 26 Ft.
Ground Elevation 31.76' msl	

Depth (ft)	Sample Despcription		USCS Symbol	Graphic Log
	0-1.5'	Tan, fine sand, some silt, 1/2' of organic	SM	
2	1.5-5.5'	Gray, fine sand, trace silt. Coarser and lighter with depth.	SM	
4				
6	5.5-7'	Dark gray, silty sand	SM	
8	7-10'	Gray, silty sand, high organic content, coarse gravel at 7-8'	SM	
10				
12	10-15'	Gray/brown, silty sand, with organic righ zones and trace gravel at 12-13' and 14-14.5'	SM	
14				
16	15-17'	Brown, medium to fine sand with some silt	SM	
18	17-23'	Tan, silty sand	SM	
20				
22				
24	23-26'	Gray clay with some fine sand	CH	
26				
28				
30				

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-01-04

Date of Installation 2/17/99

1. Height of casing above ground flush
2. Depth to first coupling ~5'

   Coupling interval depths 5', 15'
3. Total length of blank pipe 15'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump ~4'
8. Total depth of boring 26' Hole diameter 6.25" OD
9. Depth to bottom of screen ~25'
10. Type of screen filter filter pack

    Quantity Used 4 x 100 lbs Size 6-14/6-20
11. Depth to top of filter 12.5'
12. Type of seal bentonite

    Quantity used 3 x 50 lbs
13. Depth to top of seal ~1'
14. Type of grout bentonite

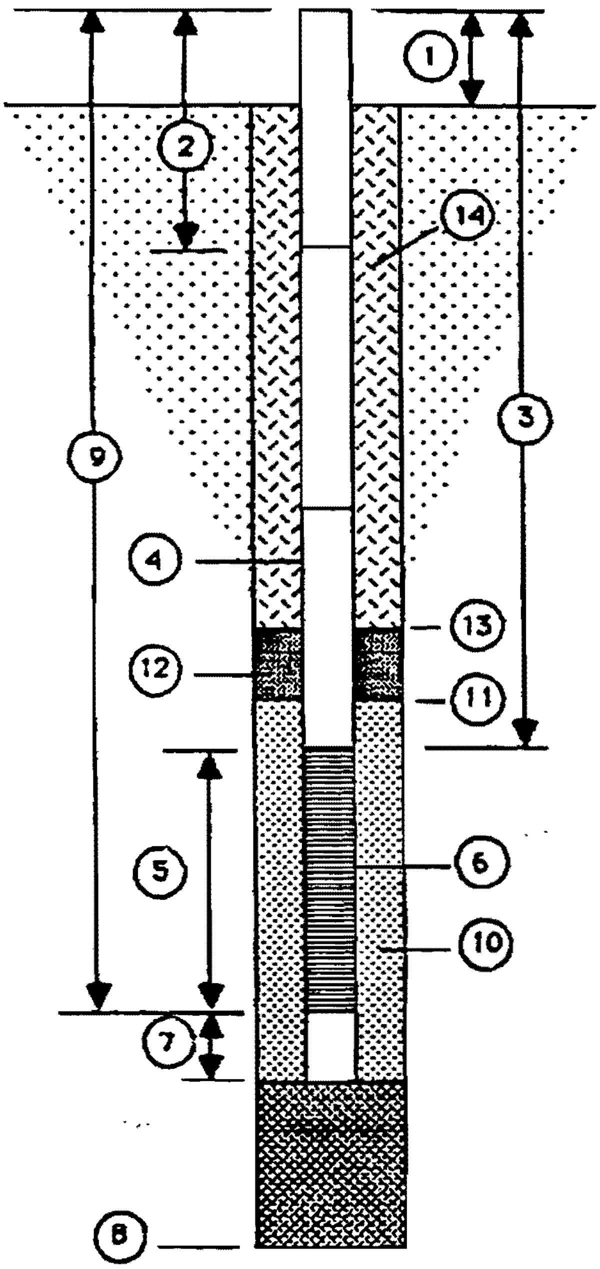
    Grout mixture

    Method of placement

COMMENTS ON INSTALLATION: Used approximately 40 gallons of water

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-01-05

Date of Installation 2/17/99

1. Height of casing above ground flush
2. Depth to first coupling ~4'

   Coupling interval depths 4', 14'
3. Total length of blank pipe ~14'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump ~4"
8. Total depth of boring ~24' Hole diameter 6.25" OD
9. Depth to bottom of screen ~24
10. Type of screen filter filter pack

    Quantity Used 4 x 50 lbs Size 6-14/6-20
11. Depth to top of filter 13'
12. Type of seal bentonite

    Quantity used 5 x 50 lbs
13. Depth to top of seal ~1'
14. Type of grout bentonite

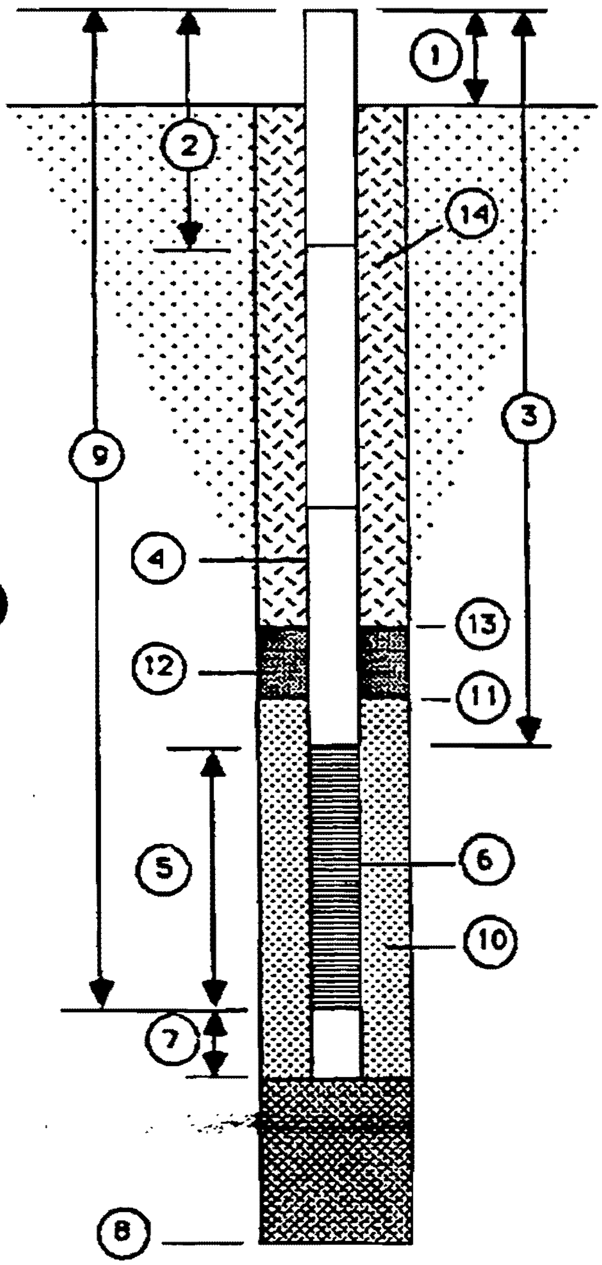
    Grout mixture

    Method of placement

COMMENTS ON INSTALLATION: Approximately 40 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-02-04

Date of Installation 2/17/99

1. Height of casing above ground flush
2. Depth to first coupling ~2'

   Coupling interval depths 2', 12'
3. Total length of blank pipe 12'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump ~4"
8. Total depth of boring ~26' Hole diameter 6.25" OD
9. Depth to bottom of screen ~22'
10. Type of screen filter filter pack

    Quantity Used 5 x 50 lbs Size 16-30
11. Depth to top of filter 10'
12. Type of seal bentonite

    Quantity used 2 x 50 lbs
13. Depth to top of seal 1'
14. Type of grout ______

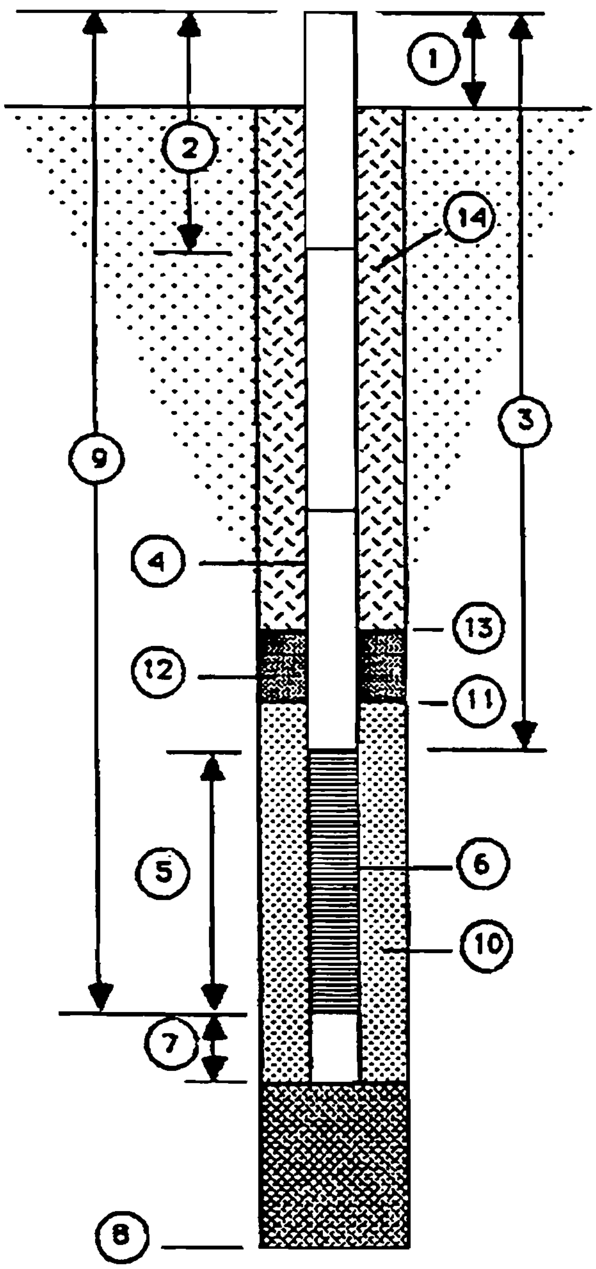
    Grout mixture ______

    Method of placement ______

COMMENTS ON INSTALLATION: Approximately 45 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-03-06

Date of Installation 2/16/99

1. Height of casing above ground flush
2. Depth to first coupling ~5'

   Coupling interval depths 5', 15'
3. Total length of blank pipe 15'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump ~4"
8. Total depth of boring 26' Hole diameter 6.25" OD
9. Depth to bottom of screen ~25'
10. Type of screen filter filter pack

    Quantity Used 4 x 50 lbs Size 6-20
11. Depth to top of filter ~14'
12. Type of seal bentonite

    Quantity used 3 x 50 lbs
13. Depth to top of seal
14. Type of grout bentonite

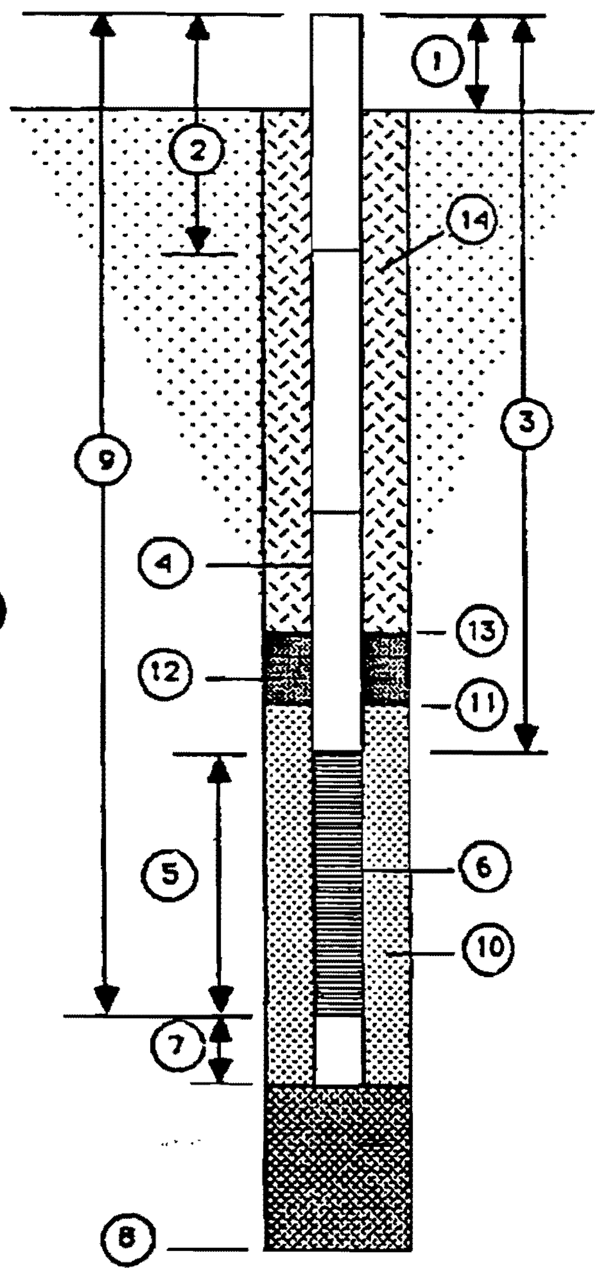
    Grout mixture

    Method of placement

COMMENTS ON INSTALLATION: Approximately 35 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-03-07

Date of Installation 2/16/99

1. Height of casing above ground flush
2. Depth to first coupling ~1'

   Coupling interval depths ~1', 6'
3. Total length of blank pipe 6'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump ~4"
8. Total depth of boring 26' Hole diameter 6.25" OD
9. Depth to bottom of screen ~16'
10. Type of screen filter filter pack

    Quantity Used 4 x 50 lbs Size 6-20
11. Depth to top of filter ~3'
12. Type of seal bentonite

    Quantity used 3.5 x 50 lbs
13. Depth to top of seal 0.5'
14. Type of grout bentonite

    Grout mixture

    Method of placement

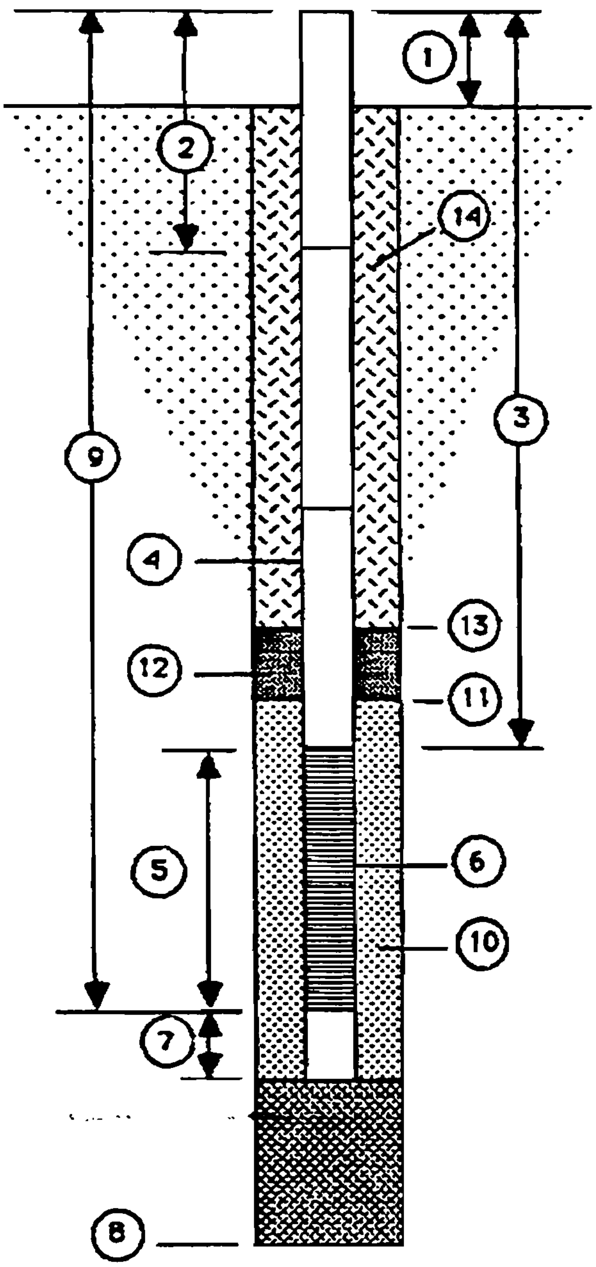
COMMENTS ON INSTALLATION: Approximately 40 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS

Well Number GPT-04-09

Date of Installation 2/18/99

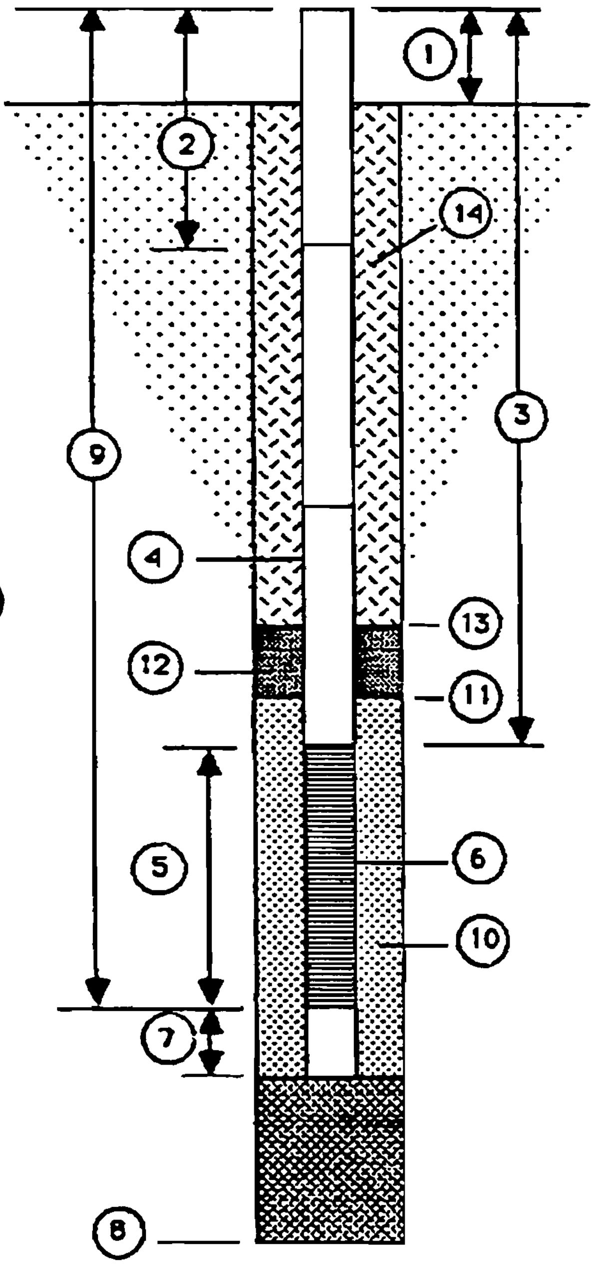


1. Height of casing above ground flush
2. Depth to first coupling ~5'
   Coupling interval depths ~5', 15'
3. Total length of blank pipe 15'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump ~9"
8. Total depth of boring ~26' Hole diameter 6.25" OD
9. Depth to bottom of screen ~25'
10. Type of screen filter filter pack
    Quantity Used 4 x 50 lbs Size 16-30
11. Depth to top of filter 14'
12. Type of seal bentonite
    Quantity used 1 x 5 gallon bucket
13. Depth to top of seal 0.5'
14. Type of grout
    Grout mixture
    Method of placement

COMMENTS ON INSTALLATION: Approximately 35 gallons of water used during installation

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-04-10

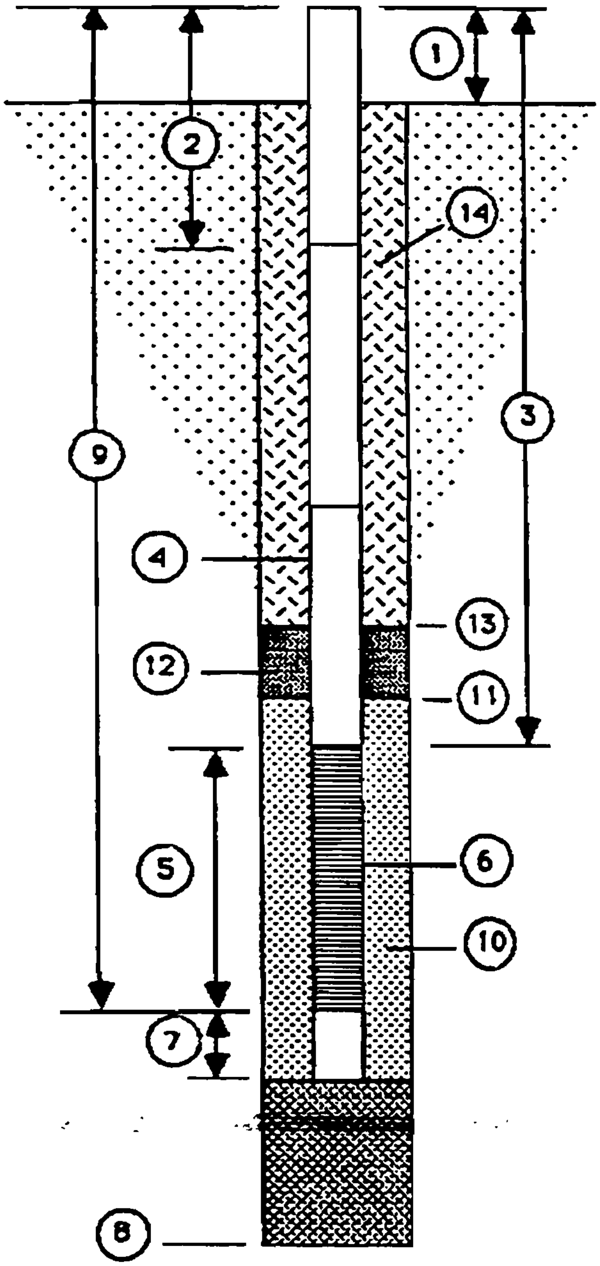
Date of Installation 2/18/99

1. Height of casing above ground flush
2. Depth to first coupling 5'
   Coupling interval depths 5'
3. Total length of blank pipe 5'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump ~4"
8. Total depth of boring ~16' Hole diameter 6.25" OD
9. Depth to bottom of screen 15'
10. Type of screen filter filter pack
    Quantity Used 4 x 50 lbs Size 16-30
11. Depth to top of filter ~4'
12. Type of seal bentonite
    Quantity used 2 x 50 lbs
13. Depth to top of seal ~0.5'
14. Type of grout
    Grout mixture
    Method of placement

COMMENTS ON INSTALLATION:

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-04-11

Date of Installation 2/18/99

1. Height of casing above ground flush
2. Depth to first coupling ~5'

   Coupling interval depths 5', 15', 25', 35'
3. Total length of blank pipe ~35'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump ~4"
8. Total depth of boring ~50' Hole diameter 6.25" OD
9. Depth to bottom of screen ~45'
10. Type of screen filter filter pack

    Quantity Used 5 x 50 lbs Size 16-30
11. Depth to top of filter ~33.5'
12. Type of seal bentonite

    Quantity used 6 x 50 lbs
13. Depth to top of seal ~1.5'
14. Type of grout

    Grout mixture

    Method of placement

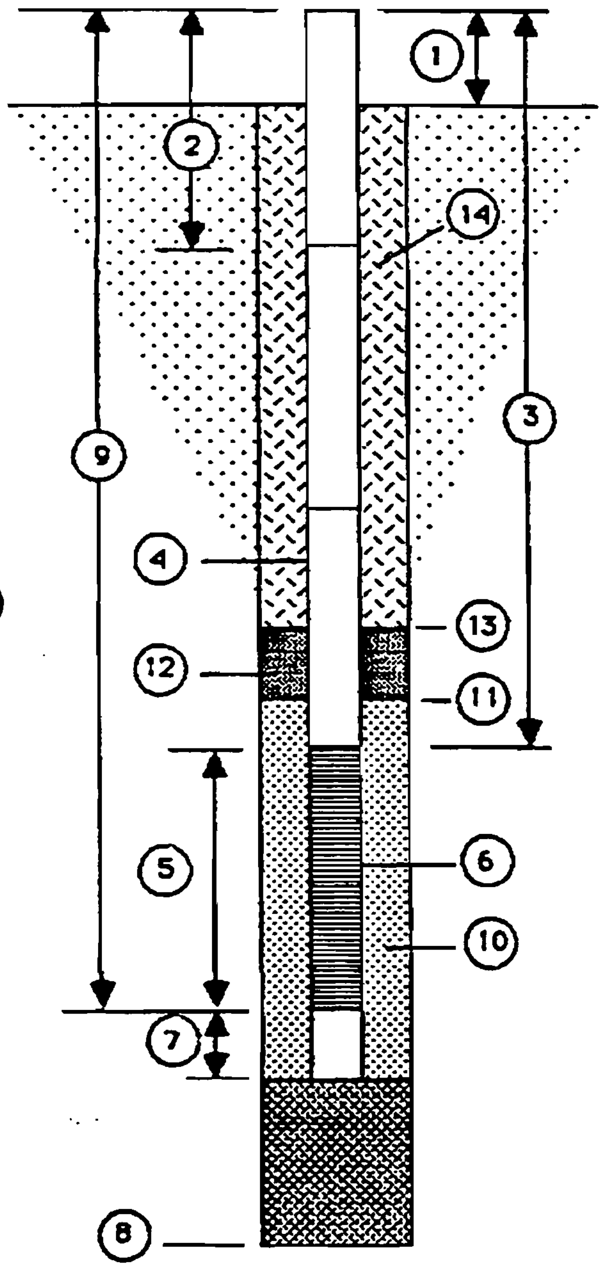
COMMENTS ON INSTALLATION: Used approximately 50 gallons to install well

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS

Well Number GPT-04-12

Date of Installation 2/18/99



1. Height of casing above ground flush
2. Depth to first coupling 8'

   Coupling interval depths 8'
3. Total length of blank pipe 8'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump
8. Total depth of boring 26' Hole diameter 6.25" OD
9. Depth to bottom of screen ~18'
10. Type of screen filter filter pack

    Quantity Used 4 x 50 lbs Size 16-30
11. Depth to top of filter ~6
12. Type of seal bentonite

    Quantity used 2 x 5 gallon bucket
13. Depth to top of seal ~0.5'
14. Type of grout

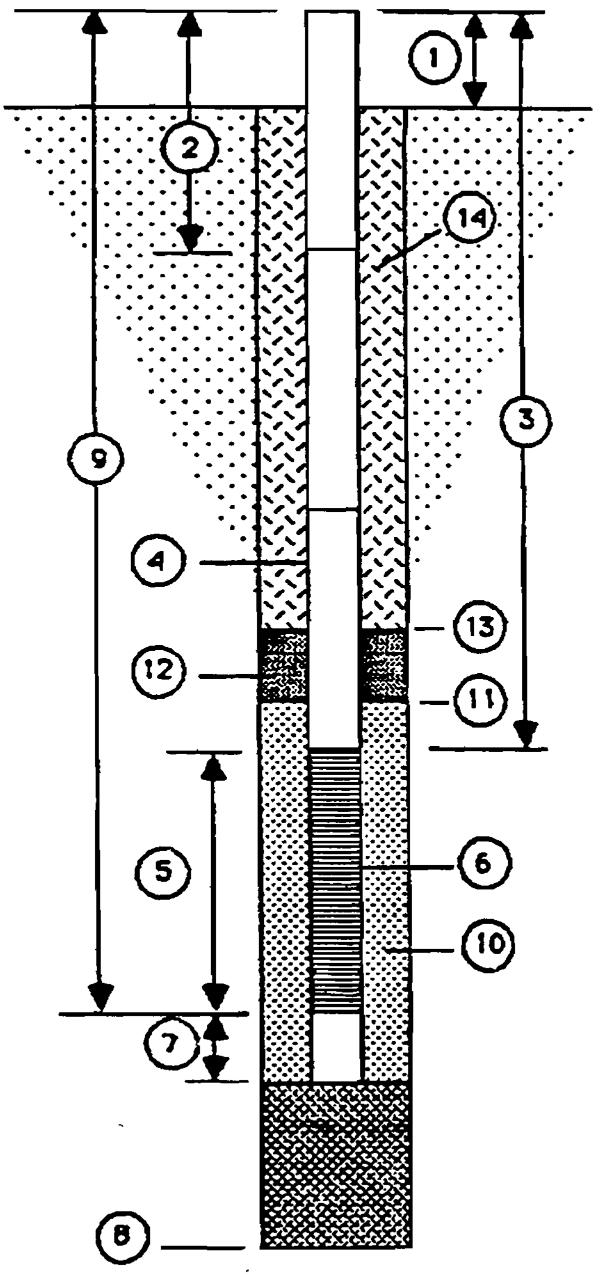
    Grout mixture

    Method of placement

COMMENTS ON INSTALLATION: Used approximately 30 gallons of water

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-04-13

Date of Installation 2/18/99

1. Height of casing above ground flush
2. Depth to first coupling ~5'

   Coupling interval depths ~5'
3. Total length of blank pipe 5'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump ~9"
8. Total depth of boring ~16' Hole diameter 6.25" OD
9. Depth to bottom of screen ~15'
10. Type of screen filter filter pack

    Quantity Used 4 x 50 lbs Size 16-30
11. Depth to top of filter ~4'
12. Type of seal bentonite

    Quantity used 1 x 50 lbs
13. Depth to top of seal
14. Type of grout

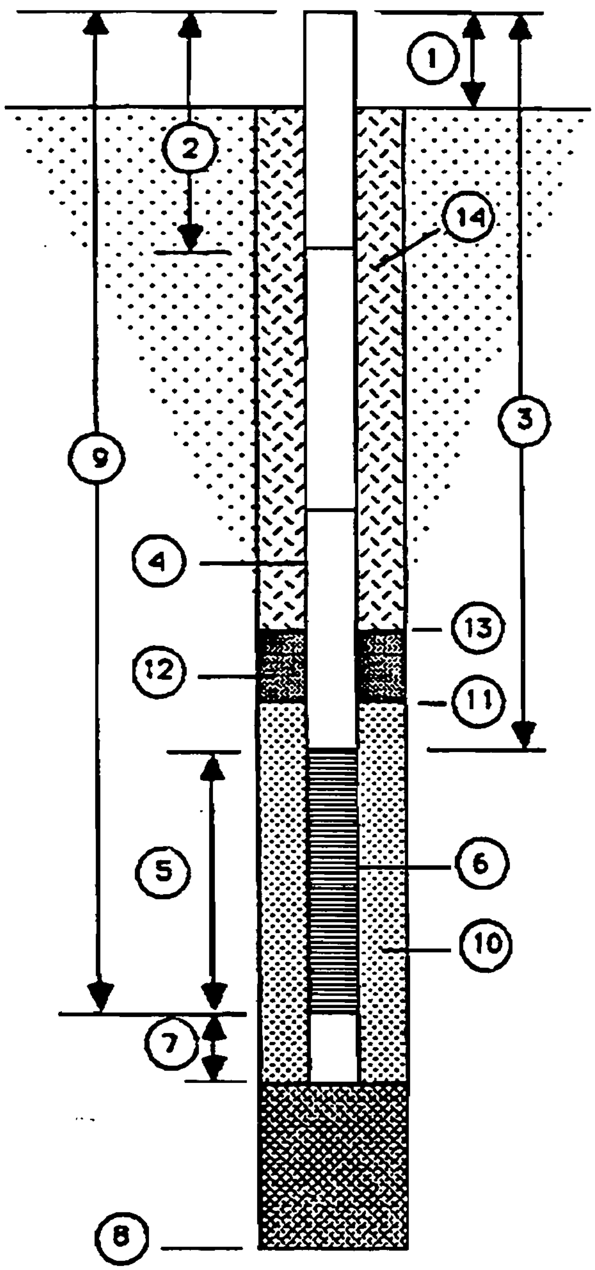
    Grout mixture

    Method of placement

COMMENTS ON INSTALLATION: Approximately 30 gallons of water used for well installation

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-04-14

Date of Installation 2/18/99

1. Height of casing above ground flush
2. Depth to first coupling ~5'

   Coupling interval depths ~5', 15', 25'
3. Total length of blank pipe 25'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump ~9"
8. Total depth of boring 52' Hole diameter 6.25" OD
9. Depth to bottom of screen ~35
10. Type of screen filter filter pack

    Quantity Used 4 x 50 lbs Size 16-30
11. Depth to top of filter ~22'
12. Type of seal bentonite

    Quantity used 3 x 50 lbs
13. Depth to top of seal 0.5'
14. Type of grout ______

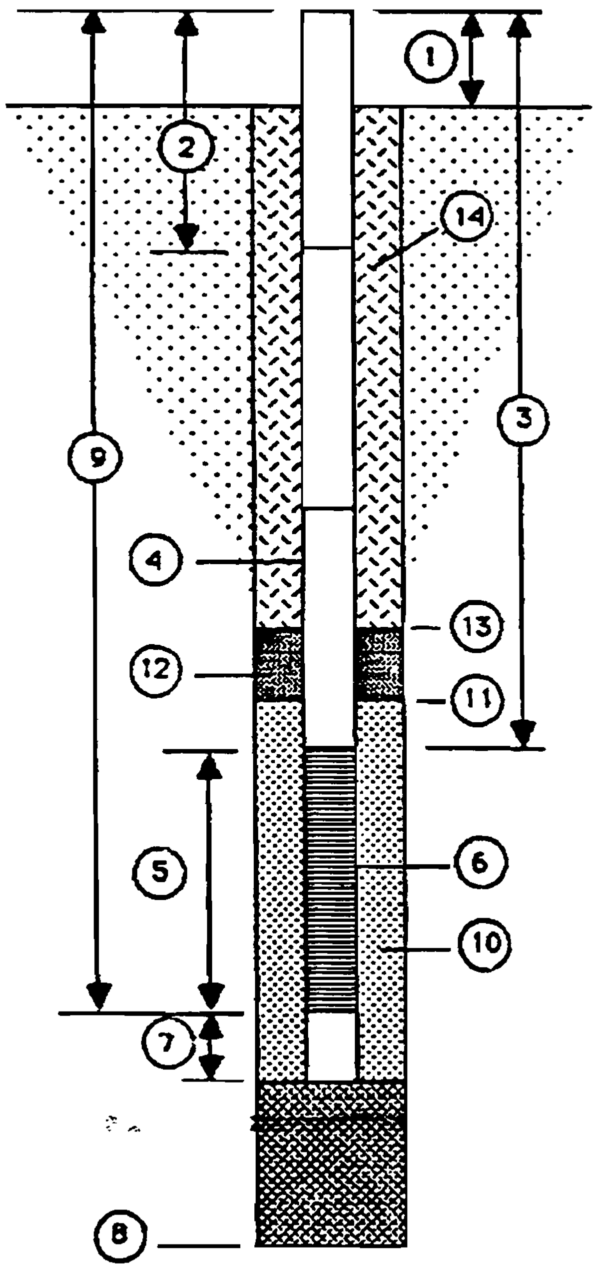
    Grout mixture ______

    Method of placement ______

COMMENTS ON INSTALLATION: Used approximately 45 gallons of water during installation

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-04-15

Date of Installation 2/18/99

1. Height of casing above ground flush
2. Depth to first coupling ~5'

   Coupling interval depths ~5'
3. Total length of blank pipe ~5'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump ~4"
8. Total depth of boring ~26' Hole diameter 6.25" OD
9. Depth to bottom of screen ~15'
10. Type of screen filter filter pack

    Quantity Used 5 x 50 lbs Size 16-30
11. Depth to top of filter ~4'
12. Type of seal bentonite

    Quantity used 2 x 50 lbs
13. Depth to top of seal ~1.0'
14. Type of grout

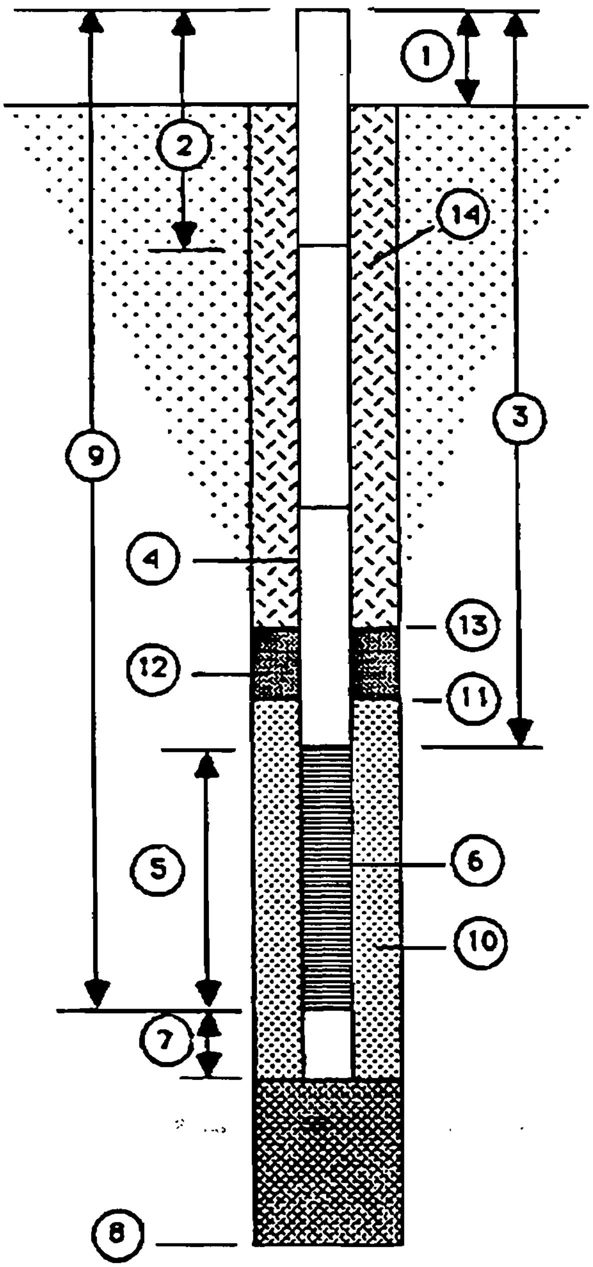
    Grout mixture

    Method of placement

COMMENTS ON INSTALLATION: Approximately 35 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-05-07

Date of Installation 2/6/99

1. Height of casing above ground ______
2. Depth to first coupling 5'

   Coupling interval depths 5', 10'
3. Total length of blank pipe 15'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump ~9"
8. Total depth of boring 26' Hole diameter 6.25" OD
9. Depth to bottom of screen 25'
10. Type of screen filter sand

    Quantity Used 4 x 50 lbs Size 6-14
11. Depth to top of filter 18.5'
12. Type of seal bentonite

    Quantity used 4 x 50 lbs
13. Depth to top of seal 0.5'
14. Type of grout NA

    Grout mixture ______

    Method of placement ______

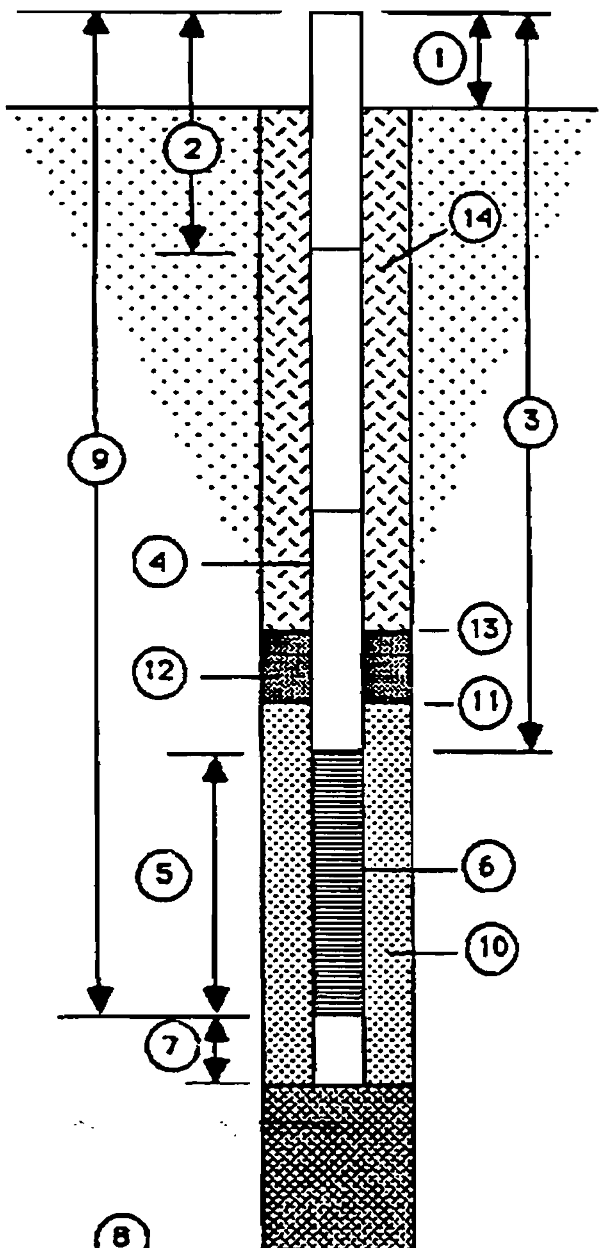
COMMENTS ON INSTALLATION: Approximately 30 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS

Well Number GPT-05-08

Date of Installation 02/06/99 - 02/07/99



1. Height of casing above ground flush
2. Depth to first coupling 5'

   Coupling interval depths 5', 15'
3. Total length of blank pipe 15'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 25' Hole diameter 6.25" OD
9. Depth to bottom of screen 25'
10. Type of screen filter sand

    Quantity Used 4 x 50 lbs Size 6-14
11. Depth to top of filter 14'
12. Type of seal bentonite

    Quantity used 4 x 50 lbs
13. Depth to top of seal 0.5'
14. Type of grout NA

    Grout mixture

    Method of placement

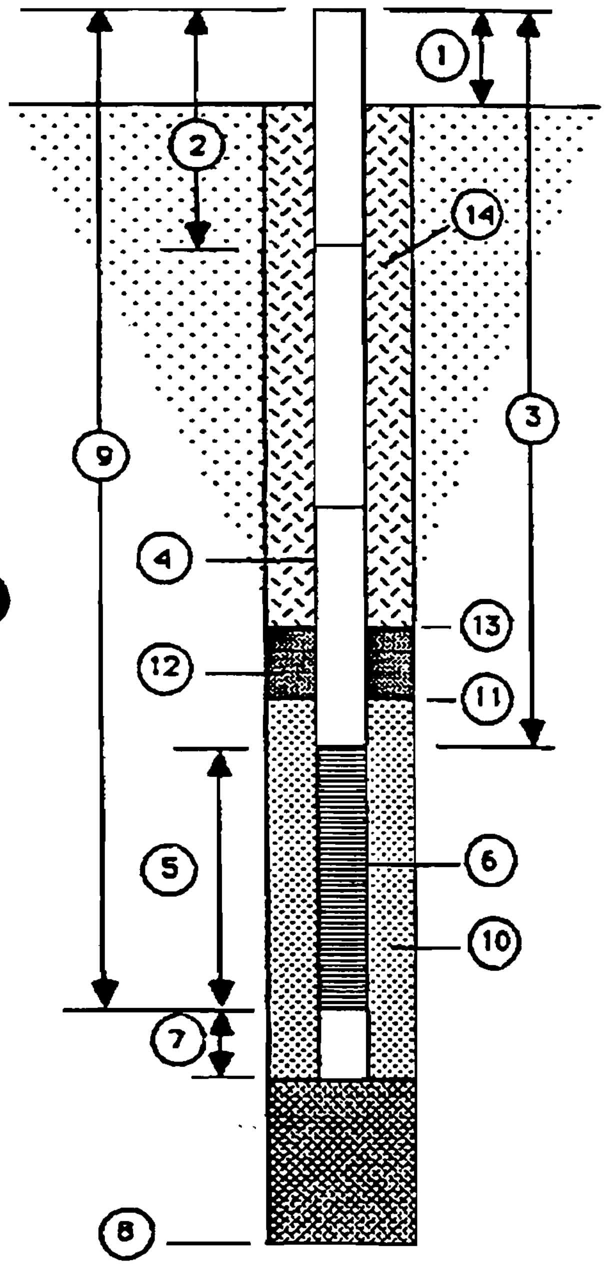
COMMENTS ON INSTALLATION: Approximately 40 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS

Well Number GPT-05-09

Date of Installation 2/6/99



1. Height of casing above ground flush
2. Depth to first coupling 5'

   Coupling interval depths 5', 10'
3. Total length of blank pipe 15'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump ~9"
8. Total depth of boring 26' Hole diameter 6.25" OD
9. Depth to bottom of screen 25'
10. Type of screen filter sand

    Quantity Used 4 x 50 lbs Size 6-14
11. Depth to top of filter 13.5'
12. Type of seal bentonite

    Quantity used 3 x 50 lbs
13. Depth to top of seal 0.5'
14. Type of grout NA

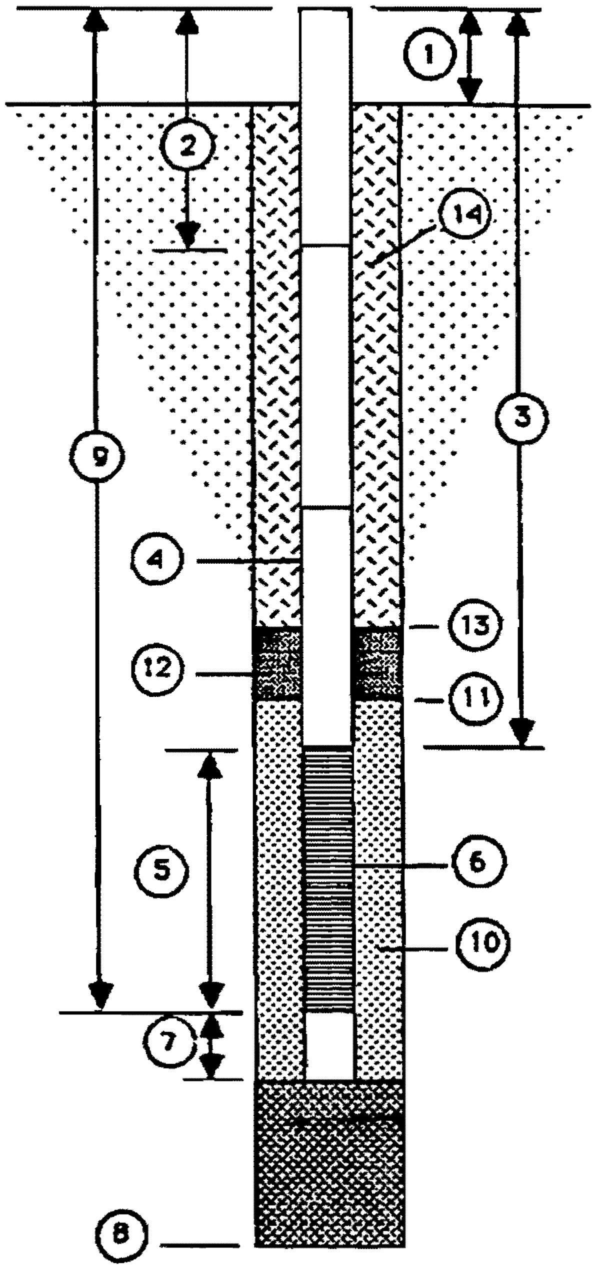
    Grout mixture

    Method of placement

COMMENTS ON INSTALLATION: Approximately 30 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-05-10

Date of Installation 2/6/99

1. Height of casing above ground flush
2. Depth to first coupling ~10'

   Coupling interval depths 10', 20', 30', 40', 50'
3. Total length of blank pipe 40'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 56' Hole diameter 6.25" OD
9. Depth to bottom of screen 50'
10. Type of screen filter sand

    Quantity Used 4 x 50 lbs Size 6-14/6-20
11. Depth to top of filter 38'
12. Type of seal bentonite

    Quantity used 8 x 50 lbs
13. Depth to top of seal 0.5'
14. Type of grout NA

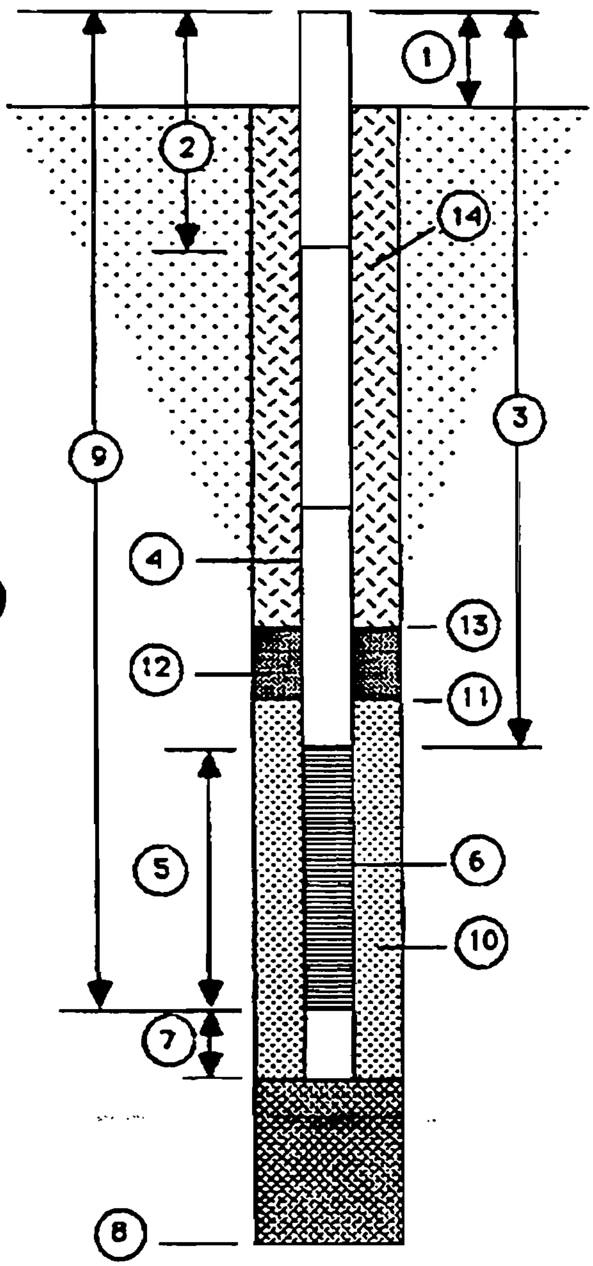
    Grout mixture

    Method of placement

COMMENTS ON INSTALLATION: Approximately 30 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-05-11

Date of Installation 2/10/99

1. Height of casing above ground flush
2. Depth to first coupling 5'

   Coupling interval depths 5'
3. Total length of blank pipe 5'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 15' Hole diameter 6.25" OD
9. Depth to bottom of screen 15'
10. Type of screen filter sand

    Quantity Used 4 x 50 lbs Size 6-14
11. Depth to top of filter ______
12. Type of seal bentonite

    Quantity used 1 x 50 lbs
13. Depth to top of seal ______
14. Type of grout NA

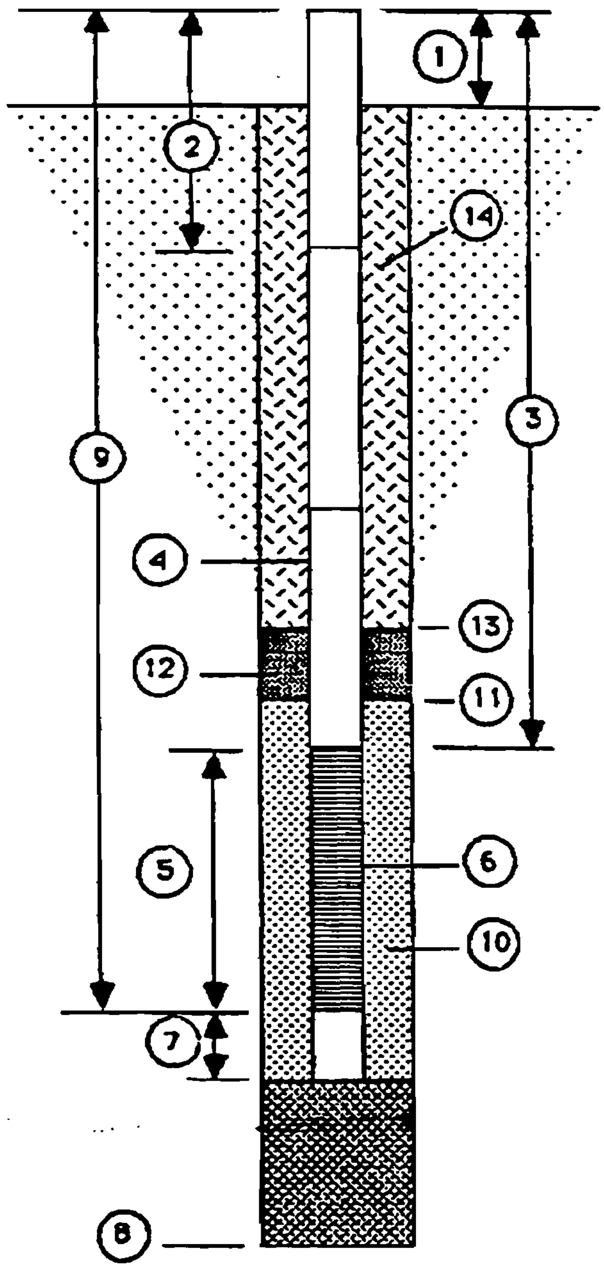
    Grout mixture ______

    Method of placement ______

COMMENTS ON INSTALLATION: Approximately 30 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-05-12

Date of Installation 2/10/99

1. Height of casing above ground flush
2. Depth to first coupling 5'

   Coupling interval depths 5', 15', 25'
3. Total length of blank pipe 25'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 46' Hole diameter 6.25" OD
9. Depth to bottom of screen 35'
10. Type of screen filter sand

    Quantity Used 6 x 50 lbs Size 6-20
11. Depth to top of filter 23'
12. Type of seal bentonite

    Quantity used 7 x 50 lbs
13. Depth to top of seal 0.5'
14. Type of grout NA

    Grout mixture

    Method of placement

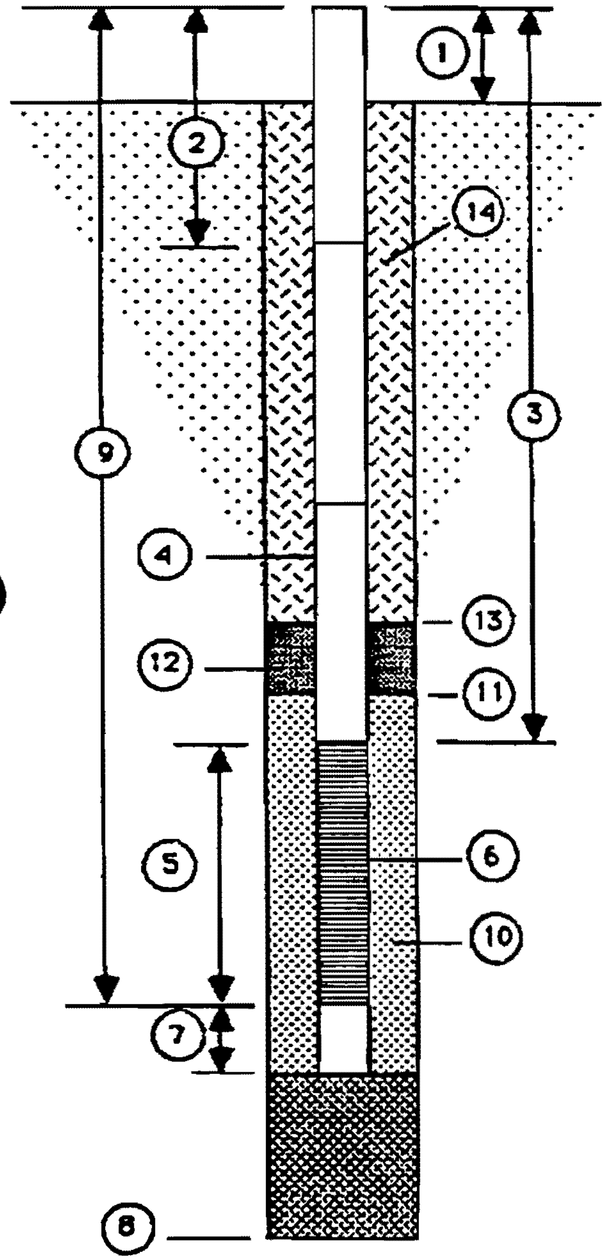
COMMENTS ON INSTALLATION: Approximately 40 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS

Well Number GPT-05-13

Date of Installation 2/7/99



1. Height of casing above ground flush
2. Depth to first coupling 5'

   Coupling interval depths 5', 15'
3. Total length of blank pipe 15'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 26' Hole diameter 6.25" OD
9. Depth to bottom of screen 25'
10. Type of screen filter sand

    Quantity Used 4 x 50 lbs Size 6-14
11. Depth to top of filter 13.5'
12. Type of seal bentonite

    Quantity used 4 x 50 lbs
13. Depth to top of seal 0.5'
14. Type of grout NA

    Grout mixture

    Method of placement

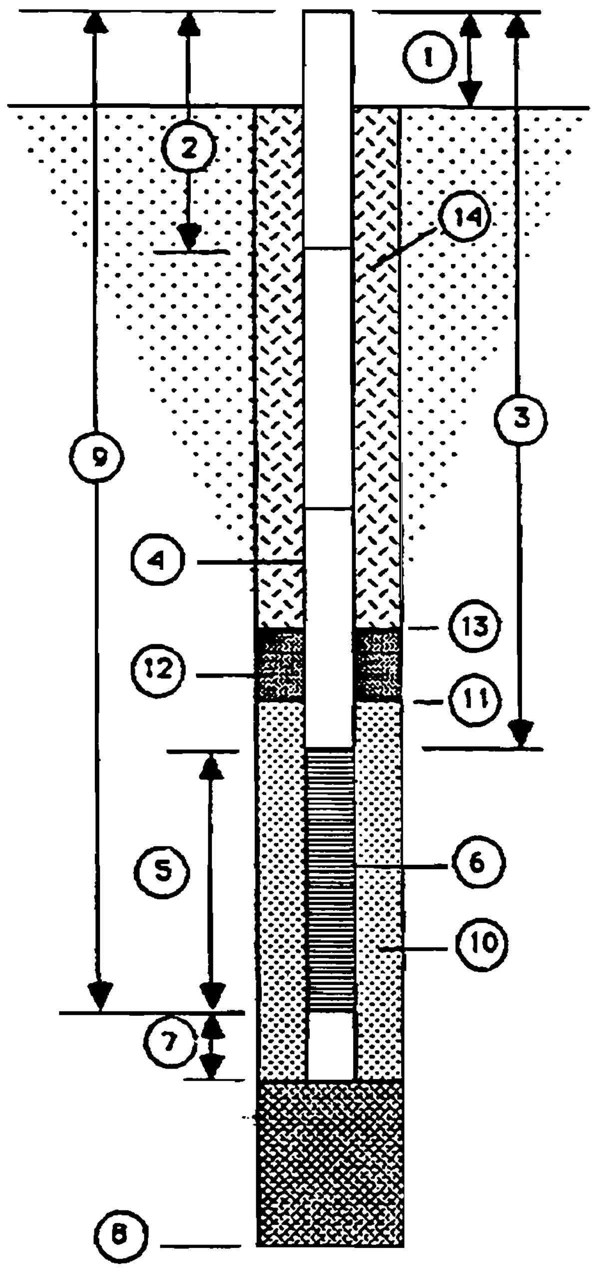
COMMENTS ON INSTALLATION: Approximately 30 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS

Well Number GPT-05-14

Date of Installation 2/7/99



1. Height of casing above ground flush
2. Depth to first coupling 5'

   Coupling interval depths 5', 15', 25', 35', 45'
3. Total length of blank pipe 45'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 55' Hole diameter 6.25" OD
9. Depth to bottom of screen 55'
10. Type of screen filter sand

    Quantity Used 4 x 50 lbs Size 6-14
11. Depth to top of filter 44'
12. Type of seal bentonite

    Quantity used 8 x 50 lbs
13. Depth to top of seal 1'
14. Type of grout NA

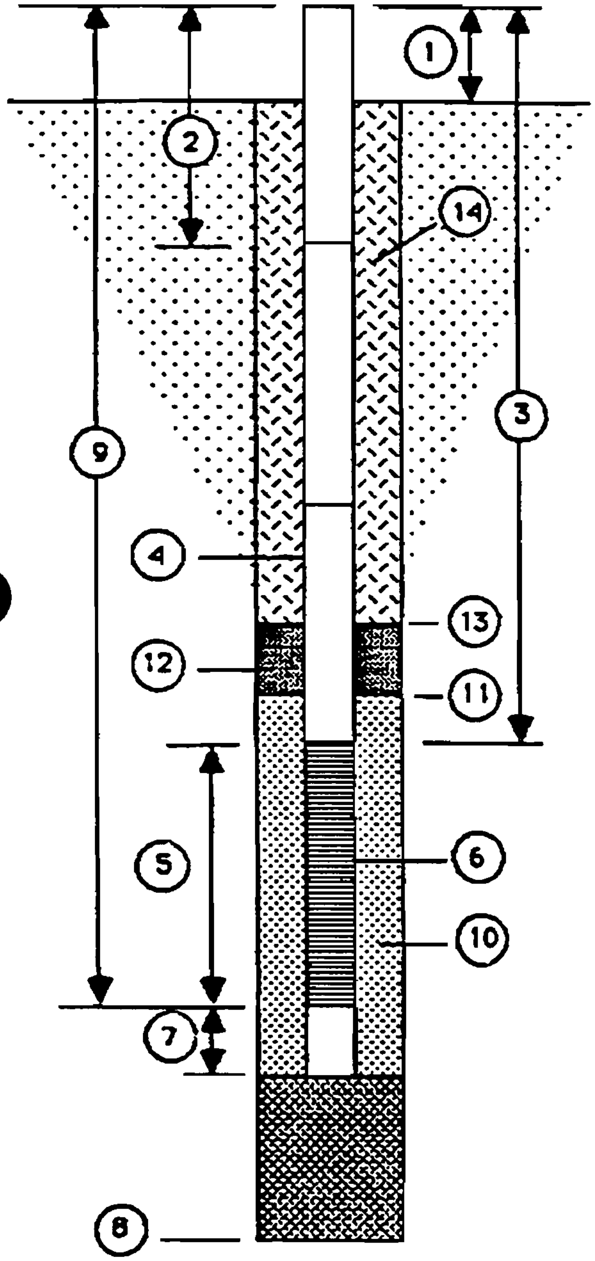
    Grout mixture

    Method of placement

COMMENTS ON INSTALLATION: Approximately 60 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-07-01

Date of Installation 2/16/99

1. Height of casing above ground flush
2. Depth to first coupling 0.5'

   Coupling interval depths 0.5', 5.5'
3. Total length of blank pipe ~6'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump ~4'
8. Total depth of boring ~26' Hole diameter 6.25" OD
9. Depth to bottom of screen ~15.5'
10. Type of screen filter filter pack

    Quantity Used 4 x 50 lbs Size 6-14
11. Depth to top of filter ~3.75"
12. Type of seal bentonite

    Quantity used 3 x 50 lbs
13. Depth to top of seal 0.5'
14. Type of grout bentonite

    Grout mixture

    Method of placement

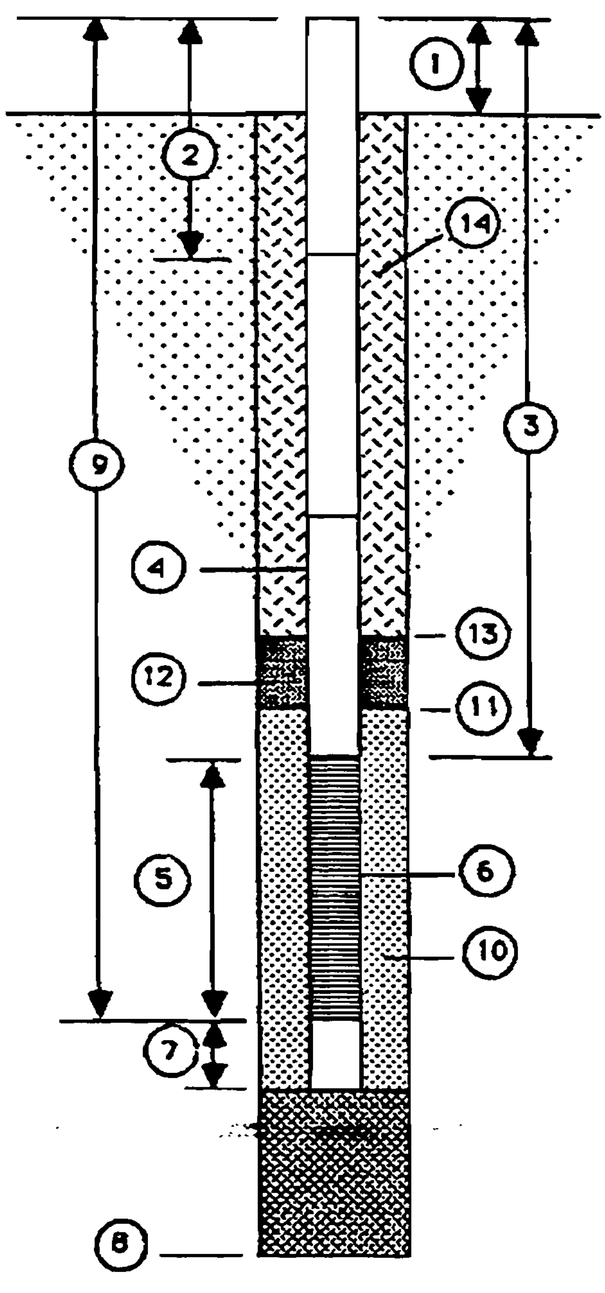
COMMENTS ON INSTALLATION: Approximately 40 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS

Well Number GPT-08-05

Date of Installation 2/2/99



1. Height of casing above ground flush
2. Depth to first coupling 5'
   Coupling interval depths 15'
3. Total length of blank pipe 15'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 25' Hole diameter 6.25" OD
9. Depth to bottom of screen 25'
10. Type of screen filter sand
    Quantity Used 4 x 50 lbs Size 6-20
11. Depth to top of filter 13'
12. Type of seal bentonite
    Quantity used 1 x 50 lbs + 1 x 5 gallon bucket
13. Depth to top of seal 1'
14. Type of grout Portland
    Grout mixture
    Method of placement

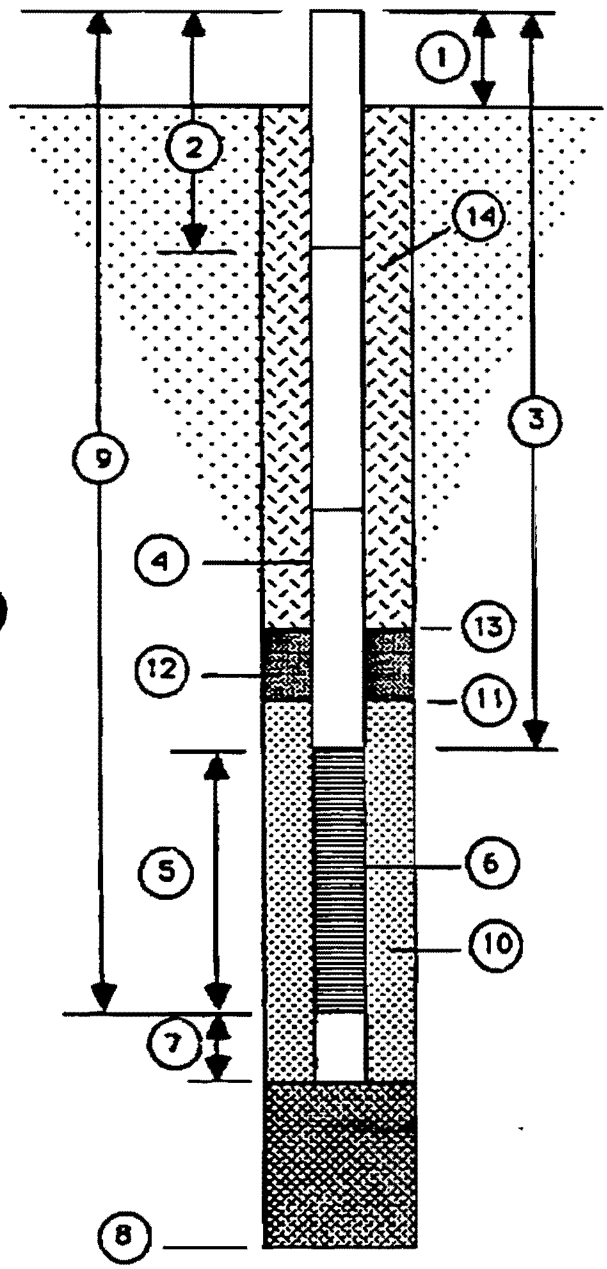
COMMENTS ON INSTALLATION: Used approximately 40 gallons of water

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS

Well Number GPT-08-06

Date of Installation 2/2/99



1. Height of casing above ground flush
2. Depth to first coupling 5'

   Coupling interval depths 15'
3. Total length of blank pipe 15'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 25.5' Hole diameter 6.25" OD
9. Depth to bottom of screen 25.5'
10. Type of screen filter sand

    Quantity Used 4 x 50 lbs Size 6-20
11. Depth to top of filter 13.5'
12. Type of seal bentonite

    Quantity used 4 x 50 lbs
13. Depth to top of seal 2'
14. Type of grout Portland

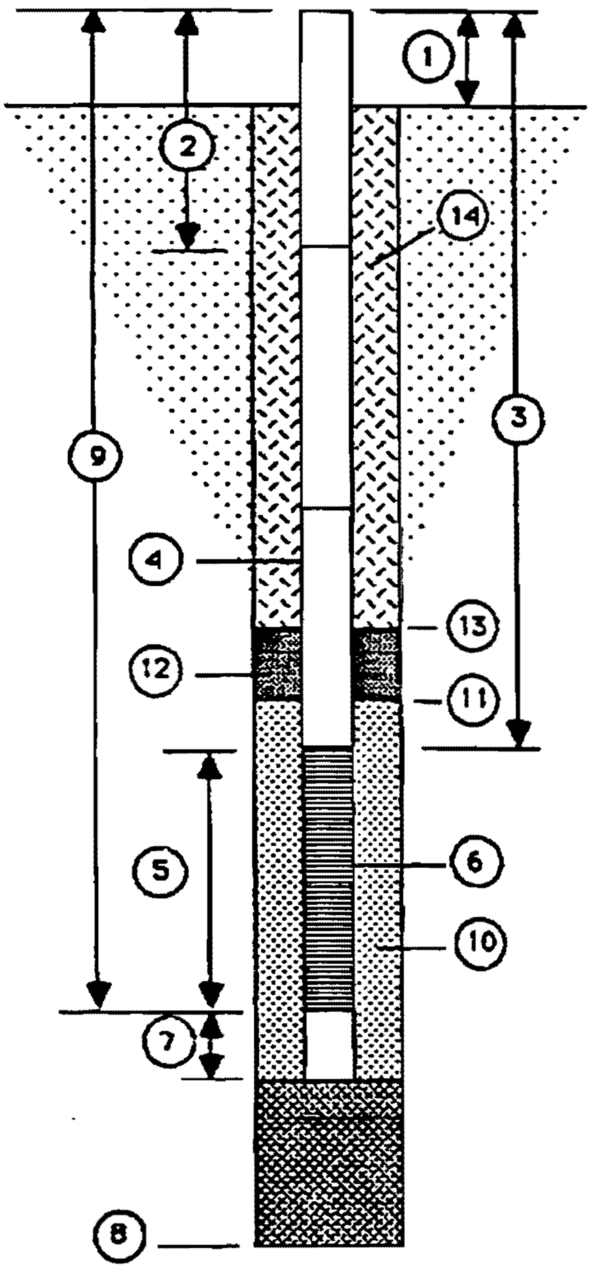
    Grout mixture

    Method of placement

COMMENTS ON INSTALLATION: Approximately 50 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-08-07

Date of Installation 2/2/99

1. Height of casing above ground flush
2. Depth to first coupling 5'

   Coupling interval depths 15'
3. Total length of blank pipe 15'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 25.5' Hole diameter 6.25" OD
9. Depth to bottom of screen 25.5'
10. Type of screen filter sand

    Quantity Used 4 x 50 lbs Size 6-20
11. Depth to top of filter 13'
12. Type of seal bentonite

    Quantity used 4 x 50 lbs
13. Depth to top of seal 3'
14. Type of grout NA

    Grout mixture

    Method of placement

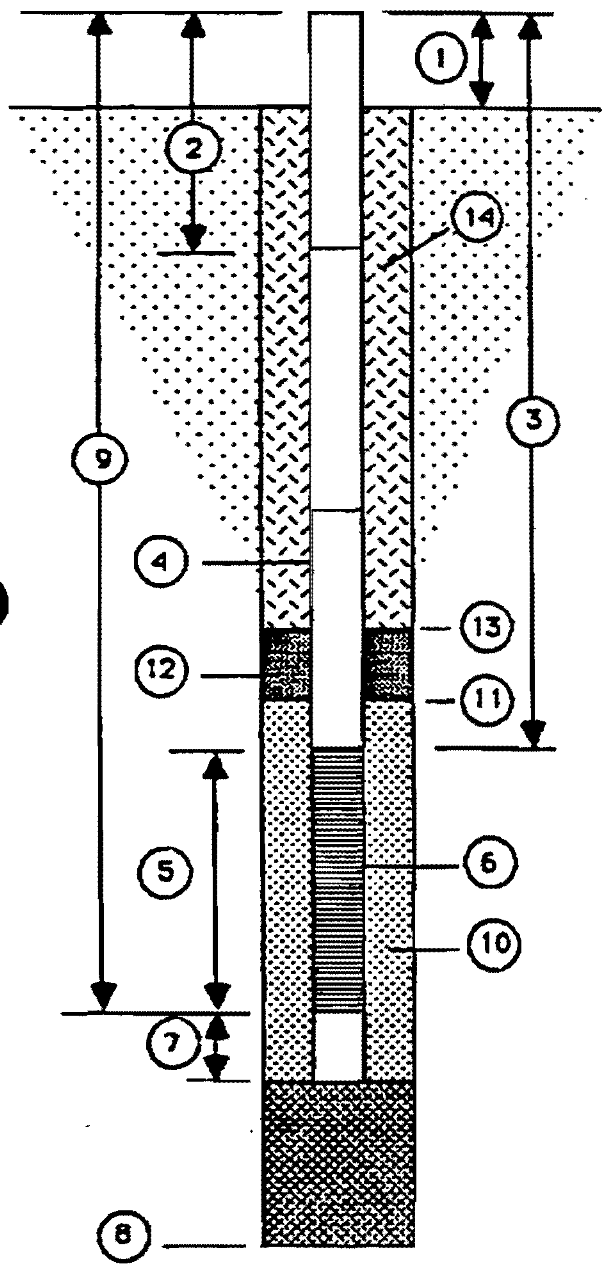
COMMENTS ON INSTALLATION: Approximately 40 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS

Well Number GPT-08-08

Date of Installation 2/2/99



1. Height of casing above ground flush
2. Depth to first coupling 5'

   Coupling interval depths 15'
3. Total length of blank pipe 15'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 26' Hole diameter 6.25" OD
9. Depth to bottom of screen 26'
10. Type of screen filter sand

    Quantity Used 4 x 50 lbs Size 6-20
11. Depth to top of filter 13'
12. Type of seal bentonite

    Quantity used 1 x 50 lbs + 1.5 x 5 gallon bucket
13. Depth to top of seal 4'
14. Type of grout NA

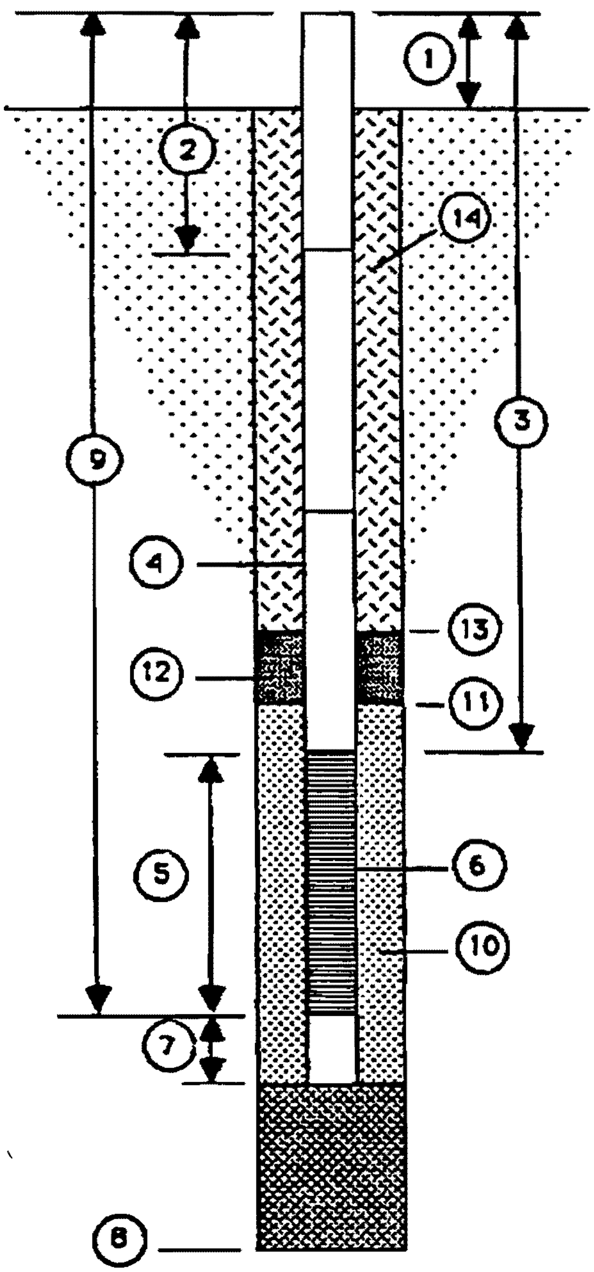
    Grout mixture

    Method of placement

COMMENTS ON INSTALLATION: Approximately 40 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-08-09

Date of Installation 2/4/99

1. Height of casing above ground flush
2. Depth to first coupling ~5'

   Coupling interval depths 5'
3. Total length of blank pipe 5'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 15' Hole diameter 6.25" OD
9. Depth to bottom of screen 15'
10. Type of screen filter sand

    Quantity Used 4.5 x 50 lbs Size 6-20
11. Depth to top of filter 9'
12. Type of seal bentonite

    Quantity used 1 x 50 lbs
13. Depth to top of seal 1'
14. Type of grout NA

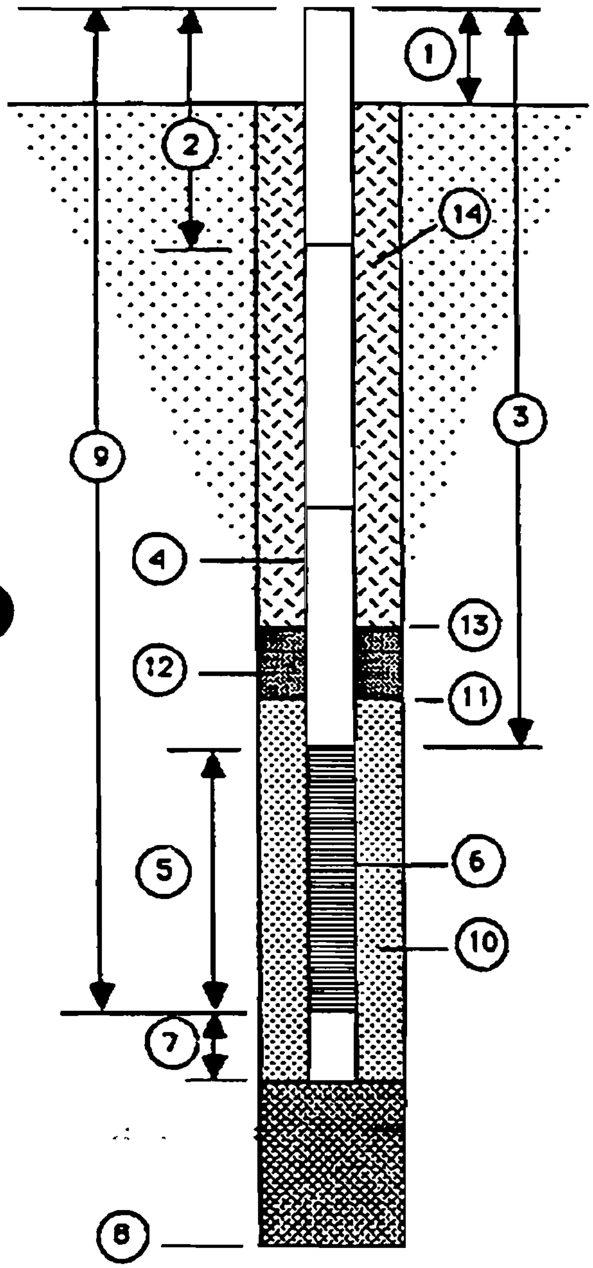
    Grout mixture

    Method of placement

COMMENTS ON INSTALLATION: Approximately 30 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-08-10

Date of Installation 2/4/99

1. Height of casing above ground flush
2. Depth to first coupling 1'

   Coupling interval depths 1', 11', 21'
3. Total length of blank pipe ~21'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 31' Hole diameter 6.25" OD
9. Depth to bottom of screen 31'
10. Type of screen filter sand

    Quantity Used 4 x 50 lbs Size 6-20
11. Depth to top of filter 19'
12. Type of seal bentonite

    Quantity used 4 x 50 lbs
13. Depth to top of seal 1'
14. Type of grout NA

    Grout mixture

    Method of placement

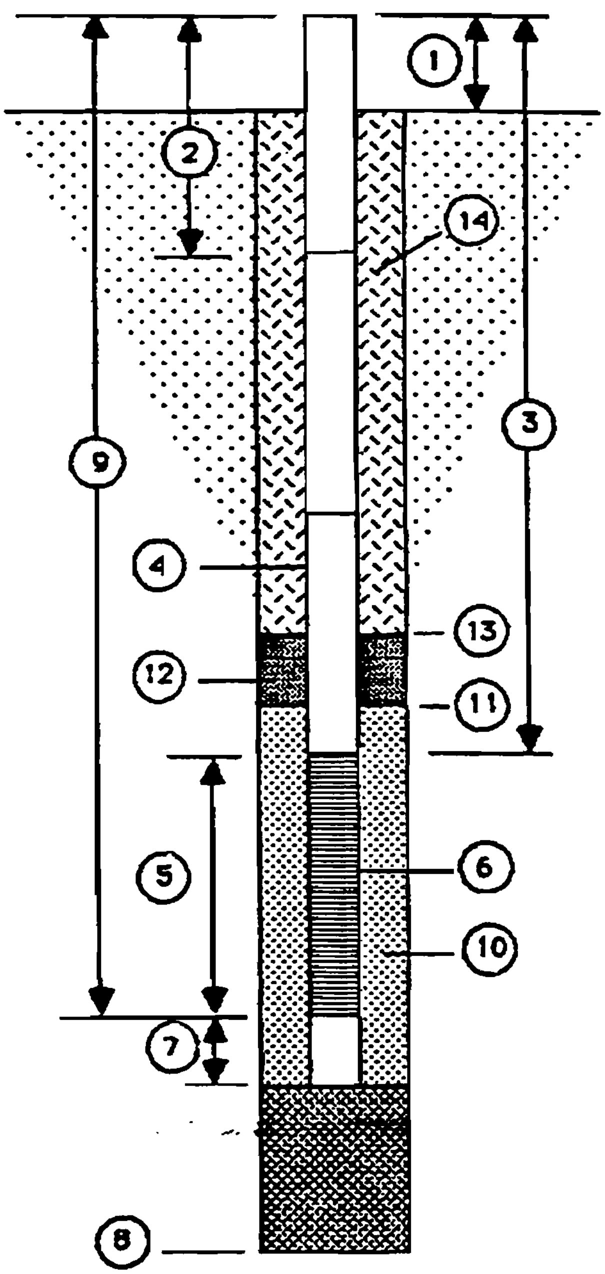
COMMENTS ON INSTALLATION: Approximately 40 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS

Well Number GPT-08-11

Date of Installation 2/2/99 - 2/4/99



1. Height of casing above ground flush
2. Depth to first coupling 5'

   Coupling interval depths 15'
3. Total length of blank pipe 135'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 145' Hole diameter 6.25" OD
9. Depth to bottom of screen 145'
10. Type of screen filter sand

    Quantity Used 4 x 50 lbs Size 6-20
11. Depth to top of filter 132.5'
12. Type of seal bentonite

    Quantity used 4 x 50 lbs
13. Depth to top of seal 121'
14. Type of grout Portland

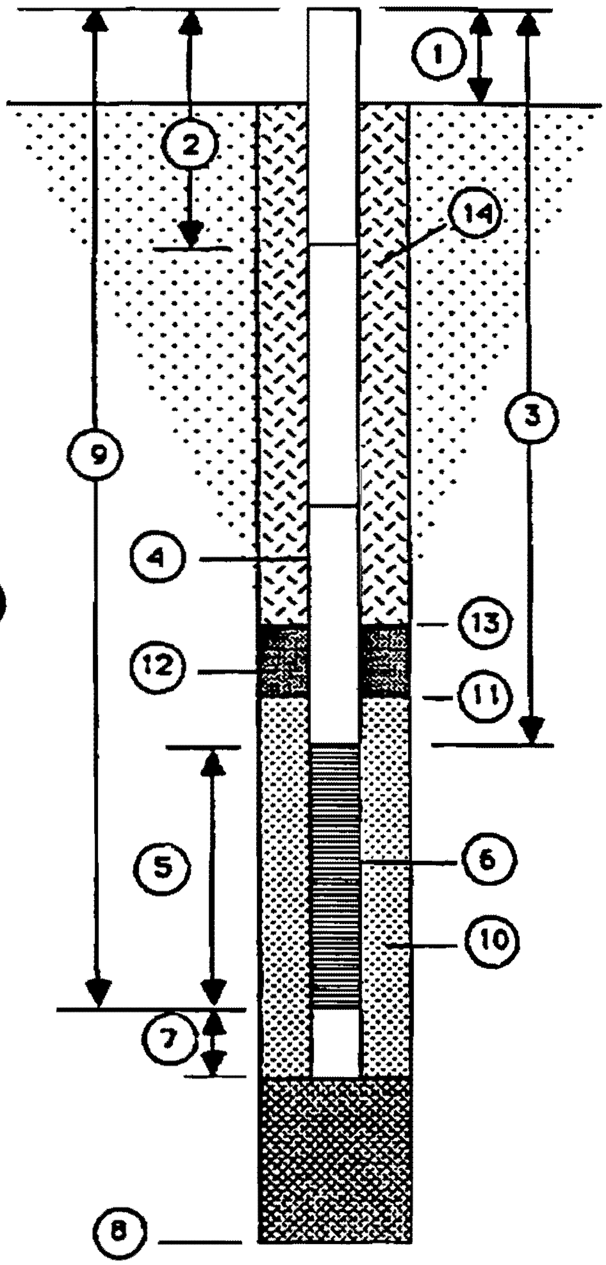
    Grout mixture 9 x 92.6 lbs

    Method of placement tremmie

COMMENTS ON INSTALLATION: Approximately 1300 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-08-12

Date of Installation 2/6/99

1. Height of casing above ground flush
2. Depth to first coupling 5'

   Coupling interval depths 5'
3. Total length of blank pipe 5'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 15' Hole diameter 6.25" OD
9. Depth to bottom of screen 15'
10. Type of screen filter sand

    Quantity Used 4 x 50 lbs Size 6-20
11. Depth to top of filter 4'
12. Type of seal bentonite

    Quantity used 4 x 50 lbs
13. Depth to top of seal ______
14. Type of grout NA

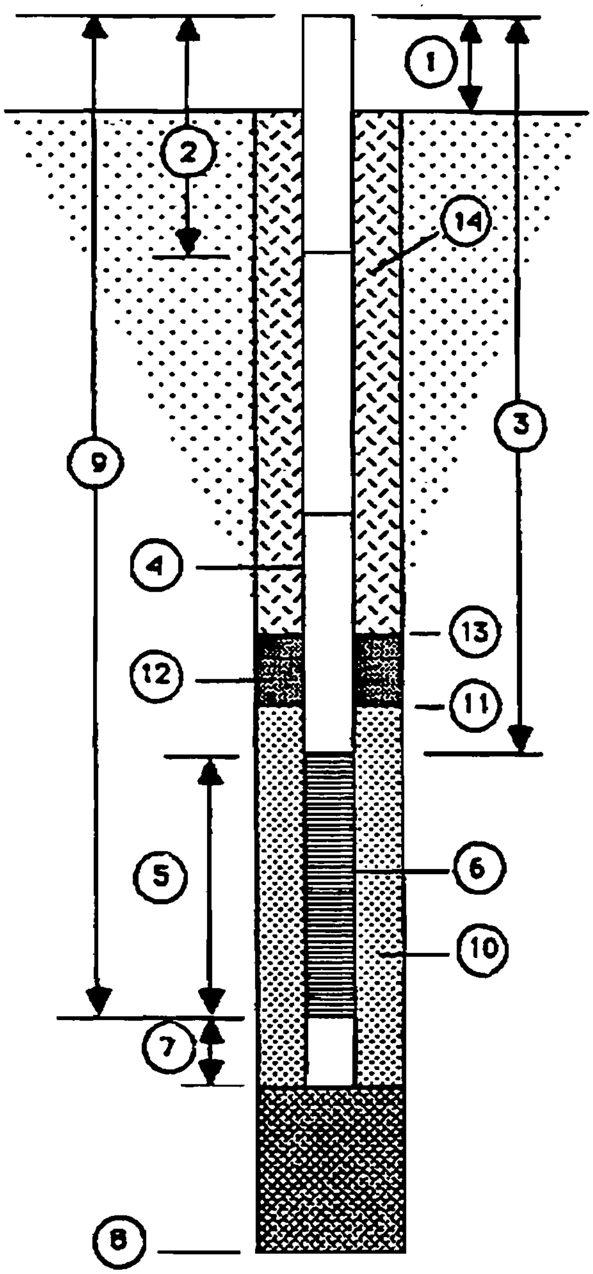
    Grout mixture ______

    Method of placement ______

COMMENTS ON INSTALLATION: Approximately 40 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS



Well Number GPT-08-13

Date of Installation 2/6/99

1. Height of casing above ground flush
2. Depth to first coupling 5'

   Coupling interval depths 5', 15', 25'
3. Total length of blank pipe 25'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 35' Hole diameter 6.25" OD
9. Depth to bottom of screen 35'
10. Type of screen filter sand

    Quantity Used 4 x 50 lbs Size 6-20
11. Depth to top of filter 23.5'
12. Type of seal bentonite

    Quantity used 8 x 50 lbs
13. Depth to top of seal 1'
14. Type of grout NA

    Grout mixture

    Method of placement

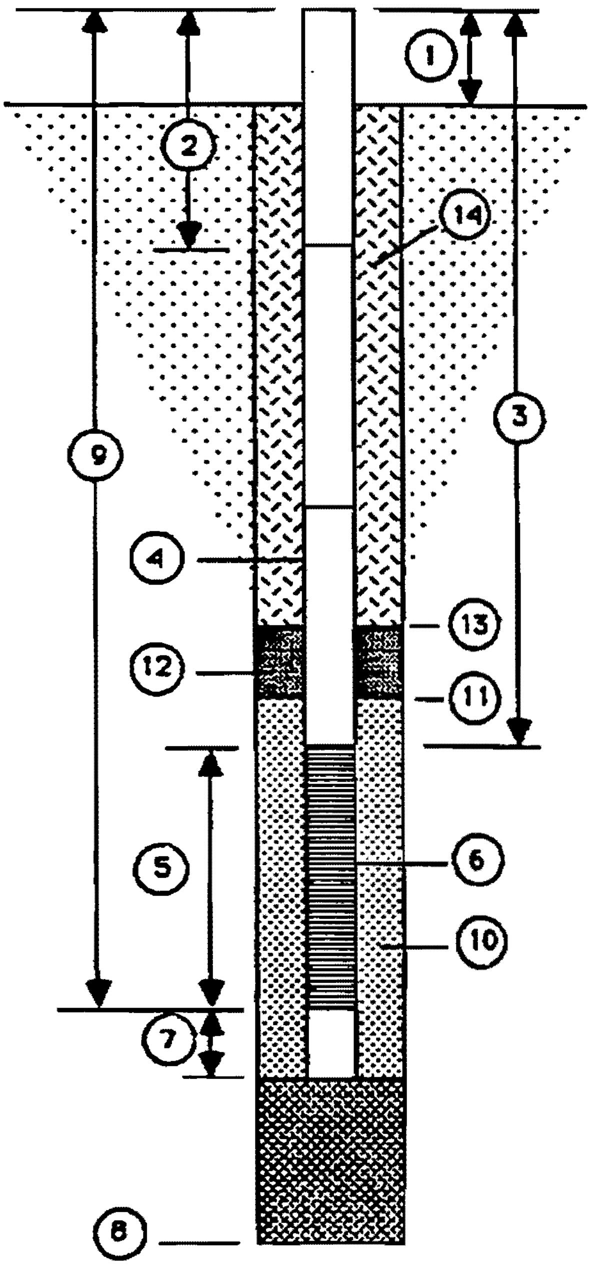
COMMENTS ON INSTALLATION: Approximately 40 gallons of water used

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 10068
CHARLESTON, SC 29411-0068

WELL CONSTRUCTION DETAILS

Well Number GPT-08-14

Date of Installation 2/2/99



1. Height of casing above ground flush
2. Depth to first coupling 5'

   Coupling interval depths 15'
3. Total length of blank pipe 15'
4. Type of blank pipe 2" Schedule 20 PVC
5. Length of screen 10'
6. Type of screen 20 slot (0.020) PVC
7. Length of sump 9"
8. Total depth of boring 27' Hole diameter 6.25" OD
9. Depth to bottom of screen 25'
10. Type of screen filter sand

    Quantity Used 4 x 50 lbs Size 6-20
11. Depth to top of filter 13.5'
12. Type of seal bentonite

    Quantity used 4 x 50 lbs
13. Depth to top of seal 5'
14. Type of grout Portland

    Grout mixture

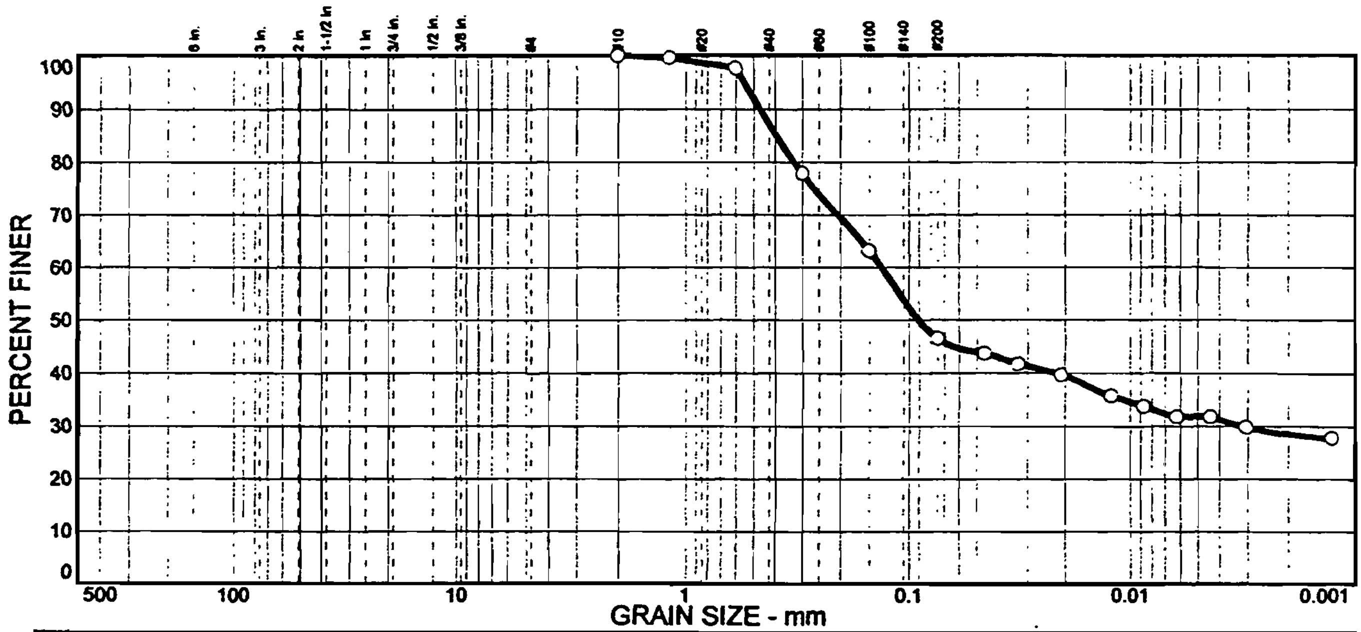
    Method of placement

COMMENTS ON INSTALLATION: Used approximately 40 gallons of water

PARTICLE SIZE DISTRIBUTION TEST REPORT

Project: Gulf Port Site **Project No.:** 98-3514

Sample No: R8025 **Source of Sample:** Gulf Port **Date:** 01/08/99
Location: R802534-38 **Elev./Depth:** 34'-38'



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	12.8	40.7	14.7	31.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#16	99.6		
#30	97.7		
#50	77.9		
#100	63.2		
#200	46.5		

* (no specification provided)

Soil Description

SAND, clayey, silty, gray (wet)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.394 D_{60}= 0.133 D_{50}= 0.0907
D_{30}= 0.0032 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SM-SC AASHTO=

Remarks

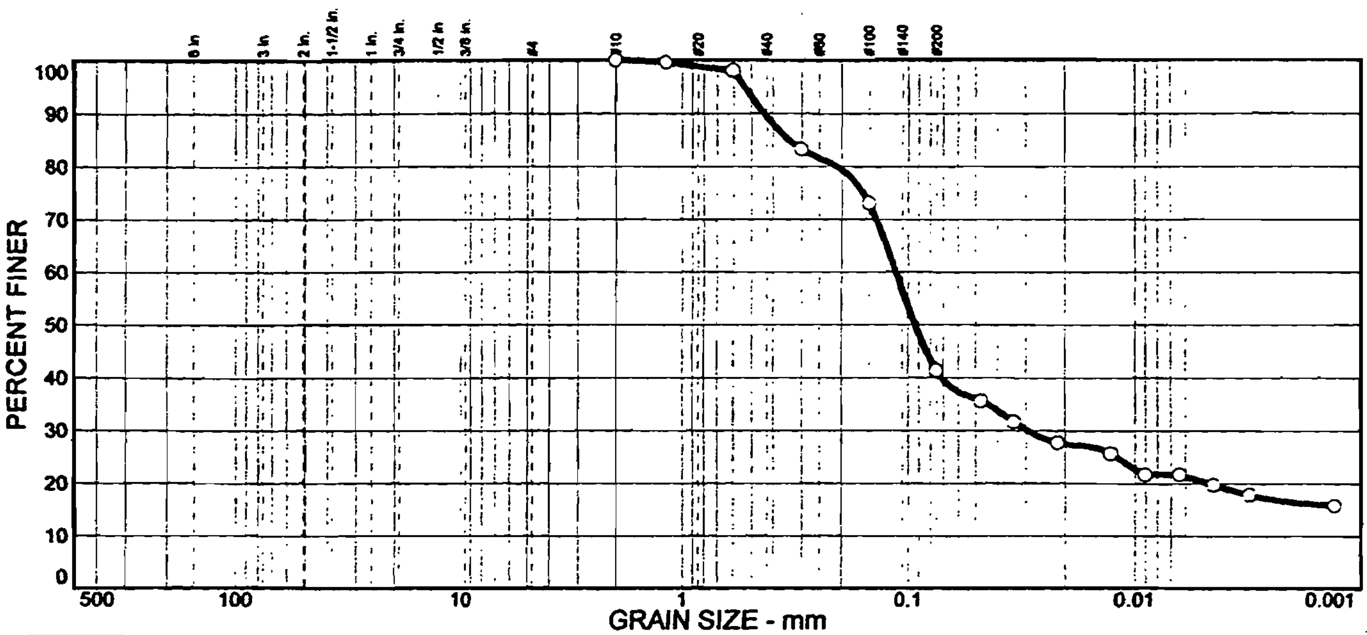
-

Plate

PARTICLE SIZE DISTRIBUTION TEST REPORT

Project: Gulf Port Site **Project No.:** 98-3514

Sample No: R8025-44'-48' **Source of Sample:** Gulf Port **Date:** 01/08/99
Location: R802544'-48' **Elev./Depth:** 44'-48'



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	10.5	48.1	21.1	20.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#16	99.6		
#30	98.1		
#50	83.3		
#100	73.0		
#200	41.4		

Soil Description

SAND, clayey, silty, gray

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.338 D_{60}= 0.113 D_{50}= 0.0930
D_{30}= 0.0294 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SM-SC AASHTO=

Remarks

* (no specification provided)

Plate

Table C-1
Well Survey Data
Groundwater Monitoring Report
Naval Construction Batallion Center
Gulfport, MS

Site ID	Easting	Northing	Ground Elev (ft-MSL)	SI (ft bgs)	Screened Elev (ft-MSL)	Depth of Boring (ft)	Zone	Comment
PZ-01	886858.28781	321066.61638	22.50	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PZ-02	889687.73439	316302.28066	29.73	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PZ-03	892236.13100	317793.45286	32.99	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PZ-04	892235.86517	317789.12186	33.24	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PZ-05	893299.64228	318270.51953	32.95	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PZ-06	891419.63270	319115.92798	29.92	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PZ-07	891420.00077	319121.21859	30.35	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PZ-08	895731.92734	319176.31605	30.67	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PZ-09	895728.64490	319179.85989	31.36	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PZ-10	897801.63712	320708.21200	27.79	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PZ-11	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PZ-13	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
GPT-01-04	[redacted]	[redacted]	[redacted]	15 - 25	[redacted]	26	Shallow	[redacted]
GPT-01-05	[redacted]	[redacted]	[redacted]	14 - 24	[redacted]	24	Shallow	[redacted]
GPT-02-04	888242.33	320119.66	22.12	12 - 22	0.12 - 10.12	26	Shallow	[redacted]
GPT-03-06	[redacted]	[redacted]	[redacted]	15 - 25	[redacted]	26	Shallow	[redacted]
GPT-03-07	[redacted]	[redacted]	[redacted]	6 - 16	[redacted]	26	Shallow	[redacted]
GPT-04-08	888053.99	319412.17	24.13	[redacted]	[redacted]	[redacted]	Shallow	Replacement
GPT-04-09	888144.79	319296.52	28.44	15 - 25	3.44 - 13.44	26	Shallow	Upgradient
GPT-04-10	887919.94	319374.33	21.86	5 - 15	6.86 - 16.86	16	Shallow	Downgradient
GPT-04-11	887926.86	319378.90	21.96	35 - 45	-(13.04 - 23.04)	50	Intermediate	Vertical extent
GPT-04-12	887847.80	319084.82	27.94	8 - 18	9.94 - 19.94	26	Shallow	Upgradient
GPT-04-13	887799.16	319079.75	27.28	5 - 15	12.28 - 22.28	16	Shallow	Characterization
GPT-04-14	887801.75	319083.92	27.26	25 - 35	-(7.74) - 2.26	52	Intermediate	Vertical extent
GPT-04-15	887684.26	319126.94	21.02	5 - 15	6.02 - 16.02	26	Shallow	Downgradient
GPT-05-07	888404.43	317731.01	27.03	15 - 25	2.03 - 12.03	26	Shallow	Upgradient
GPT-05-08	888123.17	317629.79	29.85	15 - 25	4.85 - 14.85	25	Shallow	Characterization
GPT-05-09	888050.73	317883.60	29.82	15 - 25	4.82 - 14.82	26	Shallow	Characterization
GPT-05-10	888051.07	317879.26	29.81	40 - 50	-(20.19 - 10.10)	56	Intermediate	Vertical extent
GPT-05-11	887811.47	317660.68	29.60	5 - 15	14.60 - 24.60	15	Shallow	Downgradient
GPT-05-12	887813.97	317656.74	29.72	25 - 35	-(5.28) - 4.72	46	Intermediate	Vertical extent
GPT-05-13	887963.68	317521.40	31.06	15 - 25	6.06 - 16.06	26	Shallow	Characterization
GPT-05-14	887966.09	317517.22	30.98	45 - 55	-(24.02 - 14.02)	55	Intermediate	Vertical extent
GPT-07-01	889101.25	321105.87	25.04	5.5 - 15.5	9.54 - 19.54	26	Shallow	Downgradient
GPT-08-05	894797.46	319157.32	31.99	15 - 25	6.99 - 16.99	25	Shallow	Downgradient
GPT-08-06	895225.41	319826.93	31.81	15.5 - 25.5	6.31 - 16.31	25.5	Shallow	Downgradient
GPT-08-07	895739.26	320439.77	31.86	15.5 - 25.5	6.36 - 16.36	25.5	Shallow	Downgradient
GPT-08-08	894486.29	320751.08	31.72	16 - 26	5.72 - 15.72	26	Shallow	Downgradient
GPT-08-09	893472.05	320020.01	28.00	5 - 15	13.00 - 23.00	15	Shallow	Downgradient
GPT-08-10	893480.04	320027.46	28.22	21 - 31	-(2.78) - 7.22	31	Intermediate	Downgradient
GPT-08-11	893489.00	320036.08	28.42	135 - 145	-(116.58 - 106.58)	145	Deep	Downgradient
GPT-08-12	893197.76	319388.04	31.14	5 - 15	16.14 - 26.14	15	Shallow	Downgradient
GPT-08-13	893190.08	319380.57	30.96	25 - 35	-(4.04) - 5.96	35	Intermediate	Downgradient
GPT-08-14	893448.33	319089.53	31.76	15 - 25	6.76 - 16.76	27	Shallow	Cross-gradient

NOTES:
Survey coordinates reported in NAD 83
SI = Screened Interval
ft-MSL = feet above mean sea level
bgs = below ground surface

APPENDIX D

COMPREHENSIVE DATA TABLES FOR PHASE 2 MONITORING WELL SAMPLING

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in pg/L)	SITE	GPT-01-04	GPT-01-05	GPT-02-04	GPT-03-06	GPT-03-06	GPT-03-07
	SAMPLE ID	GPT14G1P1	GPT15G1P1	GPT24G1P1	GPT36G1P1	GPT36G1D1	GPT37G1P1
	DATE	02/24/99	02/24/99	02/23/99	02/24/99	02/24/99	02/24/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Duplicate 1	Primary
2,3,7,8-TCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDD		25 U	25 U	69.5	26	27.5	68.7
1,2,3,4,6,7,8,9-OCDD		138	302	1600	302	350	1190
2,3,7,8-TCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
2,3,4,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,7,8,9-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDF		50 U	50 U	50 U	50 U	50 U	50 U
Total TCDD		10 U	10 U	10 U	10 U	10 U	29.9
Total PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDD		37.3	(24.8)	254	73.7	105	175
Total HpCDD		(24.3)	45.1	360	122	129	313
Total TCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total TEQ		0.138	0.302	2.295	0.562	0.625	1.877

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed
() =Less than Reporting Limit

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in pg/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-04-09 GPT49G1P1 02/24/99 Primary	GPT-04-09 GPT49G1D1 02/24/99 Duplicate 1	GPT-04-10 GPT410G1P1 02/25/99 Primary	GPT-04-11 GPT411G1P1 02/25/99 Primary	GPT-04-12 GPT412G1P1 02/25/99 Primary	GPT-04-13 GPT413G1P1 02/24/99 Primary
2,3,7,8-TCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	28.1
1,2,3,7,8,9-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDD		28.4	43.3	68.4	166	243	182
1,2,3,4,6,7,8,9-OCDD		272	369	455	6040	1940	1120
2,3,7,8-TCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
2,3,4,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,7,8,9-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDF		50 U	50 U	50 U	50 U	54.4	50 U
Total TCDD		10 U	10 U	10 U	90.4	10 U	10 U
Total PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDD		28.7	43.8	25 U	283	135	130
Total HpCDD		68.7	102	122	616	509	391
Total TCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDF		25 U	25 U	25 U	25 U	30.1	25 U
Total TEQ		0.556	0.802	1.139	7.7	4.4244	5.75

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in pg/L)	SITE	GPT-04-14	GPT-04-15	GPT-05-07	GPT-05-07	GPT-05-08	GPT-05-09
	SAMPLE ID	GPT414G1P1	GPT415G1P1	GPT57G1P1	GPT57G1D1	GPT58G1P1	GPT59G1P1
	DATE	02/25/99	02/25/99	02/22/99	02/22/99	02/22/99	02/22/99
	RESULT TYPE	Primary	Primary	Primary	Duplicate 1	Primary	Primary
2,3,7,8-TCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDD		79.2	42.2	33	35	73.8	78.5
1,2,3,4,6,7,8,9-OCDD		558	456	486	498	1060	1110
2,3,7,8-TCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
2,3,4,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,7,8,9-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDF		50 U	50 U	50 U	50 U	50 U	50 U
Total TCDD		10 U	10 U	57.6	72.8	134	39.8
Total PeCDD		10 U	10 U	10 U	10 U	67.9	41.8
Total HxCDD		229	60.9	153	120	339	136
Total HpCDD		282	42.2	183	206	405	291
Total TCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total TEQ		1.35	0.878	0.816	0.848	1.798	1.895

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in pg/L)	SITE	GPT-05-10	GPT-05-11	GPT-05-12	GPT-05-13	GPT-05-14	GPT-07-01
	SAMPLE ID	GPT510G1P1	GPT511G1P1	GPT512G1P1	GPT513G1P1	GPT514G1P1	GPT71G1P1
	DATE	02/23/99	02/23/99	02/23/99	02/23/99	02/23/99	02/23/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
2,3,7,8-TCDD		10 U	10 U	10 U	10 U	10 U	25.4 EMP
1,2,3,7,8-PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDD		25 U	25 U	25 U	25 U	41.3	69.4
1,2,3,7,8,9-HxCDD		25 U	25 U	37.6	40.6	172	123
1,2,3,4,6,7,8-HpCDD		58.4	45.8	442	595	2240	1540
1,2,3,4,6,7,8,9-OCDD		801	716	5470	9540	37100	14200
2,3,7,8-TCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
2,3,4,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDF		25 U	25 U	25 U	25 U	25 U	243
1,2,3,4,7,8,9-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDF		50 U	50 U	50 U	50 U	50 U	335
Total TCDD		18.8	10 U	737	342	1430	150
Total PeCDD		10 U	10 U	325	282	1580	118
Total HxCDD		57.6	26.7	1420	1300	5560	1510
Total HpCDD		265	121	2150	2280	8930	4810
Total TCDF		10 U	10 U	10 U	90.2	10 U	75.4
Total PeCDF		10 U	10 U	10 U	41	10 U	46.6
Total HxCDF		25 U	25 U	25 U	25 U	25 U	142
Total HpCDF		25 U	25 U	25 U	25 U	25 U	468
Total TEQ		1.385	1.174	13.66	19.55	80.83	51.605

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in pg/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-08-08 GPT88G1P1 02/21/99 Primary	GPT-08-09 GPT89G1P1 02/21/99 Primary	GPT-08-10 GPT810G1P1 02/21/99 Primary	GPT-08-11 GPT811G1P1 02/25/99 Primary	GPT-08-12 GPT812G1P1 02/22/99 Primary	GPT-08-13 GPT813G1P1 02/22/99 Primary
2,3,7,8-TCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDD		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDD		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDD		42.9	29.8	25 U	25 U	60.3	101
1,2,3,4,6,7,8,9-OCDD		539	219	111	50 U	1420	1510
2,3,7,8-TCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,7,8-PeCDF		10 U	<10	10 U	10 U	10 U	10 U
2,3,4,7,8-PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
1,2,3,4,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
2,3,4,6,7,8-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,7,8,9-HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,7,8,9-HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8,9-OCDF		50 U	50 U	50 U	50 U	50 U	50 U
Total TCDD		29.2	10 U	15.8	10 U	10 U	134
Total PeCDD		10 U	10 U	10 U	10 U	10 U	72.5
Total HxCDD		88.5	25 U	29.6	25 U	82.3	395
Total HpCDD		141	68.8	25 U	25 U	223	519
Total TCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total PeCDF		10 U	10 U	10 U	10 U	10 U	10 U
Total HxCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total HpCDF		25 U	25 U	25 U	25 U	25 U	25 U
Total TEQ		0.968	0.517	0.111	0	2.023	2.52

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

DIOXIN/FURAN RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in pg/L)	
SITE	GPT-08-14
SAMPLE ID	GPT814G1P1
DATE	02/22/99
RESULT TYPE	Primary
2,3,7,8-TCDD	10 U
1,2,3,7,8-PeCDD	10 U
1,2,3,4,7,8-HxCDD	25 U
1,2,3,6,7,8-HxCDD	25 U
1,2,3,7,8,9-HxCDD	25 U
1,2,3,4,6,7,8-HpCDD	25 U
1,2,3,4,6,7,8,9-OCDD	118
2,3,7,8-TCDF	10 U
1,2,3,7,8-PeCDF	10 U
2,3,4,7,8-PeCDF	10 U
1,2,3,4,7,8-HxCDF	25 U
1,2,3,6,7,8-HxCDF	25 U
2,3,4,6,7,8-HxCDF	25 U
1,2,3,7,8,9-HxCDF	25 U
1,2,3,4,6,7,8-HpCDF	25 U
1,2,3,4,7,8,9-HpCDF	25 U
1,2,3,4,6,7,8,9-OCDF	50 U
Total TCDD	10 U
Total PeCDD	10 U
Total HxCDD	30.4
Total HpCDD	25 U
Total TCDF	10 U
Total PeCDF	10 U
Total HxCDF	25 U
Total HpCDF	25 U
Total TEQ	0.118

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

HERBICIDE RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-01-04 GPT14G1P1 02/24/99 Primary	GPT-01-05 GPT15G1P1 02/24/99 Primary	GPT-02-04 GPT24G1P1 02/23/99 Primary	GPT-03-06 GPT36G1P1 02/24/99 Primary	GPT-03-06 GPT36G1D1 02/24/99 Duplicate 1	GPT-03-07 GPT37G1P1 02/24/99 Primary
2,4-D		4 U	4 U	4 U	4 U	4 U	4 U
2,4,5-TP (Silvex)		1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-T		1 U	1 U	1 U	1 U	1 U	1 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

HERBICIDE RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-04-09 GPT49G1P1 02/24/99 Primary	GPT-04-09 GPT49G1D1 02/24/99 Duplicate 1	GPT-04-10 GPT410G1P1 02/25/99 Primary	GPT-04-11 GPT411G1P1 02/25/99 Primary	GPT-04-12 GPT412G1P1 02/25/99 Primary	GPT-04-13 GPT413G1P1 02/24/99 Primary
2,4-D		40 U	4 U	4 U	4 U	4 U	4 U
2,4,5-TP (Silvex)		10 U	1 U	1 U	1 U	1 U	1 U
2,4,5-T		10 U	1 U	1 U	1 U	1 U	1 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

HERBICIDE RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-04-14	GPT-04-15	GPT-05-07	GPT-05-07	GPT-05-08	GPT-05-09
	SAMPLE ID	GPT414G1P1	GPT415G1P1	GPT57G1P1	GPT57G1D1	GPT58G1P1	GPT59G1P1
	DATE	02/25/99	02/25/99	02/22/99	02/22/99	02/22/99	02/22/99
	RESULT TYPE	Primary	Primary	Primary	Duplicate 1	Primary	Primary
2,4-D		4 U	4 U	4 U	4 U	4 U	4 U
2,4,5-TP (Silvex)		1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-T		1 U	1 U	1 U	1 U	1 U	1 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

HERBICIDE RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-05-10	GPT-05-11	GPT-05-12	GPT-05-13	GPT-05-14	GPT-07-01
	SAMPLE ID	GPT510G1P1	GPT511G1P1	GPT512G1P1	GPT513G1P1	GPT514G1P1	GPT71G1P1
	DATE	02/23/99	02/23/99	02/23/99	02/23/99	02/23/99	02/23/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
2,4-D		4 U	4 U	4 U	4 U	4 U	4 U
2,4,5-TP (Silvex)		1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-T		1 U	1 U	1 U	1 U	1 U	1 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

HERBICIDE RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-08-05 GPT85G1P1 02/21/99 Primary	GPT-08-05 GPT85G1D1 02/21/99 Duplicate 1	GPT-08-06 GPT86G1P1 02/21/99 Primary	GPT-08-07 GPT87G1P1 02/21/99 Primary	GPT-08-08 GPT88G1P1 02/21/99 Primary	GPT-08-09 GPT89G1P1 02/25/99 Primary
2,4-D		4 U	4 U	4 U	4 U	4 U	4 U
2,4,5-TP (Silvex)		1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-T		1 U	1 U	1 U	1 U	1 U	1 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

HERBICIDE RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-08-10 GPT810G1P1 02/21/99 Primary	GPT-08-11 GPT811G1P1 02/25/99 Primary	GPT-08-12 GPT812G1P1 02/22/99 Primary	GPT-08-13 GPT813G1P1 02/22/99 Primary	GPT-08-14 GPT814G1P1 02/22/99 Primary
2,4-D		4 U	4 U	4 U	4 U	4 U
2,4,5-TP (Silvex)		1 U	1 U	1 U	1 U	1 U
2,4,5-T		1 U	1 U	1 U	1 U	1 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-01-04	GPT-01-05	GPT-02-04	GPT-03-06	GPT-03-06	GPT-03-07
	SAMPLE ID	GPT14G1P1	GPT15G1P1	GPT24G1P1	GPT36G1P1	GPT36G1D1	GPT37G1P1
	DATE	02/24/99	02/24/99	02/23/99	02/24/99	02/24/99	02/24/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Duplicate 1	Primary
alpha-BHC		0.5 U	0.25 U	0.0015 J	0.25 U	0.05 UJ	0.05 UJ
beta-BHC		0.5 U	0.25 U	0.05 UJ	0.25 U	0.05 UJ	0.05 UJ
delta-BHC		0.5 U	0.25 U	0.05 UJ	0.25 U	0.05 UJ	0.05 UJ
gamma-BHC(Lindane)		0.5 U	0.25 U	0.0024 J	0.25 U	0.05 UJ	0.05 UJ
Heptachlor		0.5 U	0.25 U	0.05 UJ	0.25 U	0.05 UJ	0.05 UJ
Aldrin		0.5 U	0.25 U	0.002 J	0.25 U	0.05 UJ	0.05 UJ
Heptachlor epoxide		0.26 J	0.15 J	0.05 UJ	0.25 U	0.05 UJ	0.05 UJ
Endosulfan I		0.5 U	0.25 U	0.05 UJ	0.25 U	0.05 UJ	0.05 UJ
Dieldrin		1 U	0.5 U	0.1 UJ	0.5 U	0.1 UJ	0.1 UJ
4,4'-DDE		1 U	0.5 U	0.1 UJ	0.5 U	0.1 UJ	0.1 UJ
Endrin		1 U	0.5 U	0.1 UJ	0.5 U	0.1 UJ	0.1 UJ
Endosulfan II		1 U	0.5 U	0.1 UJ	0.5 U	0.1 UJ	0.1 UJ
4,4'-DDD		1 U	0.5 U	0.1 UJ	0.5 U	0.1 UJ	0.1 UJ
Endosulfan sulfate		1 U	0.5 U	0.1 UJ	0.5 U	0.1 UJ	0.1 UJ
4,4'-DDT		1 U	0.5 U	0.1 UJ	0.5 U	0.1 UJ	0.1 UJ
Methoxychlor		5 U	2.5 U	0.5 UJ	2.5 U	0.5 UJ	0.5 UJ
Endrin ketone		1 U	0.5 U	0.1 UJ	0.5 U	0.1 UJ	0.1 UJ
Endrin aldehyde		1 U	0.5 U	0.1 UJ	0.5 U	0.1 UJ	0.1 UJ
alpha-Chlordane		0.5 U	0.25 U	0.05 UJ	0.25 U	0.05 UJ	0.05 UJ
gamma-Chlordane		0.5 U	0.25 U	0.0057 J	0.0081 J	0.006 J	0.0058 J
Toxaphene		50 U	25 U	5 UJ	25 U	5 UJ	5 UJ
Aroclor-1016		10 U	5 U	1 UJ	5 U	1 UJ	1 UJ
Aroclor-1221		20 U	10 U	2 UJ	10 U	2 UJ	2 UJ
Aroclor-1232		10 U	5 U	1 UJ	5 U	1 UJ	1 UJ
Aroclor-1242		10 U	5 U	1 UJ	5 U	1 UJ	1 UJ
Aroclor-1248		10 U	5 U	1 UJ	5 U	1 UJ	1 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-01-04	GPT-01-05	GPT-02-04	GPT-03-06	GPT-03-06	GPT-03-07
	SAMPLE ID	GPT14G1P1	GPT15G1P1	GPT24G1P1	GPT36G1P1	GPT36G1D1	GPT37G1P1
	DATE	02/24/99	02/24/99	02/23/99	02/24/99	02/24/99	02/24/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Duplicate 1	Primary
Aroclor-1254		10 U	5 U	1 UJ	5 U	1 UJ	1 UJ
Aroclor-1260		10 U	5 U	1 UJ	5 U	1 UJ	1 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-04-09 GPT49G1P1 02/24/99 Primary	GPT-04-09 GPT49G1D1 02/24/99 Duplicate 1	GPT-04-10 GPT410G1P1 02/25/99 Primary	GPT-04-11 GPT411G1P1 02/25/99 Primary	GPT-04-12 GPT412G1P1 02/25/99 Primary	GPT-04-13 GPT413G1P1 02/24/99 Primary
alpha-BHC		0.05 UJ	0.0017 J	1 U	0.25 U	0.05 UJ	0.5 U
beta-BHC		0.05 UJ	0.006 J	1 U	0.25 U	0.05 UJ	0.5 U
delta-BHC		0.0032 J	0.0049 J	1 U	0.25 U	0.05 UJ	0.5 U
gamma-BHC(Lindane)		0.05 UJ	0.0028 J	1 U	0.25 U	0.05 UJ	0.5 U
Heptachlor		0.05 UJ	0.05 UJ	1 U	0.25 U	0.05 UJ	0.5 U
Aldrin		0.05 UJ	0.05 UJ	1 U	0.25 U	0.05 UJ	0.5 U
Heptachlor epoxide		0.0029 J	0.011 J	1 U	0.25 U	0.05 UJ	0.5 U
Endosulfan I		0.05 UJ	0.05 UJ	1 U	0.25 U	0.05 UJ	0.5 U
Dieldrin		0.1 UJ	0.0028 J	2 U	0.5 U	0.1 UJ	1 U
4,4'-DDE		0.1 UJ	0.0042 J	2 U	0.5 U	0.1 UJ	1 U
Endrin		0.1 UJ	0.003 J	2 U	0.5 U	0.1 UJ	1 U
Endosulfan II		0.1 UJ	0.1 UJ	2 U	0.5 U	0.1 UJ	1 U
4,4'-DDD		0.004 J	0.008 J	2 U	0.5 U	0.1 UJ	1 U
Endosulfan sulfate		0.1 UJ	0.1 UJ	2 U	0.5 U	0.1 UJ	1 U
4,4'-DDT		0.1 UJ	0.1 UJ	2 U	0.5 U	0.1 UJ	1 U
Methoxychlor		0.5 UJ	0.5 UJ	10 U	2.5 U	0.5 UJ	5 U
Endrin ketone		0.1 UJ	0.1 UJ	2 U	0.5 U	0.1 UJ	1 U
Endrin aldehyde		0.1 UJ	0.1 UJ	2 U	0.5 U	0.1 UJ	1 U
alpha-Chlordane		0.05 UJ	0.05 UJ	1 U	0.25 U	0.05 UJ	0.5 U
gamma-Chlordane		0.05 UJ	0.003 J	1 U	0.25 U	0.05 UJ	0.5 U
Toxaphene		5 UJ	5 UJ	100 U	25 U	5 UJ	50 U
Aroclor-1016		1 UJ	1 UJ	20 U	5 U	1 UJ	10 U
Aroclor-1221		2 UJ	2 UJ	40 U	10 U	2 UJ	20 U
Aroclor-1232		1 UJ	1 UJ	20 U	5 U	1 UJ	10 U
Aroclor-1242		1 UJ	1 UJ	20 U	5 U	1 UJ	10 U
Aroclor-1248		1 UJ	1 UJ	20 U	5 U	1 UJ	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-04-09 GPT49G1P1 02/24/99 Primary	GPT-04-09 GPT49G1D1 02/24/99 Duplicate 1	GPT-04-10 GPT410G1P1 02/25/99 Primary	GPT-04-11 GPT411G1P1 02/25/99 Primary	GPT-04-12 GPT412G1P1 02/25/99 Primary	GPT-04-13 GPT413G1P1 02/24/99 Primary
Aroclor-1254		1 UJ	1 UJ	20 U	5 U	1 UJ	10 U
Aroclor-1260		1 UJ	1 UJ	20 U	5 U	1 UJ	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE / SAMPLE ID / DATE / RESULT TYPE	GPT-04-14	GPT-04-15	GPT-05-07	GPT-05-07	GPT-05-08	GPT-05-09
	SAMPLE ID	GPT414G1P1	GPT415G1P1	GPT57G1P1	GPT57G1D1	GPT58G1P1	GPT59G1P1
	DATE	02/25/99	02/25/99	02/21/99	02/21/99	02/21/99	02/22/99
	RESULT TYPE	Primary	Primary	Primary	Duplicate 1	Primary	Primary
alpha-BHC		1 U	0.0021 J	0.052 UJ	0.05 UJ	0.052 UJ	1 U
beta-BHC		1 U	0.05 UJ	0.052 UJ	0.05 UJ	0.052 UJ	1 U
delta-BHC		1 U	0.05 UJ	0.052 UJ	0.05 UJ	0.052 UJ	1 U
gamma-BHC(Lindane)		1 U	0.002 J	0.052 UJ	0.05 UJ	0.052 UJ	1 U
Heptachlor		1 U	0.05 UJ	0.052 UJ	0.05 UJ	0.052 UJ	1 U
Aldrin		1 U	0.05 UJ	0.052 UJ	0.05 UJ	0.052 UJ	1 U
Heptachlor epoxide		1 U	0.05 UJ	0.052 UJ	0.05 UJ	0.052 UJ	1 U
Endosulfan I		1 U	0.05 UJ	0.052 UJ	0.05 UJ	0.052 UJ	1 U
Dieldrin		2 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U
4,4'-DDE		2 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U
Endrin		2 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U
Endosulfan II		2 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U
4,4'-DDD		2 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U
Endosulfan sulfate		2 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U
4,4'-DDT		2 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U
Methoxychlor		10 U	0.5 UJ	0.52 UJ	0.5 UJ	0.52 UJ	10 U
Endrin ketone		2 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U
Endrin aldehyde		2 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U
alpha-Chlordane		1 U	0.05 UJ	0.052 UJ	0.05 UJ	0.052 UJ	1 U
gamma-Chlordane		1 U	0.0033 J	0.052 UJ	0.05 UJ	0.052 UJ	1 U
Toxaphene		100 U	5 UJ	5.2 UJ	5 UJ	5.2 UJ	100 U
Aroclor-1016		20 U	1 UJ	1 UJ	1 UJ	1 UJ	20 U
Aroclor-1221		40 U	2 UJ	2.1 UJ	2 UJ	2.1 UJ	41 U
Aroclor-1232		20 U	1 UJ	1 UJ	1 UJ	1 UJ	20 U
Aroclor-1242		20 U	1 UJ	1 UJ	1 UJ	1 UJ	20 U
Aroclor-1248		20 U	1 UJ	1 UJ	1 UJ	1 UJ	20 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-04-14 GPT414G1P1 02/25/99 Primary	GPT-04-15 GPT415G1P1 02/25/99 Primary	GPT-05-07 GPT57G1P1 02/21/99 Primary	GPT-05-07 GPT57G1D1 02/21/99 Duplicate 1	GPT-05-08 GPT58G1P1 02/21/99 Primary	GPT-05-09 GPT59G1P1 02/22/99 Primary
Aroclor-1254		20 U	1 UJ	1 UJ	1 UJ	1 UJ	20 U
Aroclor-1260		20 U	1 UJ	1 UJ	1 UJ	1 UJ	20 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-05-10	GPT-05-11	GPT-05-12	GPT-05-13	GPT-05-14	GPT-07-01
	SAMPLE ID	GPT510G1P1	GPT511G1P1	GPT512G1P1	GPT513G1P1	GPT514G1P1	GPT71G1P1
	DATE	02/23/99	02/22/99	02/22/99	02/22/99	02/22/99	02/22/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
alpha-BHC		0.05 UJ	1 U	1 U	1 U	0.052 UJ	1 U
beta-BHC		0.05 UJ	1 U	1 U	1 U	0.052 UJ	1 U
delta-BHC		0.05 UJ	1 U	1 U	1 U	0.052 UJ	1 U
gamma-BHC(Lindane)		0.05 UJ	1 U	1 U	1 U	0.052 UJ	1 U
Heptachlor		0.05 UJ	1 U	1 U	1 U	0.052 UJ	1 U
Aldrin		0.016 J	1 U	1 U	1 U	0.052 UJ	1 U
Heptachlor epoxide		0.05 UJ	1 U	1 U	1 U	0.052 UJ	1 U
Endosulfan I		0.05 UJ	1 U	1 U	1 U	0.052 UJ	1 U
Dieldrin		0.0038 J	2 U	2.1 U	2.1 U	0.1 UJ	2 U
4,4'-DDE		0.1 UJ	2 U	2.1 U	2.1 U	0.1 UJ	2 U
Endrin		0.0049 J	2 U	2.1 U	2.1 U	0.1 UJ	2 U
Endosulfan II		0.1 UJ	2 U	2.1 U	2.1 U	0.1 UJ	2 U
4,4'-DDD		0.1 UJ	2 U	2.1 U	2.1 U	0.1 UJ	2 U
Endosulfan sulfate		0.1 UJ	2 U	2.1 U	2.1 U	0.1 UJ	2 U
4,4'-DDT		0.1 UJ	2 U	2.1 U	2.1 U	0.1 UJ	2 U
Methoxychlor		0.5 UJ	10 U	10 U	10 U	0.52 UJ	10 U
Endrin ketone		0.1 UJ	2 U	2.1 U	2.1 U	0.1 UJ	2 U
Endrin aldehyde		0.1 UJ	2 U	2.1 U	2.1 U	0.1 UJ	2 U
alpha-Chlordane		0.05 UJ	1 U	1 U	1 U	0.052 UJ	1 U
gamma-Chlordane		0.05 UJ	1 U	1 U	1 U	0.052 UJ	1 U
Toxaphene		5 UJ	100 U	100 U	100 U	5.2 UJ	100 U
Aroclor-1016		1 UJ	20 U	21 U	21 U	1 UJ	20 U
Aroclor-1221		2 UJ	40 U	41 U	41 U	2.1 UJ	41 U
Aroclor-1232		1 UJ	20 U	21 U	21 U	1 UJ	20 U
Aroclor-1242		1 UJ	20 U	21 U	21 U	1 UJ	20 U
Aroclor-1248		1 UJ	20 U	21 U	21 U	1 UJ	20 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-05-10 GPT510G1P1 02/23/99 Primary	GPT-05-11 GPT511G1P1 02/22/99 Primary	GPT-05-12 GPT512G1P1 02/22/99 Primary	GPT-05-13 GPT513G1P1 02/22/99 Primary	GPT-05-14 GPT514G1P1 02/22/99 Primary	GPT-07-01 GPT71G1P1 02/22/99 Primary
Aroclor-1254		1 UJ	20 U	21 U	21 U	1 UJ	20 U
Aroclor-1260		1 UJ	20 U	21 U	21 U	1 UJ	20 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-08-05	GPT-08-05	GPT-08-06	GPT-08-07	GPT-08-08	GPT-08-09
	SAMPLE ID	GPT85G1P1	GPT85G1D1	GPT86G1P1	GPT87G1P1	GPT88G1P1	GPT89G1P1
	DATE	02/21/99	02/21/99	02/21/99	02/21/99	02/21/99	02/21/99
	RESULT TYPE	Primary	Duplicate 1	Primary	Primary	Primary	Primary
alpha-BHC		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	1 U	0.05 UJ
beta-BHC		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	1 U	0.05 UJ
delta-BHC		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	1 U	0.05 UJ
gamma-BHC(Lindane)		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	1 U	0.05 UJ
Heptachlor		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	1 U	0.05 UJ
Aldrin		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	1 U	0.05 UJ
Heptachlor epoxide		0.05 UJ	0.016 J	0.05 UJ	0.05 UJ	1 U	0.05 UJ
Endosulfan I		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	1 U	0.05 UJ
Dieldrin		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U	0.1 UJ
4,4'-DDE		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U	0.0053 J
Endrin		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U	0.1 UJ
Endosulfan II		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U	0.1 UJ
4,4'-DDD		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U	0.1 UJ
Endosulfan sulfate		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U	0.1 UJ
4,4'-DDT		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U	0.1 UJ
Methoxychlor		0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	10 U	0.5 UJ
Endrin ketone		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U	0.1 UJ
Endrin aldehyde		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 U	0.1 UJ
alpha-Chlordane		0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	1 U	0.05 UJ
gamma-Chlordane		0.026 J	0.03 J	0.05 UJ	0.05 UJ	1 U	0.029 J
Toxaphene		5 UJ	5 UJ	5 UJ	5 UJ	100 U	5 UJ
Aroclor-1016		1 UJ	1 UJ	1 UJ	1 UJ	20 U	1 UJ
Aroclor-1221		2 UJ	2 UJ	2 UJ	2 UJ	40 U	2 UJ
Aroclor-1232		1 UJ	1 UJ	1 UJ	1 UJ	20 U	1 UJ
Aroclor-1242		1 UJ	1 UJ	1 UJ	1 UJ	20 U	1 UJ
Aroclor-1248		1 UJ	1 UJ	1 UJ	1 UJ	20 U	1 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-08-05 GPT85G1P1 02/21/99 Primary	GPT-08-05 GPT85G1D1 02/21/99 Duplicate 1	GPT-08-06 GPT86G1P1 02/21/99 Primary	GPT-08-07 GPT87G1P1 02/21/99 Primary	GPT-08-08 GPT88G1P1 02/21/99 Primary	GPT-08-09 GPT89G1P1 02/21/99 Primary
Aroclor-1254		1 UJ	1 UJ	1 UJ	1 UJ	20 U	1 UJ
Aroclor-1260		1 UJ	1 UJ	1 UJ	1 UJ	20 U	1 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-08-10	GPT-08-11	GPT-08-12	GPT-08-13	GPT-08-14
	SAMPLE ID	GPT810G1P1	GPT811G1P1	GPT812G1P1	GPT813G1P1	GPT814G1P1
	DATE	02/21/99	02/25/99	02/21/99	02/21/99	02/21/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary
alpha-BHC		0.05 U	0.5 U	0.05 UJ	0.05 UJ	0.053 UJ
beta-BHC		0.05 U	0.5 U	0.05 UJ	0.05 UJ	0.053 UJ
delta-BHC		0.05 U	0.5 U	0.05 UJ	0.05 UJ	0.053 UJ
gamma-BHC(Lindane)		0.05 U	0.5 U	0.05 UJ	0.05 UJ	0.053 UJ
Heptachlor		0.05 U	0.5 U	0.05 UJ	0.05 UJ	0.053 UJ
Aldrin		0.05 U	0.5 U	0.05 UJ	0.05 UJ	0.053 UJ
Heptachlor epoxide		0.05 U	0.5 U	0.05 UJ	0.05 UJ	0.053 UJ
Endosulfan I		0.05 U	0.5 U	0.05 UJ	0.05 UJ	0.053 UJ
Dieldrin		0.1 U	1 U	0.1 UJ	0.1 UJ	0.11 UJ
4,4'-DDE		0.1 U	1 U	0.1 UJ	0.1 UJ	0.11 UJ
Endrin		0.1 U	1 U	0.1 UJ	0.1 UJ	0.11 UJ
Endosulfan II		0.1 U	1 U	0.1 UJ	0.1 UJ	0.11 UJ
4,4'-DDD		0.1 U	1 U	0.1 UJ	0.1 UJ	0.11 UJ
Endosulfan sulfate		0.1 U	1 U	0.1 UJ	0.1 UJ	0.11 UJ
4,4'-DDT		0.1 U	1 U	0.1 UJ	0.1 UJ	0.11 UJ
Methoxychlor		0.5 U	5 U	0.5 UJ	0.5 UJ	0.53 UJ
Endrin ketone		0.1 U	1 U	0.1 UJ	0.1 UJ	0.11 UJ
Endrin aldehyde		0.1 U	1 U	0.1 UJ	0.1 UJ	0.11 UJ
alpha-Chlordane		0.05 U	0.5 U	0.05 UJ	0.05 UJ	0.053 UJ
gamma-Chlordane		0.017 J	0.5 U	0.05 UJ	0.05 UJ	0.053 UJ
Toxaphene		5 U	50 U	5 UJ	5 UJ	5.3 UJ
Aroclor-1016		1 U	10 U	1 UJ	1 UJ	1.1 UJ
Aroclor-1221		2 U	20 U	2 UJ	2 UJ	2.1 UJ
Aroclor-1232		1 U	10 U	1 UJ	1 UJ	1.1 UJ
Aroclor-1242		1 U	10 U	1 UJ	1 UJ	1.1 UJ
Aroclor-1248		1 U	10 U	1 UJ	1 UJ	1.1 UJ

Values represent total concentrations unless noted   < = Not detected at indicated reporting limit   --- = Not analyzed

PESTICIDE/PCB RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-08-10	GPT-08-11	GPT-08-12	GPT-08-13	GPT-08-14
	SAMPLE ID	GPT810G1P1	GPT811G1P1	GPT812G1P1	GPT813G1P1	GPT814G1P1
	DATE	02/21/99	02/25/99	02/21/99	02/21/99	02/21/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary
Aroclor-1254		1 U	10 U	1 UJ	1 UJ	1.1 UJ
Aroclor-1260		1 U	10 U	1 UJ	1 UJ	1.1 UJ

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE / SAMPLE ID / DATE / RESULT TYPE	GPT-01-04 GPT14G1P1 02/24/99 Primary	GPT-01-05 GPT15G1P1 02/24/99 Primary	GPT-02-04 GPT24G1P1 02/23/99 Primary	GPT-03-06 GPT36G1P1 02/24/99 Primary	GPT-03-06 GPT36G1D1 02/24/99 Duplicate 1	GPT-03-07 GPT37G1P1 02/24/99 Primary
Phenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethyl)ether		10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodinpropylamine		10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 UJ	10 UJ	10 U	10 U	10 U
4-Chloro-3-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		25 U	25 U	25 U	25 U	25 U	25 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-01-04	GPT-01-05	GPT-02-04	GPT-03-06	GPT-03-06	GPT-03-07
	SAMPLE ID	GPT14G1P1	GPT15G1P1	GPT24G1P1	GPT36G1P1	GPT36G1D1	GPT37G1P1
	DATE	02/24/99	02/24/99	02/23/99	02/24/99	02/24/99	02/24/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Duplicate 1	Primary
2-Chloronaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
Dimethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene		10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
Acenaphthene		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol		25 U	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol		25 U	25 U	25 U	25 U	25 U	25 U
Dibenzofuran		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U
Fluorene		10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline		25 UJ	25 U	25 U	25 UJ	25 UJ	25 UJ
4,6-Dinitro-2-methylphenol		25 U	25 U	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine (1)		10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether		10 U	10 UJ	10 UJ	10 U	10 U	10 U
Hexachlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene		10 U	10 U	10 U	10 U	10 U	10 U
Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Carbazole		10 U	10 U	10 U	10 U	10 U	10 U
Di-n-Butylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Pyrene		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-01-04 GPT14G1P1 02/24/99 Primary	GPT-01-05 GPT15G1P1 02/24/99 Primary	GPT-02-04 GPT24G1P1 02/23/99 Primary	GPT-03-06 GPT36G1P1 02/24/99 Primary	GPT-03-06 GPT36G1D1 02/24/99 Duplicate 1	GPT-03-07 GPT37G1P1 02/24/99 Primary
Butylbenzylphthalate		10 U	10 UJ	10 UJ	10 U	10 U	10 U
3,3'-Dichlorobenzidine		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Chrysene		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-ethylhexyl)Phthalate		10 U	10 UJ	10 UJ	10 U	10 U	10 U
Di-n-octylphthalate		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Benzo(b)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-04-09 GPT49G1P1 02/24/99 Primary	GPT-04-09 GPT49G1D1 02/24/99 Duplicate 1	GPT-04-10 GPT410G1P1 02/25/99 Primary	GPT-04-11 GPT411G1P1 02/25/99 Primary	GPT-04-12 GPT412G1P1 02/25/99 Primary	GPT-04-13 GPT413G1P1 02/24/99 Primary
Phenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethyl)ether		10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodinpropylamine		10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene		10 U	10 U	10 U	10 U	10 U	4 J
4-Chloroaniline		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U	3 J
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		25 U	25 U	25 U	25 U	25 U	25 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-04-09	GPT-04-09	GPT-04-10	GPT-04-11	GPT-04-12	GPT-04-13
	SAMPLE ID	GPT49G1P1	GPT49G1D1	GPT410G1P1	GPT411G1P1	GPT412G1P1	GPT413G1P1
	DATE	02/24/99	02/24/99	02/25/99	02/25/99	02/25/99	02/24/99
	RESULT TYPE	Primary	Duplicate 1	Primary	Primary	Primary	Primary
2-Chloronaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
Dimethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene		10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
Acenaphthene		10 U	10 U	10 U	10 U	10 U	16
2,4-Dinitrophenol		25 U	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol		25 U	25 U	25 U	25 U	25 U	25 U
Dibenzofuran		10 U	10 U	10 U	10 U	10 U	7 J
2,4-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U
Fluorene		10 U	10 U	10 U	10 U	10 U	10
4-Nitroaniline		25 UJ	25 UJ	25 UJ	25 UJ	25 UJ	25 UJ
4,6-Dinitro-2-methylphenol		25 U	25 U	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine (1)		10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether		10 U	10 U	10 UJ	10 UJ	10 U	10 U
Hexachlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene		10 U	10 U	10 U	10 U	10 U	10
Anthracene		10 U	10 U	10 U	10 U	10 U	2 J
Carbazole		10 U	10 U	10 U	10 U	10 U	5 J
Di-n-Butylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene		10 U	10 U	10 U	10 U	10 U	2 J
Pyrene		10 U	10 U	10 U	10 U	10 U	2 J

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-04-09 GPT49G1P1 02/24/99 Primary	GPT-04-09 GPT49G1D1 02/24/99 Duplicate 1	GPT-04-10 GPT410G1P1 02/25/99 Primary	GPT-04-11 GPT411G1P1 02/25/99 Primary	GPT-04-12 GPT412G1P1 02/25/99 Primary	GPT-04-13 GPT413G1P1 02/24/99 Primary
Butylbenzylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Chrysene		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-ethylhexyl)Phthalate		10 U	12 J	10 UJ	10 UJ	20 J	10 U
Di-n-octylphthalate		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Benzo(b)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-04-14 GPT414G1P1 02/25/99 Primary	GPT-04-15 GPT415G1P1 02/25/99 Primary	GPT-05-07 GPT57G1P1 02/22/99 Primary	GPT-05-07 GPT57G1D1 02/22/99 Duplicate 1	GPT-05-08 GPT58G1P1 02/22/99 Primary	GPT-05-09 GPT59G1P1 02/22/99 Primary
Phenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethyl)ether		10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodinpropylamine		10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 UJ	10 UJ	10 UJ	10 UJ
4-Chloro-3-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		25 U	25 U	25 U	25 U	25 U	25 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-04-14	GPT-04-15	GPT-05-07	GPT-05-07	GPT-05-08	GPT-05-09
	SAMPLE ID	GPT414G1P1	GPT415G1P1	GPT57G1P1	GPT57G1D1	GPT58G1P1	GPT59G1P1
	DATE	02/25/99	02/25/99	02/22/99	02/22/99	02/22/99	02/22/99
	RESULT TYPE	Primary	Primary	Primary	Duplicate 1	Primary	Primary
2-Chloronaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
Dimethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene		10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
Acenaphthene		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol		25 U	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol		25 U	25 U	25 U	25 U	25 U	25 U
Dibenzofuran		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U
Fluorene		10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline		25 UJ	25 UJ	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol		25 U	25 U	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine (1)		10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether		10 UJ	10 U	10 UJ	10 UJ	10 UJ	10 UJ
Hexachlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene		10 U	10 U	10 U	10 U	10 U	10 U
Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Carbazole		10 U	10 U	10 U	10 U	10 U	10 U
Di-n-Butylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Pyrene		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted   < = Not detected at indicated reporting limit   --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-04-14	GPT-04-15	GPT-05-07	GPT-05-07	GPT-05-08	GPT-05-09
	SAMPLE ID	GPT414G1P1	GPT415G1P1	GPT57G1P1	GPT57G1D1	GPT58G1P1	GPT59G1P1
	DATE	02/25/99	02/25/99	02/22/99	02/22/99	02/22/99	02/22/99
	RESULT TYPE	Primary	Primary	Primary	Duplicate 1	Primary	Primary
Butylbenzylphthalate		10 U	10 U	10 UJ	10 UJ	10 UJ	10 UJ
3,3'-Dichlorobenzidine		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Chrysene		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-ethylhexyl)Phthalate		10 U	10 U	10 UJ	10 UJ	10 UJ	10 UJ
Di-n-octylphthalate		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Benzo(b)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-05-10 GPT510G1P1 02/23/99 Primary	GPT-05-11 GPT511G1P1 02/23/99 Primary	GPT-05-12 GPT512G1P1 02/23/99 Primary	GPT-05-13 GPT513G1P1 02/23/99 Primary	GPT-05-14 GPT514G1P1 02/23/99 Primary	GPT-07-01 GPT71G1P1 02/23/99 Primary
Phenol		40 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethyl)ether		40 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		40 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		40 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		40 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		40 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol		40 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		40 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodinpropylamine		40 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol		40 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane		40 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		40 U	10 U	10 U	10 U	10 U	10 U
Isophorone		40 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		40 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		40 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethoxy)methane		40 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		40 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		40 U	10 U	10 U	10 U	10 U	10 U
Naphthalene		40 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		40 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		40 UJ	10 UJ	10 U	10 UJ	10 U	10 UJ
4-Chloro-3-Methylphenol		40 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		40 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		40 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		40 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		100 U	25 U	25 U	25 U	25 U	25 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-05-10	GPT-05-11	GPT-05-12	GPT-05-13	GPT-05-14	GPT-07-01
	SAMPLE ID	GPT510G1P1	GPT511G1P1	GPT512G1P1	GPT513G1P1	GPT514G1P1	GPT71G1P1
	DATE	02/23/99	02/23/99	02/23/99	02/23/99	02/23/99	02/23/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
2-Chloronaphthalene		40 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		100 U	25 U	25 U	25 U	25 U	25 U
Dimethylphthalate		40 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene		40 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		40 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		100 U	25 U	25 U	25 U	25 U	25 U
Acenaphthene		40 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol		100 U	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol		100 U	25 U	25 U	25 U	25 U	25 U
Dibenzofuran		40 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		40 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate		40 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether		40 U	10 U	10 U	10 U	10 U	10 U
Fluorene		40 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline		100 U	25 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol		100 U	25 U	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine (1)		40 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether		40 UJ	10 UJ	10 U	10 UJ	10 U	10 UJ
Hexachlorobenzene		40 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		100 U	25 UJ	25 U	25 U	25 U	25 U
Phenanthrene		40 U	10 U	10 U	10 U	10 U	10 U
Anthracene		40 U	10 U	10 U	10 U	10 U	10 U
Carbazole		40 U	10 U	10 U	10 U	10 U	10 U
Di-n-Butylphthalate		40 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene		40 U	10 U	10 U	10 U	10 U	10 U
Pyrene		40 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-05-10 GPT510G1P1 02/23/99 Primary	GPT-05-11 GPT511G1P1 02/23/99 Primary	GPT-05-12 GPT512G1P1 02/23/99 Primary	GPT-05-13 GPT513G1P1 02/23/99 Primary	GPT-05-14 GPT514G1P1 02/23/99 Primary	GPT-07-01 GPT71G1P1 02/23/99 Primary
Butylbenzylphthalate		40 UJ	10 U	10 U	10 UJ	10 U	10 UJ
3,3'-Dichlorobenzidine		40 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)Anthracene		40 U	10 U	10 U	10 U	10 U	10 U
Chrysene		40 U	10 U	10 U	10 U	10 U	10 U
bis(2-ethylhexyl)Phthalate		40 UJ	10 UJ	10 U	10 UJ	11	10 UJ
Di-n-octylphthalate		40 UJ	10 UJ	10 U	10 UJ	10 U	10 UJ
Benzo(b)fluoranthene		40 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene		40 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene		40 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		40 U	10 U	10 UJ	10 U	10 UJ	10 U
Dibenzo(a,h)anthracene		40 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		40 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-08-05	GPT-08-05	GPT-08-06	GPT-08-07	GPT-08-08	GPT-08-09
	SAMPLE ID	GPT85G1P1	GPT85G1D1	GPT86G1P1	GPT87G1P1	GPT88G1P1	GPT89G1P1
	DATE	02/21/99	02/21/99	02/21/99	02/21/99	02/21/99	02/21/99
	RESULT TYPE	Primary	Duplicate 1	Primary	Primary	Primary	Primary
Phenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethyl)ether		10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodinpropylamine		10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 UJ	10 U	10 U	10 U	10 UJ
4-Chloro-3-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		25 U	25 U	25 U	25 U	25 U	25 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-08-05 GPT85G1P1 02/21/99 Primary	GPT-08-05 GPT85G1D1 02/21/99 Duplicate 1	GPT-08-06 GPT86G1P1 02/21/99 Primary	GPT-08-07 GPT87G1P1 02/21/99 Primary	GPT-08-08 GPT88G1P1 02/21/99 Primary	GPT-08-09 GPT89G1P1 02/21/99 Primary
2-Chloronaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
Dimethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene		10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
Acenaphthene		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol		25 U	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol		25 U	25 U	25 U	25 U	25 U	25 U
Dibenzofuran		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U
Fluorene		10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline		25 U	25 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol		25 U	25 U	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine (1)		10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether		10 U	10 UJ	10 U	10 U	10 U	10 UJ
Hexachlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene		10 U	10 U	10 U	10 U	10 U	10 U
Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Carbazole		10 U	10 U	10 U	10 U	10 U	10 U
Di-n-Butylphthalate		10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene		10 U	10 U	10 U	10 U	10 U	2 J
Pyrene		10 UJ	10 U	10 U	10 U	10 U	1 J

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-08-05	GPT-08-05	GPT-08-06	GPT-08-07	GPT-08-08	GPT-08-09
	SAMPLE ID	GPT85G1P1	GPT85G1D1	GPT86G1P1	GPT87G1P1	GPT88G1P1	GPT89G1P1
	DATE	02/21/99	02/21/99	02/21/99	02/21/99	02/21/99	02/21/99
	RESULT TYPE	Primary	Duplicate 1	Primary	Primary	Primary	Primary
Butylbenzylphthalate		10 U	10 UJ	10 U	10 U	10 U	10 UJ
3,3'-Dichlorobenzidine		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)Anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Chrysene		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-ethylhexyl)Phthalate		10 U	10 UJ	16	10 U	10 U	10 UJ
Di-n-octylphthalate		10 U	10 UJ	10 U	10 U	10 U	10 UJ
Benzo(b)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene		10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		10 UJ	10 U	10 UJ	10 UJ	10 UJ	10 U
Dibenzo(a,h)anthracene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-08-10 GPT810G1P1 02/21/99 Primary	GPT-08-11 GPT811G1P1 02/25/99 Primary	GPT-08-12 GPT812G1P1 02/22/99 Primary	GPT-08-13 GPT813G1P1 02/22/99 Primary	GPT-08-14 GPT814G1P1 02/22/99 Primary
Phenol		10 U	10 U	10 U	10 U	10 U
bis(2-chloroethyl)ether		10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		10 U	10 U	10 U	10 U	10 U
N-Nitrosodinpropylamine		10 U	10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 U
bis(2-chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	10 U	10 U	10 U
Naphthalene		10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 UJ	10 U	10 U
4-Chloro-3-Methylphenol		10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		25 U	25 U	25 U	25 U	25 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-08-10 GPT810G1P1 02/21/99 Primary	GPT-08-11 GPT811G1P1 02/25/99 Primary	GPT-08-12 GPT812G1P1 02/22/99 Primary	GPT-08-13 GPT813G1P1 02/22/99 Primary	GPT-08-14 GPT814G1P1 02/22/99 Primary
2-Chloronaphthalene		10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		25 U	25 U	25 U	25 U	25 U
Dimethylphthalate		10 U	10 U	10 U	10 U	10 U
Acenaphthylene		10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		25 U	25 U	25 U	25 U	25 U
Acenaphthene		10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol		25 U	25 U	25 U	25 U	25 U
4-Nitrophenol		25 U	25 U	25 U	25 U	25 U
Dibenzofuran		10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U
Diethylphthalate		10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether		10 U	10 U	10 U	10 U	10 U
Fluorene		10 U	10 U	10 U	10 U	10 U
4-Nitroaniline		25 U	25 UJ	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol		25 U	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine (1)		10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether		10 U	10 UJ	10 UJ	10 U	10 U
Hexachlorobenzene		10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		25 U	25 U	25 U	25 U	25 U
Phenanthrene		10 U	10 U	10 U	10 U	10 U
Anthracene		10 U	10 U	10 U	10 U	10 U
Carbazole		10 U	10 U	10 U	10 U	10 U
Di-n-Butylphthalate		10 U	10 U	10 U	10 U	10 U
Fluoranthene		10 U	10 U	10 U	10 U	10 U
Pyrene		10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

SVOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-08-10 GPT810G1P1 02/21/99 Primary	GPT-08-11 GPT811G1P1 02/25/99 Primary	GPT-08-12 GPT812G1P1 02/22/99 Primary	GPT-08-13 GPT813G1P1 02/22/99 Primary	GPT-08-14 GPT814G1P1 02/22/99 Primary
Butylbenzylphthalate		10 U	10 U	10 UJ	10 U	10 U
3,3'-Dichlorobenzidine		10 U	10 U	10 U	10 U	10 U
Benzo(a)Anthracene		10 U	10 U	10 U	10 U	10 U
Chrysene		10 U	10 U	10 U	10 U	10 U
bis(2-ethylhexyl)Phthalate		10 U	10 U	10 UJ	10 U	10 U
Di-n-octylphthalate		10 U	10 UJ	10 UJ	10 U	10 U
Benzo(b)fluoranthene		10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene		10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene		10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		10 UJ	10 U	10 U	10 UJ	10 UJ
Dibenzo(a,h)anthracene		10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-01-04	GPT-01-05	GPT-02-04	GPT-03-06	GPT-03-06	GPT-03-07
	SAMPLE ID	GPT14G1P1	GPT15G1P1	GPT24G1P1	GPT36G1P1	GPT36G1D1	GPT37G1P1
	DATE	02/24/99	02/24/99	02/23/99	02/24/99	02/24/99	02/24/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Duplicate 1	Primary
Chloromethane		10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride		10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride		10 U	10 U	10 U	10 U	10 U	10 U
Acetone		16	21	14	10 U	10 U	15
Carbon disulfide		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride		10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Benzene		10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Bromoform		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-01-04 GPT14G1P1 02/24/99 Primary	GPT-01-05 GPT15G1P1 02/24/99 Primary	GPT-02-04 GPT24G1P1 02/23/99 Primary	GPT-03-06 GPT36G1P1 02/24/99 Primary	GPT-03-06 GPT36G1D1 02/24/99 Duplicate 1	GPT-03-07 GPT37G1P1 02/24/99 Primary
Tetrachloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Toluene		10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene		10 U	10 U	10 U	10 U	10 U	10 U
Styrene		10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-04-09	GPT-04-09	GPT-04-10	GPT-04-11	GPT-04-12	GPT-04-13
	SAMPLE ID	GPT49G1P1	GPT49G1D1	GPT410G1P1	GPT411G1P1	GPT412G1P1	GPT413G1P1
	DATE	02/24/99	02/24/99	02/25/99	02/25/99	02/25/99	02/24/99
	RESULT TYPE	Primary	Duplicate 1	Primary	Primary	Primary	Primary
Chloromethane		10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride		10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride		10 U	10 U	10 U	10 U	10 U	10 U
Acetone		6 J	10 U	10 U	10 U	10 U	6 J
Carbon disulfide		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride		10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Benzene		10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Bromoform		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-04-09	GPT-04-09	GPT-04-10	GPT-04-11	GPT-04-12	GPT-04-13
	SAMPLE ID	GPT49G1P1	GPT49G1D1	GPT410G1P1	GPT411G1P1	GPT412G1P1	GPT413G1P1
	DATE	02/24/99	02/24/99	02/25/99	02/25/99	02/25/99	02/24/99
	RESULT TYPE	Primary	Duplicate 1	Primary	Primary	Primary	Primary
Tetrachloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Toluene		10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene		10 U	10 U	10	10 U	10 U	10 U
Ethylbenzene		10 U	10 U	10 U	10 U	10 U	10 U
Styrene		10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-04-14 GPT414G1P1 02/25/99 Primary	GPT-04-15 GPT415G1P1 02/25/99 Primary	GPT-05-07 GPT57G1P1 02/22/99 Primary	GPT-05-07 GPT57G1D1 02/22/99 Duplicate 1	GPT-05-08 GPT58G1P1 02/22/99 Primary	GPT-05-09 GPT59G1P1 02/22/99 Primary
Chloromethane		33 U	10 U	10 U	10 U	10 U	10 U
Bromomethane		33 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride		65	10 U	10 U	10 U	10 U	10 U
Chloroethane		33 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride		33 U	10 U	10 U	10 U	10 U	3 JB
Acetone		33 U	3 J	10 U	10 U	5 J	10 U
Carbon disulfide		33 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		33 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane		33 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		540	10 U	10 U	10 U	10 U	10 U
Chloroform		33 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane		33 U	10 U	10 U	10 U	10 U	10 U
2-Butanone		33 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		33 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride		33 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		33 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		33 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		33 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene		22 J	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane		33 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		9 J	10 U	10 U	10 U	10 U	10 U
Benzene		33 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene		33 U	10 U	10 U	10 U	10 U	10 U
Bromoform		33 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		33 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		33 UJ	10 UJ	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-04-14	GPT-04-15	GPT-05-07	GPT-05-07	GPT-05-08	GPT-05-09
	SAMPLE ID	GPT414G1P1	GPT415G1P1	GPT57G1P1	GPT57G1D1	GPT58G1P1	GPT59G1P1
	DATE	02/25/99	02/25/99	02/22/99	02/22/99	02/22/99	02/22/99
	RESULT TYPE	Primary	Primary	Primary	Duplicate 1	Primary	Primary
Tetrachloroethene		33 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		33 U	10 U	10 U	10 U	10 U	10 U
Toluene		33 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene		33 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene		33 U	10 U	10 U	10 U	10 U	10 U
Styrene		33 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)		33 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-05-10	GPT-05-11	GPT-05-12	GPT-05-13	GPT-05-14	GPT-07-01
	SAMPLE ID	GPT510G1P1	GPT511G1P1	GPT512G1P1	GPT513G1P1	GPT514G1P1	GPT71G1P1
	DATE	02/23/99	02/23/99	02/23/99	02/23/99	02/23/99	02/23/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Chloromethane		10 U	10 U	10 U	10 UJ	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 UJ	10 U	10 U
Vinyl chloride		10 U	10 U	10 U	10 UJ	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 UJ	10 U	10 U
Methylene chloride		10 U	10 U	10 U	10 UJ	10 U	10 U
Acetone		47	57	33	27 J	6 J	4 J
Carbon disulfide		10 U	10 U	10 U	10 UJ	10 U	10 U
1,1-Dichloroethene		10 U	10 U	10 U	10 UJ	10 U	10 U
1,1-Dichloroethane		10 U	10 U	10 U	10 UJ	10 U	10 U
1,2-Dichloroethene (total)		10 U	10 U	10 U	10 UJ	10 U	10 U
Chloroform		10 U	10 U	10 U	10 UJ	10 U	10 U
1,2-Dichloroethane		10 U	10 U	10 U	10 UJ	10 U	10 U
2-Butanone		7 J	10 U	10 U	10 UJ	10 U	10 U
1,1,1-Trichloroethane		10 U	10 U	10 U	10 UJ	10 U	10 U
Carbon tetrachloride		10 U	10 U	10 U	10 UJ	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	10 UJ	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 UJ	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 UJ	10 U	10 U
Trichloroethene		10 U	10 U	10 U	10 UJ	10 U	10 U
Dibromochloromethane		10 U	10 U	10 U	10 UJ	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	10 UJ	10 U	10 U
Benzene		10 U	10 U	10 U	10 UJ	10 U	10 U
trans-1,3-Dichloropropene		10 U	10 U	10 U	10 UJ	10 U	10 U
Bromoform		10 U	10 U	10 U	10 UJ	10 U	10 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 UJ	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 UJ	10 U	10 UJ

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-05-10	GPT-05-11	GPT-05-12	GPT-05-13	GPT-05-14	GPT-07-01
	SAMPLE ID	GPT510G1P1	GPT511G1P1	GPT512G1P1	GPT513G1P1	GPT514G1P1	GPT71G1P1
	DATE	02/23/99	02/23/99	02/23/99	02/23/99	02/23/99	02/23/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Tetrachloroethene		10 U	10 U	10 U	10 UJ	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 UJ	10 U	10 U
Toluene		10 U	10 U	10 U	10 UJ	10 U	10 U
Chlorobenzene		10 U	10 U	10 U	10 UJ	10 U	10 U
Ethylbenzene		10 U	10 U	10 U	10 UJ	10 U	10 U
Styrene		10 U	10 U	10 U	10 UJ	10 U	10 U
Xylenes (total)		10 U	10 U	10 U	10 UJ	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE	GPT-08-05	GPT-08-05	GPT-08-06	GPT-08-07	GPT-08-08	GPT-08-09
	SAMPLE ID	GPT85G1P1	GPT85G1D1	GPT86G1P1	GPT87G1P1	GPT88G1P1	GPT89G1P1
	DATE	02/21/99	02/21/99	02/21/99	02/21/99	02/21/99	02/21/99
	RESULT TYPE	Primary	Duplicate 1	Primary	Primary	Primary	Primary
Chloromethane		10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride		10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride		10 U	10 U	10 U	10 U	10 U	10 U
Acetone		5 J	7 J	8 J	5 J	10 U	3 J
Carbon disulfide		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride		10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene		10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Benzene		10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Bromoform		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-08-05 GPT85G1P1 02/21/99 Primary	GPT-08-05 GPT85G1D1 02/21/99 Duplicate 1	GPT-08-06 GPT86G1P1 02/21/99 Primary	GPT-08-07 GPT87G1P1 02/21/99 Primary	GPT-08-08 GPT88G1P1 02/21/99 Primary	GPT-08-09 GPT89G1P1 02/21/99 Primary
Tetrachloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Toluene		10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene		10 U	10 U	10 U	10 U	10 U	10 U
Styrene		10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)		10 U	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted   < = Not detected at indicated reporting limit   --- = Not analyzed

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-08-10 GPT810G1P1 02/21/99 Primary	GPT-08-11 GPT811G1P1 02/25/99 Primary	GPT-08-12 GPT812G1P1 02/22/99 Primary	GPT-08-13 GPT813G1P1 02/22/99 Primary	GPT-08-14 GPT814G1P1 02/22/99 Primary
Chloromethane		10 U	10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U	10 U
Vinyl chloride		10 U	10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U	10 U
Methylene chloride		10 U	10 U	10 U	10 U	10 U
Acetone		8 J	10 U	10 U	4 J	5 J
Carbon disulfide		10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane		10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		10 U	10 U	10 U	10 U	10 U
Chloroform		10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane		10 U	10 U	10 U	10 U	10 U
2-Butanone		10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride		10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U
Trichloroethene		10 U	10 U	10 U	10 U	10 U
Dibromochloromethane		10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	10 U	10 U
Benzene		10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U
Bromoform		10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 UJ	10 U	10 U	10 U

Values represent total concentrations unless noted   < = Not detected at indicated reporting limit   --- = Not analyzed

VOC RESULTS
GROUNDWATER MONITORING PLAN
PHASE 2

CONSTITUENT (Units in ug/L)	SITE SAMPLE ID DATE RESULT TYPE	GPT-08-10 GPT810G1P1 02/21/99 Primary	GPT-08-11 GPT811G1P1 02/25/99 Primary	GPT-08-12 GPT812G1P1 02/22/99 Primary	GPT-08-13 GPT813G1P1 02/22/99 Primary	GPT-08-14 GPT814G1P1 02/22/99 Primary
Tetrachloroethene		10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 U	10 U
Toluene		10 U	10 U	10 U	10 U	10 U
Chlorobenzene		10 U	10 U	10 U	10 U	10 U
Ethylbenzene		10 U	10 U	10 U	10 U	10 U
Styrene		10 U	10 U	10 U	10 U	10 U
Xylenes (total)		10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

APPENDIX E

PRECISION, ACCURACY, REPRESENTATIVENESS, COMPARABILITY, AND COMPLETENESS REPORTS

PARCC CRITERIA EVALUATION REPORT

NCBC GILFPORT, MISSISSIPPI
Groundwater Monitoring Program

June 1999

Prepared for:

Harding Lawson Associates ES, Inc.
1400 Centerpoint Blvd., Suite 158
Knoxville, Tennessee 37932

Prepared by:

Environmental Data Services, Inc.
5 South State Street
Concord, New Hampshire 03301

Table of Contents

1.0 Introduction

Environmental Data Services, Inc. (EDS) performed data validation and evaluation of chemical analytical data from environmental samples which consisted of groundwater samples. These samples were collected at NCBC Gulfport, Mississippi. The purpose of the data validation was to assess the reliability of the analytical data.

The data validation was performed in accordance with the Naval Facilities Engineering Service Center (NFESC) document Navy Installation Restoration Laboratory Quality Assurance Guide, February 1996. Other guidance documents used are the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, February 1994, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, February 1994. This report summarizes the results of the data quality assessment according to the precision, accuracy, representativeness, completeness and comparability (PARCC) parameters relative to the project specific Data Quality Objectives (DQOs).

The data consisted of NFESC Level D data packages for volatile organic compounds, semivolatile organic compounds, pesticide/PCB compounds, and chlorinated herbicide compounds. Quanterra, Inc. analyzed all of the samples in their North Canton, Ohio, laboratory.

The data validation was performed to assess data quality. Data quality is dependent on field sampling procedures, analytical methods and instrumentation, and sample matrices. Field sampling procedures and laboratory analysis contain potential sources of uncertainty, error, or bias, which can affect the overall quality of the data. Sampling errors can occur from inadequate equipment decontamination, improper sample collection techniques, improper filtering, improper preservation, and homogenization or non-homogenization of samples. Data quality can also be affected by analytical factors such appropriate analytical method, proper equipment maintenance, quality instrumentation and software.

Quality control samples are used to determine the effects of sampling procedures and evaluate laboratory contaminants, laboratory performance, and matrix effects. Quality control samples include trip blanks, equipment rinsate blanks, field source blanks, method blanks, laboratory control samples, surrogate spikes, matrix spike/matrix spike duplicate samples, laboratory duplicates and field duplicates.

Before conducting the PARCC evaluation, the data were validated according to the functional guidelines for organic and inorganic data (USEPA 1994). Samples not meeting functional guideline acceptance criteria were qualified with a data quality flag, as specified below. The qualifiers used for this project are as follows:

Organic Data Qualifiers

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Following review and qualification of the data according to the functional guidelines, the data are then evaluated using PARCC criteria. PARCC criteria provide an evaluation of overall data usability. The following section defines the PARCC criteria in general terms, followed by a specific evaluation for each analysis; volatile organic compounds, semivolatile organic compounds, pesticides/PCBs, and chlorinated herbicides.

Precision

Definition: Precision - Precision is a measure of mutual agreement among individual measurements of the same property, usually under prescribed similar conditions. Precision is best expressed in terms of the standard deviation around the mean.

The Contract Laboratory Program (CLP) defines precision as the relative percent difference of matrix spike recoveries for two matrix spikes of the same sample (matrix spike and matrix spike duplicates recoveries, MS/MSD). Precision was assessed by comparing the results for field sample duplicates and laboratory sample duplicates to provide information on homogeneity of field sampling techniques, improper handling of samples, and on laboratory sample preparation and analysis.

The relative percent difference (RPD) was calculated for the MS and MSD samples, ABB sample and associated field duplicate, and ABB sample and associated laboratory duplicate sample.

Precision was quantitatively measured as the difference of the two sample results divided by the mean and multiplied by 100 in order to be reported as a percentage. The RPD was calculated by the reviewer for each of the duplicate samples and compared to the Data Quality Objectives (DQOs) for this project. Sample heterogeneity, improper sample collection or handling, inconsistent sample preparation, and improper instrument use can cause poor precision. An RPD above the numerical QC limit indicates imprecision which indicates that the actual concentrations may be higher or lower that the reported result.

Accuracy

Definition: Accuracy - Accuracy is the degree of conformity of a measurement (or an average of measurements of the same parameter), X, with an accepted reference or true value, T, usually expressed as the difference of the two values, X-T, or the difference as a percentage of the reference or true value 100(X-T)/T, and sometimes expressed as a ratio, X/T. Accuracy is a measurement of the bias in a system.

Accuracy is defined by the CLP as a percent recovery for a spiked sample for analyses. MS/MSD samples, surrogate recovery samples, and LCS samples are used to evaluate the data for accuracy. Recoveries outside of acceptable QC limits may be due to matrix interference, instrumentation, analyst error, or poor recovery of some of the target compounds.

Accuracy was quantitatively measured as the concentration of the spiked analyte minus the concentration of the spiked compound in the original sample, divided by the true concentration of the spiked analyte and multiplied by 100 in order to be reported as a percentage.

Accuracy was evaluated based on the results of the matrix spike/matrix spike duplicate, laboratory control sample, and surrogate spike. The reviewer calculated the percent recovery value (%R) for each spiking compound and compared the results with the DQOs for this project. Spike recoveries outside the acceptable QC limits indicate a source of bias, where the reported results may be either higher or lower than reported.

Representativeness

Definition: Representativeness - Representativeness is the degree to which data accurately and precisely represent the true value of a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition intended to be characterized.

Representativeness is evaluated using the QC blank sample results. QC blank samples are equipment rinsate blanks, field source blanks, trip blanks, laboratory method blanks for organic analyses and laboratory preparation blanks for inorganic analyses. The presence of target compounds in these QC blanks provide an estimate of bias to the samples due to either cross contamination in the field or laboratory.

Field QC results were used to evaluate representativeness. Positive detection of compounds in the field QC samples identify compounds that could have been introduced to the associated field samples during sample collection, transportation to the laboratory, or during analysis. Contamination should not be found in field QC samples.

Qualifications were made to the data based on field blank contamination when the sample results were below ten (10) times the maximum amount detected in the blank for compounds that are common laboratory contaminants and five (5) times the maximum amount detected in the blank for compounds that are not common contaminants. Samples that were qualified as estimated due to blank contamination were flagged by the data reviewer with a "U." Compounds that were qualified due to blank contamination that were reported below the method detection limit were raised to the detection limit and the laboratory qualifier was replaced by the reviewer with a "U."

Qualifications were made to the data based on blank contamination in the following order:

- Laboratory method blank contamination;

Followed by the highest concentration of contaminant found in any of the following:

- Field blank contamination;
- Trip blank contamination;
- Equipment blank contamination;

Representativeness was also evaluated based on laboratory QC results. Laboratory method blanks were analyzed for the organic methods and preparation blanks were analyzed for inorganic compounds. Positive detection of compounds in the laboratory QC samples identify compounds that could have been introduced to the associated field samples during sample extraction or preparation or during analysis. Contamination should not be found in laboratory QC samples. The detection of target compounds in the laboratory QC samples provides an estimate of bias to the associated samples due to cross contamination in the laboratory.

Qualifications were made to the data based on laboratory blank contamination when the sample results were below ten (10) times the maximum amount detected in the blank for compounds that are common laboratory contaminants and five (5) times the maximum amount detected in the blank for compounds that are not common contaminants. Samples that were qualified as estimated due to laboratory blank contamination were flagged by the data reviewer with a "U." Compounds that were qualified due to blank contamination that were reported below the method detection limit were raised to the detection limit and the laboratory qualifier was replaced by the reviewer with a "U."

Comparability

Definition: Comparability - Comparability is the confidence with which one data set can be compared to another. Comparability may be assessed by comparing sampling methodology, analytical methodology, and measurement units of reported data.

The comparability parameter assessment relies almost exclusively on the results of the data validation process. Each data reviewer assessed the comparability parameter by determining whether or not the data was acquired by using standard operating procedures for sampling, standard analytical methods for analysis and by reporting analytical results in standard units.

Comparability also may be assessed by review of the analytical method practical quantitation limits. The DQOs for this project specify that the any compound detected between the detection limit and practical quantitation limit will be reported and qualified as estimated (J).

Completeness

Definition: Completeness - Completeness is a measure of the amount of valid data expressed as a percentage obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions.

Completeness is evaluated to determine if an acceptable level of data was obtained so that a project can be completed with valid usable data. Valid usable values are data that are not rejected (R qualifier) by comparison of the analytical procedures with Level C Data Validation Guidelines as specified by NFESC. Completeness is quantitatively measured as the total number of analytes in each sample, equipment rinsate, field and trip blanks and duplicate samples, minus the total number of rejected analytes divided by the total number of analytes. The completeness criterion should be defined to be consistent with the project DQOs.

2.0 Volatile Organic Compounds (VOC)

A total of seven (7) VOC SDGs were analyzed for this project. The SDGs were as follows:

HLG01, HLG02, HLG03, HLG04, HLG05, HLG06, and HLG07

This section discusses the QC supporting documentation as defined by the PARCC criteria and evaluated based on the project specific DQOs.

2.1 Precision

The relative percent difference (RPD) between MS/MSD samples and field duplicate samples is used to assess precision.

MS/MSD Samples

For all SDGs, at least one MS/MSD sample was analyzed. The functional guidelines establish RPD QC criteria limits for MS/MSD samples as follows:

MS/MSD Criteria

	Water RPD	Soil/Sediment RPD
1,1-Dichloroethene	14	22
Trichloroethene	14	24
Benzene	11	21
Toluene	13	21
Chlorobenzene	13	21

The RPD values for the MS/MSD analytical results for each SDG were acceptable.

Field Duplicate Samples

Field duplicate sample results were non-detect for SDGs HLG02, HLG03, HLG04, and HLG05. The following tables summarize the field duplicate results in the remaining SDGs. No qualifications were made based on these results.

SDG HLG01

Sample	R5001G1P1 ug/L	R5001G1P1DUP ug/L	RPD
1,1-Dichloroethene	1	1	0
1,1-Dichloroethane	3	3	0
1,2-Dichloroethane	3	3	0

Sample	R5015G1P1 ug/L	R5015G1P1DUP ug/L	RPD
None	ND	ND	--

SDG HLG06

Compound	GPT85G1P1 ug/L	GPT85G1D1 ug/L	RPD
Acetone	5	7	33

Compound	GPT57G1P1 ug/L	GPT57G1D1 ug/L	RPD
None	ND	ND	--

SDG HLG07

Compound	GPT36G1P1 ug/L	GPT36G1D1 ug/L	RPD
None	ND	ND	--

Compound	GPT49G1P1 ug/L	GPT49G1D1 ug/L	RPD
Acetone	6	10U	NC

2.2 Accuracy

The percent recovery results of MS/MSD samples and surrogate spikes are used to assess accuracy. Additionally, initial and continuing calibration results can be used to evaluate accuracy. Relative response factors (RRFs), percent relative standard deviation (%RSD) and percent difference (%D) are the three parameters used to evaluate instrument calibration.

MS/MSD Samples

The functional guidelines establish % Recovery QC criteria limits for MS/MSD samples as follows:

MS/MSD Criteria

	Water %R	Soil/Sediment %R
1,1-Dichloroethene	61-145	59-172
Trichloroethene	71-120	62-137
Benzene	76-127	66-142
Toluene	76-125	59-139
Chlorobenzene	75-130	60-133

The percent recovery (%R) values for all of the MS/MSD samples were acceptable.

Surrogate Spikes

Three surrogate compounds are used for spiking the volatile organic samples. Surrogate spike recoveries for volatile organic analyses were compared to the QC acceptance criteria as specified in the functional guidelines. These criteria are summarized as follows:

System Monitoring Compound Criteria

	Water %R	Soil/Sediment %R
Toluene-d_8 (TOL)	88-110	84-138
Bromofluorobenzene (BFB)	86-115	59-113
1,2-Dichloroethane-d_4 (DCE)	76-114	70-121

All surrogate recovery results were acceptable with the exception of the following:

SDG HLG06

Samples GPT513G1P1 and GPT513G1P1RE exhibited low %R values for surrogate compound S2-bromofluorobenzene of 84% and 83%, respectively. All results for both samples have been qualified (J) for positive results and (UJ) for non-detects.

SDG HLG07

Sample QATB803-2 exhibited a high %R value for surrogate compound toluene-d8 of 113%, however, all results are non-detect and no qualifications were required. A second analysis failed due to instrument failure.

Initial and Continuing Calibration

Initial and continuing calibration results can be used to evaluate accuracy within an SDG. Relative response factors (RRFs), percent relative standard deviation (%RSD) and percent difference (%D) are the three parameters used to evaluate instrument calibration. The RRF is a measure of relative response of an analyte compared to its internal standard. The %RSD is an expression of the linearity of instrument response and the %D is a comparison of the continuing calibration instrument response with its initial calibration response. The RRF is the most critical of the three parameters.

All initial calibration criteria were met, however, compounds in all seven SDGs were qualified due to continuing calibration problems and are summarized below.

SDG HLG01

The continuing calibration analyzed on 10/19/98 exhibited high %D values for acetone, 1,2-dichloroethane, 2-butanone, 4-methyl-2-pentanone, and 2-hexanone of 38.2%, 25.7%, 41.4%, 35.4%, and 55.6%, respectively. All of the above compounds have been qualified (J) for positive results and (UJ) for non-detects in all samples except R5009G1P1.

The continuing calibration analyzed on 10/20/98 exhibited high %D values for chloromethane, chloroethane, 1,2-dichloroethane, and trans-1,3-dichloropropene of 27.6%, 38.9%, 35.7%, and 26.0%, respectively. All of the above compounds have been qualified (UJ) in associated sample R5009G1P1 since all results are non-detect.

SDG HLG02

The continuing calibration analyzed on 10/20/98 exhibited high %D values for chloromethane, chloroethane, 1,2-dichloroethane, and trans-1,3-dichloropropene of 27.6%, 38.9%, 35.7%, and 26.0%, respectively. All of the above compounds have been qualified (UJ) in all samples since all results are non-detect.

SDG HLG03

The continuing calibration analyzed on 10/22/98 exhibited a high %D value for acetone of 30.7%. Acetone has been qualified (J) for positive results and (UJ) for non-detects in all samples.

SDG HLG04

The continuing calibration analyzed on 10/29/98 exhibited a high %D value for bromomethane of 29.8%. Bromomethane has been qualified (UJ) in all samples except R4005G1P1, R4006G1P1, and R4011G1P1 since all results are non-detect.

The continuing calibration analyzed on 11/05/98 exhibited high %D values for chloroethane, acetone, 2-butanone, and 2-hexanone of 25.8%, 37.8%, 26.6%, and 28.4%, respectively. All four compounds have been qualified (UJ) in associated samples R4005G1P1, R4006G1P1, and R4011G1P1 since all results are non-detect.

SDG HLG05

The continuing calibration analyzed on 11/05/98 exhibited high %D values for chloroethane, acetone, 2-butanone, and 2-hexanone of 25.8%, 37.8%, 26.6%, and 28.4%. All four compounds have been qualified (J) for positive results and (UJ) for non-detects in all samples except HLDBLK1.

The continuing calibration analyzed on 11/9/98 exhibited high %D values for bromomethane, chloroethane, acetone, 2-butanone, 1,1,1-trichloroethane, and 2-hexanone of 25.4%, 26.1%, 68.8%, 55.8%, 26.8%, and 63.1%, respectively. All of the above compounds have been qualified (UJ) in associated sample HLDBLK1 since all results are non-detect.

SDG HLG06

The continuing calibrations analyzed on 2/26/99 and 2/27/99 exhibited acceptable %D and RRF values. No qualifications were required.

The continuing calibration analyzed on 3/1/99 exhibited a high %D value for 2-hexanone of 29.1%. 2-Hexanone has been qualified (J) for positive results and (UJ) for non-detects in samples GPT59G1P1, GPT514G1P1, GPT513G1P1RE, GPT71G1P1, GPT24G1P1, and QATB802.

SDG HLG07

The continuing calibrations analyzed on 3/1/99 and 3/3/99 exhibited a high %D value for 2-hexanone of 29.1% and 29.4%, respectively. 2-Hexanone has been qualified (J) for positive results and (UJ) for non-detects in all samples.

2.3 Representativeness

Method blanks, equipment rinsate blanks, trip blanks, and field source blanks are used to evaluate representativeness. A summary of the contaminants found in these blanks can be found below. The laboratory method blank was applied first to the samples, followed by the highest concentration of the equipment rinsate blank, trip blank and field source blank.

Qualifications were made to the data based on blank contamination when the sample results were below ten (10) times the maximum amount detected in the blank for compounds that are common laboratory contaminants and five (5) times the maximum amount detected in the blank for compounds that are not common contaminants. Samples that were qualified as undetected due to blank contamination were flagged by the data reviewer with a "U." Compounds that were qualified due to blank contamination that were reported below the method detection limit were raised to the detection limit and the laboratory qualifier was replaced by the reviewer with a "U." If a sample result exceeded 5X or 10X the amount in the blank, the result was not amended.

The following summarizes the method blanks, equipment rinsate blanks, trip blanks, and field source blanks.

Method Blanks

The method blanks for SDG HLG02 were free of contamination. For all other SDGs, the method blank contamination and qualifications are summarized below.

SDG HLG01

Method blank VBLK1 (10/19/98) exhibited methylene chloride contamination at 0.2 ug/L. Positive methylene chloride results have been qualified (U) in all samples except R009G1P1.

SDG HLG03

Method blank VBLK1 (10/29/98) exhibited methylene chloride contamination at 1 ug/L. Methylene chloride has been qualified (U) in all samples.

SDG HLG04

Method blank VBLK1 (10/29/98) exhibited methylene chloride contamination at 1 ug/L. Methylene chloride has been qualified (U) in all samples except R4005G1P1, R4006G1P1, and R4011G1P1.

SDG HLG05

Method blank VBLK1 (11/09/98) exhibited methylene chloride contamination at 0.2 ug/L. Methylene chloride has been qualified (U) in associated sample HLDBLK1.

SDG HLG06

Method blank VBLK3 (3/1/99) exhibited methylene chloride contamination at 4 ug/L. Methylene chloride has been qualified (U) in associated sample GPT59G1P1.

SDG HLG07

Method blank VBLK3 (3/1/99) exhibited methylene chloride contamination at 4 ug/L, however, all associated results are non-detect and no qualifications were required.

Method blank VBLK4 (3/3/99) exhibited bromomethane contamination at 3 ug/L, however, all associated results are non-detect and no qualifications were required.

Equipment/Rinsate Blanks

Equipment rinsate blanks are used to evaluate contaminants that may have been introduced through the sampling equipment or laboratory handling of samples. Equipment/rinsate blank contamination and qualifications are summarized below.

SDG HLG01

Rinsate blank QARI300 exhibited acetone, chloroform, bromodichloromethane, bromoform, and toluene contamination at 25 ug/L, 0.8 ug/L, 0.9 ug/L, 0.3 ug/L, and 0.9 ug/L, respectively. Toluene has been qualified (U) in associated sample R5001G1P1. All other associated results are non-detect and no further qualifications were required.

Rinsate blank QARI301 in SDG HLG02 exhibited methylene chloride contamination at 0.4 ug/L, however, all associated results have already been qualified due to blank contamination.

SDG HLG02

Rinsate blank QARI301 exhibited methylene chloride contamination at 0.4 ug/L, however, all associated results have already been qualified due to trip blank contamination and no further qualifications were required.

SDG HLG03

Rinsate blank QARI302 exhibited acetone and chloroform contamination at 14 ug/L and 1 ug/L, respectively, however, all associated results are non-detect and no qualifications were required.

SDG HLG04

Rinsate blank QARI302 exhibited acetone and chloroform contamination at 14 ug/L and 1 ug/L, respectively, however, all associated results are non-detect and no qualifications were required.

SDG HLG05

Rinsate blank QARI303 exhibited chloroform and bromodichloromethane contamination at 1 ug/L and 1 ug/L, respectively, however, all associated results are non-detect and no qualifications were required.

SDG HLG06

Rinsate blank QARI801 exhibited chloroform and bromodichloromethane contamination at 7 ug/L and 2 ug/L, respectively, however, all associated results are non-detect and no qualifications were required.

SDG HLG07

Rinsate blank QARI802 exhibited chloroform and bromodichloromethane contamination at 17 ug/L and 3 ug/L, respectively, however, all associated results are non-detect and no qualifications were required.

Trip Blanks

Trip blanks are used to evaluate contaminants that may have been introduced through storage, shipping, or site conditions. Trip blank contamination and qualifications are summarized below.

SDG HLG01

Trip blank TB301 in SDG HLG02 exhibited methylene chloride contamination at 4 ug/L. Sample R50096G1P1 has been qualified (U).

SDG HLG02

Trip blank TB301 exhibited methylene chloride contamination at 4 ug/L. Positive methylene chloride results have been qualified (U) in all samples.

Trip blank TB300 (in HLG05) was free of contamination. No qualifications were required.

SDG HLG03

Trip blank QATB303 was free of contamination. No qualifications were required.

SDG HLG04

Trip blank QATB303 was free of contamination. No qualifications were required.

Trip blank QATB304 was free of contamination. No qualifications were required.

Trip blank QATB305 (in SDG HLG05) exhibited methylene chloride contamination at 0.4 ug/L. Methylene chloride has been qualified (U) in associated samples R4005G1P1, R4006G1P1, and R4011G1P1.

SDG HLG05

Trip blank QATB305 exhibited methylene chloride contamination at 0.4 ug/L. Methylene chloride has been qualified (U) in associated sample R4003G1P1DUP.

Trip blank QATB306 exhibited methylene chloride contamination at 0.4 ug/L, however, all associated results are non-detect and no qualifications were required.

SDG HLG06

Trip blank QATB801 was free of contamination. No qualifications were required.

Trip blank QATB802 was free of contamination. No qualifications were required.

SDG HLG07

Trip blank QATB803 was free of contamination. No qualifications were required.

Trip blank QATB803-2 was free of contamination. No qualifications were required.

Field Source Blanks

Field source blanks are used to evaluate contaminants that may have been introduced through site conditions. Field source blanks are typically prepared in the field (on-site) as opposed to a trip blank, which is typically prepared at the laboratory and shipped with the cooler. Field blank contamination and qualifications are summarized below.

SDG HLG01

Field blank QADI300 exhibited chloroform and bromodichloromethane contamination at 2 ug/L and 1 ug/L, respectively, however, all associated results are non-detect and no qualifications were required.

SDG HLG02

Field blank QADI300 (in SDG HLG05) exhibited chloroform and bromodichloromethane contamination at 2 ug/L and 1 ug/L, respectively, however, all associated results are non-detect and no qualifications were required.

Hold blank HLDBLK1 exhibited methylene chloride and chloroform contamination at 0.9 ug/L and 0.4 ug/L, respectively, however, all associated results are non-detect or have already been qualified due to trip blank contamination and no further qualifications were required.

SDG HLG03

Field blank QADI301 exhibited acetone, chloroform, and bromodichloromethane contamination at 6 ug/L, 4 ug/L, and 2 ug/L, respectively, however, all associated results are non-detect and no qualifications were required.

SDG HLG04

Field blank QADI301 exhibited acetone, chloroform, and bromodichloromethane contamination at 6 ug/L, 4 ug/L, and 2 ug/L, respectively, however, all associated results are non-detect and no qualifications were required.

Hold blank HLDBLK was free of contamination. No qualifications were required.

SDG HLG05

Field blank QADI301 (in SDG HLG04) exhibited acetone, chloroform, and bromodichloromethane contamination at 6 ug/L, 4 ug/L, and 2 ug/L, respectively. Acetone has been qualified (U) in associated sample R4015G1P1. All other associated results are non-detect and no further qualifications were required.

Hold blank HLDBLK1 was free of contamination. No qualifications were required.

SDG HLG06

Field blank QADI801 exhibited chloroform contamination at 5 ug/L, however, all associated results are non-detect and no qualifications were required.

Hold blank HOLD BLANK was free of contamination. No qualifications were required.

SDG HLG07

Field blank QADI801 (from SDG HLG06) exhibited chloroform contamination at 5 ug/L, however, all associated results are non-detect and no qualifications were required.

Hold blank HOLD BLANK was free of contamination. No qualifications were required.

2.4 Comparability

The laboratory used standard analytical methods for all of the analyses. The method detection limits were below the contract required quantitation limits, therefore, the comparability was considered acceptable.

2.5 Completeness

There were 0 rejections of the data in the SDGs that were analyzed for volatile organic compounds. The percent of valid data for the volatile analysis is 100%.

3.0 Semivolatile Organic Compounds (SVOC)

A total of seven (7) SVOC SDGs were analyzed for this project. The SDGs are as follows:

HLG01, HLG02, HLG03, HLG04, HLG05, HLG06, and HLG07

This section discusses the QC supporting documentation as defined by the PARCC criteria and evaluated based on the project specific DQOs.

3.1 Precision

MS/MSD Samples

The relative percent difference (RPD) between MS/MSD samples and field duplicate samples is used to assess precision.

The functional guidelines establish RPD QC criteria limits for MS/MSD samples as follows:

MS/MSD CRITERIA

	Water RPD	Soil/Sediment RPD
Phenol	42	35
2-Chlorophenol	40	50
1,4-Dichlorobenzene	28	27
N-nitroso-di-n-propylamine	38	38
1,2,4-Trichlorobenzene	28	23
4-Chloro-3-methylphenol	42	33
Acenaphthene	31	19
4-Nitrophenol	50	50
2-4-Dinitrotoluene	38	47
Pentachlorophenol	50	47
Pyrene	31	36

MS/MSD samples were not analyzed for SDGs HGL03, HGL04, and HGL05. MS/MSD RPD results were acceptable for the remaining SDGs with the exception of SDG HLG02. MS/MSD RPD results and qualifications for SDG HLG02 are summarized below.

SDG HLG02

MS/MSD sample R8010G1P1 exhibited a high RPD value for pyrene of 50. Pyrene has been qualified (UJ) in sample R8010G1P1.

Field Duplicate Samples

Field duplicate sample results were non-detect for SDGs HLG02, HLG05, and HLG06. Field duplicate samples were not analyzed in SDGs HLG03 and HLG04. Field duplicate results in SDGs HLG01 and HLG07 are summarized below. No qualifications were made based on field duplicate results.

SDG HLG01

Sample	R5001G1P1 ug/L	R5001G1P1DUP ug/L	RPD
Bis(2-ethylhexyl)phthalate	2	10U	NC

Sample	R5015G1P1 ug/L	R5015G1P1DUP ug/L	RPD
None	ND	ND	--

SDG HLG07

Compound	GPT36G1P1 ug/L	GPT36G1D1 ug/L	RPD
None	ND	ND	--

Compound	GPT49G1P1 ug/L	GPT49G1D1 ug/L	RPD
Bis(2-ethylhexyl)phthalate	2	12	143

3.2 Accuracy

The percent recovery results of MS/MSD samples and surrogate spikes are used to assess accuracy. Additionally, initial and continuing calibration results can be used to evaluate accuracy. Relative response factors (RRFs), percent relative standard deviation (%RSD) and percent difference (%D) are the three parameters used to evaluate instrument calibration.

MS/MSD Samples

The functional guidelines establish % Recovery QC criteria limits for MS/MSD samples as follows:

MS/MSD CRITERIA

	Water %R	Soil/Sediment %R
Phenol	12-110	26-90
2-Chlorophenol	27-123	25-102
1,4-Dichlorobenzene	36-97	28-104

N-Nitroso-di-n-propylamine	41-116	41-126
1,2,4-Trichlorobenzene	39-98	38-107
4-Chloro-3-methylphenol	23-97	26-103
Acenaphthene	46-118	31-137
4-Nitrophenol	10-80	11-114
2-4-Dinitrotoluene	24-96	28-89
Pentachlorophenol	9-103	17-109
Pyrene	26-127	35-142

MS/MSD samples were not analyzed for SDGs HGL03, HGL04, and HGL05. MS/MSD %R results and qualifications for the remaining SDGs are summarized below.

SDG HLG01

MS/MSD sample R5001G1P1 exhibited a high MS %R value for 4-nitrophenol of 83%, however, this compound is non-detect in sample R5001G1P1 and no qualifications were required.

SDG HLG02

MS/MSD sample R8010G1P1 exhibited a low MS %R value for pyrene of 24%, a high MSD %R value for 4-nitrophenol of 84%, and a high RPD value for pyrene of 50. Pyrene has been qualified (UJ) in sample R8010G1P1. 4-Nitrophenol is non-detect in this sample and no further qualifications were required.

SDG HLG06

MS/MSD sample GPT85G1P1 exhibited low MS/MSD %R values for pyrene of 22%/22% and a high MS %R value for 4-nitrophenol of 93%. Pyrene has been qualified (UJ) in sample GPT85G1P1. 4-Nitrophenol is non-detect in this sample and no further qualifications were required.

SDG HLG07

MS/MSD sample GPT49G1P1 exhibited high MS/MSD %R values for 4-nitrophenol of 85%/83%, however, 4-nitrophenol is non-detect in this sample and no qualifications were required.

Surrogate Spikes

Six surrogate compounds are used for spiking the semivolatile organic samples. Surrogate spike recoveries for semivolatile organic analyses were compared to the QC acceptance criteria as specified in the functional guidelines. These criteria are summarized as follows:

Surrogate Recovery Limits

	Water %R	Soil %R
NBZ (Nitrobenzene-d5)	35-114	23-120
FBP (2-Fluorobiphenyl)	43-116	30-115
TPH (Terphenyl-d14)	33-141	18-137
PHL (Phenol-d5)	10-110	24-113
2FP (2-Fluorophenol)	21-110	25-121
TBP (2,4,6-Tribromophenol)	10-123	19-122

Surrogate recovery values for SDGs HLG02, HLG03, HLG06, and HLG07 were acceptable. Surrogate results and qualifications for SDGs HLG01, HLG04, and HLG05 are summarized below.

SDG HLG01

Sample QARI300 exhibited low %R values for surrogate compounds S4-phenol-d5 and S8-1,2-dichlorobenzene-d4 of 8% and 1%, respectively. All compounds have been qualified (J) for positive results and rejected (R) for non-detects in this sample. The sample was re-extracted (outside of holding times) and exhibited low %R values for surrogate compounds S2-2-fluorobiphenyl and S4-phenol-d5 of 39% and 3%, respectively. All acid compounds have been qualified (J) for positive results and rejected (R) for non-detects for sample QARI300RE. Due to less rejected (R) data, the reanalysis sample results should be used for reporting purposes.

SDG HLG04

Sample QADI301 exhibited a low %R value for surrogate compound S4-phenol-d5 of 9%. All acid compounds have been qualified (J) for positive results and rejected (R) for non-detects in this sample. The sample was reanalyzed (outside of holding times) and exhibited acceptable surrogate %R values. Due to less rejected (R) data, the reanalysis sample results should be used for reporting purposes.

SDG HLG05

Samples QARI303 and QARI304 exhibited low %R values for surrogate compound S4-phenol-d5 of 7% and 3%, respectively. All acid compounds have been qualified (J) for positive results and rejected (R) for non-detects in these samples. The samples were reanalyzed (outside of holding times) and sample QARI304RE exhibited a low %R value for surrogate compound S4-phenol-d5 of 10%, however, all results have already been qualified due to holding times. Due to less rejected (R) data, both reanalysis sample results should be used for reporting purposes.

Initial and Continuing Calibration

Initial and continuing calibration results can be used to evaluate accuracy within an SDG. Relative response factors (RRFs), percent relative standard deviation (%RSD) and percent difference (%D) are the three parameters used to evaluate instrument calibration. The RRF is a measure of relative response of an analyte compared to its internal standard. The %RSD is an expression of the linearity of instrument response and the %D is a comparison of the continuing calibration instrument response with its initial calibration response. The RRF is the most critical of the three parameters.

Initial calibration criteria have been met for all SDGs except HLG07. All SDGs were qualified due to continuing calibration problems and are summarized below.

SDG HLG01

The continuing calibration analyzed on 11/5/98 exhibited a high %D value for 2-nitroaniline of 26.0%. 2-Nitroaniline has been qualified (UJ) in associated samples R5001G1P1, R5001G1P1DUP, R5002G1P1, R5003G1P1, R5004G1P1, R5016G1P1, R5005G1P1, R5006G1P1, R5007G1P1, R5015G1D1, R5010G1P1, R5011G1P1, and R5012G1P1 since all results are non-detect.

The continuing calibration analyzed on 11/6/98 exhibited high %D values for butylbenzylphthalate and di-n-octylphthalate of 26.6% and 27.8%, respectively. Both compounds have been qualified (UJ) in associated samples R5008G1P1, R5009G1P1, R5015G1P1, and QADI300 since all results are non-detect. Both compounds have already been rejected (R) in associated sample QARI300 due to low surrogate recoveries and no further qualifications were required.

SDG HLG02

The continuing calibration analyzed on 11/6/98 exhibited high %D values for butylbenzylphthalate and di-n-octylphthalate of 26.6% and 27.8%, respectively. Both compounds have been qualified (UJ) in all samples except R8008G1P1 since all results are non-detect.

The continuing calibration analyzed on 11/7/98 exhibited high %D values for 2-nitroaniline, pentachlorophenol, and di-n-octylphthalate of 33.1%, 33.9%, and 26.0%, respectively, however, all results for associated sample R8008G1P1 have already been qualified due to holding times and no further qualifications were required.

SDG HLG03

The continuing calibration analyzed on 11/7/98 exhibited high %D values for 2-nitroaniline, pentachlorophenol, and di-n-octylphthalate of 33.1%, 33.9%, and 26.0%, respectively. All of the above compounds have been qualified "UJ" in sample R5014G1P1 since all results are non-detect.

SDG HLG04

The continuing calibration analyzed on 11/8/98 exhibited a high %D value for 2,4-dinitrophenol of 35.0%. 2,4-Dinitrophenol has been qualified (UJ) in all samples except QADI301 and QADI301RE since all results are non-detect.

The continuing calibration analyzed on 11/23/98 exhibited high %D values for butylbenzylphthalate, bis(2-ethylhexyl)phthalate, and di-n-octylphthalate of 34.4%, 25.8%, and 30.9%, respectively, however, all results for associated sample QADI301RE have already been qualified due to holding times and no further qualifications were required.

SDG HLG05

The continuing calibration analyzed on 11/23/98 exhibited high %D values for butylbenzylphthalate, bis(2-ethylhexyl)phthalate, and di-n-octylphthalate of 34.4%, 25.8%, and 30.9%, respectively, however, all results for associated samples QARI303RE and QARI304RE have already been qualified due to holding times and no further qualifications were required.

SDG HLG06

The continuing calibration analyzed on 3/2/99 exhibited a high %D value for indeno(1,2,3-cd)pyrene of 25.7%. Indeno(1,2,3-cd)pyrene has been qualified (J) for positive results and (UJ) for non-detects in samples GPT85G1P1, GPT86G1P1, GPT87G1P1, GPT88G1P1, GPT810G1P1, GPT814G1P1, QARI801, QADI801, GPT512G1P1, GPT514G1P1, and GPT813G1P1.

The continuing calibration analyzed on 3/4/99 exhibited high %D values for hexachlorobutadiene, 4-bromophenyl phenylether, butylbenzylphthalate, bis(2-ethylhexyl)phthalate, and di-n-octylphthalate of 42.2%, 28.9%, 25.2%, 28.3%, and 26.2%, respectively. All of the above compounds have been qualified (J) for positive results and (UJ) for non-detects in samples GPT513G1P1, GPT71G1P1, GPT24G1P1, GPT89G1P1, GPT59G1P1, GPT85G1D1, GPT812G1P1, GPT57G1P1, GPT57G1D1, GPT510G1P1, GPT58G1P1, and GPT511G1P1.

SDG HLG07

The initial calibration analyzed on 3/10/99 exhibited high %RSD values for butylbenzylphthalate, bis(2-ethylhexyl)phthalate, and di-n-octylphthalate of 32.1%, 37.0%, and 43.9%, respectively. Bis(2-ethylhexyl)phthalate has been qualified (J) in associated samples GPT412G1P1 and GPT49G1D1. All other associated results are non-detect and no further qualifications were required.

The continuing calibration analyzed on 3/4/99 exhibited high %D values for hexachlorobutadiene, 4-bromophenyl phenylether, butylbenzylphthalate, bis(2-ethylhexyl)phthalate, and di-n-octylphthalate of 42.2%, 28.9%, 25.2%, 28.3%, and 26.2%, respectively. All of the above compounds have been qualified (J) for positive results and (UJ) for non-detects in sample GPT15G1P1.

The continuing calibration analyzed on 3/10/99 exhibited high %D values for 4-nitroaniline and di-n-octylphthalate of 26.4% and 33.4%, respectively. Both compounds have been qualified (J) for positive results and (UJ) for non-detects in samples GPT36G1P1, GPT36G1D1, GPT37G1P1, GPT14G1P1, GPT412G1P1, GPT413G1P1, GPT415G1P1, GPT49G1P1, and GPT49G1D1.

The continuing calibration analyzed on 3/11/99 exhibited high %D values for 4-nitroaniline, 4-bromophenyl phenylether, bis(2-ethylhexyl)phthalate, and di-n-octylphthalate of 27.4%, 26.9%, 28.1%, and 37.7%, respectively. All of the above compounds have been qualified (J) for positive results and (UJ) for non-detects in samples GPT410G1P1, GPT411G1P1, GPT414G1P1, GPT811G1P1, and QARI802.

3.3 Representativeness

Method blanks, equipment rinsate blanks, and field source blanks are used to evaluate representativeness. A summary of the contaminants found in these blanks can be found below. Several compounds were detected in the various blanks. The laboratory method blank was applied first to the samples, followed by the highest concentration of the equipment rinsate blank and field source blank.

Qualifications were made to the data based on blank contamination when the sample results were below ten (10) times the maximum amount detected in the blank for compounds that are common laboratory contaminants and five (5) times the maximum amount detected in the blank for compounds that are not common contaminants. Samples that were qualified as undetected due to blank contamination were flagged by the data reviewer with a "U." Compounds that were qualified due to blank contamination that were reported below the method detection limit were raised to the detection limit and the laboratory qualifier was replaced by the reviewer with a "U." If a sample result exceeded 5X or 10X the amount in the blank, the result was not amended.

The following summarizes the method blanks, equipment rinsate blanks, and field source blanks.

Method Blanks

Method blanks were analyzed with each SDG to identify contaminants that may have been introduced through analytical instrumentation or sample preparation. All method blanks in SDGs

HLG03, HLG04, HLG05, HLG06, and HLG07 were free of contamination. Method blank contamination and qualifications for SDGs HLG01 and HLG02 are summarized below.

SDG HLG01

Method blank SBLK1 (10/14/98) exhibited phenol and 4-methylphenol contamination at 8 ug/L and 3 ug/L, respectively. Phenol has been qualified (U) in associated samples R5001G1P1DUP, R5002G1P1, and R5006G1P1. All 4-methylphenol associated results are non-detect and no further qualifications were required.

SDG HLG02

Method blank SBLK1 (10/16/98) exhibited bis(2-ethylhexyl)phthalate contamination at 15 ug/L. Bis(2-ethylhexyl)phthalate has been qualified (U) in associated sample QARI301.

Equipment/Rinsate Blanks

Equipment rinsate blanks are used to evaluate contaminants that may have been introduced through the sampling equipment or laboratory handling of samples. Equipment/rinsate blank contamination and qualifications are summarized below.

SDG HLG04

Rinsate blank QARI302 exhibited dimethylphthalate contamination at 22 ug/L, however, this compound is non-detect in all associated samples and no qualifications were required.

SDG HLG06

Rinsate blank QARI801 exhibited phenol contamination at 2 ug/L, however, all associated results are non-detect and no qualifications were required.

Field Source Blanks

Field source blanks are used to evaluate contaminants that may have been introduced through site conditions. Field source blanks are typically prepared in the field (on-site) as opposed to a trip blank which is typically prepared at the laboratory and shipped with the cooler. Field blank contamination and qualifications are summarized below.

SDG HLG06

Field blank QADI801 exhibited phenol and bis(2-ethylhexyl)phthalate contamination at 2 ug/L and 1 ug/L, respectively. Bis(2-ethylhexyl)phthalate has been qualified (U) in associated sample GPT812G1P1. Phenol is non-detect in all associated samples and no further qualifications were required.

SDG HLG07

Field blank QADI801 (from SDG HLG06) exhibited phenol and bis(2-ethylhexyl)phthalate contamination at 2 ug/L and 1 ug/L, respectively. Bis(2-ethylhexyl)phthalate has been qualified (U) in associated sample GPT14G1P1, GPT413G1P1, GPT414G1P1, GPT49G1P1, and GPT811G1P1. Phenol is non-detect in all associated samples and no further qualifications were required.

3.4 Comparability

The laboratory used standard analytical methods for all of the analyses. The method detection limits were below the contract required quantitation limits, therefore, the comparability was considered acceptable.

3.5 Completeness

There were 14 rejections of the data in one rinsate QC sample. All other samples in the SDGs analyzed for SVOCs were valid. The percent of valid data for the SVOC samples, excluding the QC sample, is 100%.

4.0 Pesticide/PCB Compounds

A total of seven (7) Pesticide/PCB SDGs were analyzed for this project. The SDGs are as follows:

HLG01, HLG02, HLG03, HLG04, HLG05, HLG06, and HLG07

This section discusses the QC supporting documentation as defined by the PARCC criteria and evaluated based on the project specific DQOs.

4.1 Precision

MS/MSD Samples

The relative percent difference (RPD) between MS/MSD samples is used to assess precision. The functional guidelines establishes RPD QC criteria limits for MS/MSD samples as follows:

MS/MSD Criteria

	Water RPD	Soil RPD
gamma-BHC (Lindane)	15	50
Heptachlor	20	31
Aldrin	22	43
Dieldrin	18	38
Endrin	21	45
4,4'-DDT	27	50

MS/MSD samples were not analyzed for SDGs HGL03, HGL04, and HGL05. MS/MSD RPD results were acceptable for the remaining SDGs with the exception of SDG HLG02. MS/MSD RPD results and qualifications for SDG HLG02 are summarized below.

SDG HLG02

MS/MSD sample R8010G1P1 exhibited a high RPD value for gamma-BHC of 16, however, endrin is non-detect in sample R8010G1P1 and qualifications are not required for high RPD values alone, therefore, no qualifications were required.

Field Duplicate Samples

Field duplicate sample results were non-detect for SDGs HLG02 and HLG05. Field duplicate samples were not analyzed in SDGs HLG03 and HLG04. Field duplicate results in SDGs HLG01, HLG06 and HLG07 are summarized below. No qualifications were made based on field duplicate results.

SDG HLG01

Sample	R5001G1P1 ug/L	R5001G1P1DUP ug/L	RPD
4,4'-DDD	0.10U	0.014	NC

Sample	R5015G1P1 ug/L	R5015G1P1DUP ug/L	RPD
None	ND	ND	--

SDG HLG06

Compound	GPT85G1P1 ug/L	GPT85G1D1 ug/L	RPD
Gamma-Chlordane	0.026	0.030	14

Compound	GPT57G1P1 ug/L	GPT57G1D1 ug/L	RPD
None	ND	ND	--

SDG HLG07

Compound	GPT36G1P1 ug/L	GPT36G1D1 ug/L	RPD
Gamma-Chlordane	0.0081	0.0060	30

Compound	GPT49G1P1 ug/L	GPT49G1D1 ug/L	RPD
Alpha-BHC	0.0017	0.050U	NC
Beta-BHC	0.0060	0.050U	NC
Delta-BHC	0.0049	0.0032	42
Gamma-BHC	0.0028	0.050U	NC
Heptachlor Epoxide	0.011	0.0029	117
Dieldrin	0.0028	0.10U	NC
4,4'-DDE	0.0042	0.10U	NC
Endrin	0.0030	0.10U	NC
4,4'-DDD	0.0080	0.0040	67
Gamma-Chlordane	0.0030	0.050U	NC

4.2 Accuracy

The percent recovery results of MS/MSD samples and surrogate spikes are used to assess accuracy. MS/MSD recovery results are presented below. Accuracy for MS/MSD samples was assessed by calculating the percent recoveries of six spiking compounds:

MS/MSD Samples

The functional guidelines establishes % Recovery QC criteria limits for MS/MSD samples as follows:

MS/MSD Criteria

	Water %R	Soil/Sediment %R
gamma-BHC (Lindane)	56-123	46-127
Heptachlor	40-131	35-130
Aldrin	40-120	34-132
Dieldrin	52-126	31-134
Endrin	56-121	42-139
4,4'-DDT	38-127	23-134

MS/MSD samples were not analyzed for SDGs HGL03, HGL04, and HGL05. MS/MSD %R results and qualifications for the remaining SDGs are summarized below.

SDG HLG02

MS/MSD sample R8010G1P1 exhibited a high MS %R value for endrin of 130% and a high RPD value for gamma-BHC of 16, however, endrin is non-detect in sample R8010G1P1 and qualifications are not required for high RPD values alone, therefore, no qualifications were required.

SDG HLH07

MS/MSD sample GPT49G1P1 exhibited a low MSD %R value for 4,4'-DDT of 34%, however, all results for this sample have already been qualified due to surrogate problems and no further qualifications were required.

Surrogate Spikes

Two surrogate compounds, TCX and DCB, are used for spiking the pesticide/PCB samples. Surrogate spike recoveries for pesticide/PCB analyses were compared to the QC acceptance criteria specified for each SDG. Surrogate recovery results were within QC advisory limits for TCX and DCB for SDG HLG03. All remaining SDGs exhibited surrogate problems and the results and qualifications are summarized below.

SDG HLG01

Several samples exhibited low surrogate %R values and are summarized in the table below. All results for samples R5002G1P1, R5006G1P1, R5004G1P1, R5001G1P1, R5001G1P1DUP, R5015G1P1, R5008G1P1, R5012G1P1, R5011G1P1, and R5015G1D1 have been qualified (J) for positive results and (UJ) for non-detects. All positive results for sample QARI300 have been qualified (J).

Sample	TCX1	TCX2	DCB1	DCB2	Qualifier
R5002G1P1	--	--	22%	20%	J/UJ
R5006G1P1	--	--	14%	16%	J/UJ
QARJ300	183%	--	--	--	J only
R5004G1P1	--	--	25%	25%	J/UJ
R5001G1P1	--	--	22%	22%	J/UJ
R5001G1P1DUP	--	--	20%	18%	J/UJ
R5015G1P1	--	--	21%	15%	J/UJ
R5008G1P1	--	--	17%	17%	J/UJ
R5012G1P1	--	--	19%	20%	J/UJ
R5011G1P1	--	--	26%	28%	J/UJ
R5015G1D1	--	--	22%	25%	J/UJ

SDG HLG02

Several samples exhibited low surrogate %R values and are summarized in the table below. All results for samples R5013G1P1, R8009G1P1, and R8010G1P1 have been qualified (UJ) since all results are non-detect. All results for sample R8008G1P1 have already been qualified due to holding times and no further qualifications were required.

Sample	TCX1	TCX2	DCB1	DCB2	Qualifier
R5013G1P1	--	--	19%	19%	J/UJ
R8008G1P1	--	--	12%	13%	J/UJ
R8009G1P1	--	--	18%	17%	J/UJ
R8010G1P1	--	--	29%	28%	J/UJ

SDG HLG04

Several samples exhibited low surrogate %R values and are summarized in the table below. All results for samples R8020G1P1, R4011G1P1, R4006G1P1, R4012G1P1, and R4009G1P1 have been qualified (J) for positive results and (UJ) for non-detects. All results for sample R4010G1P1 have been qualified (J) for positive results and rejected (R) for non-detects.

Sample	TCX1	TCX2	DCB1	DCB2	Qualifier
R8020G1P1	--	--	25%	26%	J/UJ
R4011G1P1	--	--	29%	--	J/UJ.
R4006G1P1	--	--	20%	22%	J/UJ
R4012G1P1	--	--	17%	18%	J/UJ
R4009G1P1	--	--	21%	21%	J/UJ
R4010G1P1	0%	--	20%	19%	J/R

SDG HLG05

Several samples exhibited low surrogate %R values and are summarized in the table below. All results for samples R4014G1P1, R4003G1P1DUP, and R4013G1P1 have been qualified (UJ) since all results are non-detect.

Sample	TCX1	TCX2	DCB1	DCB2	Qualifier
R4014G1P1	--	--	28%	27%	J/UJ
R4003G1P1DUP	--	--	21%	21%	J/UJ
R4013G1P1	--	--	26%	27%	J/UJ

SDG HLG06

Several samples exhibited low surrogate %R values and are summarized in the table below. All results for these samples have been qualified (J) for positive results and (UJ) for non-detects.

Sample	DCB1 %R	DCB2 %R	Qualifier
GPT85G1P1	23	29	J/UJ
GPT85G1D1	14	22	J/UJ
GPT86G1P1	14	15	J/UJ
GPT87G1P1	22	20	J/UJ
GPT57G1D1	15	14	J/UJ
GPT89G1P1	20	19	J/UJ
GPT812G1P1	22	21	J/UJ
GPT813G1P1	17	20	J/UJ
GPT814G1P1	24	23	J/UJ
GPT57G1P1	11	10	J/UJ
GPT58G1P1	14	13	J/UJ
GPT510G1P1	17	19	J/UJ
GPT514G1P1	14	13	J/UJ
GPT24G1P1	12	11	J/UJ

SDG HLG07

Several samples exhibited low surrogate %R values and are summarized in the table below. All results for these samples have been qualified (J) for positive results and (UJ) for non-detects.

Sample	DCB1 %R	DCB2 %R	Qualifier
GPT49G1P1	21	18	J/UJ
GPT49G1D1	28	25	J/UJ
GPT36G1D1	16	14	J/UJ
GPT37G1P1	18	18	J/UJ
GPT412G1P1	15	13	J/UJ
GPT415G1P1	18	16	J/UJ

Initial and Continuing Calibration

Initial and continuing calibration results can be used to evaluate accuracy within an SDG. Percent relative standard deviation (%RSD) and percent difference (%D) are the two parameters used to evaluate instrument calibration. The %RSD is an expression of the linearity of instrument response and the %D is a comparison of the continuing calibration instrument response with its initial calibration response.

Initial calibration criteria have been met for SDGs HLG06 and HLG07. Continuing calibration criteria were met for all SDGs. Initial calibration problems and qualifications are summarized below.

SDH HLG01

The initial calibrations analyzed on between 10/27/98-10/28/98 exhibited a high %RSD value for aldrin of 23.9% on the secondary column. Aldrin has been qualified (UJ) in all samples since all results are non-detect.

SDH HLG02

The initial calibrations analyzed on between 10/27/98-11/06/98 exhibited high %RSD values for alpha-BHC and delta-BHC of 21.8% and 20.3%, respectively, on the primary column. Both compounds have been qualified (UJ) in all samples except R8008G1P1 since all results are non-detect.

SDH HLG03

The initial calibration analyzed on 10/27/98 exhibited a high %RSD value for aldrin of 23.9% on the secondary column. Aldrin has been qualified (UJ) in sample R5014G1P1 since this result is non-detect.

SDH HLG04

The initial calibrations analyzed on between 10/27/98-11/06/98 exhibited high %RSD values for alpha-BHC and delta-BHC of 21.8% and 20.3%, respectively. on the primary column. Alpha-BHC and delta-BHC have been qualified (UJ) in all samples since all results are non-detect.

SDH HLG05

The initial calibrations analyzed on between 10/27/98-11/06/98 exhibited high %RSD values for alpha-BHC and delta-BHC of 21.8% and 20.3%, respectively, on the primary column. Alpha-BHC and delta-BHC have been qualified (UJ) in all samples since all results are non-detect.

4.3 Representativeness

Method blanks, equipment rinsate blanks, and field source blanks were used to evaluate representativeness for the pesticide/PCB analyses. A summary of the contaminants found in these blanks can be found below. The blanks were used to assess the sample data.

The following summarizes the method blanks, equipment rinsate blanks, and field source blanks.

Method Blanks

Method blanks were analyzed with each SDG to identify contaminants that may have been introduced through analytical instrumentation or sample preparation. Method blanks in SDG HLG05 were free of contamination. Method blank contamination and qualifications for the remaining SDGs are summarized below.

SDG HLG01

Method blank PBLANK1 (10/14/98) exhibited aroclor-1242 contamination at 0.50 ug/L, however, all associated results are non-detect and no qualifications were required.

SDG HLG02

Method blank PBLANK1 (10/16/98) exhibited heptachlor contamination at 0.0064 ug/L. Heptachlor has been qualified (U) in associated samples R5013G1P1, R5017G1P1, R8003G1P1, R8010G1D1, and R8010G1P1.

Method blank PBLANK2 (11/05/98) exhibited heptachlor contamination at 0.012 ug/L, however, the associated result is non-detect and no qualifications were required.

SDG HLG03

Method blank PBLK1 (10/16/98) exhibited heptachlor contamination at 0.0032 ug/L, however, heptachlor is non-detect in sample R5014G1P1 and no qualifications were required.

SDG HLG04

Method blank PBLANK (10/27/98) exhibited heptachlor contamination at 0.016 ug/L. Heptachlor has been qualified (U) in associated samples QADI301 and QARI302.

Method blank PBLANK2 (10/30/98) exhibited heptachlor contamination at 0.014 ug/L. Heptachlor has been qualified (U) in associated samples R4005G1P1, R4006G1P1, and R4011G1P1.

SDG HLG06

Method blank PBLANK1 (2/25/99) exhibited heptachlor contamination at 0.0065 ug/L. Heptachlor has been qualified (U) in samples GPT57G1D1, GPT57G1P1, GPT58G1P1, GPT810G1P1, GPT812G1P1, GPT813G1P1, GPT814G1P1, GPT85G1P1, GPT85G1D1,

GPT86GP1, GPT87G1P1, GPT89G1P1, QADI801, and QARI801.

Method blank PBLANK2 (2/26/99) exhibited heptachlor and alpha-chlordane contamination at 0.0034 ug/L and 0.0028 ug/L, respectively. Heptachlor has been qualified (U) in samples GPT24G1P1 and GPT510G1P1. Alpha-chlordane is non-detect in all associated samples and no further qualifications were required.

SDG HLG07

Method blank PBLANK1 (2/2799) exhibited heptachlor contamination at 0.0032 ug/L. Heptachlor has been qualified (U) in samples GPT415G1P1 and QARI802.

Equipment/Rinsate Blanks

Equipment rinsate blanks are used to evaluate contaminants that may have been introduced through the sampling equipment or laboratory handling of samples. Equipment/rinsate blank contamination and qualifications are summarized below.

SDG HLG01

Rinsate blank QARI300 exhibited heptachlor and 4,4'-DDT contamination at 0.0043 ug/L and 0.0077 ug/L, respectively, however, all associated results are non-detect or already qualified due to blank contamination and no qualifications were required.

Rinsate blank QARI301 in SDG HLG02 was non-detect and no qualifications were required.

SDG HLG02

Rinsate blank QARI301 was free of contamination. No qualifications were required.

SDG HLG03

Rinsate blank QARI301 (in SDG HGL02) was free of contamination. No qualifications were required.

SDG HLG04

Rinsate blank QARI302 exhibited 4,4'-DDT contamination at 0.018 ug/L, however, all associated results are non-detect and no qualifications were required.

Rinsate blank QARI303 (in SDG HLG05) was free of contamination. No qualifications were required.

SDG HLG05

Rinsate blank QARI303 was free of contamination. No qualifications were required.

SDG HLG06

Rinsate blank QARI801 exhibited endrin aldehyde contamination at 0.0090 ug/L, however, all associated results are non-detect and no qualifications were required.

SDG HLG07

Rinsate blank QARI802 was free of contamination. No qualifications were required.

Field Source Blanks

Field source blanks are used to evaluate contaminants that may have been introduced through site conditions. Field source blanks are typically prepared in the field (on-site) as opposed to a trip blank which is typically prepared at the laboratory and shipped with the cooler. Field blank contamination and qualifications are summarized below.

SDG HLG01

Field blank QADI300 exhibited heptachlor contamination at 0.0088 ug/L. Heptachlor has been qualified (U) in associated samples R5001G1P1DUP, R5005G1P1, R5008G1P1, R5010G1P1, R5012G1P1, and R5015G1D1.

SDG HLG02

Field blank QADI300 (in SDG HGL01) exhibited heptachlor contamination at 0.0088 ug/L, however, all associated results are non-detect or have already been qualified due to blank contamination and no further qualifications were required.

SDG HLG03

Field blank QADI300 (in SDG HGL01) exhibited heptachlor contamination at 0.0088 ug/L, however, the sample in this data package was non-detect for heptachlor, therefore, no qualifications were required.

SDG HLG04

Field blank QADI301 was free of contamination. No qualifications were required.

SDG HLG05

Field blank QADI301 (in SDG HLG04) was free of contamination. No qualifications were required.

SDG HLG06

Field blank QADI801 exhibited endrin aldehyde and alpha-chlordane contamination at 0.0098 ug/L and 0.011 ug/L, respectively. Alpha-chlordane has been qualified (U) in associated samples GPT86G1P1, GPT814G1P1, GPT85G1D1, GPT58G1P1, GPT810G1P1, and GPT813G1P1. Phenol is non-detect in all associated samples and no further qualifications were required.

SDG HLG07

Field blank QADI801 (from SDG HLG06) exhibited endrin aldehyde and alpha-chlordane contamination at 0.0098 ug/L and 0.011 ug/L, respectively. Alpha-chlordane has been qualified (U) in associated samples GPT412G1P1 and GPT415G1P1. Phenol is non-detect in all associated samples and no further qualifications were required.

4.4 Comparability

The laboratory used standard analytical methods for all of the analyses. The method detection limits were below the contract required quantitation limits, therefore, the comparability was considered acceptable.

4.5 Completeness

There were 27 rejections of the data in one sample. All other samples analyzed for pesticide/PCBs were valid. The percent of valid data for the samples, excluding the QC samples, is 99.9%.

5.0 Chlorinated Herbicides

A total of seven (7) Pesticide/PCB SDGs were analyzed for this project. The SDGs are as follows:

HLG01, HLG02, HLG03, HLG04, HLG05, HLG06, and HLG07

This section discusses the QC supporting documentation as defined by the PARCC criteria and evaluated based on the project specific DQOs.

5.1 Precision

MS/MSD Samples

The relative percent difference (RPD) between MS/MSD samples and field duplicate samples is used to assess precision.

The functional guidelines establish RPD QC criteria limits for MS/MSD samples as follows:

MS/MSD CRITERIA

	Water RPD	Soil/Sediment RPD
2,4-D	40	40
Silvex	40	40
2,4,5-T	40	40

MS/MSD samples were not analyzed for SDGs HGL03, HGL04, and HGL05. MS/MSD RPD results were acceptable for the remaining SDGs with the exception of SDG HLG02. MS/MSD RPD results and qualifications for SDG HLG02 are summarized below.

SDG HLG02

MS/MSD sample R8010G1P1 exhibited low MSD %R values for 2,4-D and 2,4,5-TP of 21% and 24%, respectively, and high RPD values for both compounds of 63 and 61, respectively. However, all results for this sample have already been qualified due to surrogate problems and no further qualifications were required.

Field Duplicate Samples

Field duplicate sample results were non-detect for SDGs HLG01, HLG02, HLG05, HLG06, and HLG07. Field duplicate samples were not analyzed in SDGs HLG03 and HLG04. No qualifications were made based on field duplicate results.

5.2 Accuracy

The percent recovery results of MS/MSD samples and surrogate spikes are used to assess accuracy. Additionally, initial and continuing calibration results can be used to evaluate accuracy. Percent relative standard deviation (%RSD) and percent difference (%D) are the two parameters used to evaluate instrument calibration.

MS/MSD Samples

The functional guidelines establish % Recovery QC criteria limits for MS/MSD samples as follows:

MS/MSD CRITERIA

	Water %R	Soil/Sediment %R
2,4-D	30-150	30-150
Silvex	30-150	30-150
2,4,5-T	30-150	30-150

MS/MSD samples were not analyzed for SDGs HGL03, HGL04, and HGL05. MS/MSD %R results and qualifications for the remaining SDGs are summarized below.

SDG HLG02

MS/MSD sample R8010G1P1 exhibited low MSD %R values for 2,4-D and 2,4,5-TP of 21% and 24%, respectively, and high RPD values for both compounds of 63 and 61, respectively. However, all results for this sample have already been qualified due to surrogate problems and no further qualifications were required.

Surrogate Spikes

One surrogate compound is used for spiking the chlorinated herbicide samples. Surrogate spike recoveries were compared to the QC acceptance criteria as specified in the functional guidelines. These criteria are summarized as follows:

Surrogate Recovery Limits

	Water %R	Soil %R
DCPA	30-150	30-150

Surrogate recoveries were acceptable in SDGs HLG03, HLG04, HLG05, and HLG07. All remaining SDGs exhibited surrogate problems and the results and qualifications are summarized below.

SDG HLG01

Sample R5004G1P1 exhibited a low %R value for surrogate compound DCPA of 12%. All results for this sample have been qualified (UJ) since all results are non-detect. Re-extracted sample R5004G1P1RE exhibited acceptable %R values, however, the all results for this sample have already been rejected due to holding times. The original analysis sample results should be used for reporting purposes.

SDG HLG02

Sample R8010G1P1 exhibited a low %R value for surrogate compound DCPA of 20%. All results for this sample have been qualified (UJ) since all results are non-detect.

SDG HLG06

Sample GPT88G1P1 exhibited a low %R value for surrogate compound DCPA of 6.1%. All results are non-detect for this sample and have been rejected (R). The sample was reanalyzed and exhibited acceptable surrogate recoveries. The reanalyzed sample results should be used for reporting purposes.

Initial and Continuing Calibration

Initial and continuing calibration results can be used to evaluate accuracy within an SDG. Correlation coefficient curves and percent difference (%D) are the two parameters used to evaluate instrument calibration. The correlation coefficient is an expression of the linearity of instrument response and the %D is a comparison of the continuing calibration instrument response with its initial calibration response.

Initial and continuing calibration criteria have been met for all SDGs. No qualifications were required.

5.3 Representativeness

Method blanks, equipment rinsate blanks, and field source blanks were used to evaluate representativeness for the pesticide/PCB analyses. A summary of the contaminants found in these blanks can be found below. The blanks were used to assess the sample data.

The following summarizes the method blanks, equipment rinsate blanks, and field source blanks.

Method Blanks

Method blanks were analyzed with each SDG to identify contaminants that may have been introduced through analytical instrumentation or sample preparation. Method blanks in all SDGs were free of contamination. No qualifications were required.

Equipment/Rinsate Blanks

Equipment rinsate blanks are used to evaluate contaminants that may have been introduced through the sampling equipment or laboratory handling of samples. Equipment/rinsate blanks were free of contamination in all SDGs. No qualifications were required.

Field Source Blanks

Field source blanks are used to evaluate contaminants that may have been introduced through site conditions. Field source blanks are typically prepared in the field (on-site) as opposed to a trip blank which is typically prepared at the laboratory and shipped with the cooler. Field source blanks were free of contamination in all SDGs. No qualifications were required.

5.4 Comparability

The laboratory used standard analytical methods for all of the analyses. The method detection limits were below the contract required quantitation limits, therefore, the comparability was considered acceptable.

5.5 Completeness

There were 0 rejections of the data. All samples analyzed for chlorinated herbicides were valid. The percent of valid data for the samples is 100%.

PARCC Criteria Summary Table

SDG Number	Precision	Accuracy	Representativeness	Completeness	Comparability
HLG01	Acceptable w/qualification	Acceptable w/qualification	Acceptable w/qualification	Acceptable	Acceptable
HLG02	Acceptable w/qualification	Acceptable w/qualification	Acceptable w/qualification	Acceptable	Acceptable
HLG03	Acceptable w/qualification	Acceptable w/qualification	Acceptable w/qualification	Acceptable	Acceptable
HLG04	Acceptable w/qualification	Acceptable w/qualification	Acceptable w/qualification	Acceptable	Acceptable
HLG05	Acceptable w/qualification	Acceptable w/qualification	Acceptable w/qualification	Acceptable	Acceptable
HLG06	Acceptable w/qualification	Acceptable w/qualification	Acceptable w/qualification	Acceptable	Acceptable
HLG07	Acceptable w/qualification	Acceptable w/qualification	Acceptable w/qualification	Acceptable	Acceptable